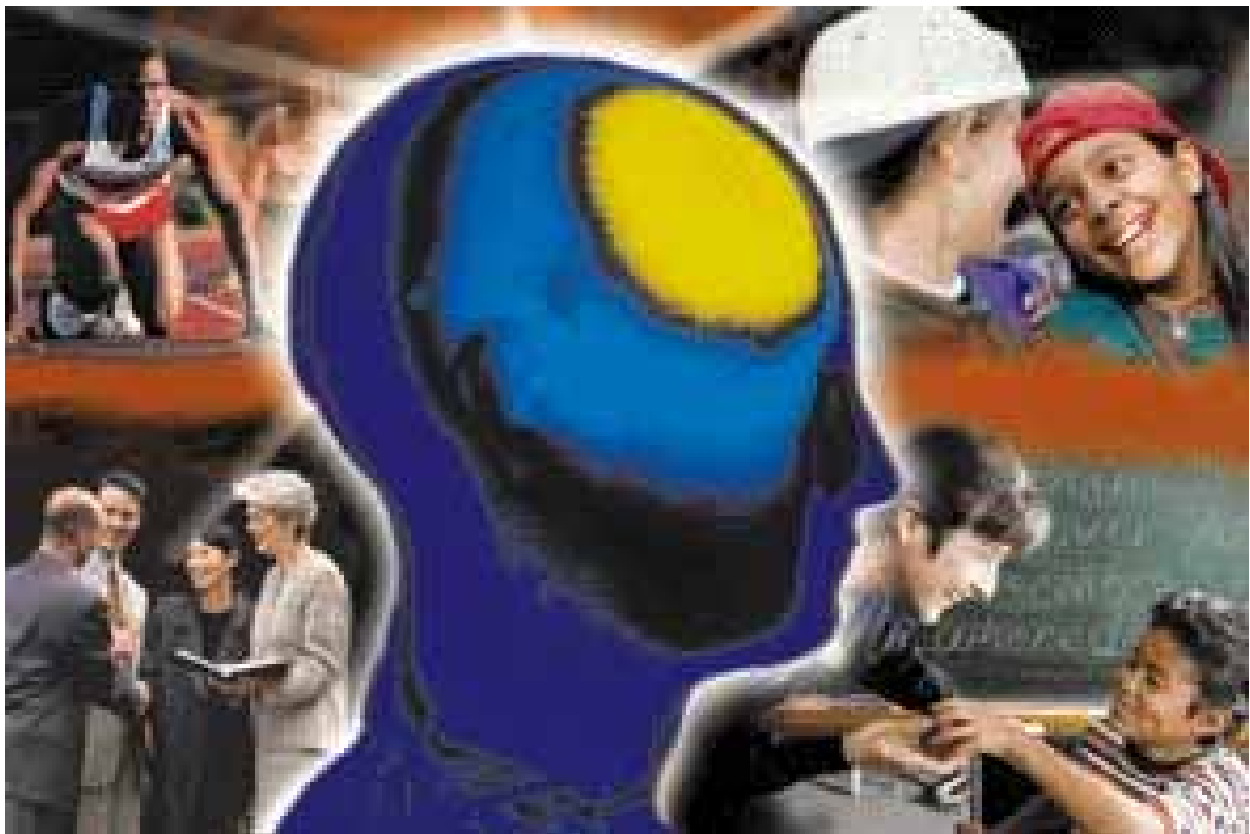


Director: Professor Herbert W. Marsh

*Self-Concept Theory, Research
and Practice:
Advances for the New Millennium*



Collected Papers of the Inaugural Self-Concept Enhancement and Learning Facilitation (SELF) Research Centre International Conference, Sydney, Australia, October 5-6, 2000.

Edited by Rhonda G Craven and Herbert W Marsh
Self-concept Enhancement and Learning Facilitation (SELF) Research Centre,
University of Western Sydney

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Review Process

Contributors were given the choice as to whether their paper was to be refereed or non-refereed. All keynote addresses and refereed articles so categorised in the contents page were subject to a formal process of blind peer review of the full paper by at least 2 reviewers.

Reviewers consisted of International Foundation Members of the SELF Research Centre and other internationally respected senior academics from Australia, China, New Zealand, and the U.S.A. Reviewers were selected to review papers on the basis of their international research reputations, research interests and knowledge of the areas covered by the content of the papers. The refereeing process for the published papers was overseen by the Editors.

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- *Reviewers* in selecting and providing feedback on the full text of all keynote addresses and refereed papers included in this work;
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- *Presenters* for creating high quality papers of interest to the international research community;
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- *Ms Penny Manson*, Research Assistant, SELF Research Centre for assisting with conference organisation.

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About the Self-concept Enhancement and Learning Facilitation (SELF) Research Centre

The SELF Research Centre's major goal is to develop and promote strategies to optimise self-concept as a valuable outcome in itself, and as a means to facilitate the attainment of other valued outcomes such as learning and achievement, teaching effectiveness, physical, cognitive and social development, emotional and physical well-being, improved productivity and job satisfaction, and more healthy lifestyles, along with a greater awareness of the worth of self in different social and cultural contexts.

The SELF Research Centre, with its primary focus on self-concept theory, measurement, research, and practice, is unique in Australia and internationally. At the heart of the Centre is a network of Australian universities and international SELF Satellite Research Units each with its own management, and financial support structure. In recognition of its national importance, the SELF Research Centre draws together some of Australia's most productive researchers in this field. Its international importance is demonstrated by the breadth of its International Foundation Members comprising some of the world's leading researchers, and the collaborative links sought by key research bodies.

Through its established links with industry partners, the SELF Research Centre collaborates on research and evaluation projects of mutual interest. At the core of the SELF Research Centre are Major Research Projects of international significance that have resulted in many widely cited publications in leading international journals, many prestigious external grants, numerous research and teaching consultancies, and outstanding PhD candidates.



Professor Herb Marsh
Director

A strong management structure under the leadership of an experienced and highly respected *Director* ensures the success of the Centre's Major Research Projects, financial viability, research training programs, international links, industry links, and professional outreach. The Director, Professor Herb Marsh, is the author of widely used and internationally acclaimed self-concept and teaching effectiveness measurement instruments, has published 210 articles in top international journals, is the most widely cited Australian educational researcher, and is the 11th most productive psychological researcher in the world. His research has consistently attracted Large ARC grants, ARC SPIRT Grants and other national and international funding. In recognition of these accomplishments, he was awarded the prestigious ARC Special Investigator Award for a period of 5 years to expand on his self-concept research. This is the first such award to be awarded to an educational researcher.

Further Information

<http://edweb.uws.edu.au/self/>

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Director's Welcome Address

The Self-Concept Enhancement and Learning Facilitation (SELF) Research Centre: Research Breakthroughs and Directions for the New Millennium

Herbert W Marsh

University of Western Sydney, Australia

I would like to warmly welcome you all to the Inaugural Self-concept Enhancement and Learning Facilitation (SELF) Research Centre conference. We are particularly honoured to have amongst us some of the leading self-concept researchers in the world. The range and high quality of the published conference papers in the Conference Proceedings attests to the importance of self-concept research internationally and the significant implications of such research in a variety of settings.

The purpose of my address is to familiarise you with the structure and function of the SELF Research Centre and to provide an overview of some recent research initiatives being undertaken at the Centre. First I will discuss the background to the establishment of the SELF Research Centre and the Centre's structure and primary mission. Second I will showcase some of our current research and provide a summary of some interesting findings and exciting new research directions. Many of these studies will be discussed during the course of the conference in greater detail.

The Structure of the SELF Research Centre

In 1998 the University of Western Sydney, Macarthur implemented an ambitious strategy as part of its Research Management Plan to focus more significant institutional research funding on areas of proven research strength. After a highly competitive process and two rounds of external review, the SELF Research Centre was awarded \$200,000 per year for the next six years (1999-2004) under stringent guidelines of accountability for its management structure, financial system, and research outcomes.

In 2000 the three members (Macarthur, Nepean, and Hawkesbury) of the Federated University of Western Sydney were integrated to form a single University of Western Sydney with a multi-campus structure. As part of this massive restructure, the integrated UWS elected to concentrate its research efforts in areas of internationally respected research strength. We are pleased to advise that the SELF Research Centre was named as one of 12 UWS Key Research Centres.

The SELF Research Centre, with its primary focus on self-concept theory, measurement, research, and practice, is unique in Australia and internationally. At the heart of the SELF Research Centre is a network of Australian universities (UWS, Charles Sturt University, University of Sydney, University of Melbourne, Queensland University of Technology) and international SELF Satellite Research Units (Chinese University of Hong Kong, Max Planck Institute for Human Development and Education in Berlin) each with

its own management, and financial support structure. Each of these institutions has sought collaboration with the SELF Research Centre on the basis of its strong international reputation. Several other institutions (from New Zealand, USA and South Africa) have forwarded expressions of interest in becoming SELF Satellite Research Units. Hence we will be considering expanding the number of international SELF Satellite Research Units.

In recognition of its *national importance*, the SELF Research Centre draws together some of Australia's most productive researchers in this field (e.g. Prof. P. Burnett, A/Prof. R. Craven, Prof. D. McInerney). Within this network, the SELF Research Centre provides professional development courses, advanced undergraduate and graduate level teaching, and supervision at the University of Western Sydney of 36 PhD students pursuing self-concept-related theses.

Its *international importance* is demonstrated by the breadth of its International Foundation Members comprising some of the world's leading researchers, and the collaborative links sought by key research bodies. In most cases, our International Foundation Members have been active collaborators with key researchers in the SELF Research Centre for some time. Our International Foundation Members include: Prof B. Byrne (Canada); Prof J. Chapman (New Zealand); Prof J. Eccles (U.S.A.); Prof J. Hattie (New Zealand.); Prof K.T. Hau (Hong Kong); Prof F. Pajares (U.S.A.); Prof R. Shavelson (U.S.A.); Dr N. Tanzer (Austria); Prof S. Vaughn (U.S.A.); Dr K. Schnabel (Germany) and Prof D. Watkins (Hong Kong). These leading scholars will create future research and exchange opportunities, and most have expressed interest in coming (or returning) to the Centre as Visiting Scholars. For example, Professors Byrne, Chapman, Hau, Hattie, Raykov and Watkins have visited the SELF Research Centre to conduct advanced research training courses, report on collaborative research projects and develop collaborative research proposals.

Through its established links with *industry partners*, the SELF Research Centre collaborates on research and evaluation projects of mutual interest. At the core of the SELF Research Centre are Major Research Projects of international significance that have resulted in many widely cited publications in top international journals, many prestigious external grants, numerous research and teaching consultancies, outstanding PhD candidates, and important implications for policy and practice in a wide range of settings but particularly in education, psychology, and training.

A strong management structure under the leadership of

an experienced and highly respected Director ensures the success of the Centre's Major Research Projects, financial viability, research training programs, international links, industry links, and professional outreach. The Director is the author of widely used and internationally acclaimed self-concept and teaching effectiveness measurement instruments, has published 210 articles in top international journals, is the most widely cited Australian educational and psychological researcher, and is the 11th most productive psychological researcher in the world. His research has consistently attracted Large ARC grants, ARC SPIRT Grants and other national and international funding. In recognition of these accomplishments, he was awarded the prestigious ARC Special Investigator Award for a period of 5 years to expand on his self-concept research. This is the first such award to be awarded to an educational researcher.

The SELF Research Centre conducted an extensive, world-wide search for a Deputy Director of the Centre that attracted considerable attention and a strong field of applicants from all over the world (Austria, Germany, South Africa, United States, China as well as Australia). The selection committee, Chaired by Professor Jan Reid, Vice Chancellor of UWS, interviewed applicants and selected Dr. Rhonda Craven, the Year 2000 Postdoctoral Fellow at Sydney University. We are pleased to report that Associate Professor Rhonda Craven was appointed as the SELF Research Centre Deputy Director in 1999. Associate Professor Craven is an Australian educator of national and international repute. She has attracted substantial external funding for her research including ARC Large Grants, ARC SPIRT Grants, grants from the National Priority (Reserve Fund), the Educational Innovations Program, the Indigenous Education Strategic Initiatives Program, and the Council for Aboriginal Reconciliation. Associate Professor Craven is also a founding member of the national Aboriginal Studies Association and to date has convened 9 national conferences and served as the co-editor of the Association's journal since 1992.

The Goals and Achievements of the SELF Research Centre

Mission Statement

The Centre's major goal is to develop and promote strategies to optimise self-concept as a valuable outcome in itself, and as a means to facilitate the attainment of other valued outcomes such as learning and achievement, teaching effectiveness, physical, cognitive and social development, emotional and physical well-being, improved productivity and job satisfaction, and more healthy lifestyles, along with a greater awareness of the worth of self in different social and cultural contexts.

Rationale

The Centre's mission is seen as crucial given that self-concept is one of the most important psychological constructs in the social/behavioural sciences. The enhancement of self-concept has been identified as a major goal in many different fields including education, child development, health, social services, organisational settings, management, industry, and sport/exercise sciences. In particular, educational policy statements throughout the world list self-concept enhancement as a central goal of education. Self-concept is also an important mediating factor that facilitates the attainment of other desirable psychological and behavioural outcomes. In education, for example, a positive academic self-concept is both a highly desirable goal and a means for facilitating subsequent academic accomplishments. The benefits of feeling positively about oneself on one's choice, planning, persistence and subsequent accomplishments transcend traditional disciplinary and cultural barriers. Hence, self-concept is a critical field of research of national and international significance in terms of its relation to important psychological, social, cultural, technological, and economic outcomes. Nathaniel Branden (1994, p. xv), an eminent philosopher and psychologist, attests to this broad, significant implication of the self-concept/self-esteem construct, stating that:

I cannot think of a single psychological problem - from anxiety to depression, to under-achievement at school or at work, to fear of intimacy, happiness or success, to alcohol or drug abuse, to spouse battering or child molestation, to co-dependency and sexual disorders, to passivity and chronic aimlessness, to suicide and crimes of violence - that is not traceable, at least in part, to the problem of deficient self-esteem.

Research Focus

The SELF Research Centre was conceived to foster, guide and conduct research pertaining to a broad array of self-related constructs and processes including self-concept, self-esteem, self-efficacy, identity, motivation, anxiety, self-attributions, self-regulated learning, and meta-cognition. The research focus of the SELF Research Centre includes theory underlying these constructs, their measurement, their relation to each other and to other constructs, their enhancement and their application in research and practice across a diversity of settings.

Research of the SELF Research Centre addresses a wide cross-section of: settings (e.g., early childhood, infants, primary and secondary schools, tertiary education, clinical and mental health, outdoor education, cross-cultural, business, government, health, specialist organisations such as the Australian Institute of Sport); participants (e.g., mainstream students, gifted students, students with special needs, Indigenous students, teacher-education students, university teachers, diverse social and cultural groups, employees, managers, elite athletes); research areas (e.g., creativity, motivation, anxiety, gender issues, behavioural

disorders, cooperative and self-regulated learning, instructional and learning techniques, teaching effectiveness, cross-cultural studies); and members (e.g., researchers from the network of Australian universities, Satellite Research Units, and International Members).

Major Research Projects of International Significance

The central research focus is based on *Major Research Projects* of international significance that have resulted in widely cited publications in top international journals, prestigious external grants, research consultancies, outstanding postgraduate research candidates, and collaboration with leading national and international researchers. These Major Research Projects include:

- Critical Meta-Analyses of Self-concept Effects,
- Developmental Perspectives with Young Children,
- Elite Performers and Highly Selective Environments,
- Physical Self-concept, Image and Activity and Health Related Fitness,
- Cross-cultural and Cross-national Perspectives,
- What Makes a Difference During Adolescence,
- Motivation and Learning,
- Self-concept and Special Education,
- Indigenous Perspectives,
- Enhancing Self-concept,
- Teacher Self-concept and Improving Teaching Effectiveness at All Levels of Education, and
- Self-concept and Effective Schooling.

Postgraduate Research

In addition to experienced researchers pursuing projects of international significance in relation to major research projects, we currently have enrolled 36 PhD students pursuing a range of thesis topics (see Table 1) that further expand the scope and focus of the major research projects of the Centre. Four researchers working in the SELF Research Centre have recently completed their PhDs (see Appendix 1 for Abstracts from these theses):

- **Andrew Martin:** Self-Handicapping And Defensive Pessimism: Predictors and Consequences from a Self-Worth Motivation Perspective;
- **Valentina McInerney:** Computer Anxiety: Assessment and Treatment;
- **Geoffrey Barnes:** A Motivational Model of Enrolment Intentions in Senior Secondary Schools In New South Wales (Australia) Schools; and
- **Martin Dowson:** Relations Between Students' Academic Motivation, Cognition and Achievement in School Settings.

Hence recent postgraduate research emanating from the Centre has made an important contribution to extending our understandings of a range of self constructs and illuminating the implications of research findings in a range of settings of practical significance to educators.

Executive Summary

In summary we are pleased to report that in its short history the SELF Research Centre has:

- Been awarded a highly competitive designation as a Key Research Centre at the University of Western Sydney that provides substantial infrastructure support for the Centre;
- Successfully applied for prestigious competitive research grants to support the further development of major research projects;
- Established collaborative research projects with industry and community partners that includes their active involvement, funding from industry partners, and matching government funding from the Australian Research Council;
- Attracted a network of international founding members who are world renown self-concept researchers as well as a critical mass of researchers from the University of Western Sydney, other Australian universities, and universities throughout the world;
- Established Satellite Research Units in international and national research centres of high repute;
- Attracted a significant mass of outstanding PhD candidates;
- Established a collaborative research network by establishing a World Wide Web page; and
- Conducted our Inaugural International Conference that has attracted top self-concept researchers from all over the world

The Structure and Measurement of Self-Concept

Diversity of Self-concept Instruments

Shavelson, Hubner, and Stanton (1976) developed a multifaceted, hierarchical model of self-concept in which general self-concept was divided into specific domains (e.g., social, physical, academic). At the time Shavelson et al. first developed their model, there was only modest support for the hypothesised domains and no one instrument considered in their review was able to differentiate among even the broad academic, social, and physical domains. Nevertheless, the Shavelson et al. model provided a foundation for the development of new theory, measurement instruments, and research.

Table 1:
Current PhD Topics

- *A Motivational Model of Enrolment Intentions in Senior Secondary Science in NSW Schools;*
- *Leadership Style Behaviour of School Principals, School Learning Environment and Aspects of Teacher Job Satisfaction;*
- *The Efficacy of a Comprehension Strategy Instruction Package for Improving Reading Comprehension Performance of Students in Year 8;*
- *Special Education - Inclusion of Students With Sensory Impairment;*
- *Self-concept, Motivation and Achievement of Gifted and Talented Primary School Children;*
- *The Self-concept of Nurses and the Relationship of Multiple Dimensions of Nursing Self-concepts to Job Satisfaction;*
- *The Motivation of First Year Japanese University Students Towards Learning English as a Foreign Language;*
- *Self-concept and Social Skills of Adults with Intellectual Disabilities;*
- *Cognitive and Motivational Determinants of Students' Academic Performance & Achievement;*
- *Measuring the Structure and Development of Pre-school Children's Self-concept;*
- *Co-operative and Competitive Learning Styles: The Implications for Teaching Methods & Strategies;*
- *A Cross-cultural Psychological Perspective of Motivation and Its Relations With the Social Milieu;*
- *The Nature and Learning of Mathematics in Years 5 and 6: People's Attitudes, Beliefs and Values;*
- *An Examination at Peer Review Process for the Evaluation of the Large ARC Grant Scheme;*
- *Peer Support and Self-concept;*
- *Prevention Strategies for Adolescent Gambling;*
- *Self-handicapping and Defensive Pessimism: Predictors and Consequences From a Self-worth Motivation Perspective;*
- *Computer and Technology Anxiety: Assessment and Treatment;*
- *Outdoor Experimental Education - Effects of Outward Bound;*
- *Elite Athlete Self-concept;*
- *The Psychological Concomitants of the Female Menopause;*
- *Theory of Mind in Children with Disabilities;*
- *Bullying and Self-concept;*
- *The Role of Self-concept and Motivation in Realising the Potential of Artistically Talented Youth;*
- *Language Maintenance;*
- *The Significance of Perceived Physical Self-image;*
- *The Structure and Significance of Multifaceted Teaching Self-concepts for Pre-service Teachers;*
- *Voicing Components of a Stigmatised Identity: Lesbians' Stories;*
- *An Investigation of the Contribution Made to Language Teaching and Learning Outcomes Through the Use of Electronic Books;*
- *Special Education Practice in Early Childhood;*
- *Cultural and Linguistics Context for Effective Learning;*
- *Theory of Mind;*
- *Physical Education Curriculum;*
- *The Effect of Differential Education Placement on the Self-concept of Primary Aged Students With Mild Intellectual Disability;*
- *PDHPE - Special Education and Access;*
- *The Impact of Self-concept Construction on Mature Age Learning and Student Attrition Rates.*

Using this model and addressing developmental changes in self-concept throughout the life span, the Self Description Questionnaire (SDQ; Marsh & Craven, 1997) instruments were designed for preadolescent primary school students (SDQI), adolescent high school students (SDQII), and late adolescents and young adults (SDQIII). Whereas the SDQ instruments (see Table 2) measure a broad cross-section of academic and nonacademic self-concept scales, more recently developed instruments based on the SDQ

instrumentation have a narrower focus. These instruments include: the Academic Self Description Questionnaire (ASDQ; see Marsh, 1990c, 1992a; 1993; also see review by Byrne, 1996a; 1996b); Physical Self Description Questionnaire (Physical SDQ; Marsh, Richards, Johnson, Roche, & Tremayne, 1994; also see Marsh, 1997; Byrne, 1996b); the Elite Athlete Self Description Questionnaire (Elite Athlete SDQ; Marsh, Hey, Johnson, & Perry, 1997; Marsh, Hey, Roche, & Perry, 1997), and Artistic Self

Perception Inventory (ASPI; Vispoel, 1993, 1995; also see Byrne, 1996b; Marsh & Roche, 1996b) (see Table 2).

In her definitive review of self-concept instruments, in a monograph commissioned by the American Psychological Association, Byrne (1996) concluded that:

The SDQI is clearly the most validated self-concept instrument available. ... For more than a decade, it has been the target of a well-planned research strategy to firmly establish its construct validity, as well as its other psychometric properties. In using the SDQI, researchers, clinicians, counsellors, and others interested in the welfare of preadolescent children can feel confident in the validity of interpretation based on responses to its multidimensionally sensitive items (p. 117).

Like her evaluation of the SDQI (for pre-adolescents), Byrne had similarly positive evaluations of the SDQII (adolescent) and SDQIII (late-adolescent/young adult) versions, and the more specialised Academic SDQ and Physical SDQ instruments.

Particularly research based on the set of Self Description Questionnaire (SDQ) instruments and reviews of the instruments support the multidimensional structure of self-concept and demonstrate that self-concept cannot be adequately understood if its multidimensionality is ignored (Byrne, 1984, 1996a, 1996b; Hattie, 1992; Marsh & Shavelson, 1985; Marsh, 1990b, 1993). This important finding is the basis of recent research breakthroughs in international self-concept research and has significant practical implications in a variety of academic and applied research settings. Such international recognition of the SDQ instruments ensures that the SELF Research Centre will continue to be widely recognised world-wide and provides for many collaborative research opportunities with researchers seeking to use these instruments.

Structure: Developments Based On Research With Young Children

Developing children's self-concepts is a critical educational goal in Australia and throughout the world. Despite considerable advances in self-concept research with older students, there has been only limited progress with children 5-8 years of age. This is unfortunate, as this transitional period between early and middle childhood in which many major developmental milestones are achieved may be crucial in the formation of a positive self-concept that is related to the attainment of many other valued outcomes. The failure to pursue research with this age group is due, in large part, to problems associated with measuring self-concepts of young children.

Seminal work by Marsh, Craven, and Debus (1991; 1998) developed and replicated an Individualized Administration (IA) procedure for use with the SDQI-IA self-concept instrument. This procedure consists of an individual interview style of presentation. Results based on these two studies

demonstrated a clearly defined factor structure based on responses by children between the ages of 5 and 8. Important findings of these studies include: a) the development of a sound self-concept measurement instrument for young children; b) illuminating the structure of self-concept for young children including ascertaining that young children do conceptualise a general self-concept; c) the identification of age and gender differences typified for older students being extended to these very young children; and d) pragmatic issues such as the length of instruments for young children. Although it has typically been assumed that longer instruments (e.g., 64 items) are inappropriate for young children, these results showed the opposite pattern of results. For items presented in random order, those near the end of the questionnaire were more effective than those at the start or middle of the instrument.

Craven, Marsh, and V. McInerney are currently pursuing an externally funded project to followup this promising research. The initial goal of this research is to verify the new assessment procedure in a new large-scale longitudinal study using a multi-cohort-multi-occasion design. This research evaluates: the emergence of differentiation among different self-concept components (social, physical, academic) and subcomponents (self-concept in specific school subjects); the development and differentiation between cognitive and affective components of academic self-concept; gender differences in specific areas of self-concept; and patterns of relations between academic self-concept and academic achievement.

Attempting to extend this Individualised Administration administration procedure even further, Marsh, Ellis and Craven (2000) conducted pilot research utilising the SDQ-IA with preschool children aged 4-5. For this very young group, they found that some of the SDQI items could not be understood easily and some items were more appropriate for a schooling context rather than an early childhood setting. In a series of interviews with young children they attempted to develop suitable items. The final 38-item instrument (SDQ-P) was designed to measure six self-concept factors (Physical, Appearance, Peers, Parents, Verbal, Math). About half the items were from the original SDQI. Using an individual-interview procedure, young children (N = 100, aged 4.0 to 5.6 years) completed the SDQ-P and achievement tests.

The psychometric properties were good in that the self-concept scales were reliable (.75 - .89; Md = .83), and first and higher-order confirmatory factor models fit the data well, and correlations among the scales were moderate (-.03 - .73; Md = .29). Achievement test-scores correlated modestly with academic self-concept factors (rs .15 to .40), but were nonsignificantly or significantly negatively related to nonacademic self-concept scales. Gender and age differences, although mostly small, were suggestive of developmental trends that are consistent with results based on responses with older children.

Table 2:

Summary of Self-Concept Instruments Self-Description Instruments (SDQI, SDQII, SDQIII, SDQI-IA)

- The **SDQII** is a 102-item instrument designed for high school students (aged 12-18) that measures 11 factors. The 11 SDQ scales are: Physical Ability, Physical Appearance, Opposite Sex Relationships, Same Sex Relationships, Honesty/Trustworthiness, Parent Relationships, Emotional Stability, Self-Esteem, Verbal, Math, and Academic. These differ from the SDQI factors in that it divides the peers scale into same sex and opposite sex scales, and additional scales were constructed to represent emotional stability, and honesty/dependability.
- The **SDQIII** is a 136-item instrument designed for university students and young adults (aged 18 and older) that measures 13 factors. The 13 SDQ scales are: Physical Ability, Physical Appearance, Opposite Sex Relationships, Same Sex Relationships, Honesty/Trustworthiness, Parent Relationships, Emotional Stability, Self-Esteem, Verbal, Math, and Academic. It differs from the SDQII in the addition of problem solving, and religion/spirituality factors.
- The **SDQI-IA** is an Individualised Administration (IA) version of the SDQI instrument. It consists of 66 items from the original SDQI instrument (all but the 10 negatively worded items) and is designed for very young children 5-8 years of age or for special populations of student who have problems with the group administered SDQI (e.g., young academically disadvantaged students). Like the SDQI, it measures 8 factors).

Academic SDQ (ASDQI, ASDQII)

- The **ASDQII** parallels the SDQ instrument in terms of format, instructions, and 6-point response scale and has good psychometric properties. The ASDQII measures 14 school subject scales (English, Foreign Languages, History, Geography, Commerce, Computer Studies, Science, Mathematics, Physical Education, Health, Music, Art, Industrial Arts, Religion) and School self-concept. The wording of the six items for each scale is strictly parallel except for reference to the particular subject area or the expression “most school subjects” for the School self-concept scale.

Physical Self Description Questionnaire (PSDQ)

- The **PSDQ** is a 70-item test designed to measure 9 specific components of physical self-concept (Appearance; Strength; Condition/Endurance; Flexibility; Health; Coordination; Activity; Body Fat; Sport) and two global components (Global Physical, Global Self-Esteem). The instructions, response format, and layout of the instrument are based on the SDQII instrument. There is good support for the reliability of the Physical SDQ scales (coefficient alphas in the mid .80s or higher for each scale), CFA tests of the structure underlying Physical SDQ responses and its invariance over gender, convergent and discriminant validity based on a multitrait-multimethod analysis of responses to three physical self-concept instruments, and a pattern of relations to an extensive set of external validity criteria.

Physical Self Concept (PSC)

- The **PSC** is a 35-item instrument designed to measure 7 scales: Activity, Appearance, Health, Competence, Strength, Body Build, and Satisfaction. Each item is a simple declarative statement and participants respond on an 8-point true-false response scale. It has good psychometric properties and its 7-factor solution is remarkably robust over gender and age (10 through 60 years of age).

Elite Athlete SDQ (EASDQ)

- The **EASDQ** is a brief, 28-item instrument designed to measure 6 specific components of elite athlete self-concept: Skills; Body; Aerobic; Anaerobic; Mental; Performance. The format, instructions, and 6-point response scale parallel those of the SDQII instrument. The coefficient alpha estimates of reliability are good (.83 to .89) and confirmatory factor analyses support the 6-factor structure

Arts Self-Perception Inventory (ASPI)

- The **ASPI** is a 40-item instrument that measures four self-concept scales (Music, Visual Art, Dance, Drama) with good psychometric properties. The format, response scales, and instructions to students are like those on the SDQ instrument.

The results show that very young children do distinguish between multiple dimensions of self-concept at an even younger age than suggested by previous research. Verbal and Math self-concepts, however, were much more highly correlated (.73) than found in previous research with older students, suggesting that very young children do not make the clear differentiation between these areas that is found in responses by older children. Louise will present some of this research later in the Conference and you are encouraged to discuss this research with her in greater detail.

In other research to be discussed later, Tracey and Marsh (2000) demonstrated that self-concepts of young, academically disadvantaged students could be effectively measured with this Individualised Administration procedure.

The Causal Ordering of Academic Self-Concept and Achievement

Do changes in academic self-concept lead to changes in subsequent academic achievement? The causal ordering of academic self-concept and academic achievement is, perhaps, the most vexing question in academic self-concept research. This critical question has important theoretical and practical implications, and has been the focus of considerable research.

Byrne (1984) noted that much of the interest in the self-concept/achievement relation stems from the belief that academic self-concept has motivational properties such that changes in academic self-concept will lead to changes in subsequent academic achievement. Calsyn and Kenny (1977) contrasted self-enhancement and skill-development models of the self-concept/achievement relation. According to the self-enhancement model, self-concept is a primary determinant of academic achievement, thus supporting self-concept enhancement interventions explicit or implicit in many educational programs. In contrast, the skill development model implies that academic self-concept emerges principally as a consequence of academic achievement so that academic self-concept is enhanced by developing stronger academic skills.

Because self-concept and academic achievement are not readily amenable to experimental manipulations, most research relies on longitudinal panel data in which both self-concept and achievement are measured on at least two occasions (i.e., a 2-wave 2-variable design). Although well-established paradigms to study this problem did not exist prior to the 1980s, more recent developments in the application of structural equation modelling have evolved for the analysis of such longitudinal panel designs. In her classic review of the academic self-concept research, Byrne (1984) proposed three criteria that such studies must satisfy: (a) a statistical relationship must be established, (b) a clearly established time precedence must be established in longitudinal studies, and (c) a causal model must be tested using appropriate statistical techniques such as SEM.

Despite Byrne's guidelines and the growing popularity of the structural modelling techniques, Marsh (1990a) was able to find only three studies meeting Byrne's criteria and concluded that none were entirely satisfactory. Marsh (1990a)

tested the causal ordering of academic self-concept and academic achievement with four waves of data (last 3 years of high school and 1 year after graduation) based on standardized test scores, school grades, and academic self-concept. He found support for reciprocal effects in which the largest paths were from prior academic self-concept to subsequent school grades. Marsh and Yeung (1997a; also Byrne, 1996a) updated previous reviews to include new research. They also concluded, however, that this research provided reasonably consistent support for a reciprocal effects model, whereby changes in academic self-concept impact on achievement and vice versa.

With the hindsight of 15 years' experience, Marsh, Byrne and Yeung (1999) offered commentary on potential problems and how they can be avoided in future research; demonstrated new, more defensible models of these data; emphasized more generally the role of researcher as substantive data detective; and updated Byrne's (1984) standards of an "ideal" study and directions for future research. Because there now exists good support for the reciprocal effects model, there is also need to pursue further research into processes that mediate the positive effects of prior academic self-concept on subsequent academic achievement. Thus, for example, Marsh and Yeung (1997a, 1997b) found that that higher academic self-concepts in particular school subjects led to an increased likelihood of students taking more advanced coursework in those subjects which led to increased academic achievement.

This research is critically important in that it has established that increases in academic self-concept lead to increases in subsequent academic achievement and other desirable educational outcomes. Hence, not only is self-concept an important outcome variable in itself, it also plays a central role in mediating the effects of other desirable educational outcomes. These findings have significant implications for international educational policy and practice.

Big Fish Little Pond Effect

Self-concept cannot be adequately understood if the role of frames of reference is ignored. The same objective characteristics and accomplishments can lead to disparate self-concepts depending on the frame of reference or standards of comparison that individuals use to evaluate themselves. More than a century ago, William James (1890/1963) discussed "the paradox of a man shamed to death because he is only the second pugilist or the second oarsman in the world" (p.310). Almost half a century ago, Festinger (1954) introduced social comparison theory that provides one approach for studying frame of reference effects. In an educational context, Marsh (1984a; 1984b; 1991; Marsh & Parker, 1984) proposed a frame of reference model called the big-fish-little-pond effect (BFLPE) to encapsulate frame of reference effects posited in social comparison theory.

In the theoretical model underlying the BFLPE, Marsh (1984b) hypothesized that students compare their own academic ability with the academic abilities of their peers and use this social comparison impression as one basis for forming their own academic self-concept. A negative BFLPE

occurs when equally able students have lower academic self-concepts when they compare themselves to more able students, and higher academic self-concepts when they compare themselves with less able students. For example, consider average ability students who attend a high-ability school (i.e., a school where the average ability level of other students is high). Because students' academic skills are below the average of other students in their school, it is predicted that this will lead to academic self-concepts that are below average. Conversely if these students attended a low ability school, then their abilities would be above average in that school. This would lead to academic self-concepts that are above average. Thus, academic self-concepts depend not only on one's academic accomplishments but also the accomplishments of those in the school that a student attends. According to this model, academic self-concept will be correlated positively with individual achievement (higher achieving children will have higher academic self-concepts). However, academic self-concept should be negatively related to school-average achievement (equally able students will have lower academic self-concepts in a school where the average ability is high and higher academic self-concepts in a school where the average ability is low). Recent research into this phenomena has taken a number of different directions some, of which are highlighted in the following sections.

Special Gifted and Talented Classes and Academically Selective High Schools

In recent years Australia, as most other countries in the world, has experienced a substantial growth in the numbers of gifted and talented primary classes and academically selective high schools. This growth reflects strong parental interest in, and political support for, special educational settings for academically able students. It is based, at least in part, on the implicit assumption that gifted students feel more positively about themselves when being educated in the context of other academically gifted students. This assumption, however, runs counter to the results of BFLE studies.

Marsh, Chessor, Craven, and Roche. (1995; also see Craven, Marsh & Print, 2000) designed two studies to test BFLPE predictions about the effects of participation in full-time "gifted and talented" primary school classes. In both studies, students from gifted and talented programs were matched to students of equal ability from mixed-ability classes. In both studies, students in the gifted and talented program experienced significant declines in three domains of academic self-concept over time and in relation to matched comparison students. In both studies this general pattern of results was reasonably consistent across gender, age, and initial ability. A critical feature of these studies was a multidimensional perspective of self-concept. Consistent with a priori predictions based on theory and previous research, participation in gifted and talented programs had a negative effect on academic self-concept and little or no effect on nonacademic self-concept. This prediction is important,

because most previous gifted and talented research was based on a unidimensional perspective of self-concept and relied on a single self-concept score that confounded differences between academic and nonacademic self-concept. Hence, BFLPE research calls into question the assumed benefits of attending full-time gifted and talented classes and academically selective high schools

Special Classes and Regular Classes for Academically Disadvantaged Students

The movement towards the inclusion of academically disadvantaged students in regular classrooms is a contentious issue, which has generated many debates. Labelling theory suggests that placing academically disadvantaged students in special classes with other low-achieving students will lead to lower self-concepts and create a long lasting stigmatisation. On the basis of this theoretical argument there has been widespread support for the practice of integrating academically disadvantaged students into regular classrooms (i.e., "mainstreaming"). In contrast, predictions based on BFLPE research imply that academically disadvantaged students will have higher self-concepts when grouped with other academically disadvantaged students (compared to similarly disadvantaged students in regular classroom settings).

Tracey and Marsh (2000) tested labelling and social comparison predictions in a study of children with mild intellectual disabilities (IM), using the individualised administration approach developed by Marsh, Craven and Debus (1991, 1998). The 211 IM students enrolled in Grades 2–6 had previously been identified as having a mild intellectual disability (i.e., an IQ of 56 to 75). On the basis of the students' current educational placement, Tracey and Marsh compared the self-concepts of IM students who were enrolled in regular classes or an IM Support Unit. Consistent with BFLPE predictions, students in special IM classes had significantly higher self-concepts for all three academic scales (Reading, Math, School). In addition, however, these IM students had significantly higher Peer self-concepts and significantly higher General Self-concepts. The two groups did not differ significantly for the remaining three nonacademic self-concepts (Parents, Physical Ability, Physical Appearance). These recent results are mostly consistent with BFLPE predictions and clearly inconsistent with predictions based on labelling theory. Therefore recent BFLPE research in special education settings has called into question the assumed benefits of academically disadvantaged students attending regular classes.

Cross-Cultural Tests of BFLPE Predictions

How specific are BFLPEs to particular cultural settings? Importantly, previous tests of the BFLPE have been conducted primarily in Western countries and, typically, in those where the native language is English. New tests of the cross-cultural generalisability of the BFLPE come from studies based on large, representative samples of East and West German students (Marsh, Koeller & Baumart, in press) and of Hong Kong students (Marsh, Kong & Hau, 2000).

In 1991 East and West German students experienced a remarkable social experiment in which the very different school systems of the former East Germany and West Germany were reunified. Prior to the reunification, the former East German students had explicitly not been grouped into schools or classes according to their achievement levels whereas the former West German students had attended schools based largely on their achievement levels for the previous two years. After the reunification, all German students attended schools grouped according to ability levels. The BFLPE was clearly evident in this German study. Consistent with BFLPE predictions and the history of selective schooling in East and West Germany, however, the BFLPE was significantly bigger for West than East German students at the start of the reunification. Importantly, also consistent with predictions, the size of this difference was significantly smaller by the middle of the school year and had disappeared completely by the end of the first year of the reunified school systems. Results of this large-scale, quasi-experimental study clearly support the BFLPE and demonstrate how system-wide educational policy differences can impact the academic self-concepts of individual students.

Marsh, Kong and Hau (2000) evaluated the BFLPE in a longitudinal, nationally representative sample of Hong Kong high school students. They were able to unconfound negative and positive effects on academic self-concept associated with attending schools where the average ability level of students was very high. Consistent the BFLPE, higher school-average achievements led to lower academic self-concepts (contrast effect) whereas higher perceived school status had a counterbalancing positive effect on self-concept (reflected glory, assimilation effect). The negative BFLPE is the net effect of counterbalancing influences, stronger negative contrast effects, and weaker positive assimilation effects. Hence, controlling perceived school status led to purer – and even more negative – contrast effects. Attending a school where school-average achievement is high simultaneously results in a more demanding basis of comparison for one's own accomplishments (the stronger negative contrast effect) and a source of pride (the weaker positive assimilation effect).

Moving Beyond Metaphor: The BLPE with Elite Swimmers

A particularly interesting study is being conducted as a PhD by Clark Perry of the Australian Institute of Sport in collaboration with the SELF Research Centre. As the sport psychologist for the Australian swimming team, Clark has

access to some unique research opportunities with elite athletes. This research is based on the Elite Athlete Self Description Questionnaire (EASDQ) that measures multiple dimensions of athletic self-concept. Australia recently hosted the International Pan Pacific Swimming Meet. All participating nations were invited to participate in our research, and most agreed. Swimmers completed the EASDQ shortly before the start of the competition in relation to each of the events in which they competed. For each swimmer we also had access to prior personal bests and performances at the meet for each event. In addition, we have rankings of each country in relation to overall performances and performances in each event. Similar data were subsequently collected at the World Short Course Championships in Greece. Between the two studies, we have responses from 270 of the top swimmers in the world representing nearly 700 events. For all events each performance can be evaluated in relation to international points that allow us to compare performances across events in relation to a comparable standard.

The main goal of the study, moving beyond metaphor, is to evaluate an interesting new application of the BFLPE in this elite athletic setting. Specifically, we will evaluate the contribution of a swimmer's previous performance and the quality of swimming in his/her country in the formation of athletic self-concept. We predict that individual performance will contribute positively but that national ranking of the team will contribute negatively to academic self-concept. Thus, for example, a swimmer who is ranked 20th in the world in a particular event will have a higher swimming self-concept if this athlete is the top ranked swimmer in his/her country. However, this swimmer is likely to have a lower swimming self-concept if there many other elite swimmers from the same country who are ranked higher – particularly if they are ranked higher in the same event.

This study of elite swimmers also provides an interesting application of causal ordering models (based on academic self-concept/achievement studies) and Internal/External Frame of Reference Models (based on a model of relations between achievement and self-concept in different school subjects). Consistent with causal ordering studies in academic contexts, swimming self-concept is predicted to contribute to subsequent overall performance beyond the contribution of prior performance. Consistent with the Internal/External frame of reference model in academic self-concept research, swimmers are predicted to have self-concepts higher than predicted by their performances in their "best" event, but lower than predicted by their performances in their "worst" event. Consider, for example, a swimmer is ranked number 1 in the world in the 100 M freestyle who also competes in the 200 M freestyle (but is "only" ranked 12th in the world). This swimmer is predicted to have a lower self-concept in the 200 M event than the 13th ranked swimmer who is much stronger at this even than any other event (i.e., the 200 M is his/her best event).

Cross-Cultural Applications

SDQ instruments are used all over the world and have been translated into many languages (e.g., German, French, English, Spanish, Portuguese, Greek, Cantonese, Mandarin, Italian, Japanese, Korean). This provides us with unique opportunities to: test the generalisability of our research findings, to extend our research into new areas, and to strengthen our international links and recognition. Thus, for example, there were symposia sponsored by the SELF Research Centre at two recent American Educational Research Association meetings. Despite coming from different countries from all over the world, symposium participants were working on interrelated problems using similar instruments, using similar terminology, and employing state of the art methodologies. This cross-cultural, international appeal of self-concept research adds to vibrancy to this field of study, as demonstrated by the research represented in this conference.

Hong Kong Study

One particularly important research program is a large-scale study in Hong Kong, evaluating the development of self-concept, its relation to academic achievement in particular school subjects, and how it is affected by attending schools of different types (particularly schools varying in the degree of academic selectivity and language of instruction). This research is facilitated by the strong international collaboration with the Chinese University of Hong Kong, through Professor Kit-Tia Hau, Director of the SELF Satellite Research Centre at this institution. He will summarize some of the highlights of this research in greater detail in his Keynote Address.

This research program has resulted in many important studies, several of which have already been published and others that will be presented as part of this conference. Significant findings from these studies which extend the external validity of current Centre research include: a) Demonstrating good psychometric properties of responses to a Chinese translation of the SDQII based on administration to a very large nationally representative sample of Hong Kong high school students on each of four occasions; b) Replicating and extending the theoretical basis of the BFLPE; c) evaluating the impact of immersion programs through instruction in a second language (English instead of Chinese) on achievement and academic self-concept in different school subjects. The effects of being taught Science, History, Geography, and, to a lesser extent, mathematics in a second language are more negative (up to $-2SD$) than the positive effects of academic ability. We also explore how these effects interrelate with academic self-concept.; and d) Demonstrating in a causal modelling study that the prior academic self-concept contributes to subsequent academic achievement beyond the effects of prior academic achievement.

French Versions of the SDQI and SDQII

Violaine Ayotte of the Montreal Department of Public Health has recently translated the SDQI and SDQII into French and used these new translations in two large-scale French Canadian studies. In each of these studies, results provided clear confirmation of the psychometric properties of the SDQ instruments and extended theory and research in new directions. Marsh and Ayotte (2000) provided new support for the separation of competence and affect components and for a developmental theory about how self-concept for young children (grades 2-6) becomes increasingly multidimensional with age. Marsh, Parada and Ayotte (2000) demonstrated that there was a systematic, highly differentiated multivariate pattern of relations between the 11 SDQII factors and 7 factors of adolescent mental health. Based on this research they argued that relations between self-concept and mental health cannot be adequately understood if mental health research continues to maintain a unidimensional perspective of self-concept. Both these studies demonstrate how cross-national comparisons are likely to lead to extend existing research in new directions as well as replicating the generalisability of SDQ instruments. Because Violaine is presenting later in the conference, I invite you to talk further with her about her research.

The Cross-Cultural Comparability of Responses to Self-Concept Instruments

Professor David Watkins from the University of Hong Kong is one of the leading and most prolific cross-cultural psychology researchers in the world. Drawing from his research in this area, he argues that self-concept has played a central role in the cross-cultural psychology literature. In his research, he has evaluated psychometric properties of self-concept instruments – including the SDQ – in a variety of cross-cultural comparisons from all over the world. However, he has also considered a symbiotic blend of quantitative and qualitative approaches to less structured instruments such as the Twenty Questions instrument to determine how cultural dimensions such as individualism and collectivism influence the way people in different cultures view themselves. Professor Watkins will be summarising some of this research in his keynote address.

Professor Barbara Byrne is internationally known for her self-concept research. She has conducted important empirical studies, provided critical reviews of academic self-concept research, and written the definitive review of self-concept instruments. Outside of the self-concept research area, she is particularly well known for her methodological contributions relating to confirmatory factor analysis and structural equation modelling. Bringing together these two strands of her research, her most recent research explores technical issues involved in making cross-cultural comparisons of self-concept responses.

Motivation, Self-Concept and Indigenous Students

Motivation and its relation to self-concept and other desirable outcomes in different contexts is a burgeoning research area that has stimulated international interest. Professor Dennis McInerney is highly regarded internationally for his extensive cross-cultural research, particularly in relation to comparisons of motivational measures and the applicability of motivation goal theory to Indigenous school children from different countries. He has conducted many cross-cultural studies examining the relevance of personal, social, and educational goals to school motivation and achievement of students from different cultural groups. Specifically, the research program examines the compatibility of goals held by students from a variety of cultural backgrounds with goals promoted by classrooms and schools, and the impact that individual, peer, family, class and school goals have on student achievement, motivation and school retention. Professor McInerney will describe his research in more detail in his Keynote Address.

New Applications of Self-concept Research

Self-concept is an exciting construct that is applicable to almost all research involving human beings. Underlying much self-concept research is the assumption that individuals with higher self-concepts feel better about themselves and that this leads to more effective performance and other desirable outcomes. Support for this assumption is particularly strong in educational research, but can be easily translated to many other areas of applied research. The Centre is currently undertaking a range of new applied studies that are hoped to result in significant implications for theory, policy and practice.

Enhancing Self-concept in Classroom Settings

The pervasive influence of self-concept has resulted in many educational policy statements throughout the world listing the development of a positive self-concept as one of the key goals of education (e.g. Ministerial Council on Education, Employment, Training and Youth Affairs, 1999). Brookover and Lezotte (1979), in their model of effective schools, suggested that maximising academic self-concept, self-reliance, and academic achievement should be major outcome goals of schooling. The attainment of a positive academic self-concept also affects academic behaviours, academic choices, educational aspirations, and subsequent academic achievement (Byrne, 1984; Marsh, 1992b; Marsh & Craven; 1997). Because of the desirability of enhancing self-concept, there have been many intervention studies designed to enhance self-concept in a wide variety of settings. However, these studies have typically been plagued with methodological flaws such as: the use of weak interventions; the use of potentially powerful interventions but with small sample sizes or weak designs where effects are unlikely to be statistically significant; and a poor fit between the intended goals of the intervention and the specific dimensions of self-

concept used to evaluate the interventions (see Craven & Marsh, in press; Hattie, 1992; Marsh & Craven, 1997; Marsh & Richards, 1988). Most interventions that target constructs related to self-concept, have been administered in special settings removed from the classroom by individuals who do not interact with the participants in naturalistic settings. Yet, designing interventions to be administered by teachers in naturalistic educational settings is a critical goal since this is the target setting where interventions have most direct practical significance. However, although it is assumed that teachers can readily enhance self-concept in the classroom without special guidance, Janet Hattie's 1992 meta-analysis of self-concept enhancement studies reported that classroom teachers were among the least effective change agents.

The SELF Research Centre has capitalised on recent advances in the quality of self-concept research to facilitate stronger interventions. Studies undertaken by SELF researchers (e.g. Burnett, 1995; Craven; 1989, 1996; Craven, Marsh, & Debus, 1991; Marsh, Richards & Barnes, 1986a) have identified and evaluated promising self-concept enhancement treatments in the context of a multidimensional model of self-concept. Marsh, Richards & Barnes (1986a, 1986b) presented a construct validity approach to the study of intervention effects and the validity of interpretations resulting from such studies. Using this approach they argued that specific dimensions of self-concept that are most relevant to the intervention should be most affected, while less relevant dimensions should be less affected and serve as a control for response biases. Applications of this approach have demonstrated that changes due to interventions that target non-academic facets of self-concept (Marsh, Richards & Barnes, 1986a; 1986b) or academic facets of self-concept (Craven, 1989; 1996; Craven, Marsh and Debus, 1991; Marsh & Richards, 1988) are specific to the goals of the intervention. These interventions clearly demonstrate that the multidimensionality of self-concept as defined in the Shavelson model is critical to consider in research designs that aim to enhance self-concept. This advance in methodology in combination with recent developments in theory and measurement instruments has provided the basis for overcoming the limitations of past self-concept enhancement research by ensuring considerations of measurement instruments, interventions and theory are intertwined.

A new investigation is the subject of a current externally funded project that combines self-concept enhancement approaches developed in different SELF Satellite Research Units to maximise the successful implementation of a teacher-administered intervention in naturalistic education settings. The specific aim of this in progress study is to investigate the longitudinal impact of a teacher-delivered internally focused attributional feedback/reinforcement program developed by Burnett and Craven on children's academic self-concepts, global self-esteem, self-attributions, self-talk, perceptions of praise and feedback, and reading and maths achievement. The expected outcomes of this study include the development of:

- a strong cognitive based teacher-mediated self-concept

enhancement intervention;

- effective feedback, reinforcement, and praise strategies that upper primary school teachers can use to enhance children's self-concepts and academic achievement; and
- significant conceptual advances in self-concept theory, research and practice.
- Based on this Major Program of Centre research, Craven and Marsh are undertaking a synthesis of promising findings emanating from self-concept research that could facilitate the development of stronger intervention studies. This synthesis should lead to new directions for self-concept enhancement theory, research and practice.

Teacher Self-concept and Teaching Effectiveness

University lecturers are expected to be good teachers and good researchers, but receive little teacher training. Although there is a persistent myth that good researchers are necessarily good teachers, a large meta-analysis showed teaching effectiveness to be almost unrelated to research productivity. Hence, it is not surprising that many lecturers lack confidence about their teaching effectiveness and may not know how to improve it even if motivated to do so. There is an extensive literature showing that students' evaluations of teaching effectiveness are reliable and valid when measured with well-designed multidimensional instruments like Marsh's Students' Evaluation of Educational Quality (SEEQ) instrument. Marsh and Roche (1993), however, reported that teachers do not know how to use feedback from their students to improve their teaching effectiveness without additional consultation. They developed a feedback intervention based on students' evaluations, teacher self-concepts (self-ratings of their own teaching effectiveness), and booklets containing concrete strategies on how to improve teaching effectiveness for each SEEQ factor (e.g., Organisation, Learning, Group Interaction, Enthusiasm, Breadth of coverage, Exams). In consultation with a consultant, teachers used this information to select specific SEEQ factors and appropriate strategies to improve their teaching effectiveness. This feedback intervention led to significantly improved teaching effectiveness in subsequent courses compared to randomly assigned control teachers in a no-feedback condition.

Following from this research, Roche and Marsh (2000) argued that surprisingly little attention has been paid to the nature, measurement and practical implications of university teachers' self-concepts – their self-perceptions of their own teaching effectiveness. Their research tries to integrate extensive research literatures in self-concept and in students' evaluations of teaching effectiveness. They developed a multidimensional university teaching self-concept instrument (Teacher's Evaluation of Educational Quality; TEEQ) and demonstrated the instrument's good psychometric properties (factor structure, reliability, validity). Multitrait-multimethod analysis of relations between multiple dimensions of teaching self-concept and corresponding student rating dimensions also provided good support for the construct validity of the teaching self-concept responses. Consistent with predictions from self-concept research, they demonstrated that feedback

from significant others (students) influenced self-concept. They discussed implications for further research on teacher reflection and for improving teaching effectiveness in higher education.

Bullies, Victims, Violence and Aggression

Bullying, violence, and victimisation in schools are pervasive problems with longterm psychological consequences for bullies, victims and communities. Anti-bullying programs, although popular internationally, are rarely developed to capitalise on recent theoretical advances and systematically analysed by rigorous research. Grounded on cutting edge research in anti-bullying, school ethos, self-concept and cognitive psychology, we are developing an innovative whole-school anti-bullying intervention, and will critically analyse its impact on desirable social and educational outcomes for victims, bullies, and other students. We will use a powerful multicohort-multi-occasion experimental design and state-of-the-art quantitative and qualitative analyses, tracking both individual students and whole schools over time.

This is one of two new applied research programs in which the SELF Research Centre has obtained active involvement and funding from community and industry partners along with matching government funding from the Australian Research Council. This collaborative research project involves the SELF Research Centre; Western Sydney Area Health Service, Department of Child, Adolescent and Family Psychiatry, Redbank House; and the Marist Education Centre/Catholic Education Office. *The Department of Child, Adolescent and Family Psychiatry (Redbank House)* brings extensive expertise in designing, documenting and implementing anti-violence programs and the care of adolescents who have been victims of violence. *The Marist Education Centre and Catholic Office of Education* bring a wealth of knowledge about the school system and expertise in the delivery of curriculum, program implementation, evaluation, and policy imperatives. The creation of a safe, supportive, nurturing school environment that is the ultimate aim of the proposed project is central to the mission and values of these organisations. The SELF Research Centre brings substantive focus on self-concept that is central to the project and research expertise. Importantly, Roberto Parada's in progress PhD is also based on this research.

One of the first studies to come from this new research project evaluates the Pivotal Role of Self-concept in Relation to Bullying (Marsh, Parada, Yeung, & Healey, 2000). Aggressive Troublemaking and being a Victim were related to three components of self-concept (General, Same Sex, and Opposite Sex) based on the large, nationally representative NELS database. Longitudinal structural equation models for students in 8th, 10th and 12th grades showed that the Troublemaker and Victim constructs were reasonably stable over time and moderately correlated (many students were both troublemakers and victims). The Victim factor was negatively correlated with self-concepts and had negative effects on subsequent self-concepts. Whereas the

Troublemaker factor was also correlated somewhat negatively with self-concepts, the Troublemaker factor had small positive effects on subsequent self-concept. This suggests that low self-concept may trigger troublemaking behaviour in a possibly successful attempt to enhance subsequent self-concept. Although boys had higher Troublemaker and Victim scores than girls, the effects of these constructs on subsequent self-concepts were similar for boys and girls. The results indicate that bullies derive a sense of self-worth from their anti-social activities and suggest that this is reinforced by others. Hence, an effective means to undermine bullying behaviors may be to alter the social ethos within a school that reinforces bullying behaviors.

Self-concept, Peer Support and the Peer Support Foundation

School-based peer support programs are very popular and are seen to provide important benefits in Australia and throughout the world. Such programs, however, are rarely evaluated systematically using a strong research design, a suitable range of outcome measures and a dual focus on both the junior students (tutee, helpee) and senior students (helper, tutor). Of particular interest is the effect of peer support programs on the potentially stressful transition from primary to secondary schools that is associated with declines in attendance, academic achievement and self-concept, and increases in classroom misbehaviour and depressive symptoms. It is therefore important to find out whether peer support programs can counter these negative effects. Since peer support plays an important role in adolescent adjustment, it is important to explore whether peer support programs lead to an increase in perceived social support by students in the program and a strong sense of “connectedness” with the school. The results of this study should have profound effects for our conceptual understandings of the key strengths of peer support programs and their benefits for high school participants.

This collaborative research project funded by the Australian Research Council involves the SELF Research Centre, the Peer Support Foundation, and the Catholic Education Commission. The Peer Support Foundation has a mission to provide dynamic peer led programs that foster the physical and mental well-being of young people and the community. The central goal of the Peer Support Program is to develop self-concept, self-esteem, self-awareness and self-confidence. The foundation currently provides support and training materials for schools in NSW, across Australia, and throughout the world. As part of the research program, the Foundation will develop a new Secondary Peer Support Core program that emphasized self-concept enhancement. The Catholic Education Commission has a long history of successful collaboration with the Peer Support Foundation, thus making possible this project. The SELF Research Centre brings research expertise and the substantive focus on self-concept that is central to the project. Importantly, Louise Ellis's in progress PhD is also based on this research.

Although still in very early stages, this research program provides a wonderful opportunity for the SELF Research Centre to contribute its theoretical, academic and substantive expertise to a community program that has the potential to really make a difference to the lives of students. Julie Dawson, Director of the Peer Support Foundation, will provide an overview of their Core program as part of this conference.

Summary

In summary the establishment of the SELF Research Centre and its satellite research units has stimulated a new internationally concerted impetus and interest in self-concept research. This extensive research agenda has resulted in substantial advances in self-concept theory, research and practice. The results of these studies also have important implications for policy and practice in a wide range of settings of international interest. These significant accomplishments attest to the need to continue and expand international collaboration in the important area of self-concept research and by so doing contribute to making the world a better and happier place.

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Appendix 1:

Abstracts of Recent PhD Theses from the SELF Research Centre

Self-Handicapping and Defensive Pessimism: Predictors and Consequences from a Self-Worth Motivation Perspective

Andrew Martin, 1999

Abstract

The present study examines predictors and consequences of self-handicapping and defensive pessimism (comprising defensive expectations and reflectivity) from a self-worth motivation perspective (Beery, 1975; Covington, 1984a, 1992; Covington & Beery, 1976). Consistent with self-worth motivation theory, self-handicapping and defensive expectations are proposed as two strategies students use to protect their self-worth in the event of potential failure, and in some cases to enhance their worth in the event of success. Using longitudinal data derived from undergraduate students from three institutions in their first and their second years at university, quantitative analyses, involving confirmatory factor analysis and structural equation modelling, tested models in which a set of affective and motivational factors was proposed to predict self-handicapping, defensive expectations, and reflectivity. These three strategies were in turn proposed to predict a variety of academic outcomes including self-regulation, persistence, future academic plans, and grades.

In students' first (n=584) and second years (n=489) at university, two process models were examined and the patterns of relationships emerging at both times were broadly congruent: External attributional orientation, performance orientation, uncertain personal control, and anxiety, all positively predicted self-handicapping, defensive expectations, and reflectivity, while task-orientation was found to negatively predict self-handicapping and defensive expectations and positively predict reflectivity. In turn, self-handicapping and defensive expectations negatively predicted persistence and self-regulation, while reflectivity positively predicted these outcomes. A pivotal finding in the additional longitudinal model (n=328), beyond those derived in the process models, was the negative effect of Time 1 self-handicapping on subsequent academic grades. Application of the quadripolar model of need achievement (Covington & Omelich, 1991) provided an integrative conceptual rationale to assist substantive interpretations suggesting that reflectivity involved both a success orientation and a motive to avoid failure, defensive expectations primarily reflected failure avoidance, while self-handicapping actually bordered on failure acceptance.

In-depth interviews with students were conducted at Times 1 (n=24) and 2 (n=16) which expanded quantitative findings about the self-protective process from students' personal perspectives. Time 1 interview data highlighted the idiosyncratic ways in which students self-protect through self-handicapping and defensive expectations, illuminated their consequences, and provided rich detail about the precise nature of the many factors associated with these strategies. Time 2 qualitative analyses shed light on upward and downward shifts in self-handicapping and defensive expectations over time. Time 2 qualitative data also provided insights into the concomitant shifts in the affective and motivational factors underpinning these strategies and the perceived academic and personal difficulties which students felt accounted for the identified shifts in self-handicapping and defensive expectations.

Both quantitative and qualitative data hold implications not only for current understanding and existing theory regarding self-handicapping and defensive pessimism, but also for educational practice and research dealing with these phenomena. On a more general level, data derived from the various studies provide new perspectives on defensive manoeuvring and the lengths to which students will go to protect their self-worth, the many reasons they pursue their studies in such a fashion, and the diversity (and complexity) of consequences that follow from such behaviour.

Computer Anxiety: Assessment and Treatment

Valentina McInerney, 1997

Abstract

This Dissertation represents the results of a series of studies designed to investigate a specific manifestation of the technostress that is so prevalent in Western society today (Weil & Rosen, 1997): computer anxiety among adult learners undertaking an introductory university computer training course.

In the first of these studies, the existence, nature and degree of computer anxiety was investigated with a sample of teacher trainees undertaking a semester-long introductory computer training course ($n = 101$). The impact of this course on the anxiety and cognitions of these students was a second significant area of interest. A third study focussed on the evaluation of the measure of computer anxiety used in this study in relation to the relevant theoretical literature with a view to the design of a new computer anxiety instrument.

This study demonstrated that anxiety and associated negative cognitions with regard to computing were not necessarily dissipated by completing a computer course and were correlated with gender, computer ownership and previous computer experience, as in previous research. A number of questions raised as a consequence of the findings of this pilot study included: a) Could a reliable measure for assessing such anxiety amongst adult learners in a university setting be designed? b) Using this measure, what is the extent and nature of this anxiety among undergraduates in general? and, c) What is the relationship between the way that computing skills are taught and anxiety alleviation or exacerbation?

To address the first question, the Computer Anxiety and Learning Measure (CALM) was designed as a multidimensional instrument comprising eleven factors subsumed into four scales: Gaining Initial Computing Skills; Sense of Control; Computing Self-Concept; and State Anxiety in Computing Situations. This measure was shown to have both high validity and reliability, and to be factorially invariant for undergraduate groups from dissimilar faculties.

To better understand the nature and extent of computer anxiety and related negative cognitions, a number of faculties with different student populations were studied: Education, Health, Arts and Social Sciences, and Business and Technology (total $n = 794$). Using the CALM measure, it was demonstrated that anxiety and cognitions relating to learning computing skills (namely, perceptions of control and mastery as well as self-concept of ability in computing situations) were high within each of the faculties, but in significantly different ways. Furthermore, the correlates of these constructs also varied from one faculty to the other.

In-depth interviews conducted with computing course coordinators at this time indicated a range of approaches to instructional design, beliefs about the extent and causes of computer anxiety, and the appropriate ways of alleviating it. Among the instructional methods used were a traditional transmission approach and a relatively unstructured cooperative learning approach. While there were strengths reported for each of the methods in terms of anxiety reduction and achievement gains, there was no empirical evidence of the comparative efficacy of either. In order to examine the potential effects of these approaches on computer anxiety and cognitions, and their potential interactions, a quasi-experimental aptitude-treatment-interaction (ATI) study was designed and implemented.

Two approaches derived from the faculty interviews formed the basis of the design of this study, with instructional methods (direct instruction and direct instruction plus structured cooperative groupwork incorporating metacognitive strategy training) as the treatments, and levels of computer anxiety and negative cognitions as the aptitudes.

The theoretical literature strongly suggests that both direct instruction and structured cooperative groupwork should effectively alleviate anxiety for different reasons: information processing reduction in the former, and social support and the cognitive benefits of explaining in the latter. Furthermore, on the basis of self-efficacy theory and the literature relating to the positive outcomes of cognitive-behavioural training, the author theorised that metacognitive strategy training in self-questioning within the context of a structured cooperative group should enhance positive cognitions (sense of control and computing self-concept). A consequence of this intervention was anticipated to be improved achievement.

The sample for this study comprised two equivalent groups of undergraduate students (total $n = 31$) undertaking a computer training course in which a range of applications were to be taught over a semester. The same instructor taught both groups. Two alternative approaches to computer instruction were examined. The first group received traditional teacher-led direct instruction (this was the comparison group), while the second group received direct instruction plus metacognitive strategy training in self-questioning within a cooperative learning context (this was the intervention group).

The results of this quasi-experimental study indicated that there were significant ATI effects: some aspects of anxiety related to learning computing skills remained for initially anxious students receiving the cooperative learning intervention but not for those in the direct instruction group. For those with low positive cognitions, however, there was a significant advantage in being in the cooperative learning group rather than the direct instruction group. Both groups achieved equally well.

To further explore the comparative usefulness of the two approaches, qualitative data were simultaneously collected from a number of sources: in-depth interviews with two high and two low anxious students from each group; student logbooks in which details of thoughts and feelings following each computing tutorial were recorded; and an instructor tutorial diary.

Potential limitations in the methodology of the first ATI study revealed through analyses of the qualitative data, namely, the forming of spontaneous collaborative groups in the direct instruction treatment, and the development of self-regulatory behaviours in both groups, led to the redesign of the research to reinforce the contrast between the treatments. A second ATI study was designed to minimize the effects of the limitations of study one. In this second study, the metacognitive strategy intervention was strengthened to ensure that students received earlier and more extensive training in the use of higher order self-questioning than had occurred in the previous study and regular practice in self-regulation through the use of a “reflective folder”. This redesigned study was conducted with two new groups undertaking the same introductory computer course as previously ($n = 30$) with the same instructor as in the first study.

The results of this second aptitude-treatment-interaction study yielded clearer outcomes while confirming some of those of the first study. Achievement was significantly enhanced for those receiving the metacognitive strategy training intervention. An additional outcome was the reduction of fear in computing situations for the initially anxious in this group. Initially low anxious students in the direct instruction group experienced greater levels of posttest anxiety than low anxious students in the cooperative group. Positive cognitions (perceptions of control and mastery as well as self-concept of ability in computing situations) were increased for those with initially low levels in the cooperative learning group. On the basis of these findings, it was felt that considerable confidence could be placed in the ATI effects and in the value of metacognitive training in self-questioning within a structured cooperative learning context as a means of enhancing achievement and positive cognitions with regard to learning computing for the highly anxious and those with low positive cognitions.

One paradoxical outcome of the cooperative learning intervention remained, however. Despite significantly improved achievement, some aspects of anxiety relating to learning computing skills in an evaluative situation remained for students with initially high levels of anxiety in these areas, while their perceptions of control and mastery as well as self-concept of ability in computing situations were enhanced. This raised two possibilities: that computer anxiety in this learning context was not debilitating but, rather, that it was facilitating; and that positive cognitions with regard to computing might be more highly correlated with achievement than was anxiety. In other words, it appears likely that any anxiety about learning computing at the end of the computer course did not reduce performance for those whose sense of control and self-concept were increased as a consequence of metacognitive strategy training in self-questioning within a cooperative learning environment.

In terms of future directions, three important avenues can be followed on the basis of the research conducted for this Dissertation: Further evaluation of the CALM in terms of its usefulness in identifying those individuals whose negative affect and cognitions in computing computer training situations are impediments to motivation and learning; replication of the intervention used in the second ATI study within a different learning context where external, normative evaluation is not a potentially compounding factor; and, an examination of additional qualitative data collected longitudinally and developmentally from students in computer training situations, as well as from their instructors, in order to further investigate the interplay between anxiety and the cognitive processes involved in perceptions of control and ability in computing situations, especially where these extend over a period of time.

In conclusion, the research encompassed in this Doctoral Dissertation is strongly suggestive that computer anxiety and associated cognitions exist as multidimensional constructs, and that the CALM is an effective measure of these for adults in computer training contexts. Furthermore, it would appear that instructor-mediated computer training interventions for students assessed as high in anxiety and low in positive cognitions with regard to learning computing skills can be designed and implemented. Those responsible for the design and implementation of computer training programs for adult learners in the future, therefore, have been provided with potentially effective tools for instructional practice.

Have had a computer phobia since high school - a fear of wiping a whole lot of information. Scared stiff this week in computing class - making silly mistakes (Nathan, high anxious)

Being embarrassed to ask for help - that's what makes people more tense about computers (Michael, low anxious)

For some reason this computer class seems to remind me of the great secretarial typing pools of the 40s and 50s that you see in the movies, especially when we're all bashing away. (Terry, low anxious)

Laughing between students in our group in class is good; you can laugh at your mistakes - it helps relaxation and builds up confidence seeing someone else's mistake. I like having people next to me to talk to in case I make a mistake. I am not afraid of people finding out that I can't do things then, nor embarrassed (Yonneka, high anxious)¹

¹ These extracts from student interviews form part of the qualitative research conducted in this Dissertation.

A Motivational Model of Enrolment Intentions in Senior Secondary Schools in New South Wales (Australia) Schools

Geoffrey Barnes, 1999

Abstract

This thesis presents a set of models of enrolment behaviour in senior secondary science courses in New South Wales (Australia) schools. The models have been developed out of concerns about declining enrolments and continued sex differences in enrolments in these courses. They use the framework of the Science Enrolment Model (SEM), a framework which uses an expectancy/ value approach to examine the *relationships* between the various influences and their *combined* effect on enrolment behaviour. The SEM was constructed by fitting the factors which have been shown to influence enrolment behaviour in the sciences to the structure of the General Model of Academic Choice, a model of achievement related behaviour developed by Eccles and colleagues (Eccles et al, 1983) .

Models were constructed for enrolment behaviour in three specialist science courses; Biology, Chemistry and Physics and two non-specialist science courses; General Science and Science for Life. These five courses account for 97% of enrolments in senior secondary science in New South Wales. Measures of enrolment intentions were predicted by, measures of interest, perceived career value, TER value (value as a means gaining university entrance) and a combined measure of self-concept and performance expectations. These constructs were, in turn, predicted by measures of perceptions of parent and teacher attitudes, perceptions of past performance, attributions for past performance and personality measures. The enrolment models were constructed using the technique of structural equation modelling (LISREL). The mean structures extension of the LISREL model was used for the analysis of sex differences.

The models of enrolment intentions were based on the responses of 450 Year 10 students (approximately 16 years of age) from the Sydney (Australia) metropolitan area. The sample contained roughly equal numbers of males and females and represented a socio-cultural and academic cross section of the New South Wales student population.

The enrolment models explained between 60% and 70% of the variance in enrolment intentions in the specialist science subjects. 'Career value' was found to be a major influence on enrolment behaviour in all five subjects. The SEM assumes that 'Interest value' influences enrolment behaviour both directly and indirectly via 'Career value'. 'Interest value' was found to have a substantial influence on 'Career value' in all five models resulting in it having large indirect effects on 'Enrolment intentions'. The influence of the expectation constructs was weaker than that of the value constructs although it was still an important influence on enrolment behaviour in Chemistry and Physics. When all the model variables were allowed to influence 'Enrolment intentions' directly, rather than having their influence mediated by the expectancy and value constructs, the explained variance increased only marginally, supporting the contention that the expectancy/value constructs act as mediators of the influence of the other variables.

The expectancy and value variables explained approximately 80% of the sex difference in enrolment intentions in the specialist science subjects. Career considerations accounted for between 30% and 50% of this difference.

Relations Between Students' Academic Motivation, Cognition and Achievement in School Settings

Martin Dowson, 1999

Abstract

Students' abilities to self-regulate their cognitive processes, academic behaviour, and affect significantly influence their academic performance and achievement. In particular, recent research has confirmed that students' abilities to effectively apply a variety of cognitive and metacognitive strategies in learning situations positively influences their academic performance and achievement.

Cognitive models of learning have proven useful in explaining *how* students' use of cognitive and metacognitive strategies effects students' acquisition, retrieval and application of knowledge and, hence, *why* the appropriate use of these strategies enhances academic performance and achievement. However, these models have proven less useful in explaining (a) why, when they have the ability, students may not appropriately activate strategies, and (b) why students may fail to transfer strategies in their possession from one academic task or situation to another.

Motivational models of learning, on the other hand, may help explain why students do not activate or transfer appropriate strategies; but are less useful in explaining precisely *what* cognitive processes students engage when they are motivated to activate and transfer strategies. In order to develop a holistic understanding of students' academic achievement there is a need, therefore, to explain students' cognitive engagement (ie. the extent to which they activate and transfer strategies) in both cognitive *and* motivational terms.

Overview of the Research Program

Given this introduction, the purpose of the present research was to investigate relations between students' academic motivation, cognition, and achievement. In particular, the research investigates substantial issues involving the *interaction* of students' academic motivation and cognition, and specifies how selected motivational and cognitive variables may influence student academic achievement.

In order to do this, the present research develops a causal model of student achievement which, using goal theory as a framework, incorporates both motivational and cognitive variables to account for students' academic achievement. The model also incorporates selected facilitating (or background) variables which are hypothesised to influence students' motivational orientations and cognitive processes.

Essentially, the model proposes that students' facilitating variables causally influence their motivational goal orientations. These motivational goal orientations, in turn, causally influence students' use of various cognitive and metacognitive strategies. Students' patterns of strategy use, then, impact upon their academic achievement. These mediated processes are represented diagrammatically as below.

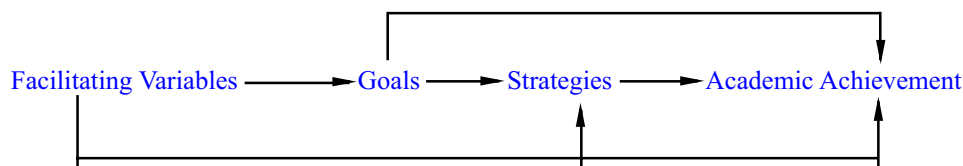


Figure1 : The research model.

The research program is comprised of three related studies. Study One, a qualitative study, identifies, and describes the components of, the social and academic motivational goals that were reported by the eighty-six (86) middle-school students participating in the study. Study Two, with six-hundred and two (602) participants, develops a psychometric instrument (the Goal Orientation and Learning Strategies Survey: GOALS-S) capable of measuring the motivational goals identified in Study One, as well as a range of students' facilitating variables, and cognitive and metacognitive strategies. Study Two also determines the validity and reliability of the GOALS-S using Confirmatory Factor, Hierarchical Confirmatory Factor, and Reliability Analyses. Study Three uses Path Analyses to:

- (a) specify relations between students' facilitating variables, motivational goals, cognitive and metacognitive strategies, and academic achievement; and
- (b) determine whether these relations correspond to hypothesised relations the research model outlined above.

Results

Results of these research program indicate that:

- a) students reported a variety of academic and social goals with respect to their academic achievement. (Three (3) academic and five (5) social goals were identified through a series of qualitative interviews and observations.)
- b) these goals, along with selected facilitating variables, cognitive strategies, and metacognitive strategies; were reliably and validly measured by the GOALS-S. (Various Goodness-of-fit indices for the GOALS-S exceeded 0.9, and reliabilities for the sub-scales ranged from 0.72 to 0.92.)
- c) the data did not contradict the hypothesised model, which proved to be a substantial representation of the motivational and cognitive processes underlying students' academic achievement (Estimates of explained variance (r^2 s) for the Mathematics and English Achievement models were 0.76 and 0.77 respectively.)

In total, the results suggest that students' academic achievement may be both conceptualised, and operationalised, as the product of interrelations between key facilitating, motivational, and cognitive variables. The exact nature of these variables, their interrelations, and their effects on students' achievement are discussed in detail throughout the research.

Limitations and Implications for Future Research

The research is primarily limited by its deliberate focus on students' goals as representative of their academic motivation, and students' strategies as representative of their academic cognition. Thus, both students' goals and their strategies have been chosen from a range of possible alternative representations of their academic motivation and cognition. A justification for this choice is included in Chapter Three.

The research is also limited by its focus on middle-school students rather than on a wider analysis involving older or younger students. The research is also limited by its focus on individual students, rather than on an analysis of class-wide or school-wide motivational dynamics.

Despite these limitations, the research suggests several positive directions for future research. These include, in particular, further investigation of the social goals identified in the research, how these goals relate to students' academic cognition, and how selected social goals and strategies together influence students' academic achievement. There is also further scope to investigate the role of particular facilitating variables (namely students' perceptions of the academic support they receive at school, and their sense of belonging to their school) in 'driving' students' academic motivation and cognition. Finally, there is scope to investigate further the relative salience of the motivational and cognitive variables, and processes, identified in this research across a range of age, gender, cultural and socioeconomic groupings.

Thus, the present research provides an empirical basis from which future, complementary, research may be undertaken.

Self-Concept Enhancement: The Roles of Students' Self-Talk and Teacher Feedback

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This paper outlines an account of a 20-year professional and research journey that has focussed on developing and investigating strategies to enhance upper primary school students' self-concepts and self-esteem. The journey started with the development and evaluation of an eight-session program to enhance children's global self-esteem (Burnett, 1983, 1985) and currently continues with an investigation of how teacher feedback can be used to enhance academic self-concepts, specifically in mathematics and reading (Burnett, 1999, 2000a). Studies that have investigated the impact of structured programs of materials on children's self-perceptions will be outlined. Furthermore, research which has evaluated the impact of positive and negative statements by significant others on children's self-perceptions will be described. Lastly, insights gained about strategies to enhance upper primary school students' self-perceptions will be presented.

The Journey Commences

As a primary school teacher in the late 70s I became interested in a Grade 5 student that I was teaching. He was bright, achieving well and seemed popular with his peers but lacked confidence in himself and his accomplishments. He was hesitant to speak despite encouragement from his classmates and was negative in his comments about himself. He was often reluctant to try new things and was quite shy. This student's behaviour was a catalyst for thinking about students' perceptions of themselves and about how confident they were; and the impact of these beliefs about self on their behaviour. In the early 80s I undertook a research project as a naive beginning researcher. An eight session intervention program was developed and described for teachers and counsellors based on self-awareness and self-development activities (Burnett, 1983) which was subsequently implemented and evaluated (Ritchie & Burnett, 1985). The program was based on Adlerian self-enhancement materials available at the time and drew heavily from the Developing Understanding of Self and Others (DUSO, Dinkmeyer, 1970) and 100 Ways to Enhance Self-Concept in the Classroom (Canfield & Wells, 1976). A theme was developed for each of the eight sessions as follows: Personal Characteristics, What are Feelings?, The Effects of Others and Negative Statements, Individuality, Trust and Belonging, Playing with Others, Behaviour has Purpose and Cooperation and Goals. The findings outlined in these two articles suggested that general self-esteem, as measured by the total score on the Piers Harris Children's Self-Concept Scale, was enhanced as a result of the program. However, it should be noted that the study had a small sample size (10 matched pairs), had low statistical power, involved simple data analysis procedures and was not methodologically strong because both experimental and control students came from the same class.

Defining Self-Variables: The Journey Recommences

Burnett (1993) noted that confusion existed with regards to the substantive difference between self-concept and self-esteem and in an endeavour to cast some light on the confusion between these two constructs, two studies were

conducted. Some 1193 preadolescents were administered items from the Self-Description Questionnaire 1 (SDQ1, Marsh, Smith, & Barnes, 1983) and the Coopersmith Self-Esteem Inventory (CSEI, Coopersmith, 1981). Study 1 involved 965 primary students in Grades 3 to 7 and investigated the factor structure of the selected SDQ1 and CSEI items when analysed simultaneously. The initial factor solution of the 72 items resulted in the emergence of a negative item factor and these items were removed for subsequent analysis. A second study was conducted to investigate the effect of rewording the negative items into positive items using 228 students in Grades 3 to 7. The results of these two studies suggested that both the SDQ1 and CSEI measured the same specific facets of self-concept. However, general self-concept/global self-esteem proved a difficult construct to measure in this sample of preadolescent students using the 72 items from these two scales.

In light of these findings, Burnett (1994a) developed a different approach to measure self-concept and global self-esteem. A 5-level graded sentence approach was used as the response format to measure seven facets of self-concept and global self-esteem. Items that measured both descriptive (I like ..., and I enjoy ...) and evaluative/comparative (I am good at..., I get good marks in..., I have lots of...) beliefs about Physical Appearance, Physical Ability, Peer Relations, Parents Relations, Reading, Maths and School Subjects were developed. Two descriptive items and two evaluative items were written for each of the seven facets of self-concept, giving a total of 28 items. Six items that measured students' global feelings about themselves as a person (happy, proud, pleased, feel good, satisfied and confident) and four items that measured global beliefs about oneself (I am a good kid, I like myself) were administered. The results of a factor analysis were as hypothesised with all items loading on the predicted scales, except that the four Physical Appearance items loaded on the same factor as the global self-esteem items, suggesting a close relationship between items tapping global self-esteem and how comfortable students are with their physical appearance. This was supported by a correlation of 0.70 found between the two scale scores. Additionally, items that measured liking school subjects loaded on a different factor to those items that tapped being good at school subjects. Reliability coefficients ranged from 0.67 to 0.88

with a mean of 0.81 suggesting moderate to high reliability. A correlation of 0.78 was found between affective and cognitive self-esteem scales suggesting that these items should be combined to form a single global self-esteem scale. The factor analysis results together with the high average correlation ($r = 0.62$) between the aggregated descriptive items and their evaluative counterparts indicated that it was appropriate to aggregate both types of items to form self-concept scales for specific characteristics.

A modified version of this scale was used to investigate age and gender differences (Burnett, 1996a) and a subsequent version has been published as the Burnett Self-Scale (Burden, 1999). The scale is based on the following definitions of self-concept and self-esteem. "Self-concept can be viewed as having a cognitive/thought orientation that encompasses both descriptive and evaluative beliefs about one's characteristics, whereas self-esteem has a global affective and cognitive orientation that focuses on how an individual feels about him or herself as a person" (Burnett, 1994a, p.165).

Also in 1994 I became interested in students' self-talk and its impact on behaviour and functioning. A non-clinical sample of 105 elementary students in Grades 4 to 7 were interviewed about their self-talk in response to nine scenarios and a questionnaire was used to tap global self-esteem. A small but significant correlation was found between the generation of positive self-talk statements and self-esteem although self-esteem was not related to the generation of negative self-talk statements (Burnett, 1994b). Self-talk was defined as "what a student says to him/herself with particular emphasis on the words used to express thoughts, beliefs, values and attitudes about the world and oneself" (Burnett, 1994b, p.182).

Two Approaches to Enhancing Self-Perceptions.

After focussing on defining self-esteem, self-concepts and self-talk my research endeavours regarding potential strategies for enhancing self-perceptions proceeded down two paths. The first path was based on the notion that self-variables can be enhanced by a program of related materials and activities delivered by a teacher in the classroom. This path built on the previous work undertaken in the early 80s (Burnett, 1983; Ritchie & Burnett, 1985) and was influenced by the findings of a meta-analysis undertaken by Janet Hattie (1992). The second path investigated the impact of positive and negative statements (praise and feedback) made by significant others on self-esteem, self-concepts and self-talk with a view to enhancing self-variables by having significant others provide positive statements and productive feedback.

The Program Path: A Meta-Analysis on Enhancing Self-Perceptions

To investigate the effectiveness of self-concept enhancement programs and strategies, Janet Hattie (1992) conducted a meta-analysis. From Psychological Abstracts, 650 studies were located of which only 89 contained sufficient data for meta-analytic purposes. Janet Hattie noted, "that so many studies had to be rejected [and this] is a reflection of the quality of research conducted in the area of self-concept change" (p. 227). Some significant issues pertaining to the enhancement of self-concept in the primary school context emerged from this study. From the studies analysed, 485 effect sizes were calculated with the average effect size being 0.37. Janet Hattie found that the effect sizes were higher for other settings (0.50) when compared to educational settings (0.36). She also found that even though teachers conducted a great majority of programs, the effectiveness of teachers as self-concept enhancement agents was considerably lower than average (0.26). Further, in examining enhancement approaches, Janet Hattie reported that cognitively oriented interventions appeared to be the most effective with a mean effect size of 0.47.

Janet Hattie's (1992) results provided important directions for the development of self-concept enhancement interventions. Self-concept enhancement programs were more successful if they were (a) conducted with lower socioeconomic groups; (b) conducted outside educational settings; (c) not related to academic programs; (d) not conducted by teachers; (e) not conducted with preadolescents; and (f) conducted using cognitively orientated programs. Hattie noted that much of the previous work implemented in schools to enhance self-concept had not been effective and that schools needed to be aware that

- (a) Academic programs that claim to enhance self-concept by increasing achievement are typically ineffective
- (b) Teachers *without* specific training are not as effective at implementing successful self-concept enhancement programs as psychologists and therapists, and
- (c) programs conducted in schools have limited impact because they are generally associated with the expectation of achievement and it is difficult for teachers to separate themselves from the achievement-orientated ethos of the school environment.

The results of Janet Hattie's (1992) meta-analysis indicated that self-concept could be enhanced, although change is contingent on certain variables that need to be considered in planning programs to enhance the self. Hattie noted some key ingredients that were needed for successful programs to enhance self-concept: (a) program presenters should have an understanding and appreciation of individual differences in self-concept, particularly when working in group situations; (b) cognitively orientated techniques should

be used to help individuals make sense of themselves and their world; (c) persons should be trained in cognitive techniques and be knowledgeable about the self-concept literature; (d) enthusiasm should be captured by using short concentrated programs; and (e) outcome measures which are appropriate and dependable should be used. Hattie argued against using teachers to implement specific self-concept enhancement programs because they tend to concentrate on enhancing achievement outcomes rather than self-outcomes and they do not have the psychological knowledge or background. However, Hattie does not note whether the teachers administering the less effective programs received training and support prior to and during program implementation.

The Program Path: Enhancing Self-Perceptions using Cognitive Strategies

Burnett (1995, 1997) built on Janet Hattie's (1992) finding that cognitive behavioural-based interventions were the most successful enhancers of self-esteem and self-concepts. Two eight-week cognitive behavioural programs were developed. One program was based on

Cognitive-Behavioural Therapy strategies (CBT) whilst the other was based on Rational Emotive Education (REE) activities. Burnett (1995, 1997) noted that CBT programs are based on the notion that negative thoughts and beliefs about life result in negative self-talk that leads to negative thoughts and feelings about oneself and one's characteristics. REE programs emphasise the limitation of skills and cognitive training without first challenging and focussing on a person's irrational and unproductive beliefs. In terms of self-enhancement, CBT uses cognitive and behavioural techniques to help students think more positively about themselves and behave more confidently, while REE focuses on developing rational self-accepting beliefs as the primary techniques of enhancement. Burnett (1995, 1997) developed a series of materials and activities based on the theoretical distinction between CBT and REE and a Masters level School Counsellor administered these in two classes in two different schools.

The findings indicated that neither program had an impact on students' self-esteem or self-concepts in the short-term. However, both programs were associated with an increase in positive self-talk and CBT was linked to a decrease in negative self-talk. It seemed that self-talk was changed for the positive in the short-term but not self-esteem or self-concepts. Given that self-esteem was found to correlate with positive self-talk ($r = 0.39$) and with negative self-talk ($r = -0.36$), it was postulated that self-esteem may increase in the longer term as a result of changes in the frequencies of positive and negative self-talk. Janet Hattie (1992) reported that it was difficult to enhance preadolescents' self-esteem and self-concepts using short-term intervention programs and Burnett's findings confirmed this. However, one important finding to emerge from these studies was the significant relationships between positive and negative self-talk and self-esteem and the fact that the

program seemed to have an impact on changing students' self-talk in a positive way. Burnett (1997) described some of the activities used in the programs.

A Program to Enhance Self-Talk

The activities and materials contained in the CBT and REE have been reduced and coalesced into one 8 session program on the basis of feedback received by the School Counsellor who administered the two programs and the teachers who observed the implementation of the materials in their classrooms. The program has a strong self-talk orientation and each session is completed in approximately one hour. The themes for the eight sessions are:

- Session 1: Personal Characteristics.
- Session 2: What are Feelings?
- Session 3: Self-Talk: The Positive and Negative Things We Say to Ourselves.
- Session 4: Positive Self-Talk.
- Session 5: Dealing with Negative Self-Talk.
- Session 6: The Impact of Negative Events and Statements.
- Session 7: Dealing with Negative and Positive Statements by Others.
- Session 8: A Game to Learn about Ourselves and Others.

The Feedback Path: Significant Others' Positive and Negative Statements

Studies have investigated the importance of what significant others say to students (Burnett, 1996b, 1999; Burnett & McCrindle, 1999). The relationships between positive and negative statements made by significant others (parents, teachers, siblings and peers) and students' self-talk have been investigated (Burnett, 1996b) as has the mediating effect of self-talk between self-esteem and behaviour (Burnett & McCrindle, 1999) and between statements made by significant others and specific self-concepts (Burnett, 1999).

Burnett (1996b) administered the Significant Others Statements Inventory (SOSI) and the Self-Talk Inventory (STI) to 635 primary school students in Grades 3 to 7 and found that positive statements made by teachers was the best predictor of positive self-talk. The next predictors in order of magnitude were positive statements made by peers, parents and siblings. A perceived low rate of positive statements from teachers was a predictor of negative self-talk behind negative statements from siblings and peers and a low rate of positives from peers. The results of this study indicated that significant relationships existed between the perceived frequency of positive and negative statements made by significant others and positive and negative self-talk.

Burnett and McCrindle (1999) used structural equation modelling and found that general positive statements made

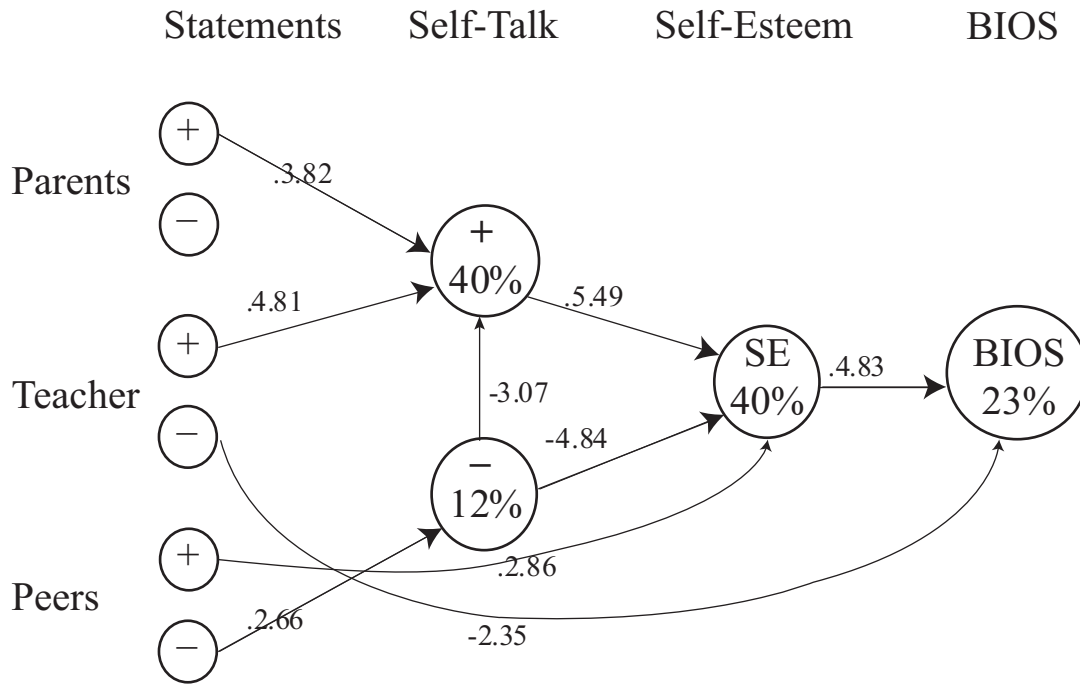


Figure 1: Burnett and McCrindle's (1999) Model with Significant T-Values Shown as well as the Percentage of Variance Accounted for

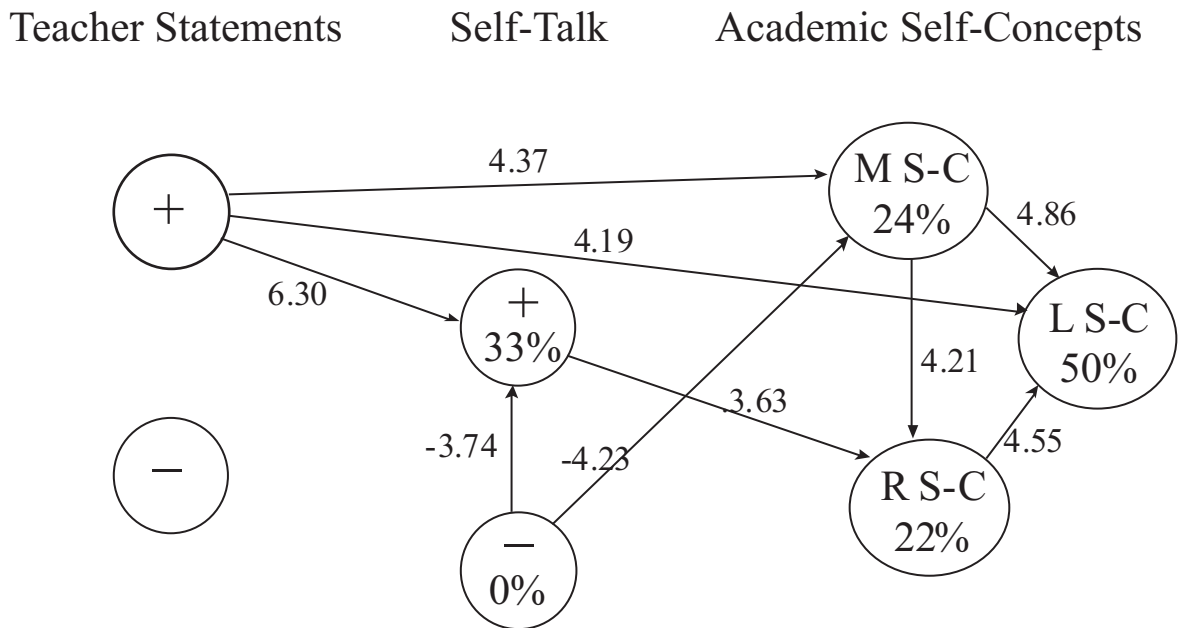


Figure 2: Burnett's (1999) Model with Significant T Values Shown as well as the Percentage of Variance Accounted for

(You've got good ability in maths). Attributional researchers have argued that the perceived causes of success and failure have important implications for the classroom. Weiner (1986) claimed that for self-concept enhancement programs to be successful the perceived causes of success must be changed in order to alter self-concept. The ascription of success by higher self-concept children to internal factors, like ability, is believed to contribute to further satisfaction with performance (ie. higher self-concept) and to striving for achievement to further maintain and reinforce high self-concept. In contrast, low self-concept children are considered to attribute their success to external, unstable factors (luck) with such attributions serving to maintain levels of self-concept. Attributing success to external factors implies no need to change self-evaluations. Interestingly, Weiner did not suggest a relationship between self-concept and effort (working hard) attribution. However, Marsh, Cairns, Relich, Barnes and Debus (1984), reported correlations between self-concept and attributions for success to ability ($r = 0.59$) and effort ($r = 0.55$) suggesting that both attributions are similarly related to self-concept.

Marsh (1990) found that students who attributed their successes to ability and, to a lesser extent, effort have better academic skills and academic self-concepts than those students who do not. Craven, Marsh and Debus (1991) cited three US studies that suggested that ability feedback was most valued and the dominant influence on self-concept formation and development. However, recent Australian research conducted by Burnett (2000b) contradicts the notion that ability feedback is most valued by Australian primary school students. When 747 students in Grades 3 to 6 were asked if they would like to be praised for trying hard or for being smart, 84% responded that they would rather be praised for trying hard. Consequently, if ability feedback is needed to develop and enhance self-concept in a particular subject but students would prefer not to receive it, then an impasse to the enhancement of students' self-concepts may exist. Additionally, not all the research findings relating to ability feedback are positive. Mueller and Dweck (1998) conducted a series of six studies with fifth grade students aged 9 to 11 years and found that students provided with ability feedback (a) were performance rather than learning orientated, (b) experienced difficulties with task persistence, (c) reported low enjoyment of tasks after a failure, (d) attributed failure to not being smart, (e) had poor performance after a failure, (f) lied about their results after encountering failure, and (g) viewed ability as an entity and not malleable. Mueller and Dweck strongly advocated the use of effort feedback over ability feedback because of the negative effect of ability feedback, especially after students encountered a failure experience.

In a recent study, Burnett (2000a) addressed the specific context issue by investigating the relationships between students' perceptions of the frequency of specific types of teacher feedback (ability, effort and negative), students' subject specific self-talk and their descriptive and evaluative self-concepts in that subject. Data were collected in six rural elementary schools ($n = 747$). Structural equation modelling

was used to test a mediating model in the specific areas of reading and mathematics. The results provided strong support for the model indicating that self-talk (positive and negative) mediated between subject-specific teacher feedback (ability, effort and negative) and academic self-concept (evaluative and descriptive). The results for the total sample indicated a mediating effect of self-talk between teachers' subject-specific feedback and students' mathematics and reading self-concepts (See Figure 3). These findings support Craven, Marsh and Debus' (1991) internal mediating model and Burnett's (1999) study that found that general positive self-talk mediated between teachers' general praise and students' self-concept in reading.

Burnett's (2000a) findings also suggested that ability feedback impacted on both positive and negative self-talk in both reading and mathematics. Students who had high positive self-talk and low negative self-talk perceived that their teachers frequently provided ability feedback. These significant paths were predicted but the finding of positive paths between effort feedback and negative self-talk in both the reading and mathematics contexts were unexpected. These paths suggest that students who perceive that their teacher gives them lots of effort feedback related to reading and mathematics have high reading and mathematics negative self-talk. It seems that ability feedback has a positive impact on students' self-talk whereas effort feedback has a negative impact. Given that Burnett (2000b) found that students prefer effort to ability feedback, it appears that students have a preference for a type of feedback that may impact negatively on them. Interestingly, the type of feedback that is related to negative and positive self-talk is one not popular with students.

What has Been Learnt Thus Far from the Journey?

Enhancing and developing upper primary school students' self-esteem, self-concept and self-talk is a complex process. The cross-sectional research evidence suggests that many of these self-perceptions decline as students progress through primary schooling (Burnett, 1996a, 1996b). Such declines may be due to a shift with age from egocentricity to objectivity and a lessening of blind acquiescence but alternatively may represent a suppression of student optimism by the schooling process and by negative interactions with significant others.

Global self-esteem was significantly related to physical appearance self-concept (Burnett, 1996a). It seems that students' confidence in themselves as people is closely related to how good looking they perceive they are and to how much they like their looks. When this finding is coupled with the finding that negative statements from siblings and peers are predictive of negative self-talk which is related to self-esteem ($r = -0.36$) then it could be hypothesised that self-esteem may be enhanced by reducing the negative comments made by siblings and peers, particularly those that relate to physical appearance.

This hypothesis will need to be investigated using an intervention methodology.

The use of praise as an encourager and motivator has received negative press over the past 15 or so years and not all teachers or parents favour its use. The Systematic Training for Effective Teaching (STET) and the Systematic Training

for Effective Parenting (STEP) programs actively encouraged teachers and parents not to praise students but to give encouraging comments.

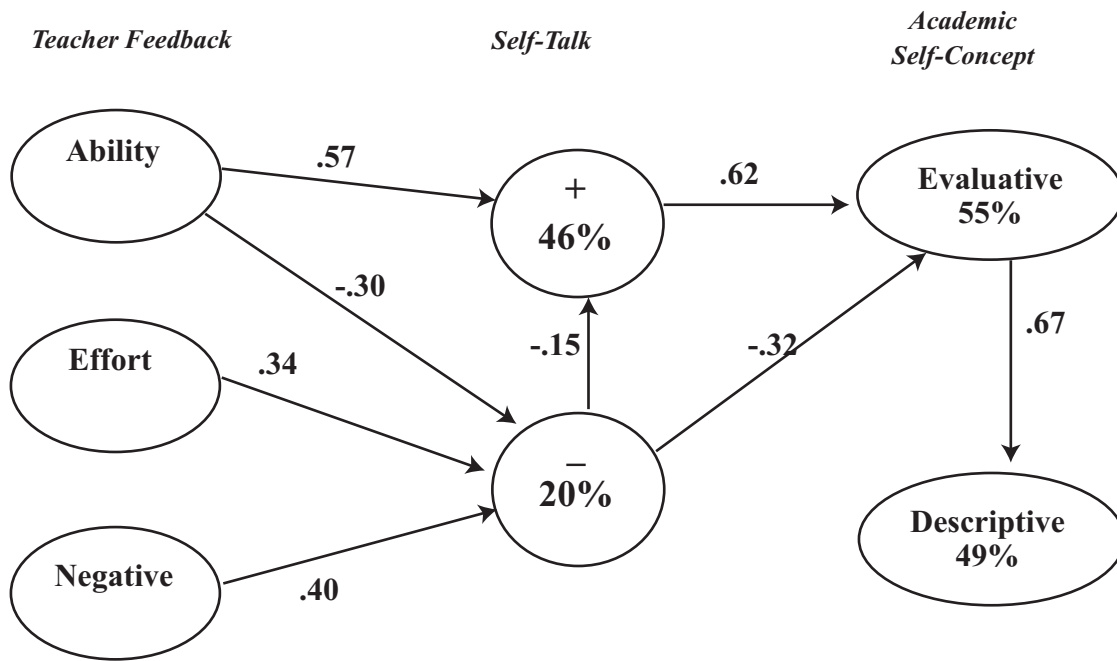


Figure 3: Burnett's (1999) Specific Model Outlining the Relationship between Teacher Feedback, Self-Talk and Evaluative and descriptive Self-Concepts in the Reading Context

I do not support this approach and believe that it has meant that many students have received only minimal positive statements from significant others. I believe that all students should be given positive comments and feedback. The use of general non-specific praise and positive comments may not enhance self-esteem and may have critics but it certainly makes students feel valued and respected. I believe that students need praise every day. Try it and see what happens.

Janet Hattie's (1992) finding that the enhancement of preadolescents' self-esteem and self-concepts using short-term programs was difficult has been supported by the results of my research studies. The implementation of three different intervention programs has resulted in very few increases in self-esteem or self-concepts. However, self-talk seems to be one self-perception that can be enhanced by a short-term program. The self-talk program described above teaches students about positive and negative self-talk, how to think positively, how to deal with negative comments particularly from siblings and peers, and about one's characteristics and feelings. The empirical evidence and anecdotal comments from teachers and students have suggested that the program has a positive impact.

Teacher praise and feedback strategies are currently the most promising vehicle for enhancing students' self-concepts

in specific subjects, although the use of these strategies is complex. It is plausible to suggest that providing students with ability feedback (You have good ability in maths) will influence the evaluative/comparative component of self-concept (I am good at maths). However, upper primary school students have a strong preference against ability feedback (Burnett, 2000b) and Mueller and Dweck (1998) noted significant negative consequences associated with ability feedback especially post failure. Providing students with effort feedback may be the answer given its relationship with self-concept ($r = 0.55$) but Burnett (2000a) found that effort feedback was positively related to negative maths and reading self-talk which in turn associated with low scores on the evaluative component of reading and maths self-concept.

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Measuring Self-Concept Across Culture: Issues, Caveats, and Practice

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Although mean group differences in self-concept scores across culturally diverse groups have been of interest for many decades, investigation into the extent to which self-concept measures are equivalent across such groups is a relatively recent phenomenon. Of important concern is the use of self-concept instruments that have been developed and normed in one culture and then used in another culture, either in their original linguistic form, or as a translated version of the original instrument. Both testing approaches carry very strong, and likely unrealistic assumptions of instrument equivalence across culture. Because comparison of mean cultural group scores represents the primary substance of most cross-cultural research, the extent to which the instrument is measuring the *same* construct(s) in exactly the *same* way within each group is clearly critical; should this assumption not hold, then the issues of bias and/or adequate test translation is of primary concern. The present paper addresses these measurement issues within the framework of self-concept research and has four primary purposes: (a) to identify and elaborate upon the issue of bias in cross-cultural research; (b) to explore the issue of equivalence in cross-cultural research; (c) to examine criteria bearing on the adequate translation of an instrument from one language to another, for purposes of use in a culture which differs from the one in which it was developed; and (d) to outline procedures used in testing for the equivalence of self-concept measurements across culture.

Although mean group differences in self-concept scores across culturally diverse groups have been of interest for many decades, investigation into the extent to which self-concept *measures* are equivalent across such groups is a relatively recent phenomenon. Of important concern is the use of self-concept instruments that have been developed and normed in one culture and then used in another culture, either in their original linguistic form, or as a translated version of the original instrument. Both testing approaches carry very strong, and likely unrealistic assumptions of instrument equivalence across culture. Because comparison of mean cultural group scores represents the primary substance of most cross-cultural research, the extent to which the instrument is measuring the *same* construct(s) in exactly the *same* way within each group is clearly critical; should this assumption not hold, then the issues of bias and/or adequate test translation is of primary concern.

The present paper addresses these measurement issues within the framework of self-concept research and has four primary purposes: (a) to identify and elaborate upon the issue of bias in cross-cultural research; (b) to explore the issue of equivalence in cross-cultural research; (c) to examine criteria bearing on the adequate translation of an instrument from one language to another, for purposes of use in a culture which differs from the one in which it was developed; and (d) to outline procedures used in testing for the equivalence of self-concept measurements across culture.

Typically, cross-cultural research embraces one of two perspectives in measuring a construct of interest: (a) use of the same measuring instrument, in its original linguistic form, across cultural groups, and (b) use of a translated version of an instrument for populations whose culture differs from the one in which the instrument was originally developed and normed. In both instances, researchers and clinicians have no grounds for assuming, either that the instrument operates equivalently, or that the norms are equally relevant across groups. Although most research concerned with these methodological issues, to date, has focused on achievement

tests, the issues are particularly potent for psychological assessment in general, and self-concept measurement in particular. In this regard,

Oyserman and Markus (1993, p. 212) have noted, "Though individuals worldwide all appear to have a sense of self, its content, processes, and structures are bound to sociocultural context and thus are likely to differ".

In general, problems indigenous to the measurement of self-concept across culture relate to two primary issues: instrument equivalence and adequate test translation. As a result of rapidly increasing interest in the ways by which perceptions of self can differ across culture, research bearing on these two aspects of self-concept measurement would appear to hold center stage. We turn now to a review of the primary issues.

The Issue of Bias in Cross-Cultural Research

Bias refers to the validity of scores from an assessment measure, albeit with a specific focus on *differential validity* between two or more groups. Essentially, there are two aspects of the bias issue: (a) the question of fairness, and (b) the idea of measuring different things for different groups. Likely, as a consequence of their very different orientations, the operational definition of bias has tended to differ for cognitive and affective measures. Typically, bias associated with cognitive measures is interpreted as meaning that equally able individuals, from different groups, have unequal opportunities of success. Bias related to affective measures, on the other hand, conveys the notion that test scores based on the same items measure different traits and characteristics for each group. Indeed, given the less concrete nature of psychological constructs, and the fact that their structure is so strongly influenced by cultural factors, affective measures such as attitude scales, require very strong evidence that the test items tap the underlying constructs in exactly the same way for all groups.

In terms of cross-cultural research, Van de Vijver and

Tanzer (1997) emphasize that the issue of bias does not relate to the intrinsic properties of an assessment instrument *per se*, but rather, to the characteristics of the respondents from each cultural group. Furthermore, statements regarding bias always refer to the use of an instrument within the framework of a particular cross-cultural comparison. For example, whereas an instrument may reveal evidence of bias in a comparison of Canadians and Germans, such evidence may not be present in a comparison of Canadians and Australians.

In general, problems of bias in cross-cultural research can be linked to three primary sources: (a) the construct of interest, (b) the methodological procedures, and (c) the item content. We turn now, to a brief description of each of these types of bias.

Construct Bias

Construct bias conveys the notion that the construct being measured holds some degree of differential meaningfulness across the cultural groups under study. This type of bias can arise as a consequence of three important factors.

First, the behaviors being tapped as behavioral indicators of a construct can be differentially appropriate across cultural groups. A good example here can be drawn from the work on filial piety, the concept of being a 'good' son or daughter. Given the widely discrepant structure of this concept for Western and non-Western societies, it is commonplace to find comparisons made between cultures embracing each of these social structures. For example, children in China are expected to fulfill substantially more and different obligations towards parents and grandparents, than are children in say, United States or Canada. As a consequence, then, it seems logical to assume that perceptions of self relative to one's parents would be based on a differential set of criteria; these criteria, in turn, generating a differential set of behaviors considered to tap the underlying construct of filial piety.

Second, the extent to which all relevant dimensions of the construct have been included in the formulation of item content varies across groups. Take, for example, a self-concept instrument that has been structured in accordance with a theoretical perspective that includes the facet of emotional self-concept within its theoretical structure. Pertinent to some cultures, the concept of emotional self-concept may be totally meaningless or irrelevant. As a consequence, all items designed to measure emotional self-concept will be rendered inappropriate for the cultural group in question.

Finally, the sampling of behaviors considered to represent the constructs being measured, may be inadequate for a particular cultural group. For example, in cultures where one's ties involve large extended families, it seems reasonable to assume that perceptions of self within the social context (i.e., social self-concept) would be based on a much broader range of social interactive behaviors than would be the case for cultures such as Canada and the United States in which the extended family is rapidly becoming an historical artifact.

Method Bias

A second major source of bias, *method bias*, can derive from one of three aspects of the methodology used in making comparisons across cultures. The first of these is termed sample bias and relates to the incomparability of samples on phenomena other than the target factors under study. A case in point can be made in the measurement of academic self-concepts. Despite the fact that selected groups of children from different cultures might be categorized as belonging to the same grade level, it is nonetheless very easy for their educational experiences to be dramatically different. As a consequence, the criteria upon which they formulate their self-perceptions of academic ability in particular subject areas may be vastly different. Take, for example, the case of verbal self-concept. Historically, it has been customary to link this dimension of academic self-concept to English as a school subject. However, this is one academic area for which the curriculum can vary widely even within the same culture; without question, then, it seems reasonable to assume that this curriculum will likely differ across culture as well. For example, one curriculum of study might emphasize acquired skills related to literature, grammar, reading ability, and writing ability; in another culture, only reading and writing ability may be considered of primary importance.

A second type of method bias derives from problems associated with the assessment measure used and is therefore termed instrument bias. More specifically, it relates to the differential response, by comparative groups, to the structured format of the assessment instrument. One recognized source of instrument bias is that of *stimulus familiarity*. An example can be found in the work of Deregowski and Serpel (1971) in which Scottish and Zimbabwean children were asked to sort models of animals and cars, and then asked to do so again based on photographs of these models. Although the authors reported no cultural differences when the actual models were sorted, the Scottish children attained significantly higher scores when the sorting was based on the photographs. Given that most self-concept instruments are based on paper-pencil tests that are structured around a multiple-choice, Likert scaling format, it is indeed possible that this type of stimulus response may be unfamiliar to some cultural groups thereby reflecting itself in a biasing of item scores. A second type of instrument bias can be found with respect to *patterns of response*. These patterns can reflect evidence of response bias in one of two ways: (a) by consistently selecting one of the two extreme scale points (high, low), and with such selection being completely independent of the item content. This type of response bias is termed a *response style*; and (b) by selecting scale points, either consciously, or unconsciously, in such a way as to convey a favorable impression of oneself (e.g., social desirability, acquiescence). This type of response bias is termed a *response set*.

Response bias, whether it be in the form of a response style or a response set, is certainly not uncommon to cross-cultural research in general, nor to self-concept research, in particular. (For a more extensive discussion of response bias

relative to self-concept, see Byrne, 1996.) Early work in this area, for example, has shown a clear tendency for Hispanics, as opposed to non-Hispanics, to choose the extreme response option of multi-category Likert scales (see e.g., Hui & Triandis, 1989; Marín, Gamba, & Marín, 1992). More recently, in a comparison of factor analytic structure related to the Beck Depression Inventory for Canadian, Bulgarian, and Swedish adolescents, Byrne and Campbell (1999) reported a substantially different pattern of response for the latter. Although all three nonclinical adolescent groups typically assigned a large percentage of their responses to the lowest category (no indication of depression) as might be expected, this assignment was dramatically higher and more consistent for Swedish adolescents. This discrepant responding pattern by the Swedes was attributed to the highly salient and important cultural value of self-disclosure.

Two recent cross-cultural studies have specifically addressed the issue of differential response bias (Cheung & Rensvold, 2000; Watkins & Cheung, 1995). The first of these focused on patterns of response related to subscale scores from the Self Description Questionnaire for Australian, Chinese, Nepalese, Nigerian, and Filipino children 12-14 years of age (Watkins & Cheung, 1995). Findings from this study revealed no evidence of response set bias, albeit substantial differences in response styles across culture; moreover, strong evidence of a country by gender interaction was reported. The second study (Cheung & Rensvold, 2000) used confirmatory factor analysis to test the extent to which extreme and acquiescent response styles related to scores from "Work Orientation" subscale of the International Social Survey Program differed across eleven countries. These authors concluded that failure to take into account the differential styles of response patterning relative to each cultural group can have a severe biasing effect on the resulting assessment scores.

The final source of method bias is that of administration bias. Although this type of bias can distort all modes of testing, the interview format would appear to be particularly vulnerable. Indeed, van de Vijver and Tanzer (1997) have noted that communication problems between interviewers and interviewees can easily occur, particularly when their first languages and cultural backgrounds are different. These authors further posit that, given an interviewee's insufficient knowledge of the testing language, and/or an interviewer's mode of address is in violation of the cultural norms of the interviewees, the collection of appropriate data can be seriously jeopardized.

Item Bias

A final category of bias is that of *item bias*. As its name implies and in contrast to construct and method bias, item bias refers to distortions at the item level. As such, items are said to be biased if they elicit a differential meaning of their content across cultural groups. Differential interpretation of item content by members of culturally-different groups derives largely from a diversity of sociocultural contexts that include the family, the school, the peer group, and society at large. For example, Oyserman and Markus (1993) noted that whereas American families urge children to stand up for themselves and not be pushed around, Japanese families, stress the value of working in cooperation with others; in contrast to Americans, they do not perceive the yielding of personal autonomy as a depression of one's self-esteem. Thus, from this example, it seems evident that differing socialization practices cannot help but lead to different sets of criteria against which to judge one's perception of self.

The above family-oriented example epitomizes the contrasting values and philosophic tenets held by individualistic Western societies versus collectivist Eastern societies. Whereas Western societies place high value on *independence* and individual freedom, Eastern societies neither assume nor value such individualism; in contrast, these societies seek to maintain *interdependence* among individuals (Markus & Kitayama, 1991). Regardless of independent/interdependent orientation, however, it is important to note that perceptions of self do not exist merely as cognitive representations, but also, as social representations (e.g., emotional, motivational, and interpersonal behaviors) that are collectively shared by others in the same culture. Indeed, Kitayama, Markus, and Lieberman (1995, pp. 526-527) have shown, via a taxonomic progression of cultural shaping, that one's individual characterization is "crafted within specific social settings (e.g., home, school, work) which, in turn, are made up of and shaped by a variety of sociopsychological processes such as linguistic conventions, socialization practices, scripts for everyday behavior, as well as educational, religious, and media practices". As a consequence, one's perception of self will always be formulated within the framework of his or her immediate culture.

The basic principle of individualistic versus collectivist thought can lead to differential assessments of self in at least two other ways.

First, response to self-concept items often involves the process of social comparison. However, because perspectives of others is rooted in widely discrepant philosophies within Western and Eastern societies, this comparative process will be influenced by a cultural bias that ultimately leads to differential perceptions of self. For example, Oyserman and Markus (1993) noted that whereas Japanese, Korean, and Thai respondents tend to view others as better, smarter, more sociable, and more in control than *themselves*, Americans tend to perceive themselves as better than others in a number of different domains. This perception of others on the part of Eastern respondents has been termed the self-efficacy bias

which is consistent with the tendency to be other-serving, rather than self-serving, in the attempt to submerge the self (Oyserman & Markus, 1993).

Second, response to self-concept items will also be governed by the importance of one's self-representations relative to other society members. For example, in Western societies, these representations tend to be located *within the individual* and are tied to particular desires, preferences, and attributes (Markus & Kitayama, 1991). As a consequence, they stimulate concerns associated with the development of one's potential. Thus, although others in society are important to the individual, they are only so, in the sense of providing a benchmark against which to evaluate one's own inner attributes of self (Markus & Kitayama, 1991). In contrast, for individuals from Eastern societies, self-representations are determined by perceptions of the self *in relation to others*. Given this emphasis on the individual's connectedness or interdependence to others (Markus & Kitayama, 1991), self-evaluations by these individuals will be based on their relationships with others, rather than on their own unique attributes. Because most measures of self-concept are structured in the form of self-report inventories that require respondents to invoke social comparison processes and to assess oneself in relation to others, these instruments are particularly prone to item bias.

Other important factors that can contribute to the differential interpretation of item content are the impact of cultural norms (e.g., legality of drug use), ambiguous item content, use of colloquialisms (idiomatic expressions unique to a particular culture), and poor item translation. These latter issues are addressed below under the rubric of "Adequacy of Instrument Translation".

The Issue of Equivalence in Cross-cultural Research

As noted earlier, a common, albeit incorrect assumption in research that tests for mean differences across groups, is that the measuring instrument is operating in exactly the same way for each group under study. Such assumptions imply equivalence across populations with respect to both its measurement and theoretical structure. Most typically, when we speak of *measurement equivalence*, we refer to two issues: (a) the extent to which the factor pattern and weighting of loadings is invariant (i.e., group-equivalent interpretation of item content); and (b) the extent to which errors of measurement are equivalent (i.e., group-equivalent reliability of the instrument). Adherence to the latter equivalence constraint, however, is considered to be excessively stringent and is typically not tested in determining evidence of invariance.

Structural equivalence refers to the extent to which the theoretical structure of the instrument is invariant across groups. In other words, that correlations among multidimensional facets of the underlying construct are group-equivalent.

Finally, of additional concern in cross-cultural research, as noted earlier, is the presence of systematic error in the form of response bias for one group, albeit not for the other;

or in the event that it exists for both groups, that it is of an equivalent form (see e.g., Cheung & Rensvold, 2000).

To the extent that an instrument of measurement is not equivalent across groups, any comparison of test and normative scores will be impaired. There are two approaches to testing for the group-equivalence of measuring instruments - one rooted in item response theory (differential item functioning) and the other, rooted in the analysis of covariance structures (structural equation modeling within the framework of a confirmatory factor analytic model). Whereas the differential item functioning approach, to date, has been applied almost solely to achievement data that are unidimensional in structure, the confirmatory factor analytic approach has been used largely with psychological data that are multidimensionally structured. As a consequence, virtually all tests for the equivalence of self-concept measures have been based on the application of confirmatory factor analysis.

As noted above, it seems evident that when an instrument is developed and normed in one culture and then used in another culture — either in its original form, or as a translated version of the original instrument, the risk of bias, and ultimately, equivalence, is extremely high. It is important, then, that we now review issues related to the translation/adaptation of measuring instruments.

The Issue of Adequate Instrument Translation

Needless to say, the rigor with which an instrument is translated into another language bears critically upon its construct validity. In this regard, Sperber, Devellis, & Boehlecke (1994) and others (Spielberger, 1992; Tanzer & Sim, 2000; van de Vijver & Hambleton, 1996) have argued that it is not sufficient merely to demonstrate the adequacy of translation and back translation, but also, that the psychometric properties of the test in the second language are as adequate as those in the original language. Thus, in adapting a measuring instrument to another language, it is essential to consider a balanced treatment of psychological, linguistic, and cultural phenomena. Once the newly translated instrument has been formulated, the next logical step is to test the extent to which the factorial measurements (i.e., factor loadings), as well as the factorial structure (i.e., relations among the underlying constructs or factors) of the instrument are consistent with the original instrument (van de Vijver & Poortinga, 1992). Because the conversion of a measuring instrument from one language to another involves more than just linguistic translation, then, these modified instruments are more appropriately termed "adapted", rather than "translated" tests.

One of the major difficulties in translating psychological instruments of measurement is the accurate transmission of meaning associated with idioms that may be unique to a particular culture (Spielberger, 1992). For example the expression "I am usually calm, cool, and collected" which is often used in item content related to emotional self-concept, is an American colloquialism that does not translate smoothly into other languages. Thus, in adapting any instrument into

another language, it is important to seek out metaphors in the target language that most closely tap the essence of the construct being measured. For items containing culture-specific content which cannot be translated, Poortinga (1995) suggests that they be either modified prior to being translated, or that they be removed entirely.

Because cultural and linguistic differences are a function of traditional customs, norms and values, it is possible for a construct to be interpreted and conceptualized within a completely different framework by two culturally different groups. For example, based on a translated version of the "How I See Myself Questionnaire" (Juhasz, 1985), Watkins and Regmi (1993) found the appropriateness of self-concept dimensions related to friends, family, and physical appearance to be somewhat dubious for Nepalese adolescents; in sharp contrast, these dimensions are highly salient for adolescents in Western societies. Clearly, then, it is essential that the researcher determine the extent to which a construct is meaningful in a particular culture before translating an instrument into the language of the target culture.

It is evident that the use of adapted tests is a complex process that encompasses a number of underlying assumptions concerning the equivalency of the original and adapted versions of a measuring instrument. Given the rapid growth of cross-cultural research in recent years, together with the resulting translation of many psychological tests into other languages, the International Test Commission (ITC) recognized the need for a standardized set of guidelines regarding the development and use of translated tests. The first of these, entitled "Guidelines for the Translation and Adaptation of Tests" (see Hambleton, 2000), comprises 22 guidelines that are organized into four categories: context, instrument development and adaptation, administration, and documentation/ interpretation. In turn, each guideline is described by a rationale for inclusion, steps to its achievement, a list of common errors, and references for follow-up research. A critical review and field-test of these new and important guidelines can be found in Tanzer and Sim (2000) and Hambleton, Yu, and Slater (2000), respectively.¹

Having emphasized the importance of testing for the equivalence of an instrument across cultural groups within the framework of two scenarios: (a) when the instrument is used in its original form with a group whose culture differs from the one within which it was developed, and (b) when the instrument is translated and adapted for use with a group whose culture differs from the one within which it was developed, the question arises as to how one should proceed when confronted with findings of *nonequivalent* factorial measurement and structures. Indeed, such findings need not be the cause of despair. Rather, researchers are advised to identify the theoretical elements or processes that possibly

account for the cultural differences (Markus & Kitayama, 1991); these differential features, in themselves, can provide a rich and informative insight into important cultural differences related to psychometric phenomena. For an example of differential factorial structure related to a self-concept instrument used across different cultural groups, readers are referred to Watkins, Hattie, and Regmi (1994).

Having identified both the sources of bias that may impact the measurement of self-concept across culture and the primary issues related to the equivalence of measuring instruments across culture, we turn now to a paradigmatic application.

Measuring Self-concept Across Culture: Testing for Instrument Equivalence

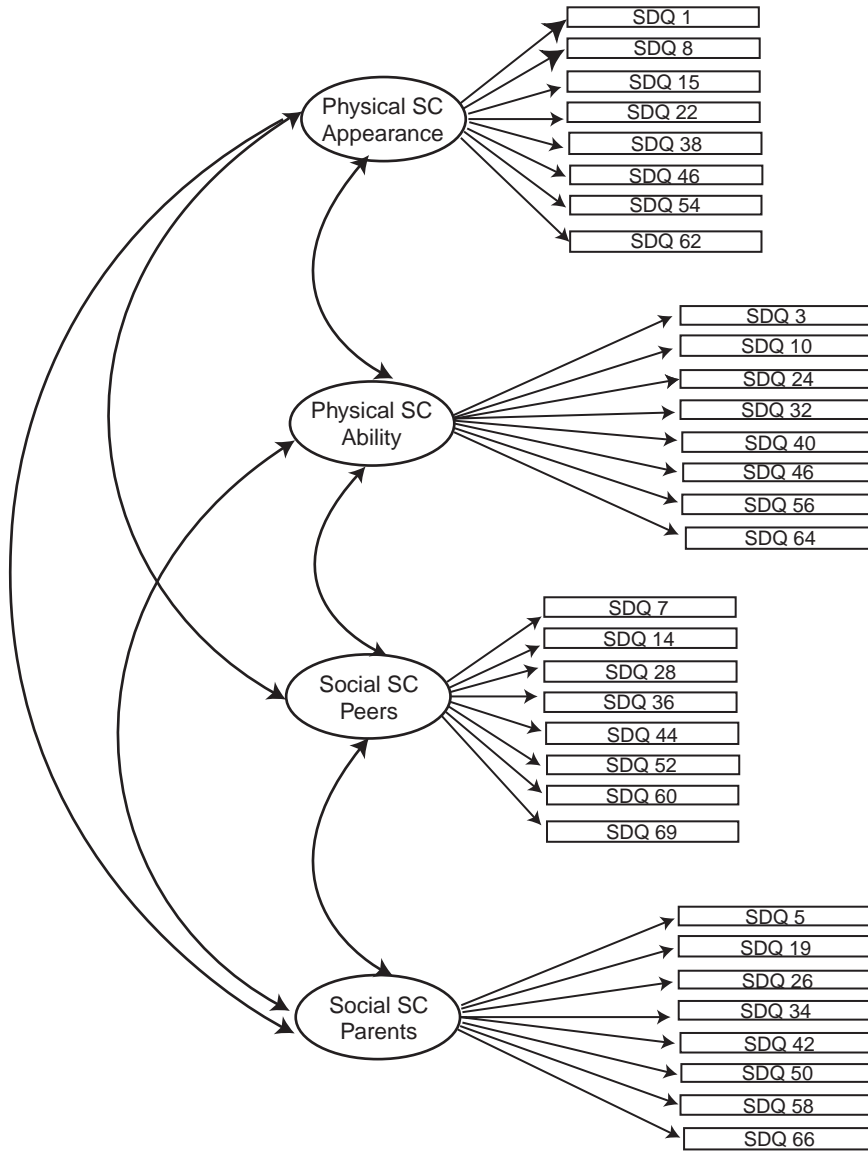
For didactic purposes, the example application to be presented here focuses on four of eight subscales comprising a widely known and used self-concept instrument. Specifically, we test for equivalence across Australian and Nigerian preadolescents of the four subscales measuring nonacademic self-concepts as derived from the Self Description Questionnaire I (SDQ-I; Marsh, 1992); these include Physical Self Concepts related to ability (PSCAb) and appearance (PSCAp), as well as Social Self-concepts related to peers (SSCPe) and parents (SSCPa). The model of Self-concept to be tested is shown schematically in Figure 1. All analyses are based on the analysis of covariance structures within the framework of a confirmatory factor analytic model, using the EQS program (Bentler & Wu, 2000). (For further details related to applications of structural equation modeling in general, and confirmatory factor analysis in particular, readers are referred to Byrne, 1994, 1998, in press.)

The Measuring Instrument

The SDQ-I is a 76-item self-report inventory based on a 5-point Likert-scale format designed for use with children ranging in age from 8 through 12 years. The respondent is presented with a series of short statements (e.g., I am good looking), and then asked to select the option which most appropriately reflects his or her level of agreement; choices range from 'false' (1) to 'true' (5). The SDQ-I has been shown to be one of the most psychometrically sound measures of self-concept available (see Byrne, 1996).

Based on research that has shown the ability of young children to respond inappropriately to negatively-worded items (Marsh, 1986), Marsh has recommended that these item scores not be included in the tallying of subscale total scores. Accordingly, then, no negative items were used in structuring and testing the model shown in Figure 1. As a consequence,

Figure 1: Model of Hypothesized Nonacademic Self-Concept Structure Based on the Self-Description Questionnaire-I



each facet of nonacademic self-concept was measured by eight items. Consistent with symbolic convention associated with structural equation modeling, these items (i.e., observed variables) are shown enclosed within rectangles, and their underlying self-concept facets (i.e., unobserved constructs) represented by ellipses. In addition, consistent with theory, the four nonacademic self-concept facets are shown to be intercorrelated, as represented by the double-headed arrows.

The Samples

The Australian sample consisted of 497 preadolescents; these data were complete (i.e., no missing values). The original sample of Nigerian preadolescents was 465, albeit with missing scores on some variables. In addressing the issue of incomplete data, all cases having >8% missing data were deleted from the analyses. For the remaining sample of 439, the randomly missing data were imputed with values derived from a multiple regression in which three item scores from the same congeneric set of indicators (i.e., items measuring the same facet of self-concept) were used as the predictor variables.

The Procedure

As a prerequisite to testing for factorial invariance, it is customary to consider a baseline model which is estimated for each group separately. This model represents the one that best fits the data from the perspectives of both parsimony and substantive meaningfulness. Given that the χ^2 statistic and its degrees of freedom are additive, the sum of the χ^2 values derived from the model-fitting process for each group separately, reflects the extent to which the underlying structure fits the data across groups when no cross-group constraints are imposed. Nonetheless, because measuring instruments are often group-specific in the way they operate, baseline models are not expected to be completely identical across groups. For example, whereas the baseline model for one group might include cross-loadings (i.e., loading of an item on a nontarget factor), and/or error covariances, this may not be so for other groups under study (see e.g., Byrne & Campbell, 1999). A priori knowledge of such group differences is critical to the application of invariance-testing procedures (see Byrne, Shavelson, & Muthén, 1989).

Because the estimation of baseline models involves no between-group constraints, the data can be analyzed separately for each group. However, in testing for invariance, equality constraints are imposed on particular with the baseline model specification for each group. Overall, tests for invariance, using covariance structure analysis, can involve both measurement and structural components of a model, the particular combination parameters and, thus, the data for all groups must be analyzed simultaneously to obtain efficient estimates (Bentler, 1995; Joreskog & Sorbom, 1996); the pattern of fixed and free parameters nonetheless remains consistent varying in accordance with the model

under study. In the case of our 1st-order CFA model to be tested here (see Figure 1), the pattern of factor loadings and structural relations among the factors are of primary interest.

Results

Baseline Models

Australians: Testing for the validity of hypothesized nonacademic self-concept structure for Australian adolescents, based on the SDQ-I, yielded a marginally well-fitting model as indicated by the goodness-of-fit values reported in Table 1. The key indicators here are the Satorra-Bentler χ^2 statistic (S-B χ^2 ; Satorra & Bentler, 1988), the related Robust CFI index (CFI*; Bentler, 1990), and the Root Mean Square Error of Approximation (RMSEA; Steiger, 1998).

The S-B χ^2 serves as a correction for the χ^2 statistic when distributional assumptions are violated. It has been shown to be the most reliable test statistic for evaluating covariance structure models under various distributions and sample sizes (Hu, Bentler, & Kano, 1992). The CFI ranges in value from zero to 1.00. A CFI value of .90 has served as the rule-of-thumb lower limit cutpoint of acceptable fit. Computation of the Robust CFI (CFI*) is based on S-B χ^2 values, rather than on uncorrected χ^2 values. Because evaluation of model fit was based on the S-B χ^2 statistic in the present study, the CFI*, rather than the CFI, was used as the index of practical fit. Finally, the RMSEA takes into account the error of approximation in the population and asks the question "How well would the model, with unknown but optimally chosen parameter values, fit the population covariance matrix if it were available?" (Browne & Cudeck, 1993, pp. 137-138). This discrepancy, as measured by the RMSEA, is expressed per degree of freedom, thus making it sensitive to model complexity; values less than .05 indicate good fit, and values as high as .08 represent reasonable errors of approximation in the population.

For analyses based on the EQS program, the Lagrange Multiplier Test (LMTTest) statistics serve in pinpointing sources of model misfit. More specifically, these modification indices identify which fixed parameters, if freely estimated in a subsequent analysis, would yield the largest drop in χ^2 value. In the case of the present model, a review of the multivariate LMTTest χ^2 statistics revealed two error covariances and two cross-loadings as being the major impediments to a better-fitting model. The two error covariances were between Items 40 and 24 from the Physical Self-concept of Ability subscale, and between Items 26 and 19 from the Social Self-concept of Parent Relations subscale. Scrutiny of the content for each of these item pairs revealed evidence of possible content overlap (e.g., "I like my parents" [Item 19]; "My parents like me" [Item 26]). The two cross-loadings involved (a) the regression of Item 38 (measuring PSC-Appearance) on the Social Self-concept of Peer Relations factor, and (b) the regression of Item 32 (PSC-

Table 1:
Models of Nonacademic Self-Concept Structure: Goodness of Fit Statistics

Difference in Model	χ^2	df	S-B χ^2	CFI*	RMSEA	S-B χ^2	df
Australian (N=497)							
Initial	1436.48	458	1059.28	.90	.07		
Final ^a	1203.21	455	903.88	.92	.06	155.40	3
Nigerian (N=439)							
Initial	936.11	458	732.94	.92	.05		
Final ^b	895.11	457	702.49	.93	.05	30.45	1

^a Error covariances between: Items 24 and 40; Items 19 and 26

Cross-loading of Item 38 on the Social Self-concept (Peers) factor

^b Error covariance between Items 19 and 26

Ability) on the Physical Self-concept of Appearance factor. regression of Item 32 (PSC-Ability) on the Physical Self-concept of Appearance factor. The fact that Item 38 (“other kids think I am good looking”) loaded on the nontarget factor of Peer relations would appear to be substantively reasonable. On the other hand, the loading of Item 32 (“I have good muscles”) on the nontarget factor of Physical Appearance would seem to be male-specific; estimation of this parameter was therefore not considered in any respecification for the full sample. Given the substantive meaningfulness of the two error covariances, and the cross-loading of Item 38 on SSC - Peers factor, the model was respecified to include these additional parameters and then reestimated. Results yielded a statistically better-fitting model (Δ S-B χ^2 155.4; CFI* = .92) that was retained as the baseline model for Australian preadolescents.

Nigerians: As shown in Table 1, testing of the hypothesized model, for Nigerian preadolescents, yielded a S-B χ^2 value of 732.94, a CFI* value of .92, and an RMSEA value of .05. Interestingly, consistent with partial findings from the Australian data, a review of the LMTtest statistics attributed substantial misfit to the misspecification of an error covariance between Items 26 and 19, from the Social Self-concept - Parents subscale. In contrast to the Australian findings, however, the LMTtest χ^2 value was clearly demarcated from lesser values representing the other fixed parameters in the model and, thus, indicating no further need for the estimation of additional parameters. Respecification of this model to include the error covariance between Items 26 and 19 yielded a S-B χ^2 value of 702.49, a CFI* value of .93, and an RMSEA value of .05; it served as the baseline model for Nigerian preadolescents.

Beyond the assessment of overall fit, all parameter estimates in both baseline models were found to be both feasible and statistically significant; all standard errors were within normal range. In summary, the baseline models for Australian and Nigerian preadolescents differed only with

respect to (a) the additional error covariance between Items 40 and 24, and (b) the cross-loading of Item 38 on the Social SC - Peers factor for the Australians; the other covariance between items 26 and 19 was common to both cultural groups. The similarity of factor structure, notwithstanding, it is important to emphasize that just because the revised model was similarly specified for both groups, in no way guarantees the equivalence of item measurements and underlying theoretical structure across the preadolescent groups; these hypotheses must be tested statistically. For example, despite an identically specified factor loading, it is possible that, with the imposition of equality constraints across groups, the tenability of invariance does not hold; that is, the link between the item and its target factor differs across the groups. Such postulated equivalencies, then, must be tested statistically. We turn now to these tests for invariance.

Tests for Invariance across Groups

When analyses focus on multigroup comparisons, with constraints specified between groups (i.e., particular parameters are constrained equal across groups), it is imperative that parameters for all groups be estimated simultaneously. In the case of our application here, constraints were imposed on all estimated factor loadings and factor correlations. More specifically, these parameter values, for the Nigerian group, were constrained to equal those estimated for the Australian group. It is worth noting that, given the cross-loading specific only to the Australian group, this parameter was not constrained equal for the Nigerian group (see Byrne, 1994, 1998, in press). It is also important to note that, because the multigroup equivalence of random measurement error is now widely acknowledged as being an excessively stringent constraint, and of little utility, these parameters, together with the common error covariance, were not tested for their invariance across groups. Results from these analyses are summarized in Table 2.

Table 2:
Nonequivalent Parameters across Australian and Nigerian Preadolescents

Parameter	Content	Related Factor(s)
Factor Loadings		
Item 24	enjoy sports	PSC (Ability)
Item 40	good at sports	PSC (Ability)
Item 56	good athlete	PSC (Ability)
Item 52	more friends than most kids	SSC (Peers)
Item 60	popular with kids same age	SSC (Peers)
Item 19	I like parents	SSC (Parents)
Item 26	parents like me	SSC (Parents)

Variations

Factor 1	PSC (Appearance)
Factor 3	SSC (Peers)
Factor 4	SSC (Parents)

Covariances

Factors 1 & 2	PSC (Appearance/Ability)
Factors 1 & 3	PSC (Appearance)/SSC (Peers)
Factors 2 & 3	PSC (Ability)/SSC (Peers)

concept; SSC = social self-concept

As can be seen in Table 2, testing for the invariance of measurement and structural parameters yielded evidence of several inequalities across the two cultural groups. In particular, these related to seven factor loadings, three factor variances and three factor covariances. In general, these findings reveal statistically significant differences between Australian and Nigerian adolescents with respect to variances, and associated covariances related to Physical SC - Appearance, Physical SC - Ability, and Social SC - Peers; no group differences were found for the variance related to Social SC - Parents, and related covariances with the other three factors. These findings of discordant structure suggest that Australians and Nigerian preadolescents differ in what they perceive as important influences on their social relationships with peers. For the

Australians, it would appear that one's physical ability is the critical factor; for the Nigerians, on the other hand, it is physical appearance. Given these findings of structural inequality, it is interesting to note that findings of measurement inequality pertained only to items measuring Physical SC - Ability (Items 24, 40, 56), Social SC - Peers (Items 52, 60), and Social SC - Parents (Items 19, 26).

Discussion

The focus of this chapter was to emphasize the importance of knowing that an assessment instrument is measuring the *same* psychological constructs in exactly the *same* way for each group in a study of cross-group comparisons. To this end, I demonstrated one approach to testing for measurement and structural equivalence across examples of alternative approaches, readers are referred to Little (1997), and Marsh,

Hey, Roche, and Perry (1997).

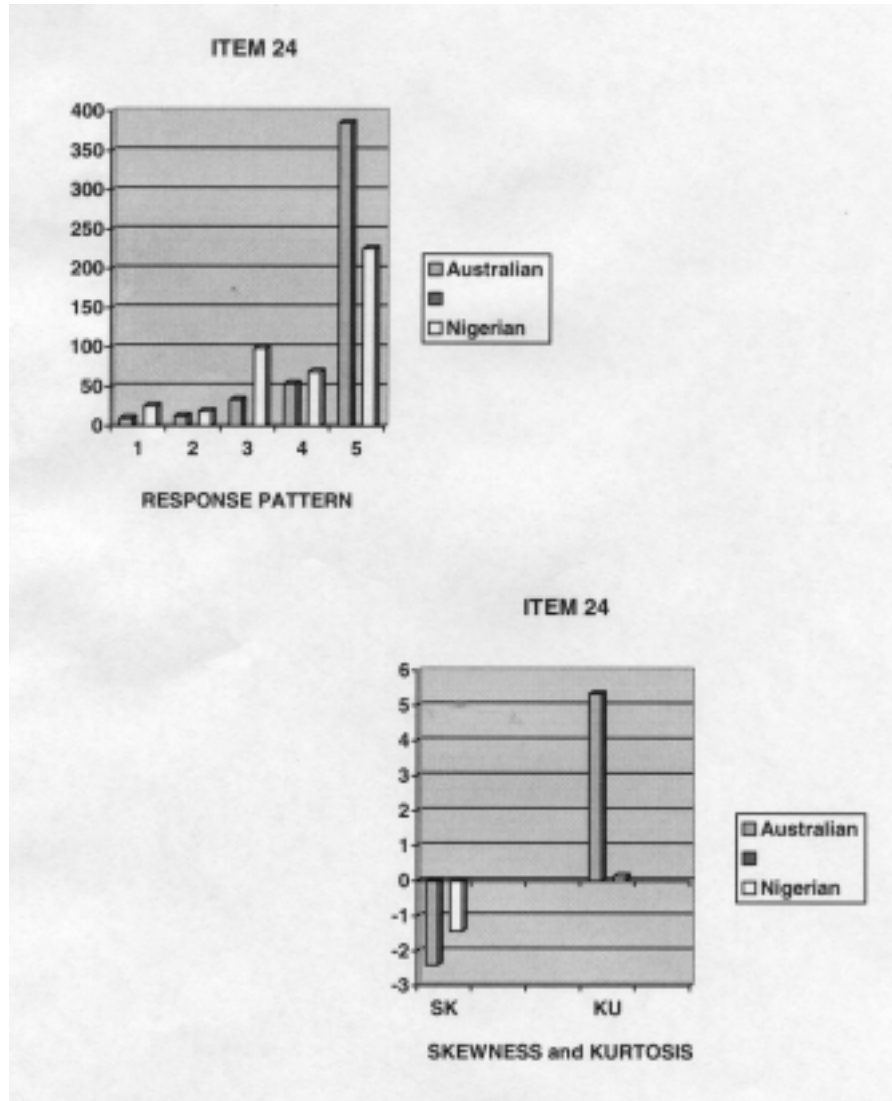
Based on an instrument that, except for one cross-loading for the Australian sample, the factorial structure was identical, results revealed evidence of noninvariance related to 13 of the 70 estimated parameters in the model (7 factor loadings, 3 factor variances, and 3 factor covariances). Having determined these noninvariant findings, the question is whether the differences represent "true" differences in the measurement and structure of nonacademic SC for Australian and Nigerians preadolescents — or, whether the differences are a function of particular biasing effects in the data. Given that the instrument was administered in its original language

(English) to both the Australian and Nigerian samples, it is highly possible that the noninvariant findings may be related directly to problems of method, and/or item bias. While construct bias may also have been a contending factor here, it is important to recognize that, in fact, the language in which the SDQ-I was administered, may be totally irrelevant.

Overall, the only way to adequately answer questions bearing on findings of "true" versus "spurious" differences is to reexamine each nonequivalent parameter light of possible sources of bias. In the interest of space here, however, I limit my post hoc reexamination to only one of the noninvariant parameters reported (the loading of Item 24 on the Physical SC - Ability factor), and suggest possible sources of bias as contributing factors. As an initial step in trying to account for the nonequivalence of parameters, it is helpful to review the patterns of response, as well as the skewness and kurtosis values related to the items in question. Graphs of these values, as they relate to Item 24 for Australians and Nigerians, are presented in Figure 2.

Inspection of the graphs shown in Figure 2 reveals a vivid difference in the way Australian and Nigerian preadolescents responded to Item 24 ("I enjoy sports and games"). Now, why should this be? Quite possibly, construct bias may play a role in this discrepancy of responses, in the sense that the behavior being tapped by the item differs across the two cultures. In other words, "enjoying sports and games" conveys a different meaning for Australian, as opposed to Nigerian preadolescents. For example, whereas the Australians may interpret the item content as implying that "I enjoy *playing* sports and games", the Nigerians may interpret it as "I enjoy *viewing* sports and games (as a spectator only)". Hence, the behavior tapped, in this instance, would be clearly diverse. Given the ambiguity of its content, as noted above, item bias may also be a factor in explaining the noninvariance of Item 24. Such uncertainty can lead to quite dissimilar interpretations of the statement to which respondents are asked to react. Further complicating the issue is the possibility that responses may also be colored by particular cultural norms. For example, it may be that sports represent a highly valued component of Australian society, whereas in Nigeria, its status may be of a lower rank, or somewhat equivocal at best.

Figure 2: (a) Pattern of Response to ITEM 24 by Australians and Nigerians
(b) Skewness and Kurtosis Related to ITEM 24 for Australians and Nigerians



Finally, it is possible that sample bias may also have been a contributing factor in triggering the noninvariance of Item 24. However, considering the relatively small number of nonequivalent parameters, overall, this possibility would seem to be somewhat unlikely.

Presented with (a) a detailed discussion of three forms of bias, and of problems associated with the linguistic translation of instruments, and (b) an application that exemplified the testing procedure used in the analysis of covariance structures approach, it is hoped that researchers will be more sensitive to the equivalency issue related to multigroup comparisons in general, and cross-cultural comparisons, in particular.

Acknowledgments

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Getting Back on the Correct Pathway for Self-Concept Research in the New Millennium: Revisiting Misinterpretations of and Revitalising the Contributions of James' Agenda for Research on the Self

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This paper aims to revisit Williams James chapter on "The Consciousness of Self" (James, 1890), and consider how self-researchers in the 20th century have selectively ignored much of his advice, such that research has addressed some minor parts of James's program extremely well while continuing to ignore the major issues. Researchers have also attempted to recast some of James's critical questions which has resulted in researchers finding excellent answers to wrong questions. The paper starts with an overview of James's claims, builds on the 100 years of research since, and outlines a research program more appropriate to the next 100 years. This ambitious task seems most appropriate for a post-Olympic conference.

James's claims include:

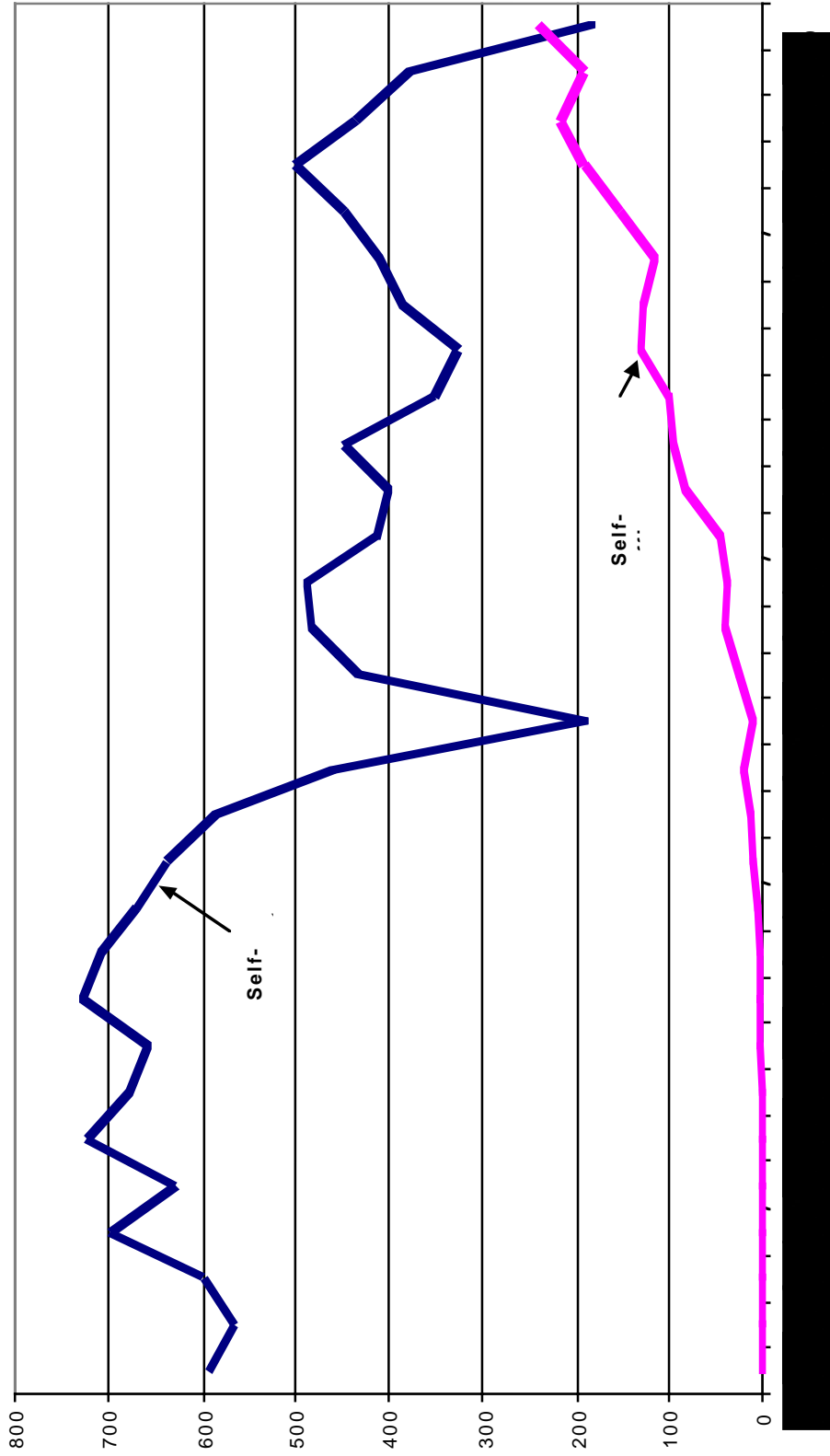
- Self is the sum total of all that he CAN call his,
- The constituents of self are multidimensional,
- Self is hierarchical,
- Self-esteem = success/prestensions,
- Social self is the recognition he gets from his mates,
- A man has many selves as there are individuals who recognise him,
- All men must single out from the rest of what they call themselves some central principle of which each would recognise the foregoing to be a fair general description,
- Self is only known in subsequent reflection,
- Self-feeling involves self-complacency and self-dissatisfaction; self-seeking and self-preservation,
- The role of self-love, self-respect, and self-estimation
- The importance of personal identity. and
- Self as a stream of thought.

This paper aims to revisit Williams James chapter on "The Consciousness of Self" (James, 1890) which very much set the agenda for research on self-concept for the subsequent 100 years. James' two books, the longer two-volume "The Principles of Psychology" (1890) and the shorter version "Psychology" A briefer course" (1892), affectionately known to many cohorts of students, as James and Jimmy, changed the prevailing view from a reliance on "habit", mental philosophy, and overlearned behaviours to a more cognitive model of considering emphasising the person as thinker.

Let me commence by making three general points that I wish to defend in this overview of self-concept debates:

1. We now have learnt a lot about the James' agenda and it is time for someone to write another paper that moves us out of the 20th century into the new century. The major theme of this paper is that, while James raised the eternal questions, our answers over the past 100 years have provided some major in-roads while avoiding some of his more critical questions. It is time to move on, and not remain entrenched in old debates cleaning up the edges and restating what has now become accepted. Do we wish to remain as the last behaviourist proving Skinner was right, or the last Piagetian arguing that we need to complete one more case study, or the Vygotskian who wants another demonstration of the zone of proximity? These sad cases are defending views that are basically sound, but we have dredged much learning from these pioneers and need to move on. Maybe it is appropriate for this SELF Research Conference to take James' lead and join together to set the agenda for the next 100 years in much the same way, as James did.
2. Because of this tiredness of answering questions for which we already have the majority of answers, the topic of self-concept is declining and becoming less relevant. Let me demonstrate how the literature on self-concept and self-esteem are in decay, and unless we change our questions this Conference may mark the last gasp of those addressing a soon-to-be dated set of questions that is having little impact on the rest of education and psychology.
3. Figure 1 illustrates the number of articles that reference "self-concept" in the title or abstract for each year from 1970 to today — in ERIC, PSYCHLIT and MEDLINE. The Figure contrasts these citations with the citations to "self-efficacy" which, unlike self-concept is on the increase as self-concept on the decline.
4. Further, it is fascinating to note, and consider how self-researchers in the 20th century selectively ignored much of James' advice, such that research has often addressed some minor parts of James' program extremely well while ignoring some of the major issues. Researchers also have recast some of his critical questions and thus have led research down paths of finding excellent answers to wrong questions. The paper starts with James, builds on the 100 years of research since, and suggests a starting point for a research program more appropriate to the next 100 years. This ambitious task seems appropriate for a post-Olympic conference.

References in ERIC that relate to Self-concept or Self-



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James' Major Claims

I now wish to address eight of James' major claims.

The Core of the Self

“Self is the sum total of all that he or she CAN call his or hers” James' Major Claims

I now wish to address eight of James' major claims.

James included in this sum total “not only his body and his physic powers, but his clothes and his house, his wife and children, his ancestors and friends, his reputation and works, his land and horses, and yacht and bank account (Today we would include her as well as his, but I have left James' quotes as he wrote them).

This notion of the “sum total” has led many to seek what is to be summed, as if self-concept is a summation of concepts, of nouns, or attributes. For example, Rosenberg (1979) and Coopersmith (1967) proposed that the global self was some amalgam of the specific self-concepts. Such notions have led to the massive search for the various dimensions or components of self and in this we have been most successful (see below).

This summation, however, has led us to ignore that self-concept is a process — it is a NOT conceptions or set of beliefs about one's self, but a process of how we interpret these conceptions. We have listened too carefully to James and sought this inner core as a “sum total” and thus been led astray. Instead, we should be considering the core as a dynamic process involving appraisals, the processes of integration, the interrelations among the parts, and the way we select, bias and interpret that which is part of the “sum total”. That is:

Our self-concepts or conceptions of our self are cognitive appraisals, expressed in terms of descriptions, expectations and/ or prescriptions, integrated across various dimensions that we attribute to ourselves. The integration is conducted primarily through self-testing or self-status quo tendencies. These attributes may be consistent or inconsistent depending on the type or amount of confirmation or disconfirmation our appraisals received from ourselves or from others. (Hattie, 1992)

The emphasis needs to be placed on the appraisals, as they are not merely “cognitive” processers, but they also involve values; our thoughts about ourselves relative to value statements and these may be good or bad, rational or irrational, frustrating or not frustrating, adaptive or maladaptive, appropriate or inappropriate, reasonable or unreasonable, justified or unjustified. Our self-concepts involve constructions about how we construe the significance of an encounter for our well-being. As Kelly (1956) so eloquently argued, the person is a chooser, more than a thinker.

We have chosen to concentrate on the “sum total” aspect of James' work, but are less reliant on James' edicts to consider “man as a chooser”. As James (1890) remarked, we are less involved with making explanations and more often involved in making choices.

People can be viewed as continually attempting to impose some sort of order and coherence on the events in which they

find themselves immersed. In order to survive we must extract some meaning from our experiences so that we can understand, anticipate, and, thus, exercise some control over life's experiences. We do this by making choices—choices about how to interpret events, choices among alternative courses of actions, (and) choices among evaluations of our actions (James, 1890, p. 56).

These arguments place much emphasis on choice, decision making and interpretation of the environments we find ourselves in and project ourselves into. The manner in which we do this, while maintaining or enhancing a conception of self, needs much more research. This also highlights the, often, post hoc place of self-concept. It may be less informative as explaining “Why” people do, think or act, but may be more important for a person to explain to themselves “Why” they did, think or acted like that.

These remarks place much attention on the person as an appraiser who makes decisions and choices on the basis of beliefs about his or her self. Using the vast literature in cognitive processing, it is most likely that individuals select, bias, and retain information, and we do so differently from others.

Hence, I would suggest that James' misled us in his claim that: “Self is the sum total of all that he or she CAN call his or hers” and could have more constructively claimed, Self is the appraisal of all that which we choose to interpret as I.

More emphasis on the perpendicular pronoun and less on the self as a kind of separate collection of entities. This should led us to research endeavours about “How do individuals make choices about what to value about themselves?”

The Core or Role of Personal Identity

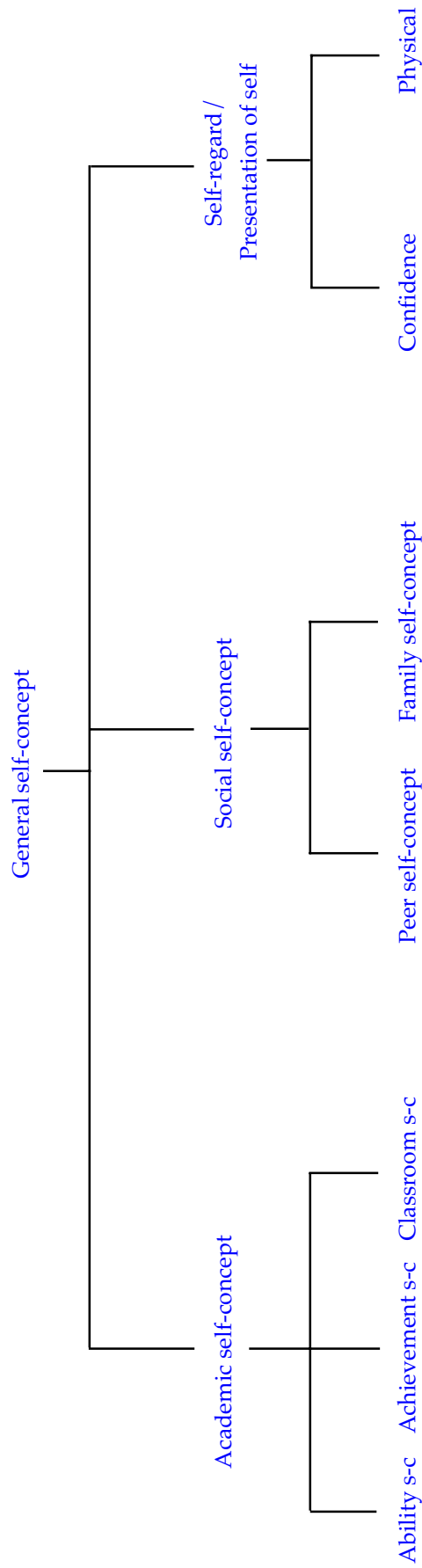
All men must single out from the rest of what they call themselves some central principle of which each would recognise the foregoing to be a fair general description — for some the soul, for others nothing but a fiction the imaginary being denoted by the pronoun I, and many between.

I have said all that need be said of the constituents of the phenomenal self, and of the nature of self-regard. Our decks are consequently cleared for the struggle with that pure principle of personal identity.

There has been centuries of debate about the core of the person, the essence of self-identity, and thus the role that self-concept plays in the larger picture of the person. Mostly this debate has centred on finding the “core”. Obviously, this core can vary in terms of time, development, situation, mood, and purpose. Thus to think of a core as a single attribute is of little value and more difficult to defend: it grows, it changes, it adapts, and it reacts.

We know so little about the development of this core, and to consider self without a reference to time and place is surely absurd. There is no immaculate perception, no universal generalisation, and no single core entity. It is neither genetic nor environmental, it is thought about — by the person in a time and place.

Figure 2:



Perhaps the literature on self-concept has played too little attention to the place of self-concept in the greater picture of the person. It is interesting to note how the literature on self-concept during the latter part of the 20th century seem to place outside the realms of personality, from whence it grew up post-James. I suggest it is time to place it back into that larger domain.

It seems that people do not strive to have desirable self-concepts, do not do things to promote a concept of self, but rather have interpretations about their self (selves) to promote a sense of Wellness; or a commitment to “physical, mental, and social well-being” (WHO, 1958, p. 1). Myers, Sweeney and colleagues (Sweeney, 1998; Sweeney & Witmer, 1991; Witmer, 1989; Witmer & Sweeney, 1992, 1998; Hattie, Myers, & Sweeney, 2000) have developed a theoretical model of wellness, and built and evaluated an assessment measure that meaningfully assesses the various components of the Wellness model. Their Wheel of Wellness model was developed from psychological and counselling theory, particularly that of Alfred Adler (Ansbacher & Ansbacher, 1967) and his followers (Mosak & Dreikurs, 1967).

It seems that people do not strive to have desirable self-concepts, do not do things to promote a concept of self, but rather have interpretations about their self (selves) to promote a sense of Wellness. In this sense, Wellness is considered in terms of “physical, mental, and social well-being” (WHO, 1958, p. 1), or “the process and state of a quest for maximum human functioning that involves the body, mind, and spirit” (Archer, Probert & Gage, 1987, p. 311).

Myers, Sweeney and colleagues have identified 17 attributes of Wellness, and then provided support for a five-higher order factors, leading to a third-order conceptualisation of Wellness.

The inner core for James, or the unity of personality for Adler, is represented here as Wellness. Around the rim are the five Self attributes, and the spokes represent the seventeen dimensions. The combination of these five Self attributes contribute to that which makes individuals intrinsically and fundamentally unique in nature, i.e. their essence. These five higher-order factors (see Table 1) are:

- Physical Self: related to physical and nutrition;
- Intra-active Self: comprised of Leisure, Stress
- Management, Sense of Worth, and Realistic Beliefs;
- Interactive Self: composed of coping skills for daily living,
- Intellectual Stimulation and Problem Solving, Sense of Control, Emotional Responsiveness, Sense of Humor, and Work;
- Social Self, includes the key Life Tasks of Friendship and Love; and

Existential Self: includes notions of spirituality, purposiveness, meaning in life, and a sense of a power greater than one’s self.

Table 1:
Factor Loadings Derived from a Maximum-Likelihood Factor Analysis Specifying Five Factors and Correlations Between Factors

	Existential Self	Social Self	Interactive Self	Physical Self	Intra-active Self
Spirituality	.49	.00	.00	.00	.00
Self-care	.48	.00	.00	.10	-.19
Gender identification	.40	.29	.00	.00	.25
Cultural identification	.30	.21	.00	.00	.21
Friendship	.00	.82	.00	.00	.01
Love	.10	.49	.15	.00	-.14
Intellectual stimulation	.00	.00	.75	.00	.00
Work	.18	-.18	.26	.14	.00
Emotional awareness	.00	.28	.35	.00	.16
Control	.00	.00	.67	.00	.00
Sense of humor	-.17	.21	.32	.00	.19
Exercise	-.00	.00	.00	.50	.11
Nutrition	.13	.00	.00	.80	.00
Realistic Beliefs	.21	.00	.19	.00	.25
Leisure	-.00	.11	.00	.14	.51
Sense of worth	.00	.15	.32	.00	.32
Stress management	.00	.00	.00	.00	.47
Existential Self	1.00				
Social Self	.44	1.00			
Interactive Self	.26	.55	1.00		
Physical Self	.25	.35	.25	1.00	
Intra-active Self	.13	.40	.13	.22	1.00

In a series of studies based on over 5000 people (aged 12-100), Hattie, Myers and Sweeney (2000) found that this structural model was defensible for males and females, for Caucasians and African Americans, married and unmarried, and for differing age groups (from 10-18 to 56+) — although there were fascinating mean differences.

The underlying notion, and key departure from the Jamesian tradition, is that when Self is considered in this manner it is not merely personality attributes, but rather are closer to various goal strivings (Emmons, 1986) — in that they are nomothetic, idiographic, and personalized motives. That is, the goals a person chooses are tied to the life tasks, such that we strive to attain these goals, which invoke various self-strivings, or seeking life tasks

There are specific relations to The Big Five, that has been so discussed in personality theory during the latter part of the 20th Century (Costa & McCrae, 1985; Goldberg, 1992; John, 1990; McCrae & Costa, 1987):

Agreeableness refers to the quality of one's interpersonal relations, the inclination toward interpersonal trust, and consideration of others, and thus the WEL dimensions of Friendship and Love would be included in Agreeableness.

Extraversion focuses primarily on the quantity and intensity of relationships, and relates to the disposition towards positive emotions, sociability, and high activity. The WEL dimension of Sense of Humor, with the active using of humor to cope with one's own difficulties, and Leisure, which includes activities typically approached from a "playful" point of view, relate to Extraversion. Some of the other aspects of Extraversion, such as hardiness, positive affectivity, and social competence, are clearly present among the items in some of the other WEL dimensions.

Conscientiousness, or Constraint, relates to task behavior, socially accepted impulse control, persistence, industriousness, and organization. The WEL dimension of Sense of Control clearly relates to conscientiousness as it emphasizes beliefs about mastery, competence, self-confidence and self-efficacy. Similarly, Realistic Beliefs and Stress Management have many aspects of task behavior and organization.

Neuroticism or its converse, emotional stability, relates to the tendency to experience emotional distress, or to adjustment. The WEL dimension of Emotional Responsiveness and Management includes many aspects of emotional stability, lack of vulnerability, and emotional control.

Openness to Experience contains components of intellectual stimulation, culture, creativity, broad interests, and cognitive complexity, and a receptive orientation toward varied experiences and ideas (John, 1990). These components relate to the WEL dimensions of Sense of Worth, Intellectual Stimulation, Problem Solving, and Creativity, and Cultural Identification.

The WEL model is more encompassing, as there is more than "personality" represented in the life tasks model. For example: Existential Self which is related to a belief system and optimism; Exercise and Nutrition, which are attitudes and actions relating to physical dimensions; Self-care, which

is a protective or non-self abuse dimension, Gender Identification, and Work although the latter could relate to aspects of Extraversion and Openness to Experience.

Thus, with respect to the Jamesian agenda, I suggest we reiterate the first part and ask what is the primary principles that various people use to consider the essence of self, rather than assume, as many of our models of self-concept and self-identity do, that there is an inner core. Perhaps the many papers at this Conference on cross-cultural aspects of self may have more to say on these central principles (I only add the plural to James' principle):

All persons must single out from the rest of what they call themselves some central principles of which each would recognise the foregoing to be a fair general description — for some the soul, for others nothing but a fiction the imaginary being denoted by the pronoun I, and many between.

As to the second part, I would suggest we listen clearly to James — enough said of multidimensions, and now move to the important questions not only of personal identity, but value and cultural systems that impinge on personal identity, the way we reflect on ourselves, and the way we consider ourselves in time and place. We are but an arrow defined in no one moment, but striving towards a target. We need a research agenda related to our strivings as they have more to say about how we reflect on our selves. Research is required on Self as part of the Identity, as part of Wellness. I suspect that for the vast majority of people self-concept or self-esteem is a very poor predictor or explainer — as it is not high salience as Wellness, and our strivings for Wellness. More important are the five Wellness attributes of Self, considered as strivings towards wellness. As said James we know all that need be said about the constituents of the self, and it is time to struggled with the principles of personal identity. Here I echo the Jamesian agenda — we have hardly started on these aspects.

I have said all that need be said of the constituents of the phenomenal self, and of the nature of self-regard. Our decks are consequently cleared for the struggle with that pure principle of personal identity.

We know in subsequent reflection, as part of a stream of thought.

Self is Multidimensional

The constituents of the self may be divided into two classes, those which make up respectively: The material self, the social self, the spiritual self, the pure ego.

As I have noted, James was quite clear about the constituents of the self. For example, he extensively discussed the material self (body, clothes, family, home, property we collect), the social self (recognition which he gets from his mates), the spiritual self, and the pure ego. It took a long time for researchers in the 20th Century to agree to this James' claim. But, particularly since Shavelson's and Marsh' work we now have a pretty good map of these constituents. If anything we may have over-factored the constituents.

It is possible to locate, for example:

18	dimensions of	Academic self-concept
6	dimensions of	Music self-concept
4	dimensions of	Arts self-concept
1	dimensions of	Classroom self-concept
2	dimensions of	Peers self-concept
2	dimensions of	Family self-concept
15	dimensions of	Physical self-concept
3	dimensions of	Religious self-concept

and so on.

Clearly, we can have a concept about anything and everything, and thus it is possible to have multi-dimensions about all. As I argued above, self-concept may not exist without a referent, so we may not be saying much by this claim about the constituents — especially is we aim to further delineate the various concepts. Let me illustrate the problems with an absurd case.

Take my toes. For most of us our toes would not be considered part of our concept of self, although I could develop a scale for self-toeness:

1. I like my big toe.
2. I am proud of my toes.
3. I like to show off my toes to others.
4. My toes are important to me.
5. I could not bear to part with my toes.

Given that there would be high correlations between such items, it would be easy to show via factor analysis and reliability that there is a strong single factor (80% variance explained by the first factor, AGFI > .95, alpha < .80, rmsea < .05, etc), that it is discriminant from other aspects about my self, and that it correlates with other related dimensions (e.g., fingerness, eyeballness, and eariness). Psychometrically wonderful, it would seem. There are three major points illustrated by this self-concept of toeness.

First, the important point is that we need to consider the value, or importance notion — to what degree are these various dimensions of self important to the “core”, to the wellness? How do various and particular beliefs about this attribute of self become invoked when making decisions that affect the self? How salient are the conceptions when forming an overall concept of the self? How important, or what value does the individual place, on toeness self-concept — no matter how well measured, differentiated, or developed? For most of us, toeness self-concept would have next to no salience whatsoever. I can imagine situations when it does matter. For example, if you lose your toes, then toeness may become an important factor (or as Reinhold Meisner, the great mountaineer, said when asked about the effects of losing his toes, “It makes me closer to the mountain”. Higgins (1987) has developed this notion of self-discrepancy to a higher level than space here permits.

Second, we have tended to over rely on self-reports to ascertain the various constituents of the self. As Bruner (1998) so eloquently argues in “Three seductive ideas”, a major problem with the concept of self-esteem” is the belief that individuals are aware of this quality; hence their answers to direct questions are assumed to be accurate” (p. 178). It is not clear that what

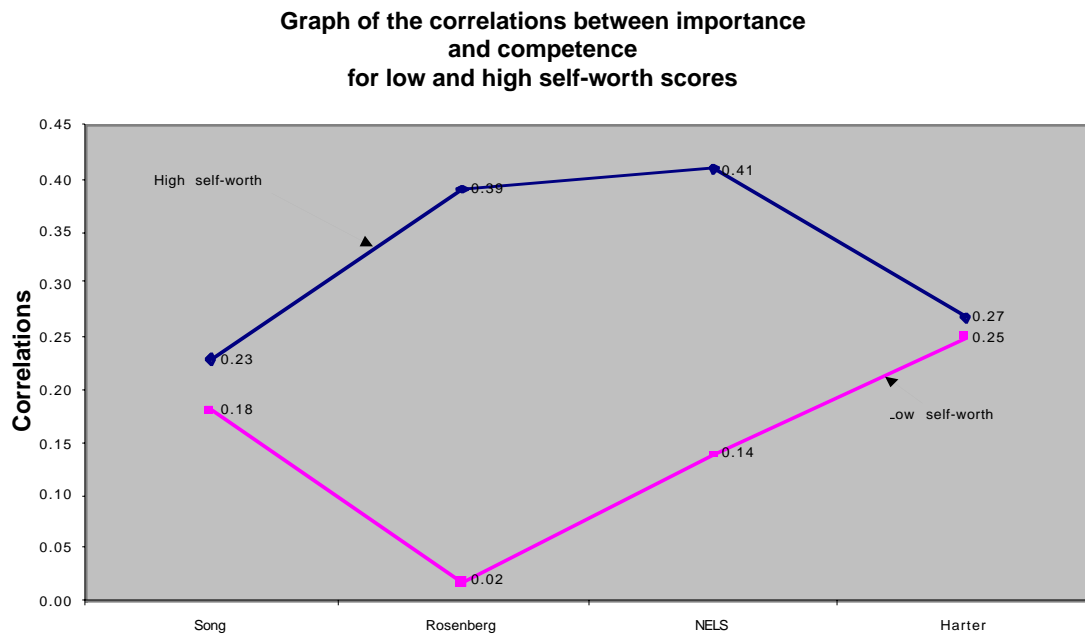
people, especially children claim in self-reports about self is necessarily related to how their conceive of conceptions about themselves. We know, for example, that adolescent boys who have no friends and are failing at school often vehemently deny the ascription of low self-esteem when asked via self-reports (Bruner, 1998). We know that adolescent males, certainly much more than girls, are far less likely to ascribe negative attributes preferring to emphasise the positive (Elliott, 1986, 1988; Hattie & McInman, 1998; Nolen-Hoeksema, 1987; Roberts & Nolen-Hoeksema, 1989). Perhaps it is not so surprising that most students score above the mid-point on most items. We need more research on alternative ways to measure self-concept. Perhaps the involvement of virtual reality will allow us to monitor choices when people are placed in simulated situations (like meeting new friends, failing at a task, in a physical exercise).

Third, the underlying classical model of test theory underlies this notion of developing scales, and it is time to move on. This notion of having at least three items to define a factor has led to an over proliferation of, what Cattell (1978) called, bloated specifics. The argument typically is, here are the psychometric criteria of success (high alpha, high factor loadings, high discrimination between factors) as if there is something in the logic of validity that presumes high correlations. As an extreme, the perfect test consists of a series of items all measuring independent aspects of the behaviour domain, in which case alpha=0, and there can be no single factor. We need more conceptual clarity, and attention to salience and explanation power of our dimensions before we seek, or claim, multiple dimensionality.

This is not to claim that self is not multidimensional. One of our successes of the late 20th century is a firm, but not fully agreed, understanding of the constituents of the self. It is the relationships, the importance, and/or the appraisals of these constituents that are far more important than the constituents per se. Now, James (and Shavelson, and Marsh) have similarly made this very clear but we have, I suggest, tended to forget this when we create scales, create studies, and create models which seem more concerned with the constituents of self than the relations between them (and between them and other attributes).

So, if I were now writing a Jamesian prescription for the 21st Century, I would suggest that:

- The constituents of the self may be divided into many dimensions, and it is most important to understand how we (re-) assemble these dimensions into a conception of self.
- We do not wake each morning, look in the mirror, and ask, “Who am I today”. We do have varying saliences of our constituent selves, and for some constituents they may be totally unimportant (depending in time and place and culture).
- I place a plea to discover no more constituents of self, I place a plea to use methods that do not depend on bloated specifics. I place a plea for adding other methods to self-report. I place a plea to move onto the issue of salience



Self is Hierarchical

The aspects of the self are ordered in an hierarchical scale, with the bodily Self at the bottom, the spiritual Self at top, and the extracorporeal material selves and the various social selves between

1. Material Self — body, clothes, family, home, property we collect
2. Social Self — we have as many social selves as there are distinct groups of persons about whose opinion we care.
3. Spiritual Self — a man's inner or subjective being, his psychic faculties or dispositions, "to think ourselves as thinkers"

This has been one of the more difficult aspects of James' claims to defend. Although James, and later Shavelson et al. (1976) claimed that the self was hierarchical, the research on this claim has been fleeting. Too often, we have endeavoured to consider hierarchy to be bottom up or top down, and the representation of self-models are tent-like. Shavelson and Marsh (1986) and Byrne (1996a; Byrne & Gavin, 1996) argued for a bottom-up model whereas Brown (1993) argued for a top-down model.

Herb and I have noted the confusion in the use of the term global self-concept and we (Marsh, 1986, 1990a, 1993a; 1995; Marsh & Hattie, 1996) reviewed support for a variety of different ways in which this term can be operationalized which include:

- An agglomerate self-concept, a total score for a typically ill-defined collection of self-report items that has little theoretical rationale nor any basis for understanding how self-concept is formed or how it was related to other constructs, interventions, or life events.
- A weighted-average general self-concept that is a calculated weighted average of specific components of self-concept in which the weights are a function of the saliency, importance, centrality or other features of each component that is particular to the individual respondent. Despite a strong theoretical rationale and a substantial body of empirical research, there is surprisingly weak support for this operationalisation, suggesting, perhaps, difficulties in operationalising constructs such as saliency and importance.
- An actual-ideal discrepancy general self-concept in which general self is a calculated from differences between actual and ideal self-concepts in specific components. Again, despite a strong theoretical rational and intuitive basis, there is limited support for this approach, at least based on studies that actually construct general self-concept scores from separate ratings of actual and ideal self-concept in specific components.
- A hierarchical self-concept, a higher-order self-concept based on factor analysis (as in the Shavelson model). This operationalisation refers to an inferred construct that is not measured directly, one that is an empirically weighted-average of the lower-order factors that are

considered (e.g., a hierarchical self-concept derived from first-order academic self-concept factors must be a hierarchical academic self-concept).

- A global self-concept scale, a relatively unidimensional scale referring to generalized characteristics that are not specific to a particular domain (e.g., Overall, I have much to be proud of; In general I like the way I am; Overall I am no good). Such global self-concept scales are typically modeled on the widely-used instrument developed by Rosenberg (1979) and are sometimes referred to — albeit ambiguously — as self-esteem. A typical implicit assumption is that respondents base their responses on appropriately weighted self-perceptions in particular areas that take into account features such as their importance, saliency, certainty, and ideal standards. Hence, this approach is not inconsistent with weighted-average, discrepancy, and, perhaps, hierarchical approaches, but does not require the researcher to collect and empirically integrate information about specific components of self-concept.

It is also important to note that some researchers who accept the multidimensionality of self-concept do not necessarily assume that it is also a hierarchically ordered construct. Harter's (1985, 1986) early research, for example, was overtly critical of hierarchical models, claiming, for example that the hierarchy resides primarily in the mind of the factor analyst. Harter's (1996) main concern with hierarchical models, however, seemed to be that "certain domains may be considered more important to the individual's overall sense of self than others; yet domains are not differentially weighted in terms of the importance to the self" (p.11). Hattie (1992; Hattie & Marsh, 1996) also argued that the typical application of factor analysis implies that all people fit the model, whereas individuals may vary in the extent to which self-concept is hierarchically ordered and the relative weight assigned to different domains. Further, the hierarchical integration implied in the Shavelson model is based on a relatively static, structural model, whereas many researchers emphasize a more dynamic process model in which the self is a more active integrator of information and that the manner in which individuals process information about self may vary with processes such as self-consistency, self-enhancement, self-verification, and self-complexity (e.g., Brown, 1993; Hattie, 1992; Hattie & Marsh, 1996; Linville, 1982; Markus & Sentis, 1982; Swan, Pelham & Krull, 1989).

Marsh (2000) completed an innovative study on top-down versus bottom-up hierarchies, using structural equation models of multi-wave multi-variable models. He found that there was "clear and unambiguous support for the horizontal effects (stability) model and little or no support for the bottom-up, top-down, or reciprocal effects models". This is a major blow to the notion of a hierarchy. A more plausible model is the processing model, as expressed in Wittgenstein's maxim:

The strength of the fibre is not from any one strand but from the overlapping of many fibres.

Hence, the overlapping of many conceptions of self brings the more stable unity, such that we do not wake up each morning and say “Who am I”. This conception does not need a flow up or down, but is reasonable cast as an integrating mechanism for considering self-concept. Such a model has no need for a top down or bottom up processing model. I would agree with Harter, that the hierarchical models are in the minds of the factor analysts and not in the minds of people.

Thus research needs to address the processes of integration and overlapping rather than the higher and lower orders of causality. This avoids the, very much, static model implied in the Shavelson et al., model, avoids the implicit assumption that we are born with a hierarchy as opposed to developing overlapping threads, and avoids the need for searching in the wrong place. Instead, I propose that there are various processes of integration that are used by individuals to achieve a hierarchical notion of conceptions of self. The use of these processes varies across individuals, and more research is needed to further understand the difference of use and behaviour of these processes. This notion of overlapping threads no longer presumes that there is one core, but that there can be many fibres as part of the unity. This is akin to the Jamesian notion of possible selves (see also Markus & Nurius, 1986; Oyserman & Markus, 1993; Rhodewalt, 1986; Rhodewalt & Agustsdottir, 1986). We need to look at the “working, on-line, or accessible self-concepts”. Not all conceptions of self will be accessible at any one time. Self-concept is continually active, and some conceptions are “tentative, fleeting and peripheral, others are highly elaborated and function as enduring, meaning-making, or interpretative structures that help individuals lend coherence to their own life experiences” (Oyserman & Markus, 1993, p. 191).

Most current research considers the higher-order conceptions of self-concept as some kind of amalgam of the lower-order concepts, whereas the converse may be the case. It may be that there are critical information-processing competencies that bias, select, and retain information and affectations about self, and these may be different depending on the situation, and on the sources of developing these biases (e.g., cultural and social sources). This is not claiming that individuals distort reality to maintain their self-images of being positive and effective people, as claimed by many (Dunning, Meyerowitz & Holzberg, 1989; Taylor & Brown, 1988). The individual’s perception of reality is a “reality,” and the greater concern is the various ways in which individuals select, bias and retains information to maintain this “reality”.

Hence, the claim is that we need to reorganise the James’ claim to:

The aspects of the self are interpreted by the individual in manners that can allow for various constituents to become more salient in the interpretations, understandings, and decision making of the person, depending on the decisions, judgements, or interpretations to be made. The unity is thus more related to the processing strategies used than to the constituent parts.

There are Strategies of Self

The longest section of James’ chapter on the self concerns the strategies that are used to process information about the self. These processes he recognised as

Self-complacency	pride, conceit, vanity, self-esteem, arrogance, vainglory;
Self-dissatisfaction	modesty, humility, confusion, diffidence, shame, mortification, contrition’s personal despair;
Self-seeking	providing for the future, desire to please, to be recognised by others; and
Self-preservation	maintaining the present.

This is the aspect of James that is among the least research and known, but I would argue should be a major focus of the next century. An exciting research area relates to the many strategies that are used to maintain a concept of self, to enhance self-esteem, and to maintain self-respect. There is already much research demonstrating how individuals attribute success and failure to either their own efforts or other factors. There is a long history of reviews demonstrating that we attribute success to ourselves for positive outcomes and blame others for negative outcomes (Bradely, 1978; Zuckerman, 1979). Snyder, Gangestad and Simpson (1983) have discussed extensively the manner in which self-esteem can distort information-processing cognitions associated with the attribution of causality, and how we tend toward self-protective attributions especially when these performances are scrutinised by others.

It would be most useful to conduct further research on the various strategies that individuals use to cope with their environment, and beliefs and reactions to their world. Such strategies have been referred to by a variety of generic labels: self-serving biases (Riess, Rosenfield, Melburg & Tedeschi, 1981; Marsh, 1986b); need for approval (Crowne & Marlowe, 1964); self-monitoring (Snyder, 1974, 1979, 1987); and self-deception (Sackheim, 1983; Sackheim & Gur, 1978). At least six major strategies have so far been identified, and we have spent much time trying to devise measures for these to use in classroom situations.

Self-Handicapping

This involves providing a handicap that can be used as an explanation for maintaining beliefs, and accounting for success or failure that is inconsistent with prior beliefs (Jones & Berglas, 1978). For example, a student could claim he or she scored 100% on an examination because the items were too easy rather than because of ability or effort in learning. Self-handicapping occurs when individuals are typically uncertain about their abilities and competencies and when there is high salience of an evaluative task; it happens more often in public versus private performance situations (Greenberg & Pyszczynski, 1985; Jones

& Berglas, 1978; Rhodewalt & Agustsdottir, 1986; Smith et al., 1982; Tice, 1991).

Discounting

A related strategy is discounting, whereby praise, punishment, or feedback is “dismissed” as being information that is not valuable, accurate, or worthwhile for the individual. For example, when a teacher tells a child that he or she is doing a great job, the child’s reaction is to discount this by claiming “she always says that,” “she’s only trying to make me feel good,” or “it’s only because it is neat, not correct”.

Distortion

Another strategy is distortion, whereby individual events, dispositions or beliefs can be distorted, usually retrospectively, to maintain the status quo. Baumeister and Covington (1985) found that high self-esteem individuals sought to conceal their reactions to persuasive messages by retrospectively expressing greater premessage agreement (i.e., distorting their initial attitudes) than those with low self-esteem. Thus, as Baumeister, Tice and Hutton (1989) have claimed, “yielding to persuasion is a self-protective strategy, whereas rejection of influence is an individuating and self-enhancing strategy” (p. 569).

Social Comparison

A powerful strategy is social comparison. Low self-esteem individuals constantly monitor other peers’ behavior for cues and attributions to explain/enhance their conceptions of self (Baumeister, 1982; Baumgardner, 1990; Schlenker, & Leary, 1982; Wood, 1989). They compare themselves with others, and social comparison sets standards or frames of reference. Individuals can choose the points of reference and make salient those activities they wish to excel in or set as a challenge. (Campbell & Fairey, 1985; Campbell, Fairey, & Fehr, 1986; Campbell & Fehr, 1990). For example, very successful mathematics students might have a high math self-concept in an average math class, but after being sent to a gifted mathematics class, their self-concept could plummet as they now compare themselves with this new cohort. These comparisons are usually private, as low self-esteem people are less likely to make public comparisons (see Baumeister, Tice & Hutton, 1989; Tesser, Campbell, & Smith, 1984). “Unable to convince themselves privately that they possess favorable qualities, these individuals may instead attempt to feel better about themselves by engaging in behaviors, observable to themselves and others, that suggest that they are capable, likable, intelligent, and so forth” (Baumgardner, Kaufman, & Levy, 1989, p. 919). Baumgardner et al. further suggested that low self-esteem people adopt a coping style that may initially intend to disconfirm negative feedback but, over time, actually confirms a negative self-view. This spiral is often noted in psychotherapy. High self-esteem individuals appear to have more cues as to when it is not socially desirable to berate the source of negative feedback (Baumgardner, Kaufman, & Levy, 1989). A particular example of social comparison has been a major focus of Herb

Marsh’s (Marsh & Craven, 2000) research on the big-fish-little-pond-effect, which has a long and reputable history dating back to the Sherif’s in the 1940s.

Goal Setting

A further strategy that has emerged primarily out of the management literature is goal setting (Locke & Latham, 1992). To attain goals, individuals must exert effort, persist over time, pay attention to what they are doing, monitor their plans and actions, evaluate their progress, and have commitment to their goals regardless of whether they are self-set, participatively set, or assigned. Low self-esteem people often set low goals and thus have little risk of failure. There has been a strong argument that there may be different implications from having performance or mastery goals (Dweck & Leggett (1988) although there is less evidence of how these relate to achievement.

Self-Monitoring

Individuals actively plan, enact and guide their behavioral choices in social situations through the process of self-monitoring (Snyder & Cantor, 1980). High self-monitors make their behavioral choices on the basis of situational information. Thus, high self-monitors are more dictated to by the external environment and by social comparison.

These six strategies explain how individuals can bias, select and retain information that affects their self-concepts. It is likely that we all use the strategies to varying extents to provide predictability in our lives. For example, the various strategies may provide extra predictability as to what to do or how to react in new situations. This effect highlights the enormous difficulties in devising programs to change self-esteem. Daly and Burton (1983) reported high correlations between many irrational beliefs and low self-esteem, particularly problem avoidance, helplessness, high self-expectations, and demand for approval. They noted that individuals with irrational beliefs have a high need to be approved by others, a need to excel in all endeavours to feel worthwhile as a person, obsessive anxiety about possible calamities in the future, and the idea that it is better to avoid problems rather than to face them. It must be noted, however, that “irrationality” is a culturally bound term and many have noted its value-laden connotations. What is irrational for one person may be rational for another (Derrida, 1976; Laing, 1969, 1971).

Future research may identify other strategies that individuals use to protect, maintain, and/or enhance their conceptions of self. A better understanding of these strategies may become pivotal in understanding how we process the information that feeds our self-concepts, and may have profound implications for programs to enhance self-concept. They also suggest that there may be more critical underlying motivations that cause us to bias, select, and retain information. Self-regulated learning can be viewed in terms of the specific strategies used by students as they engage in learning tasks, and many of these are the exact same strategies we have been discussing as strategies to maintain views about the self. Such strategies include goal setting and

planning; structuring of the learning environment; using task strategies such as organizing and transforming, reviewing, rehearsing and memorizing; seeking information and assistance from social and non-social sources; monitoring and self-evaluating, and self-consequencing.

Purdie and Hattie (1997) developed a Likert scale to assess the self attributes, with an emphasis on self-regulation. In a study of 3855 Grade 4-12 students in 69 schools in the USA, we used these self-strategies as part of the evaluation of the Paideia teaching method. This method aims “to provide a rigorous, liberal arts education in grades K-12” based on three modes of teaching: The didactic mode, a seminar component, and a coaching aspect. All teachers, administrators, and a team of parents in the school community were trained in the Paideia methods. The seminars are very structured and encourage deeper understanding of rich “texts” (e.g., literature difficult math problems, science explanations, etc), and coached projects involve students creating artefacts

based on what is learned in the didactic and seminar sessions. It was compulsorily introduced to improve teaching methods, and thus is most unusual in that most innovations are structural or policy related and rarely touches on teaching methods. The items are presented in Table 2, and it seemed, at least at the end of the first year, that there were no statistically significant differences in enhancing self-strategies relating to the degree of implementation (Table 3).

Another exciting and recent breath of fresh air in the self literature relates to the work on self-strategies published by Swann and colleagues. They have provided much evidence for there being two major tendencies that individuals adopt to perform this biasing, which they termed self-enhancement and self-verification (Sherman, Judd & Park, 1989; Skov & Sherman, 1986; Snyder & Swann, 1978; Swann, 1985; Swann, Pelham, & Chidester, 1988; Swann, Pelham & Krull, 1989; Swann & Read, 1981).

Table 2:
Factor loadings for the Self strategy Dimensions

Self-Handicapping (alpha = .69)					
1.	I am often tired at school because I stay up late at night.	-.02	.47	.06	.05
2.	If my work gets too difficult, I just watch TV instead.	.02	.77	-.05	.03
3.	It's hard for me to begin a difficult task.	-.04	.24	.35	.05
4.	I avoid doing my homework whenever possible.	.06	.56	.09	.07
Negative vigilante (Reputation maintenance) (alpha = .73)					
9.	I am known as a bit of a trouble-maker.	.03	.03	.22	.48
10.	I like some kids to be afraid of me.	.04	.03	-.04	.68
11.	It's boring to mix with people who always do the right thing.	.03	.32	-.05	.39
12.	I side with students who are being reprimanded by a teacher.	-.02	.30	.06	.31
Social Comparison (alpha = .72)					
5.	My friends are better at most things than me.	.04	-.02	.79	-.06
6.	I can't do things as well as most other people.	-.00	-.02	.77	-.10
7.	It's impossible for me to get better marks than my friends.	.02	.08	.45	.11
8.	I wish I could be like my hero, but I know I never will.	-.01	-.02	.48	.16
Goal Setting (alpha = .40)					
13.	It is important for me to have clear things to aim for	-1.02	.11	.03	-.04
14.	When I achieve a goal that I have set for myself, I give myself a reward.	-.21	-.16	-.04	.01
Factor Correlation Matrix					
Self-Handicapping	1.00				
Negative vigilante	.28	1.00			
Social Comparison	.19	.49	1.00		
Goal Setting	.19	.72	.39	1.00	

Table 3:
F-ratios, and Means for the Self Strategies Moderated by Level of Implementation

Dimension	F	p	None	Low	Some	Lots
Self-Handicapping	2.46	.070	10.08	10.95	10.22	9.13
Negative Vigilante	1.47	.231	9.36	9.97	9.32	8.82
Social Comparison	.84	.480	10.78	10.24	10.81	10.56
Goal Setting	.23	.871	8.99	9.03	9.12	9.09

They use self-enhancement as seeking positive or self-enhancing feedback, and self-verification as seeking accurate or self-verifying feedback. It is likely, however, that individuals can “self-enhance” even if they seek information that appears negative in that they may seek such information that confirms their beliefs about their status quo, thus there are fewer risks of failure, inconsistency, or necessity for changing beliefs that have worked for them up to now. We also suggest that those who seek to test their belief systems may accommodate inaccurate information and often grow as a consequence of accommodating those views that may be inconsistent with their prior beliefs (see Hattie, 1992; Laing, 1969, 1971; Weber & Crocker, 1983). While we have questioned some of the fundamental explanations of this model (see Hattie & Marsh, 1996), it is clear that such self strategies invoke the role of cognitive processing in the formation of concepts about self, and in making choices based on self-referent information.

If I was rewriting James agenda, I would recognise:

Self-enhancement	seeking positive or self-enhancing feedback,
Self-verification	seeking accurate or self-verifying feedback, and
Self-strategies	self-handicapping, discounting, distortion, social comparisons, goal setting, negative vigilante.

Self-esteem is that which we back ourselves: the often confronting by the necessary of standing by one of my empirical selves and relinquishing the rest.

Yonder puny fellow, however, whom everyone can beat, suffers no chagrin about it, for he has long ago abandoned the attempt to “carry that line”, as the merchants say, of self at all.

(James, 1890, p. 200)

Self-feeling depends entirely on what we back ourselves to be and do. It is determined by the ratio of our actualities to our supposed potentialities: a fraction of which our pretensions are the denominators and the numerators our success: thus self-esteem = Success/Pretensions.

How pleasant is the day when we give up striving to be young — or slender!

So much has been written in the 20th century about this notion of self-esteem=success/pretensions. James introduced a model of self in which specific self-concepts are integrated according to their importance, salience, certainty, and relationship to ideals. He argued that our self-worth “depends entirely on what we back ourselves to be and do” (p. 201), and thus global self-esteem was the ratio of one’s successes to one’s pretensions or aspirations toward success in the various domains of one’s life: self-esteem= Success/Pretensions. Hence we can increase self-esteem by diminishing the denominator or by increasing the numerator. James further argued that we arrange our various conceptions of self “in an hierarchical scale according to their worth” (p.

202). Over the past century since James’ writings, we have been most successful measuring and understanding the numerator, know somewhat less about the denominator, and have had little success at putting the two together. This notion that we weight various conceptions of self to form an overall, or general self-worth has been one of the more enduring claims in the psychological literature.

During the subsequent 100 years this importance notion appeared many times. For example, Rosenberg (1979) invoked the notion of psychological centrality — self dimensions vary in the degree to which they are central or peripheral, cardinal or secondary, major or minor parts of self. Stryker (1980; Stryker & Serpe, 1994) also emphasised psychological centrality, or what he termed identity salience, which he defined as a “readiness to act out an identity as a consequence of the identity’s properties as a cognitive structure of schema”.

There are many attempts to find models that encapture importance. Typically, regression models are used (Hoge & McCrathy, 1984; Marsh, 1986, 1993, 1995, Pelham & Swan, 1989), and the typical finding has been that there was “little or no support for individually weighted averages” (Marsh, 1993, p. 989), as in no case did any of the weighted models perform much better than the simple unweighted average, and in most cases they performed much poorer (see also Pelham & Swann, 1989, 1993, 1995) Pelham ended with the claim that, if “James were around today, I suspect that he might feel that it has been embarrassingly difficult for us to uncover support for one of his simplest psychological insights” (p. 1165).

If there is additional information to be found by including importance, it probably will be detected when more idiographic (person-level) rather than normative (group-referenced) methods are used, or for those self-concept dimensions that are less common such as religious self-concept, or music self-concept (Vispoel, 2000).

In a series of analyses based on 7 different methods of seeking “importance” or centrality, Richard Fletcher and I failed to find support for this importance dimension. We did find that adolescent systematically weighted Social/Friends and Family self-concept well above Academic, and Physical Self-concept (which brings into question the conjectures Ruth Harris’ has about the salience of friends over family during this age group, Table 4).

For the great majority of adolescents, it is likely that information about weighting or centrality is already included at the item level of self-concept measures, and adding another dimension relating to weighting therefore is superfluous. For example, consider the item “I am proud of my appearance” and the participant rates on a “Strongly agree to Strongly disagree” scale. The psychological processes of responding to this item with this scale already embeds a notion of importance — if unimportant they may well choose a middle option and hence importance is embedded in the response format. This explanation would assist in explaining why most individuals score above the mid-point on self-esteem scores.

Table 4:
Percentage of Adolescents Who Ranked Each Self-Concept Dimension

<u>Ranking</u>	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>Fourth</u>
Family self-concept	40	22	25	15
Friends	19	39	24	18
Academic self-concept	26	21	28	26
Physical	18	18	23	41
<u>Identity Salience</u>	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>Fourth</u>
Friends	52	29	14	5
Family self-concept	35	35	20	11
Academic self-concept	13	16	36	35
Physical	4	17	23	41
<u>Personal Importance</u>	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>Fourth</u>
Family self-concept	49	18	19	14
Friends	34	31	24	11
Academic self-concept	19	25	35	21
Physical	29	20	22	29
<u>Paired Comparisons</u>	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>Fourth</u>
Family self-concept	56	25	11	9
Friends	19	36	31	15
Academic self-concept	23	27	26	25

Physical

It is probably much more interesting, as a research question to ask why those with low self-concepts often do not wish to realise this. Those with low self-worth may suffer a dual burden. Kruger and Dunning (1999) argued, in the intellectual domain, that the skills “that engender competence in a particular domain are often the very same skills necessary to evaluate competence in that domain”. Thus, incompetent individuals lack metacognition, or the ability to know how well one is performing, when one is likely to be accurate in judgement, and when one is likely to be error, and thus they hold inflated views of their performance and ability. One source of evidence they provide for this phenomenon is the “above-average effect”, which is when individuals all claim to be above average. This effect is well documented in the self-concept literature (Baumeister, 19xx; Dunning, Griffin, Milojkovic, & Ross, 1990; Goffman, 1955; Vallone, Griffin, Lin, & Ross, 1990). Thus, those with low self-esteem are unlikely to “Strongly disagree” with positive self-esteem items, partly because they do not recognise they have low self-esteem. This then could lead to a paradox that the only way for low self-esteem people to realise their low self-esteem (at least on self-concept tests) and thus make the notion of importance or salience add extra information (as per James’ fundamental equation) is to make them have high self-esteem. We need to spend far more research time with people with low self-esteem.

This overconfidence argument highlights the critical nature of the cognitive processes we use to interpret information related to the self. The discounting, handicapping, and other processes we use to select, retrieves and bias information may be far more important than knowing how individuals score on multidimensions of self. That there is so little feedback, especially negative feedback, about our conceptions of self in

everyday life, that there is so few accurate benchmarks that force us to admit ignorance or situations that allow us to wallow in our ignorance, that there is so little incentive to ensure accuracy of feedback, that there is so many advantages in inflating our self-worth to avoid depression and other negative consequences, may help explain why there is so little additional information in the importance of various concepts of self.

James may be correct when he claimed that we should allow for pretensions and success, although for most of us, we tend to have self-concept scores similar to our pretensions. He may have led subsequent research more effectively if he had claimed that self-esteem is less a function of our pretensions, and more a function of our successes and/or failures.

Why is that “Yonder puny fellow, however, whom everyone can beat, suffers no chagrin about it? “

$$\text{Self-esteem} = (\text{Success or Failures}) + \text{Pretensions.}$$

What development factors lead to changes in salience, such as when we give up striving to be young — or slender!

Self Relates to Our Reputation Enhancement

The Social self is the recognition which we get from our mates. We have an innate propensity to get ourselves noticed, and noticed favourable, buy our kind. No more fiendish punishment could be devised were such a thing physically possible, than that one should be turned loose in society and remain absolutely unnoticed by all the members thereof”

Too often these statements and explanations by James were mixed up, and thus diluted, with the debate on weighting, or

self-esteem. I wish to argue that the power or impact of these statements has yet to be realised.

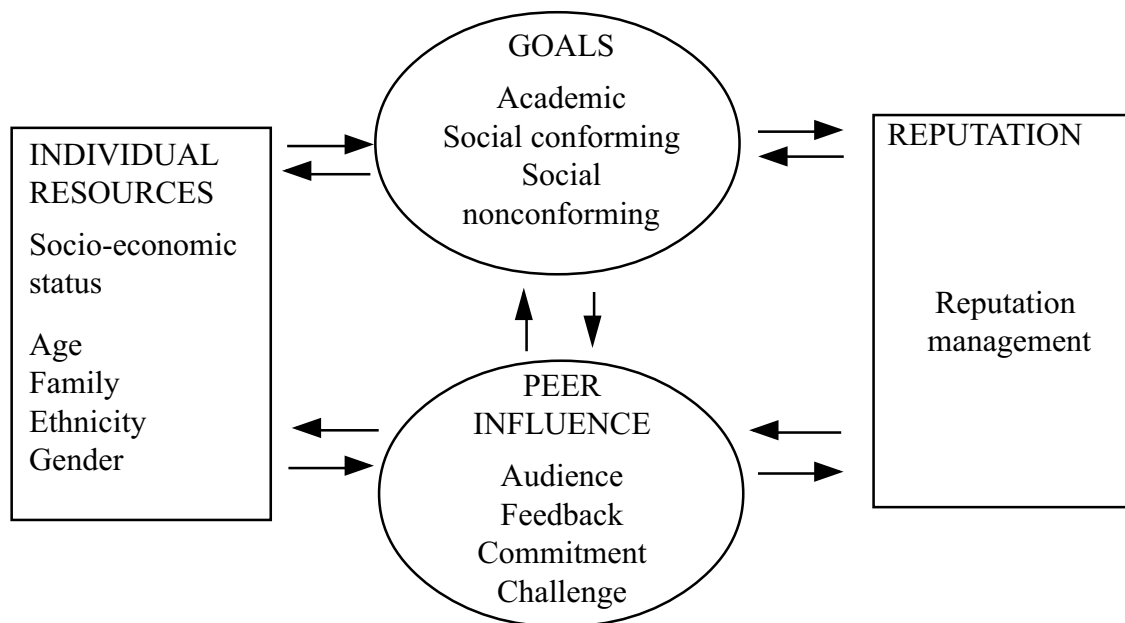
Judith Harris' (19xx) has certainly underlined the importance of social self — especially for adolescents.

Certainly, in my own work, this social self has become more powerful. Not because we are fundamentally social animals, many are not. But because much of our information about ourselves can come from social circumstances, because we are often constantly in the presence of others and thus have to present our selves, and because we build and test beliefs/concepts of who we are in social situations. This is

particularly so for adolescents. A major topic of research is the way in which we bias, select and retrieve information from others, and how we similarly try to influence others in their conceptions of our selves.

We have developed an integrated model (shown in Figure 4) based on the premise that adolescents experience and have access to many resources and opportunities, which can influence the types of self-goals they choose. For example, these resources include socioeconomic status, age, family, ethnicity, and gender.

Figure 4:
The Integrated Model of Reputation Enhancing Goals



Adolescents use various regulating strategies to maintain their reputations, and these strategies include self-concept, social skills, moral reasoning, and future time perspective. A most powerful influence that informs both goal choice and peer reputation is the feedback received from peers. The degree of feedback about goals and reputations provides evidence to adolescents that their reputations are being recognized.

The two major types of self-goals are based on academic and/or social goals, and the social goals can be further divided into: conforming or nonconforming social goals. The choice of these academic, conforming social, and/or nonconforming social goals is critical in the orientation, development, and management of adolescents' peer reputations. These reputations are publicly displayed and maintained, deliberately chosen and promoted, and are more likely to be long- than short-term oriented. Whereas goals can be defined as a generic concept encompassing the essential meanings of such terms as intention, task, purpose, aim, and objective, reputations are different from goals in that they can be conceived of as the outcome of goals which have been set by individuals and achieved, in most cases, through high

levels of commitment. Adolescents regulate their self-identity and self-presentation in ways such that others will perceive them in a certain desired manner. Adolescents who choose nonconforming social goals on which to base their reputations are those most likely to become delinquents (Carroll et al., 1998, 1999, 2000).

Adolescents use various regulating strategies to maintain their reputations, and these strategies include self-concept, social skills, moral reasoning, and future time perspective. A most powerful influence that informs both goal choice and peer reputation is the feedback received from peers. The degree of feedback about goals and reputations provides evidence to adolescents that their reputations are being recognized. The peer audience is extremely influential because friends often generate and facilitate expressions of shared behavioral inclinations (Emler, 1984). Like their non-delinquent peers, delinquent adolescents have much commitment to publicly build and maintain a reputation at which they are proficient. Following the findings in the management research (Locke & Latham, 1990), we argue that the more specific the goals then the higher the probability of feedback, and thus many delinquents choose to build and

maintain their reputation by selecting and accomplishing very specific and challenging goals (which so happen to be nonconforming). The greater degree of commitment to these goals, then the more challenging are the choice of goals, and this in turn feeds their reputation. The ways in which adolescents visibly present themselves to their peers in their behaviour and the values they express communicate a particular identity (Emler, 1984; Goffman, 1959). That is, adolescents may elect to be seen as conforming or nonconforming, respectable or delinquent, and thus choose to display behaviors which are consistent with the desired reputation. We have conducted over a dozen studies identifying the importance of audience, challenge, commitment, and feedback, and the role of individuals' resources in the management of reputations. These studies have mainly been undertaken with delinquents in schools (male and female), incarcerated youths compared to their more socially conforming peers. The evidence for the model is certainly ever present and points to the power effect that a self-belief and thence a maintaining of the reputation has on adolescent behaviour. If I were suggesting a rewrite of James, it would be more direct than he suggested,.

We choose to back ourselves (our/reputations) in many and often specific ways. The Social self is the recognition which we get from our mates. We have an innate propensity to get ourselves noticed, and noticed favourable, buy our kind. No more fiendish punishment could be devised were such a thing physically possible, than that one should be turned loose in society and remain absolutely unnoticed by all the members thereof'

I, who for the time have staked my all on being a psychologist, am mortified if others know much more psychology than I. But I am contented to wallow in the grossest ignorance of Greek (James, 1890, p. 310) Our reputations become a major focus of how interpret our selves, particularly during adolescence and early adulthood.

Self-concept and Achievement

I, who for the time have staked my all on being a psychologist, am mortified if others know much more psychology than I. But I am contented to wallow in the grossest ignorance of Greek" (James, 1890, p. 310).

This topic is a ring-in. James said nothing about the relationship between self-concept and achievement, but this has become one of the major issues of the 20th century. I am sure all in this Conference are aware of the history and major issues underlying self-concept.

The relationships between self and academic achievement are low. The earlier meta-analysis by Hansford and Hattie (1982) found an overall .20 correlation, and the more recent meta-analyses by Muller, Gullung and Bocci (1988) reported an average of .18, and Holden, Moncher, & Schinke (1990) found .13. Thus about 4% of the variance is in common. Such a correlation makes it very difficult to tease out causal directions, so it is not surprising that there are as many studies reporting that changes in self lead to changes in achievement as there are for the opposite directional argument.

Particular dimensions of self-concept have stronger correlations with achievement. For example, the components of academic self-concept would be expected to, and do have, higher correlations than the preceding averages (Marsh, 1986b, 1988a, 1989b; Marsh, Byrne, & Shavelson 1988). For example, Marsh (1988a) reported a median correlation of .39 between reading self-concept and verbal achievement indicators, and a median of .33 between math self-concept and mathematics achievement.

More interestingly, the evidence of causal modelling of the relationships between self-concept and academic achievement is: a) surprisingly few in number, b) based on very small covariances between self-concept and achievement, and c) there are as many supporting a direction from self-concept to achievement, as there is achievement to self-concept (that is support for the self-enhancement or skill development models, Calsyn & Kenny, 1997). This suggests either: a) there is very little relationship and the direction therefore is random (and significance more a factor of sample size), b) the direction is not stable (across people, across time, or across situations), or c) we have conceptualised the problem incorrectly.

There are two major reconceptualisation that are appearing in the literature, but not commonly linked directly to the self-concept nomenclature. The first is investigating the causal mechanisms that relate self and achievement. It seems that different goals and different systems of primary control are associated with different levels of self-esteem. (Baumeister, Tice & Hutton (1989; Baumeister & Tice, 1985). Both high and low self-esteem individuals prefer to succeed, but people with high self-esteem expect to succeed more than those with low self-esteem (McFarlin & Blascovich, 1981). Primary control is activated with high self-esteem individuals after initial success as this signifies a talent or potential ability, whereas for the low self-esteem individuals this confirms a deficiency that needs to be remedied. Thus, different goals and different systems of primary control are associated with different levels of self-esteem. Further, Baumeister and Tice (1985) argued that low self-esteem people aimed to transform a deficient feature into a passing one and they reacted more favorably to positive (success) evaluations, even if unexpected, and less favorably to negative (failure) evaluations, even if expected (see also McFarlin & Blascovich, 1981). Low self-esteem individuals indicate, however, that unfavorable feedback is more self-descriptive than favorable feedback. They tolerate little deviation from equilibrium. Baumeister, Tice and Hutton (1989) have argued that low self-esteem people show moderately high persistence at the task after failure, consistent with the view that they are interested in remedying their deficiencies to reach a passable level of performance, which would afford them protection against humiliating failure. Further, they tend to avoid tasks following initial success because such success signifies that they have already reached an adequate level of performance, and further tests merely run the risk of disconfirming the favorable outcome.

This causal mechanisms tie in closely with the work by Eccles and colleagues on mastery and performance goals, as

this then leads to statements about what students do differently. It is rare to find the notion of self-concept invoked in these literatures, but I suggest that they are ever present.

The second conceptualisation relates to the concepts of learning that students have and the ways in which these concepts change how students react to, involve themselves in, and consider achievement. Students conceive of learning in qualitatively different ways, and these conceptions can markedly affect performance and attitudes/motivation to learning. There has been a consistent and persistent message that these conceptions can be categorised in such a way as to reflect two predominant positions: (1) some students have a surface understanding of learning that involves the acquisition, storing, reproduction, and using of knowledge; (2) some students have a deep understanding of learning that involves the construction of meaning (understanding) and personal change.

Within these two broad categories of conception, subcategories have also been identified. For instance, following analysis of participant responses to several open-ended questions about learning (e.g., “What do you actually mean by learning?”; “How do you usually set about learning?”), Säljö (1979) concluded that people thought about learning in five distinctly different ways. He described these different conceptions as: (a) the increase of knowledge; (b) memorizing; (c) the acquisition of facts, procedures etc., which can be retained and/or utilized in practice; (d) the abstraction of meaning; and (e) an interpretative process aimed at the understanding of reality. The first three of these conceptions represented a surface understanding of learning; the fourth and fifth conceptions represented a deep understanding of learning.

Nola Purdie and team (e.g. Purdie & Hattie, 1996, 1998, 2000) have explored these notions in various cultures (Hong Kong, USA, Hong Kong, Malaysia, Australia, Aboriginal)) and within each culture have consistently found five conceptions of learning (see Table 5):

- Gaining Information;
- Remembering, Using, and Understanding;
- Duty;
- Personal Change; and
- Experience.

Two second-order factors proposed were Surface (the first three); and Deep (the last two). The model is based on the notion that different conceptions of learning can be involved depending on specific learning activities (Marton, Beaty, & Dall’Alba, 1993; Säljö, 1979; Watkins & Regmi, 1992; Watkins, Regmi, & Astilla, 1991). Thus, if writing a 21st Century Jamesian prescription for research I would ask:

I, who for the time have staked my all on being a psychologist, am mortified if others know much more psychology than I. But I am contented to wallow in the grossest ignorance of Greek (James, 1890, p. 310). We can have differing conceptions of learning to be a psychologist or Greek student, and these conceptions affect our subsequent achievement.

Conclusions

A theme of my talk here this morning, as the first keynote of our Conference, is to challenge you to consider whether we are the last major Conference on self of the 20th Century, or (as I hope) the first major Conference on self of the 21st Century. Do we close the Jamesian agenda or open the new agenda. We have a wonderful opportunity to join together to write the self research agenda in the same way that James did 100 years ago.

This will require us to get beyond our past achievements based on what we know (and there is so much known partly because of the work of people in this room), and seek to define that which we do not know, and consider of high salience to know. We need to define the longer term enduring questions, rather than complete the details of past programs.

I have addressed eight of James claims, and it is very clear that we have much to be proud of. We have accomplished a tremendous amount about the Jamesian agenda, and much has been created by people in this room: by Marsh and Vispoel relating to dimensions, Thompson and Burnett relating to processes, Watkins relating to culture, Byrne relating to causality.

I have suggested how we might re-write his agenda. But most important I am making the plea that we redefine our topic as, in the form we have known it, it is dying. Because of our successes, researchers are moving onto other aspects of the self-debate. The terms are a-changing, and this is probably no better exemplified than in the growth of self-efficacy. We used to term this self-confidence, but that is now rare, and we have debates about how different self-efficacy is from self-concept, as if it is not part of the overall family of concepts we have about ourselves.

Table 5:
Conceptions of Learning Inventory (COLI)

SURFACE (focus on information)	
<i>Learning as gaining information</i>	
INFO 1	Learning is when I'm taught something that I didn't know about before.
INFO 2	Learning is absorbing as many facts as possible.
INFO 3	When someone gives me some new information, I really feel that I am learning.
INFO 4	Learning helps me to become clever.
INFO 5	Learning means I can say something differently but it means the same thing.
<i>Learning as remembering, using, and understanding</i>	
RUU 1	When something stays in my head, I know I have really learned it.
RUU 2	If I have learned something it means that I can recall that information whenever I want to.
RUU 3	I should be able to recall what I have learned at a later date.
RUU 4	I have really learned something when I can remember it later.
RUU 5	When I have learned something, I know how to use it in other situations
RUU 6	If I know information well I can apply it if the need arises.
RUU 7	Learning is making sense out of new information and ways of doing things.
RUU 8	I know I have learned something when I can explain it to someone else.
RUU 9	Learning is finding out what things really mean.
<i>Learning as a duty</i>	
DUTY 1	Learning is difficult but important
DUTY 2	Even when a learning task is difficult, I must concentrate and keep trying.
DUTY 3	Learning and studying must be done whether I like it or not.
DEEP (focus on self and experience)	
<i>Learning as personal change</i>	
PERS 1	Learning has helped me to widen my views about life.
PERS 2	Learning changes my way of thinking.
PERS 3	Through learning, I begin to look at life in new ways.
PERS 4	Learning means I have found new ways to look at things.
PERS 5	Increased knowledge contributes to me becoming a better person.
PERS 6	I use learning to develop myself as a person.
PERS 7	When I learn, I actually change as a person.
PERS 8	Learning is necessary to help me to improve as a person.
<i>Learning as the product of experience</i>	
EXP 1	I don't think that I will ever stop learning.
EXP 2	I learn a lot from talking to other people.
EXP 3	Learning is gaining knowledge through daily experiences.
EXP 4	Learning is knowing how to get on with many different kinds of people in society.
EXP 5	Learning is not only studying at school but knowing how to be considerate to others.
EXP 6	Learning is the cultivation of common sense in order to become a member of society.
EXP 7	Learning is developing good human relationships.

In the Shavelson et al., and Song and Hattie model, self-efficacy is but a first-order concept, but now it has its own followers, its own conferences, and quite simply, the advocates are now safely ignoring the self-concept researchers as the latter have so little to say to the former, and with some notable but small exceptions, the reverse is also the case. But the self-efficacy advocates are on the rise as the self-concept defenders are on the wane.

Loevinger (1976, p., 413) noted that "Scientists are like lovers — they see reminders of their beloved everywhere". Too often our beloved fades with us, and this may be the destiny of the Jamesian agenda for self-concept.

The research has moved onto questions about the mechanisms of self — how do these conceptions of self manifest, impact on, and condition subsequent behaviours, and how do these behaviours manifest, impact on, and condition conceptions of self. Note, the use of conceptions of learning, which in the Jamesian days would have been termed self-concept of learning; reputation enhancement which would have been term self-enhancing (or some like); and self-verification which would have been termed checking the self-concept.

A useful question to ask ourselves everytime we reach for the "self-concept" lens is whether the same or a different

question would be asked if we left the term “self” out of the question. I suggest to you that we may be better off. For example, rather than asking the relation between self-concept of mathematics and achievement we ask about the relation between our conceptions of mathematics and achievement. Rather than asking about the development of self-concept of physical attributes, we ask about the development of conceptions of physical attributes. Per Wittgenstein, why do we invoke the concept of self, when it is a given. The question tends to imply that there is some “thing” called self, whereas there is nothing but a language game we involve ourselves in, which (I suggest) could be quite misleading. Maybe we should disband this Conference now, or rename it Conceptions of ... and ask Walter to talk of Conceptions of music, Paul to talk about Enhancement of concepts of learning, Herb about Conceptions of relativity, and those talking about culture — about Conceptions of xxx across culture (xxx, as you must have conceptions about something). This highlights the importance of Conceptions as actions rather than concepts as things; highlights the importance of having Conceptions and mis-Conceptions (whereas we can not have mis-concepts), and highlights the importance of understanding how we come to have these Conceptions and how having them impact on knowing, behaving, and caring. I note, that this is one feature that we did not learn from James as he never used the terms self-concept or self-esteem.

We know so little about the development of our conceptions, and too often we have assumed, in our choice of models, that these conceptions are “there”, with no reference to time and place. There is no immaculate conception, no universal generalisation, and no single core entity. It is neither genetic nor environmental, it is thinking about — by the person in a time and place.

One of the major changes that James would note if he were present today, is the sophistication of our methods. Within 10 years of James’ writing, correlation was more fully emerging, and now we have structural models. Within 10 years of James’ writing we had the critical Spearman articles that spawned factor analysis and classical test theory. Now we have maximum likelihood methods and item response models. But we have not fully harnessed the power of these newer models. As I tried to illustrate above, we need to move away from the classical test models, move away from a dependence on correlation (and its subsequent conditions) towards using item response models, generalisability theory, and growth models to more fully understand change, more dependably devise assessments, and more successfully ask about variability across situations. Yes, our models are our friends but they can constrain us.

I have argued elsewhere (based on a sample of 70 million students) the most critical ingredient underlying successful academic learning is feedback (Hattie, 1992, 1999). Similarly, we need to consider the power of feedback on conceptions of self (in various domains). Not only do people seek and benefit from feedback that confirms their self-concepts, but those with positive self-concepts are more likely to seek positive feedback, and those with negative self-concepts to

seek unfavorable feedback, although both groups prefer favorable feedback and have adverse stress reactions to negative feedback (Swann, Griffin, Predmore, & Gaines, 1987). Thus, claimed Swann, those with negative self-concepts are trapped between seeking negative self-enhancing feedback because they prefer positive feedback and it bolsters their sense of self-control. The easiest way to resolve this seeming paradox for these individuals is that they try to avoid seeking negative information altogether and seek only positive information.

These arguments about the importance of feedback underline the importance of others in defining self-concept. When we are with those who we regard as similar to us (such as our family, class, or sports team), then we are more likely to receive predictable information and we are more aware of reactions expected from us. Not only are we known by the company we keep, “people know themselves by the company they keep as well” (Brown, Novick, Lord & Richards, 1992, p. 726). Thus, people do not necessarily seek positive information if it is inconsistent with their self-views but prefer relationships and information with individuals who see them as they see themselves, even if this means seeking relationships with people who think poorly of them (Swann, Hixon, Stein-Seroussi & Gilbert, 1989). We become adept at soliciting feedback that confirms our self-views (Coyne, 1976; Curtis & Miller, 1986) and seek out information about others that fits with our own beliefs about our self (e.g., extroverts learn about others by asking questions about issues related to extroversion, whereas introverts ask about introversion; Fong & Markus, 1982). Such notions underline the remarkable consistency of self-concept and the difficulties in changing conceptions of self. As Sherman (1989) has noted, these tendencies imply that the self has inertia: “As self-relevant information is attended to and interpreted in the light of current self-beliefs, the self is likely to remain unchanged” (p. 306). Herein lies the core question to be resolved — how do we select, bias and retain information (such as feedback) to make choices and decisions.

I am suggesting moving from the 20th Century debates led by the James’ dictums and asking about self as a strategy not self as a thing, as self as a component of well-being not as self as well-being, as self as an end in itself not self as a correlate, self as a dynamic and growing not self as static (see Table 7).

This Self Conference has the potential of becoming a defining moment in the history of self-concept research. Will it help confirm the demise of the old debates, or will it raise the new debates that will help set the agenda for this century in the same way that James did for the 20th century. I implore you to debate over the next days, amongst those who have helped define James’ heritage to become the new blood, the new setters of the debates. Perhaps like James we need the longer version of this Conference (CD-rom length) to assist in setting the debate, and also need the shorter version (the single defining article summarising our agenda) to better have impact on our colleagues. Wouldn’t it be nice if these came to be called Herb and Herbie.

Table 7:
The James Agenda for the 20th and for the 21st Century

No.	Core Notion	James' claim	The 21 st Century claim
1	The core of the Self	Self is the sum total of all that he or she CAN call his or hers	Self is the appraisal of all that which we choose to interpret as I
2	The role of personal identity	All men must single out from the rest of what they call themselves some central principle of which each would recognise the foregoing to be a fair general description — for some the soul, for others nothing but a fiction the imaginary being denoted by the pronoun I, and many between. I have said all that need be said of the constituents of the phenomenal self, and of the nature of self-regard. Our decks are consequently cleared for the struggle with that pure principle of personal identity.	All persons must single out from the rest of what they call themselves some central <i>principles</i> of which each would recognise the foregoing to be a fair general description — for some the soul, for others nothing but a fiction the imaginary being denoted by the pronoun I, and many between. Self is a part of a person's wellness, and thus serves to a more encompassing sense of personal identity.
3	Self is multidimensional	The constituents of the self may be divided into two classes, those which make up respectively: the material self, the social self, the spiritual self, the pure ego.	The constituents of the self may be divided into many dimensions, and it is most important to understand how we (re-) assemble these dimensions into a conception of self.
4	Self is hierarchical	The aspects of the self are ordered "in an hierarchical scale, with the bodily Self at the bottom, the spiritual Self at top, and the extracorporeal material selves and the various social selves between 1. Material Self — body, clothes, family, home, property we collect 2. Social Self — we have as many social selves as there are distinct groups of persons about whose opinion we care. Spiritual Self — a man's inner or subjective being, his psychic faculties or dispositions, "to think ourselves as thinkers	The strength of the fibre is not in any one strand but the overlapping of many fibres. The aspects of the self are interpreted by the individual in manner that can allow for various constituents to become more salient in the interpretations, understandings, and decision making, depending on the decision, judgement, or interpretations to be made. The unity is thus more related to the processing strategies used than to the constituent parts.
5	There are strategies of self.	Self-complacency pride, conceit, vanity, self-esteem, arrogance, vainglory Self-dissatisfaction modesty, humility, confusion, diffidence, shame, mortification, contrition's personal despair Self-seeking providing for the future, desire to please, to be recognised by others Self-preservation maintaining the present	Self-enhancement seeking positive or self-enhancing feedback Self-verification seeking accurate or self-verifying feedback Self-strategies self-handicapping, discounting, distortion, social comparisons, goal setting, negative vigilante
6	Self-esteem is that	Yonder puny fellow, however, whom everyone can beat,	Why is that "Yonder puny fellow, however, whom everyone can

No.	Core Notion	James' claim	The 21 st Century claim
	<p>which we back ourselves</p>	<p>suffers no chagrin about it, for he has long ago abandoned the attempt to "carry that line", as the merchants say, of self at all. Self-feeling depends entirely on what we back ourselves to be and do. It is determined by the ratio of our actualities to our supposed potentialities: a fraction of which our pretensions are the denominators and the numerators our success: thus self-esteem = Success/Pretensions How pleasant is the day when we give up striving to be young — or slender!</p>	<p>beat, suffers no chagrin about it? Self-esteem = Success or Failures+Pretensions</p>
7	<p>Self relates to our reputation enhancement</p>	<p>The Social self is the recognition which we get from our mates. We have an innate propensity to get ourselves noticed, and noticed favourably, buy our kind. No more fiendish punishment could be devised were such a thing physically possible, than that one should be turned loose in society and remain absolutely unnoticed by all the members thereof"</p>	<p>What development factors lead to changes in salience, such as when we give up striving to be young — or slender! <i>We choose to back ourselves/reputation in many and often specific ways.</i> The Social self is the recognition which we get from our mates. We have an innate propensity to get ourselves noticed, and noticed favourably, buy our kind. No more fiendish punishment could be devised were such a thing physically possible, than that one should be turned loose in society and remain absolutely unnoticed by all the members thereof" I, who for the time have staked my all on being a psychologist, am mortified if others know much more psychology than I. But I am contented to wallow in the grossest ignorance of Greek" (James, 1890, p. 310) <i>Our reputations become a major focus of how interpret our selves, particularly during adolescence and early adulthood.</i></p>
8	<p>Self-concept and achievement</p>	<p>I, who for the time have staked my all on being a psychologist, am mortified if others know much more psychology than I. But I am contented to wallow in the grossest ignorance of Greek</p>	<p>I, who for the time have staked my all on being a psychologist, am mortified if others know much more psychology than I. But I am contented to wallow in the grossest ignorance of Greek" (James, 1890, p. 310). How do we conceive of learning to be a psychologist or Greek student, and how does this affect our subsequent achievement.</p>

I make no claims to have set this new agenda, but I do hope I can help in asking you to help set it, and not stay solving the problems of last century — most of which have become over answered. Time to move on folks.

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Chinese Student Self-Concept: Validation of Measurement and Extension of Theoretical Models

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We review and examine a series of analyses on a large-scale (N=10000) 6-year longitudinal research on the applicability of the western self-concept models on Chinese students in Hong Kong. Results from confirmatory factor, multitrait-multitrait, and factorial invariance analyses provided a very strong support for the generality of the multidimensional model of self-concept and the validity of the popular Self Description Questionnaire (SDQ) measure across cultures. We have also extended previous research to study self-concept of native and nonnative languages, to use truly longitudinal data in determining causal ordering of achievement and self-concept, and to separate the positive reflected glory assimilation effect from the negative social contrast effect in attending high-ability schools. Taken together the series of analyses demonstrate the robustness of the SDQ instruments in non-western cultures. Furthermore, the cross-cultural applicability and generality of the self-concept and its related theoretical models have also been supported in the Chinese culture.

High self-concept has been considered both as a desirable outcome as well as an important mediator in enhancing other positive psychological variables and academic achievement (e.g., see review Marsh, 1990, 1993). Previous literature, mainly based on western students, supported a multidimensional and hierarchical structure, an internal/external frame of reference (I/E model), and a significant effect of prior self-concept on subsequent academic achievement. In this paper, we will first present the major theoretical models related to self-concept and its related constructs, which have been mainly developed from studies in the western cultures. Then, we will review and examine a series of analyses on a large-scale longitudinal study on these major theoretical models among Chinese students who are from a collectivistic culture where learning goals and self-improvement (vs. competition) are strongly valued. Our studies also extend previous western research by separating the potential positive and negative effects on self-concept for students studying in high ability schools. Furthermore, the disparate relations between native and nonnative language achievements on their respective domain specific self-concepts will be explored.

Major Characteristics With Western Students

Internal-External Frame of Reference

Students compare their ability with others in their immediate environment (e.g., classmates) as one of the main basis of formulating their self-concept. Thus, high ability students tend to have more positive self-concept than their classmates. Prior to the 1980's, self-concept was usually considered as a unidimensional, general, and global construct. However, there has been growing recognition to take into consideration its multidimensional and content specific nature. For example, much stronger relationships ($r = .45$ to $.70$) have been found between self-concept and achievement of matching subject areas (e.g., between science self-concept and science achievement)(*Tay, Licht & Tate, 1995*).

As academic achievements themselves (e.g., maths with verbal) and achievement and their matching domain self-concept (e.g., maths achievement with maths self-concept) are substantially correlated, it is expected that their respective self-concepts (e.g., maths self-concept and verbal self-concepts) will also be highly correlated. However, empirical research has shown that these two self-concepts are typically uncorrelated. Such seemingly paradoxical results have been explained by Marsh (1990, 1993) using an internal/external frame of reference model. It has been postulated that students compare their verbal ability with that of other students (external comparison) as well as against their own mathematics ability (or other abilities in other school subjects, internal comparison). The former external comparison leads to a positive relation between verbal and mathematics self-concepts whereas the latter internal comparison results in a negative one. The joint effects, as demonstrated in studies in Australia, Canada, and the USA based on responses to a variety of different instruments, are: (i) a strong positive path from verbal ability to verbal self-concept (matching subject), (ii) a weak negative path from verbal ability to mathematics self-concept (cross-subject), and (iii) a close to zero relation between verbal and mathematics self-concepts (Marsh, 1993).

Big-Fish-Little-Pond Effect (BFLPE) and Assimilation Effect

The frame of reference model suggests that students' self-concept is formulated through comparison with classmates as well as with own other abilities. Particularly due to the former type of comparison, research shows that attending schools of high average ability may have negative effects on students' self-concept (Marsh, 1990, 1993). For students of equal ability, those attending high average ability schools will have a lower academic self-concept than the equally able students studying in low ability schools (i.e., BFLPE). This is because the former students are comparing their ability unfavorably with other high ability classmates (contrast

effect). In empirical studies, the BFLPE has been demonstrated as a negative effect of school-average ability on students' academic self-concept (Marsh, 1990, 1993).

Despite the above possible negative contrast effect, attending schools of high average ability may have potentially positive impact on self-concept through assimilation or identification (Felson & Reed, 1986). This is because schools of high average ability are socially valued and preferentially selected by many parents. Being a student in these schools is an indication of high academic ability and hence, perhaps, of high social status. There have been ample evidence showing that people enjoy "basking in the reflected glory" of successful others by merely associating with honorable people or joining highly valued social groups (Brown, Novick, Lord, & Richards, 1992). Thus, the identification with schools of high average ability may have a positive effect on one's self-perception. As the negative contrast effect acts simultaneously with the positive assimilation effect (Felson & Reed, 1986; Marsh, 1990, 1993), the BFLPE is necessarily a net result of the two effects, which in previous studies has been generally negative indicating a stronger contrast component to most students.

Despite the observation of the negative BFLPE on self-concept, GPA and possibly standardized achievement tests (Marsh, 1990, 1993), there is also another set of literature on ability grouping and tracking which suggest the contrary (e.g., Gamoran, Nystrand, Berends, & Lepore, 1995). Some of these studies argue with evidence that students assigned to higher-ability tracks learn and perform better than those in the lower-ability tracks. This is because in the higher-ability tracks, more advanced topics are sometimes covered in a faster pace and the teachers are comparatively more enthusiastic.

Cultural Generality and Specificity

Cultural Differences in Perception of Self

As current self-concept measures and theoretical models have been primarily developed under Western cultural contexts, they have been criticised as being culturally bound to the ideology of individualism and may not be applicable to people in a collective culture (e.g., Yang, 1991). Two lines of research are particularly relevant to this issue. One is the contrast between the independent and the interdependent views of the construal of self (Markus & Kitayama, 1991). The other is the distinction between the private and the collective self (Triandis, 1989).

Markus and Kitayama (1991) have contrasted the differences in the construal of self between people from individualistic (e.g., western) and collectivist cultures (e.g., Asian). In an individualistic culture, the person is viewed as "an independent, self-contained, autonomous entity who comprises a unique configuration of internal attributes" (Markus & Kitayama, 1991, p.226). Based on these values, the self-concept model in an individualistic culture is characterized by a description of personal attributes and traits. However, people in a collectivist culture emphasize the

interdependence and harmonious relatedness among one another (e.g., family members, working partners). In these cultural contexts, it is important to be harmonious with others, to fulfill and create obligation, and to become part of various interpersonal relationships. Because of such differential cultural emphases, it has been challenged that the western self-concept models have not captured the salient interdependent and related components of self-concept in the Chinese or other collectivist cultures.

Some empirical studies appeared to support this argument (e.g., Meredith, Wang, & Zheng, 1993; Tam & Watkins, 1995). For example, Meredith et al. (1993) used a modified version of Harter's Self-Perception Profile for Children (Harter, 1982) to investigate mainland Chinese children's perceptions of the salient components of self-concept. The salient scales (scholastic competence, social acceptance, athletic competence, & physical appearance) were not perceived as the most important scales. Instead, the scales of behavior conduct, social acceptance and group orientation appeared to be of greater importance for Chinese children (Meredith et al., 1993).

From another perspective, some theorists have attempted to operationalize the differences in cross-cultural conception of self in terms of differences in cognitions. Baumeister (1986) proposed that self-information is organized in a systematic structure and can be classified into three aspects of self, namely, the private, the public, and the collective self. They refer respectively to "the cognitions about traits, states, or behaviors of the person" (e.g., "I am kind"), "the generalized other's view of the self" (e.g., "Most people think I am kind"), and "the view of the self that is found in some collective contexts" (e.g., "My family thinks I am kind"). Triandis (1989) suggested that these three kinds of self are presented with different probabilities in different cultures. In an individualistic culture, people show mostly the private self, while in a collectivist culture, people show mainly the collective one. Triandis (1989) has further proposed that when the collective self is invoked, people are more likely to behave according to norms, rules, and customs. On the other hand, when the private self is invoked, people are more likely to behave according to their attitudes, feelings, beliefs, or personal philosophy.

Self-Concept in Collective and Individualistic Societies

Researchers have also attempted to tap the collective self and investigated its validity. For example, Luhtanen and Crocker (1992) adopted the definition of collective self in social identity theory as — "that part of an individual's self-concept which drives from his knowledge of his membership in a social group(s)" (p.302) — and designed a measure to tap collective self-esteem. They found that collective self-esteem, in addition to personal self-esteem, was an individual difference variable that moderated the attempt to maintain a positive social identity. More importantly, they demonstrated that collective self-esteem could explain aspects of psychological well-being that could not be explained by its relation to personal self-esteem (Crocker, Luhtanen, Blaine

& Broadnax, 1994). In subsequent studies, Bettencourt and Dorr (1997) further illustrated the important role of collective self-esteem in predicting human behavior. McFarland and Buehler (1995) also showed that people from a collectivist cultural-heritage had higher collective self-esteem and were less susceptible to the BFLPE in their reactions to performance feedback than people from individualistic cultural-heritage.

Obviously, these two lines of research have pointed out the potential differences in the conception of self between people from individualistic and collectivist cultures. However, the central question is whether such cultural differences are big enough to lead to very different self-concept structures between the two cultures. Perhaps, the similarities across different cultures are not so great that a general model is applicable to both cultures. The independent and the interdependent views of construal of self are, therefore, not necessarily contradicting each other; instead, they are complementary in giving a more comprehensive description of human characteristics and self-perceptions (Markus & Kitayama, 1991).

From the perspective of the three aspects of self (private, social, and collective self; Baumeister, 1986), there is a common consensus that the cognition about one's traits, states, or behaviors (private self) is the most central and universal characteristic of self-concept. Therefore, current self-concept models and measures have focused primarily on this particular aspect of self. For people in the Western and Chinese cultures, the similarities rather than the distinctiveness of their self-concept seem to dominate. In that case, it can be hypothesized that the imported self-concept measure as well as their related theoretical models will still be applicable in the Chinese culture.

Chinese Students and the Examination System in Hong Kong

In this paper, we will summarize a series of analyses on a large-scale longitudinal research on the self-concept of Chinese students in Hong Kong. Hong Kong was a British colony but has become a special administrative region of the People's Republic of China since July 1, 1997. It is a prosperous commercial and international financial center where the Chinese culture and values are still strongly felt and emphasized. There seems to be converging evidences suggesting that Chinese students in Hong Kong as well as in other societies attribute their examination results more to effort than to ability and that they concentrate on own improvement rather than on comparison with other students as determinants of academic achievement (Hau & Salili, 1991, 1996). Taken to the very extreme, the total concentration on an internal frame of reference and the ignorance of any external comparison with other students may suggest, though not logically necessary, that (i) the interrelations among different specific academic self-concepts would be negative and (ii) the negative BFLPE on self-concept and achievement would not be found among Chinese students.

In Hong Kong, nine-year compulsory and free education

up to junior secondary, Grade 9, has been enforced since 1978. However, high school places are allocated according to parental choice in the order of merit of students' internal school examination results in the last two years of primary education, moderated by their public examination performance. Due to the above school place allocation mechanism which is based largely on academic merit, it is not surprising to find that Hong Kong secondary schools are highly segregated in terms of students' ability as compared to a lot of western countries (Lo, Tsang, Chung, Cheng, Sze, Ho & Ho, 1997). That is, there is a relatively small within school variation in ability, whereas the between school variation is extremely large.

Emic Measures and Correlates with Psychosocial Constructs

Using open-ended questions and structured questionnaires, Tam and Watkins (1995) attempted to tap the important dimensions of self-concept of non-disabled and physically disabled Chinese adults in Hong Kong. The responses to the open-ended questions were content analyzed. For the non-disabled adults, family, friendship, work, marriage, study, material possessions, and leisure were reported to be the most important areas of self-concept. For the disabled adults, the functional independence in daily living tasks stood out as the most important, followed by family, friendship, health, work, leisure, material possessions, and rehabilitation. It is interesting to note that honest, family relationships, family responsibilities, and close relationships were identified as the most important for both non-disabled and disabled adults. In sum, the results reflected the cultural emphasis on the importance of human relationships and the interdependence of closed others. With the above important relationship dimensions, Tam (1997) developed a self-concept questionnaire for Chinese people in Hong Kong (SCQHK) to measure nine factors: academic self, work self, material self, personal competence, physical self, social influence, social relationship, family influence, and family relationship. The instrument was validated with Chinese adults in Hong Kong, but only nine factors were identified with an exploratory factor analysis. Thus, the model was only partially supported.

In a number of between-construct studies with Chinese subjects, the multidimensional nature of self-concept has been assumed. For example, Lau (1989) showed in a study with Chinese adolescents in Hong Kong that a multidimensional measure of self-concept (an adapted Chinese version of SDQ-I) helped to capture the specific relation between sex role orientations and different domains of self-concept. In a series of studies on Chinese adolescent delinquency using a more refined measure of self-concept (an adapted Chinese version of SDQ-I), Lau and Leung (1992) also demonstrated that parent-child relation tended to have a closer linkage to adolescents' social development, whereas school-child relation was related more to their academic achievement. It was shown that adolescents' delinquency was related to specific components rather than to a global measure of general self-concept (Leung & Lau, 1989). The results were

in congruence with Chan and Lee's (1993) finding that psychological symptoms could be accounted for by specific self-concepts.

In another study with Chinese junior high school children, Leung and Leung (1992) found that life satisfaction was more strongly associated with the self-concept in relation with parents, but less so to that with teachers. Distinctive developmental patterns across grades in specific self-concepts were also observed with the adoption of multidimensional measures of self-concept among Chinese students. For example, Lau (1990) found that self-concept of academic ability increased with age, whereas that of appearance decreased with age. In addition, the two specific self-concepts were related differently with other psychological variables such as locus of control, test anxiety and extraversion. In summary, all these studies showed that the inclusion of measures of specific components of self-concept revealed more refined relations, and hence a better understanding of the relations among constructs.

Despite the above evidences of the usefulness of the multidimensional model of self-concept, there was insufficient validation study of the internal structure of self-concept among the Chinese. In a number of construct validation studies based on Chinese subjects, Watkins and his colleagues identified six out of the seven factors of the SDQ-I measure by exploratory factor analysis (EFA). However, the general-self dimension was always submerged and intermingled with other factors (Chung & Watkins, 1992; Watkins and Dong, 1994; Watkins, Dong, & Xia, 1995). Their use of EFA, rather than CFA, in model testing had strong limitations in that they could not evaluate and compare the a priori model against other alternative ones. Moreover, previous self-concept research with Chinese subjects primarily relied on the SDQ-I measure, even though students would be more appropriately measured with SDQ-II. Furthermore, stronger statistical techniques, including multilevel regression analyses, structural equation modeling and other related techniques should be used to provide stronger tests of various theoretical models.

Validation and Extension Studies with Chinese Students

We will summarize below a series of analyses on the SDQ-II with Chinese high school students. This large-scale research started a number of years ago with over 10000 students followed longitudinally for 6 years (for details, see Hau, Kong, Marsh, & Cheng, 2000; Marsh, Kong & Hau, 1999, 2000). Students' academic achievement at Grade 6 [Time 0 (T0), pretest achievement test scores collected prior to the start of high school in Grade 7] to Grade 11 (T5) measured by standardized tests, as well as their public examination results were gathered each year (except T4). The English SDQII for adolescents was translated and was administered to the students each year from Grade 8 (T2) to Grade 11 (T5).

Factorial Structure

CFA has provided very strong support for the construct validity of the Chinese version of the SDQ-II measure used in this study. The 12 factors, including the added Chinese self-concept factor, were clearly identified and separable from one another. CFA showed that all the self-concept factors were clearly defined, the factor loadings on the target factors were very high and statistically significant (median values = .74, and .78 for Grades 8 and 9, respectively). In addition, the factor loadings on each target factor were consistent across grades, indicating that the factor structure were replicable across the two years. The various goodness-of-fit indices showed that the baseline model fitted the data very well. The RMSEA was small (0.0246), and the NNFI and CFI were substantially high (.942 and .946, respectively).

Reliabilities as estimated by Cronbach's alpha were satisfactory, ranging from .73 (Honesty) to .92 (Mathematics) with a median of .84 for Grade 8 (T2), and from .77 (Honesty) to .94 (Mathematics) with a median of .87 for Grade 9 (T3). In comparison, the reliability coefficients from the Australian Normative Archive SDQ-II Sample (N=5494, 2658 males and 2836 females) ranged from .84 (Honesty) to .91 (Physical Appearance) with a median of .87 (Marsh, 1990).

The correlations among the latent self-concept factors based on these CFA were relatively low as hypothesized (median correlations = .26 and .25 for Grades 8 and 9 respectively). The results showed that the different subscales of self-concept were quite independent and differentiable from each other and thus lent strong support for the multidimensional structure of self-concept. The convergent and divergent validity of the measure has been further demonstrated by the multitrait-multitime analysis. The correlations between the same self-concept factors at different occasions were consistently high (high convergent validities, or stability over time in this application), whereas the correlations between different self-concept factors at the same test occasion were much lower and became even lower across different test occasions (high divergent validity).

Factorial Invariance Analysis

The psychometric properties of the measure and the construct validity have been further demonstrated in the factorial invariance analysis. This was tested by placing equality constraints across grade levels, on all factor loadings (M2), factor covariances (M3), factor variances (M4), and item uniquenesses (M5). The fit of each model was compared with that of the preceding one. Furthermore, the corresponding modification indexes and expected changes for these constrained parameters were inspected to reveal the impacts of the invariance constraints on the whole model.

Judging from the overall-goodness-of-fit indices and the modification indexes, it can be concluded that the invariance of factor loadings, factor covariances and factor variances across grades was substantiated while that of uniquenesses was not; for M2 vs. M1, $\chi^2(44) = 288.83$; for M3 vs. M2, $\chi^2(66) = 238.62$; for M4 vs. M3, $\chi^2(12) = 172.51$; for M5

vs. M4, $\chi^2(56) = 3267.46$; for all comparison except M4 vs. M5, $\text{RMSEA} = .000$, $\text{NNFI} = .001$, $\text{CFI} < .001$, $\text{TC} = .999$; for M4 vs. M5, $\text{RMSEA} = .016$, $\text{NNFI} = .008$, $\text{CFI} = .008$, $\text{TC} = .989$.

Factor loadings represent the relations between the indicators and the underlying latent constructs that they are posited to measure. Hence the invariance of factor loadings across grades implies that the responses to the items are equally valid for the same participant at Grade 8 and 9. Factor covariances and variances reflect the relations among constructs and the invariance of factor covariances and variances indicates that the relations among the different facets of self-concept are stable over time. Furthermore, the invariance of factor correlations over time also suggests that the factor correlations do not drastically decline from Grade 8 to 9 as has been shown to occur between Grades 2 and 5 (Marsh, Byrne & Shavelson, 1992).

Item uniquenesses are related to the reliability of measurement. In this investigation, the item uniquenesses are not invariant across time, indicating that the items have unequal reliabilities in measuring the self-concept for the same subject at different occasions. The results are consistent with findings discussed earlier showing that the SDQ-II responses were slightly more reliable at T3 (Grade 9, Median reliability = .84) than at T2 (Grade 8, Median reliability = .87). There is no sufficient information to account for this pattern, however, it is suspected that students realize their own attributes a little bit better when they are one year older and hence respond more consistently to the questionnaire items when they are in Grade 9 than when they are in Grade 8.

Internal/External Frame of Reference, Causal Relation and Its Extension

We examine and extend the internal/external frame of reference (I/E) model of self-concept formation by relating Chinese, English, and math achievement to Chinese, English, and math self-concepts. Tests of the I/E model are typically based on math and English constructs for a single wave of data in Western countries. We extend this research, testing its cross-cultural generalizability to a non-Western country, including native and nonnative languages as well as mathematics, and evaluating longitudinal effects over a five-year period. Hong Kong provides an ideal setting for testing this extension in that both Chinese (the native, first language) and English (the nonnative, second language) are so important in the high school curriculum and - indeed - in Hong Kong society more generally.

The results clearly support a priori hypotheses that nonnative language - as well as native language and mathematics - provide an important basis for the formation of self-concepts in specific school subjects. Although math, English, and Chinese achievements were all highly correlated ($r = .67$ to $.79$), the respective self-concepts were all nearly uncorrelated ($r = -.07$ to $.13$).

There was also support for new predictions based on the logic of the I/E model that were extended to include nonnative

as well as native language. We evaluate the predictions based on the extended I/E model separately for each wave of data. The fit of the a priori (extended) I/E model is extremely good for separate analyses of data from T2 (TLI = .968), T3 (TLI = .968), and T4 (TLI = .980). Critical parameter estimates provide strong support for the I/E model in separate analyses of each of the three waves of data, namely, (i) mathematics achievement has a substantial positive effect on Math self-concept (path coefficients of $.63$ to $.79$), but smaller negative effects on English self-concept and Chinese self-concept (path coefficients of $-.35$ to $-.14$); (ii) English achievement has a substantial positive effect on English self-concept (path coefficients of $.48$ to $.62$), but smaller negative effects on Math self-concept and Chinese self-concept (path coefficients of $-.26$ to $-.10$) self-concepts; and (iii) Chinese achievement has a substantial positive effect on Chinese self-concept (path coefficients of $.50$ to $.61$), but smaller negative effects on Math self-concept and English self-concept (path coefficients of $-.40$ to $-.06$). Furthermore, there was clear support for this pattern of results for self-concepts collected on each of three different occasions up to four years after the collection of achievement at T0. These results provide very strong support for the extended I/E model and the stability of the effects over time.

The issue of whether self-concept affects achievement or achievement determines self-concept has always been a topic of academic and educational interest. Consistent with previous western studies, there are reciprocal effects of achievement on self-concept. Specifically, prior self-concept influences subsequent achievement and self-concept on and beyond the effects of prior achievement; similarly, prior achievement influences subsequent achievement and self-concept beyond the prediction of prior self-concept.

Longitudinal Extension of the I/E Model

The present investigation is important because it is a true longitudinal study based on data collected over a five-year period. Particularly because the achievement scores were collected (T0) two years prior to the first wave of self-concept data and each of the three waves of self-concept data (T2, T3, T4) was separated by a full year, there is a clearly established temporal ordering of these variables. Although much of the effects of T0 achievement on T3 self-concepts were mediated by T2 self-concepts, the predicted pattern of results was still evident even after controlling the effects of T2 self-concept. Even more surprising, the weak patterns of effects of achievement on T4 self-concepts beyond the effects that were explained in terms of T2 and T3 self-concepts still provided some support for the I/E predictions. Indeed, for separate analyses of each wave of self-concept data, the strength of the I/E effects were nearly the same at T2 and T3 (two and three years after the collection of the achievement data) and were only diminished slightly at T4 (four years after the collection of the achievement data).

Although clearly supportive of the I/E model, the strength of these effects at T3 and even T4 are somewhat surprising. In particular, even though the achievement scores were

collected shortly prior to the start of high school, there was still good support for the I/E predictions in analyses of T4 self-concept measures collected in the fourth year of high school. Part of the explanation, is that academic achievement is a very stable construct. Furthermore, the particular T0 achievement scores considered in this study were very important to students in that they were the basis of determining whether students were able to attend the high schools of their choice. Because this is such a critical rite of passage in the school life of Hong Kong students (and their parents), the scores that are the basis for this decision are likely to be strong indicators of academic ability that have a long-lasting impact on how students feel about themselves.

BFLPE and Its Extension

Culture may also have an impact on the assimilation and contrast effects. It has been demonstrated that people in a highly collective culture are less susceptible to the negative BFLPE and have a greater tendency to value their social group than those in individualistic setting (McFarland & Buehler, 1995). If Chinese students do value strongly being members of a high average ability school (stronger assimilation effect) and that their collective orientation reduces the attention to the undesirable social comparison (weaker contrast effect), the negative BFLPE may disappear or become substantially reduced. In other words, in the Chinese culture where one's face — the reputation obtained through success and ostentation — is of great concern (e.g., Ho, 1976), the gain in status and face of attending a high-ability school (assimilation) may possibly overcompensate the loss in prestige due to comparison with high ability classmates. Thus, the net BFLPE in Chinese students could be less negative or even become positive.

Results from our studies showed that consistent with a priori predictions based on the big-fish-little-pond effect (BFLPE), being in schools where school-average achievement was high led to initially lower academic self-concepts and further declined over time (social comparison contrast effects) (beta = -.22 to -.24 after controlling for initial achievements) but was associated with higher perceived school status that had a positive effect on academic self-concept (reflected glory assimilation effect). Prior self-concept also had a positive effect on subsequent achievement even after controlling for prior achievement.

The present study extended previous BFLPE research by including a measure of perceived school status to tap the potentially positive effects on academic self-concept in attending high-ability schools. Consistent with the a priori prediction, perceived school status was positively related to the school-average achievement and had positive effects on subsequent students' academic self-concept (reflected glory assimilation effects). Also in line with the theoretical hypotheses, when the perceived school status was controlled, the negative social comparison contrast effects on academic self-concept in attending high-ability schools became even more negative. These results have provided strong empirical support for the argument that BFLPE is a net effect of

counterbalancing positive reflected glory effects and negative social comparison effects. Students in high-ability schools are facing a more demanding comparison from classmates. But they are also enjoying the pride for being members in these prestigious schools.

By including a separate measure of perceived school status, we partialled out some of the reflected glory effects associated with school-average achievement so that it became a better (less confounded) basis for inferring social comparison contrast effects leading to a more negative BFLPE. These results also imply that previous research may have underestimated the size of the negative contrast effect. However, because reflected glory effects were predicted to be particularly important in Hong Kong, further research is needed to determine the generality of counter-balancing assimilation and contrast effects.

Conclusion

Strong support has been found for the applicability of western self-concept instruments, theories, and models with Chinese students. In the large-scale 6-year longitudinal study, the validity of a Chinese version of a widely used self-concept instrument (SDQ-II) was first evaluated by CFA, multitrait-multitime analysis, and factorial invariance analysis. The psychometric properties of the Chinese instrument were found to be as strong or even stronger than those of the original Australian (English) version. It is fascinating to see that an instrument developed in an Australian context can perform so well in a Chinese context.

Unlike previous validity studies using Chinese participants (e.g., Chung & Watkins, 1992; Watkins & Dong, 1994; Watkins et al., 1995), this study is able to distinguish the global, general self factor from other more specific self-concept factors using methodologically more appropriate CFA. The results suggest that knowledge or information of oneself is organized in a systematic way and this information can be retrieved and assessed accordingly. The results support the description of the characteristics of self-concept as structured, hierarchical, and stable. Consistent with the theoretical predictions, the general self factor correlated substantially high with almost every self-concept factor. Thus, results from CFA, multitrait-multitime analysis and factorial invariance analysis have converged to provide a very strong support for the generality of the multidimensional model of self-concept and the validity of the SDQ-II measure in self-concept research across cultures -- in particular Chinese secondary students in Hong Kong.

Other major relationships among self-concept and related constructs have also been found in the Chinese culture. Specifically, results similar to western findings were replicated in the relationships between self-concept and achievement of matching and non-matching domains in the internal/external frame of reference model, the relationship between school average ability and students' self-concept in the BFLPE model, and the cross-lag relationships between achievement and self-concepts in determining causal relationships. In contrast to previous western research, we

have also extended to study self-concept of native and nonnative languages, to use truly longitudinal data in determining causal ordering of achievement and self-concept, and to separate the positive reflected glory assimilation effect from the negative social contrast effect in attending high-ability schools. Taken together the series of analyses demonstrate the robustness of the SDQ instruments in non-western cultures. Furthermore, the cross-cultural applicability and generality of the self-concept and its related theoretical models have also been supported in the Chinese culture.

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Swimming in the School: Expanding the Scope of the Big Fish Little Pond Effect

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Self-concept cannot be adequately understood if the role of frames of reference is ignored. Even though academic self-concept is positively influenced by one's own academic accomplishments, it is negatively influenced by the ability levels of others in the immediate context. This social comparison frame of reference has been identified in recent studies evaluating the big-fish-little-pond effect (BFLPE). The purpose of this paper is to provide an overview of some exciting new research directions that test and extend the salience of theoretical predictions based on the BFLPE.

Firstly, we evaluate the effects of placement in specialised education settings for gifted students and educationally disadvantaged students. The results of these studies provide support for BFLPE theoretical predictions that: (a) educationally disadvantaged students have higher academic self-concepts in special education classes than in regular mixed-ability (mainstreamed) classes, whereas (b) academically gifted students have higher academic self-concepts in regular, mixed-ability classes than specialised education settings for gifted students. These recent results have important educational implications in that they run counter to educational policy being enacted throughout the world.

Secondly, we demonstrate the generalisability of the BFLPE by replicating this effect in two large-scale cross-cultural studies to provide further support for the external validity of the BFLPE. In the first study we compare East and West German students' self-concepts at the start of the reunification of the German school system following the fall of the Berlin Wall. East and West German systems prior to reunification differed in that: West German students attended schools largely based on their academic ability whereas East German schools were based on mixed ability groupings, and the East German education system's ethos emphasised more competitive educational processes compared to the West German system. The results support the BFLPE theoretical predictions that the BFLPE is initially larger for the West Germans at the start of the first year after the reunification, and the self-concepts of former East German students were lower overall than those of the former West German students. Finally we examine Hong Kong students' self-concepts to test the effects of attending academically selective schools in the context of an Eastern collectivist culture. In Hong Kong schools are more highly segregated in relation to ability than most countries in the world but collectivist cultural values prevail that are posited to counter social comparison processes (compared to more individualistic values in most Western countries). We empirically demonstrate that attending academically selective schools simultaneously results in a large negative contrast effect (more demanding standards of social comparison lead to lower academic self-concepts) and a smaller positive assimilation effect (pride in being selected to participate in a high ability school leads to higher academic self-concepts).

Self-concept cannot be adequately understood if the role of frames of reference is ignored. The same objective characteristics and accomplishments can lead to disparate self-concepts depending on the frame of reference or standards of comparison that individuals use to evaluate themselves. Social comparison theory (Festinger, 1954) is one approach for studying frame of reference effects that has a long history in social psychology and provides the theoretical underpinning for the present investigation. In an educational context, Marsh (1984a; 1984b; Marsh & Parker, 1984) proposed a frame of reference model called the big-fish-little-pond effect (BFLPE) to encapsulate frame of reference effects posited in social comparison theory. In the BFLPE, we propose that academic self-concept is influenced substantially by the ability levels of other students in the immediate context in addition to one's own ability and academic accomplishments. The purpose of this chapter is to review this research and summarise the results of recent research that expand the implications of the BFLPE.

In the theoretical model underlying the BFLPE (Marsh, 1984b), it is hypothesized that students compare their own academic ability with the academic abilities of their peers and use this social comparison impression as one basis for forming their own academic self-concept. A negative BFLPE occurs when equally able students have lower academic self-concepts when they compare themselves to more able

students, and higher academic self-concepts when they compare themselves with less able students. For example, if average ability students attend a high-ability school (i.e., a school where the average ability level of other students is high) so that their academic abilities are below the average of other students in the school, it is predicted that this educational context will foster social comparison processes that will lead to academic self-concepts that are below average. Conversely if these students attend a low ability school, then their abilities would be above average in relation to other students in the school and social comparison processes will result in academic self-concepts that are above average. Thus, academic self-concepts depend not only on one's academic accomplishments but also the accomplishments of those in the school that a student attends. According to this model, academic self-concept will be correlated positively with individual achievement (higher achieving children will have higher academic self-concepts). However, academic self-concept should be negatively related to school-average achievement (equally able students will have lower academic self-concepts in a school where the average ability is high and higher academic self-concepts in a school where the average ability is low).

The BFLPE is an example of external frame-of-reference effects that may impact upon students attending selective schools. Consider a capable student who has been evaluated

as a top student throughout primary school. If the student is accepted into a selective high school the student may be average or below average relative to other students in this school rather than at the top of the class. This can have detrimental effects on the student's self-concept as the student is no longer a big fish in a small pond (top of the class) but is in a large pond full of even larger fish (average or below average in a high-ability school). Anecdotal support for these contentions comes from in-service programs conducted by the authors for teachers from selective schools. Teachers in these programs often report that many new students in Year 7 (the first year of high school) experience emotional, motivational and academic difficulties in adjusting to the high-ability environment of selective schools. School initiated research also offers further support for the BFLPE. For example, a school counsellor from a selective school after hearing information such as presented in this chapter, conducted a simple survey in which students in Years 7 to 12 were asked to indicate how bright they were relative to other students in the state. He reported that, on average, students' self-perceptions of their academic ability declined about 5 percentage ranks for each year they had been in the selective high school.

Case study evidence also supports the underlying processes of the BFLPE (Marsh, 1991). A student named Jane was attending an academically selective Australian high school, but she was doing poorly and not attending school regularly. A change in employment forced her parents to move and Jane changed to a new high school that was not a selective school. Due to her poor progress at the last school Jane was initially placed in a class with the least able students in the school. It quickly became evident, however, that she was a very able student and she soon worked her way into the most advanced classes in the new school. Her parents found that she was taking school more seriously and spending more time on her homework. Jane indicated that at the old (selective) school she had to work really hard to get just average marks which was not worth the effort. However, if she worked hard in her new school she could be one of the best, which was apparently worth the effort.

The Theoretical Basis of the BFLPE

The historical, theoretical underpinnings of this research (see Marsh, 1974; 1984b, 1991, 1993; Marsh & Parker, 1984) derive from research in psychophysical judgment (e.g., Helson, 1964; Marsh, 1974; Parducci, 1995), social judgement (e.g., Morse & Gergen, 1970; Sherif & Sherif, 1969; Upshaw, 1969), sociology (Alwin & Otto, 1977; Hyman, 1942; Meyer, 1970), social comparison theory (e.g., Festinger, 1954; Suls, 1977), and the theory of relative deprivation (Davis, 1966; Stouffer, Suchman, DeVinney, Star & Williams, 1949). Coming from a psychophysical tradition, we use the term contrast when the judgement of a target stimulus shifts away from the background or context, whereas we use the term assimilation when the judgement shifts toward the context (Marsh, 1974). In the BFLPE, contrast occurs when higher school-average achievement levels (the

context) lead to lower individual student academic self-concepts (target judgement), whereas assimilation occurs when higher school-average achievement leads to higher academic self-concepts (Marsh, 1984b). These terms are purely descriptive, but more "meaningful" terms are sometimes used to describe assimilation (e.g. reflected glory, labelling, and identification) and contrast (e.g. negative social comparison or negative BFLPE). This proliferation of terms creates some ambiguity in that social comparison processes can result in either contrast or assimilation, but the term social comparison effects is sometimes used to refer to only contrast effects. For purposes of this study, we treat BFLPE and social comparison as generic processes that can result in either (or both) contrast (negative social comparison) effects or assimilation (positive social comparison, reflected glory) effects.

Assimilation and Contrast Effects

Self-concept may be enhanced by membership in groups that are positively valued by an individual (Diener & Fujita, 1997; Tessor, 1988) through basking in the reflected glory of accomplishments or good qualities of other group members. Marsh (1984b, 1987, 1991, 1993; also see Felson, 1984) argued that it would be reasonable for students in academically selective classes to have improved academic self-concepts by virtue of being chosen to be in a highly selective educational program — an assimilation, reflected glory, or labelling effect (e.g., If I am good enough to be selected to participate in this prestigious program with all these other very smart students, then I must be very smart). Alternatively, if students use the other students in their academically selective class as a basis of comparison, then participation in academically selective classes should result in lowered academic self-concepts — a contrast or negative BFLPE effect (e.g., there are a lot of students better than I am so I must not be as good as I thought). Similarly, academically disadvantaged children in special classes with other academically disadvantaged students may have a lower academic self-concept than they would if they were in regular classes because they know that they are in a special class (labelling or assimilation effect). Alternatively, their academic self-concepts might be higher because they compare themselves with other students with similar academic accomplishments rather than students in regular classes who have higher academic accomplishments (contrast or negative BFLPE). Observed BFLPEs are likely to represent the counter-balancing, net effects of these two opposing processes. This implies that an assimilation (labelling, reflected glory) effect may be operating even though its effects are not so large as the contrast (negative BFLPE) effects, but little research has attempted to disentangle the two effects in BFLPE studies.

McFarland and Buehler (1995) specifically looked at the juxtaposition of the negative BFLPE and the positive reflected glory effects as a paradox, noting that there was surprisingly little work relating individuals' self-appraisals and perceptions of their groups. In a series of laboratory

studies using feedback manipulations about individual and group performance, they found that people who feel more strongly about their group membership experience more positive affect when their group does well and more negative affect when their group does poorly. Following from cross-cultural research distinguishing between collectivist and individualist cultures that differ in the way they value social groups, McFarland and Buehler classified multicultural North American university students as coming from collectivist or individualist societies. They found that students from collectivist societies experienced significantly smaller negative BFLPEs than students from individualistic countries. They also noted an asymmetry such that individuals who value group membership can focus on their individual performances when they do well or on the performance of their group when they do poorly, thus allowing them to protect their self-concept. Based on their findings, they proposed a revision to the BFLPE metaphor: “although everyone feels good about being a big fish in a little pond, not everyone feels bad about being a little fish in a big pond” (p. 1068).

Domain Specificity

Consistent with the growing recognition of the multidimensionality of self-concept and the need to distinguish between academic and non-academic components of self-concept (Marsh, Byrne, & Shavelson, 1988; Marsh & Hattie, 1996), the BFLPE is very specific to academic self-concept. Marsh and Parker (1984; Marsh, 1987) showed that there were large negative BFLPEs for academic self-concept, but little or no BFLPEs on general self-concept or self-esteem. Marsh, Chessor, Craven and Roche (1995) reported two studies of the effects of participation in gifted and talented programs on different components of self-concept over time and in relation to a matched comparison group. There was clear evidence for negative BFLPEs in that academic self-concept in the gifted and talented programs declined over time and in relation to the comparison group. These BFLPEs were consistently large for Math, Verbal, and Academic self-concepts, but were small and largely nonsignificant for four nonacademic self-concepts and for general esteem. This domain specificity is illustrated even more dramatically in two studies (Marsh, 1990b; 1994) of the differential effects of school-average verbal and math achievement on math and verbal self-concepts.

Differential Effects of School-Average Verbal and Math Achievements: Domain Specificity of the BFLPE

Marsh (1990b; 1994) tested the BFLE model based on separate measures of math and verbal constructs. He began with separate analyses of the BFLPE for math self-concept (based on math achievement, school-average math achievement, and math self-concept) and corresponding model of Verbal self-concept based on verbal constructs. When math constructs were considered, the effect of math achievement on Math self-concept was substantial and

positive (.46), whereas the effect of school-average mathematics ability was smaller and negative (-.14). Being mathematically able led to a higher a Math self-concept, but attending a high school where the other students are more mathematically able led to lower Math self-concepts. A similar pattern of results was evident for models of for the Verbal self-concept model based on the effects of prior reading achievement and school-average reading achievement.

Marsh (1990b; 1994) then combined all the math and verbal constructs into a single BFLPE model. This model combined tests of the BFLPE considered separately for Math and English self-concepts, but also provided a test of the internal/external (I/E) frame of reference model (see Marsh, 1986; Marsh, Byrne & Shavelson, 1988). According to the I/E model, students use their relative accomplishments in their different school subjects as a basis for forming academic self-concepts in each school subject. Thus, for example, a student who is particularly good a mathematics will have a better math self-concept but a lower verbal self-concept. According to the I/E model, any variable that has a positive effect on math self-concept is likely to have a smaller, negative effect on verbal self-concept and vice-versa.

Consistent with the BFLPE, the effects of school-average mathematics achievement on Math self-concept were negative. A similar pattern of results is observed for English self-concept. What is new in this model was the content specificity of the BFLPE. School-average mathematics achievement had a negative effect on mathematics self-concept, but a smaller positive effect on English self-concept. Conversely, school-average English achievement had a negative effect on English self-concept but a slight positive effect on math self-concept. These results are certainly consistent with the content specificity of academic self-concepts that is a overarching principle of these studies.

It is interesting to note that school-average mathematics, despite its negative effect on math self-concept, had a slightly positive effect on English self-concept. That is, if I attend a high school where the other students are mathematical geniuses, than my math self-concept will suffer but my verbal self-concept might be a little higher. The converse set of effects were observed for school-average verbal achievement. This finding is consistent with the general observation that a variable that positively affects mathematics self-concept tends to have a negative effect on verbal self-concept, and vice-versa. This pattern of counter-balancing effects apparently reflects the internal comparison (ipsative) process embodied in the I/E model.

It should be noted that in the actual analyses, school-average achievements in verbal and mathematics were correlated highly. Because the school contexts in relation to these two subject areas were correlated highly, the amount of variance that could be explained by these differences was limited. This similarity in the mathematics and verbal contexts represents the natural state of affairs and it would be difficult to find schools where school-average mathematics achievement was high and school-average verbal achievement was low. For this reason, the results of this

analysis have greater theoretical significance than practical implications. If, however, this natural state of affairs were altered by specifically selecting students who were gifted mathematically without regards to their verbal abilities, for example, then the effects demonstrated here would have considerable practical significance.

Empirical Support For the BFLPE

Empirical support for the BFLPE comes from numerous studies (e.g. Marsh, 1984a, 1984b; 1987; 1994; Marsh & Craven, 1994; 1997; Marsh & Parker, 1984) based on a variety of different experimental/analytical approaches. Marsh and Parker (1984) sampled sixth grade classes from high and low SES areas in the same geographical area. The two samples differed substantially in terms of reading achievement and IQ scores. In path models of the relations among achievement, school-average ability and responses to the Self-Description Questionnaire-I (SDQI; Marsh, 1990c), the direct effect of school-average ability on academic self-concept was negative in models that controlled for individual achievement. In contrast, the effects of individual and school-average achievement were not statistically significant for nonacademic self-concept. Hence, the results provided an early demonstration of the BFLPE and its specificity to academic components of self-concept.

In an American study based on 87 high schools, Marsh (1987; also see Bachman & O'Malley, 1986) found that the effects of school-average ability on academic self-concept were negative whereas the effects of school-average SES on academic self-concept were negligible. He also found that African-American students, particularly those in segregated schools, did not differ substantially from Caucasian students in terms of academic self-concept even though there were substantial differences in terms of standardised achievement test scores. Whereas this pattern might suggest that the academic self-concept responses were "culturally biased," this is exactly the pattern predicted to occur in the BFLPE. African Americans had academic ability test scores that were below average, but — particularly in the segregated schools — compared themselves to classmates who also had below-average test scores. Thus, while their academic self-concepts were somewhat below average (due, perhaps to self-perceptions that were independent of the immediate school context), they were not nearly as low as ability tests would suggest.

The results of Marsh's analysis also clarified the distinction between academic ability and grade-point average (GPA), their respective influences on self-concept, and how this influenced the BFLPE. The 87 schools in the study differed substantially in terms of school-average academic ability, but not school-average GPA. Schools "graded on a curve" so that grade distributions were similar from one school to the next even though academic ability levels differed substantially. Hence, equally able students have lower GPAs in high-ability schools than in low ability schools. Marsh demonstrated that this frame of reference effect influencing GPA was separate from, but contributed

to, the BFLPE on academic self-concept. In further analysis of this same data, Marsh and Rowe (1996) replicated the finding using a multilevel modeling approach and demonstrated that the BFLPE generalised across all levels of initial ability level including the very brightest students.

Sociologists studying school context effects have found that school-average ability and particularly school-average SES are related to educational and occupational aspirations or attainments. In a review of this largely American literature, Alwin and Otto (1977) reported that: school-average ability was negatively related to aspirations whereas school-average SES tended to be positively associated with aspirations.

Rogers, Smith and Coleman (1978) ranked a group of children in terms of academic achievement relative to their own classroom and academic achievement across the sample. They found that the within classroom rankings were correlated more highly with self-concept than scores normed in relation to the entire sample.

Schwarzer, Jerusalem, and Lange (1983; also see Jerusalem, 1984) examined the self-concepts of West German students who moved from nonselective, heterogeneous primary schools to secondary schools that were streamed on the basis of academic achievement. At the transition point students selected to enter the high ability schools had substantially higher academic self-concepts than those entering the low ability schools. However by the end of the first year in the new schools no differences in academic self-concepts for the two groups were present. Path analyses indicated that the direct influence of school type on academic self-concept was negative. The most able students in the low ability schools were less able but had much higher academic self-concepts than the least able children in the high ability schools.

Brookover (1989) examined frame-of-reference effects on academic self-concept from the perspective of the extent to which students in different schools were streamed according to ability. In schools with ability streaming, low-ability students tended to be placed in classes with other low-ability students and high-ability students tended to be placed in classes with other high-ability students. To the extent that students use other students within their class as a frame of reference, low-ability students in streamed classes should have higher academic self-concepts (because they compare themselves primarily to other low-ability students) than low-ability students in unstreamed classes. High-ability students in streamed classes, however, should have lower academic self-concepts (because they compare themselves primarily to other high-ability students) than high-ability students in unstreamed classes. Thus, streaming should tend to increase the academic self-concepts of low-ability students and decrease the academic self-concepts of high-ability students. Consistent with these predictions, Brookover found that the academic self-concepts were much less variable in schools that streamed their classes.

Zeidner and Schleyer (1998) tested the BFLPE in a large-scale study based on a nationally representative sample ($N=1020$) of Israeli gifted students participating in either special homogenous classes for the gifted or mixed ability

classes. Path analyses indicated that gifted students in mixed ability classes evidenced markedly higher academic self-concepts, lower anxiety and higher school grades than gifted students in specialised classes.

Davis (1966) suggested a model similar to the BFLPE in a study of career decisions of American college students. Davis sought support for a theoretical explanation of why the academic quality of a college had so little effect on career choice. Expanding the educational policy implications of his research, Davis (1966, p. 31) concluded: "Counselors and parents might well consider the drawbacks as well as the advantages of sending a boy to a "fine" college, if, when doing so, it is fairly certain that he will end up in the bottom ranks of his graduating class. The aphorism 'It is better to be a big frog in a small pond than a small frog in a big pond' is not perfect advice but it is not trivial." Such advice may also be relevant for evaluating the likely impact of attending academically selective high schools.

So What If Students Have Lower Self-concept in Academically Selective Schools?

The results of the BFLPE are very important for understanding the formation of academic self-concept and testing frame of reference models. However, classroom teachers, policy makers and particularly parents might be prompted to ask "So what?" What are the consequences of attending high-ability schools on other academic outcomes and how are these related to academic self-concept? In order to address these issues, Marsh (1991) considered the influence of school-average ability on a much wider array of outcomes and the role of academic self-concept and educational aspirations formed early in high school as mediators of the effects of school-average ability on subsequent outcomes. The High School and Beyond data were ideal for this purpose because the database is very large (1000 randomly selected high schools and approximately 30 randomly selected students from each school), nationally representative of the United States, and contains longitudinal data, consisting of responses by the same high school students when they were sophomores (T1), seniors (T2), and two years after the normal graduation from high school (T3). The major components of the path analysis in this research were: (a) individual-level and school-average measures of academic ability (a battery of standardized tests) and SES; (b) self-concept (academic and general), academic choice behavior (taking advanced coursework), academic effort (time spent on homework and class preparation), school grades (GPA), educational aspirations, and occupational aspirations measured at T1 and T2, and (c) college attendance, educational aspirations, and occupational aspirations at T3.

Although the path model including all these outcome variables is complicated, the results are easy to summarize. The effects of school-average ability were negative for almost all of the T1, T2, and T3 outcomes; 15 of the 17 relations were significantly negative and 2 were not statistically significant. Even though it might be argued that most of the important outcome variables in educational research were

considered in this study, the effect of school-average ability was not positive for a single outcome. School-average ability most negatively affected academic self-concept as in the BFLPE studies and educational aspirations as in the school-context studies. School-average ability also negatively affected general self-concept, coursework selection, school grades, standardized test scores, occupational aspirations, and subsequent college attendance.

Marsh (1991) also evaluated process variables that might mediate the subsequent negative effects of school-average ability. Controlling T1 academic self-concept and T1 educational aspirations substantially reduced the negative effects of school-average ability at T2 and T3. This supported their proposed role as mediating variables. Even after controlling all T1 outcomes, however, school-average ability negatively affected 7 of 11 outcomes at T2 and T3. This demonstrated that school-average ability continued to affect negatively T2 and T3 outcomes beyond its already substantial negative effects at T1. The largest of these negative effects was for T2 academic self-concept. When T2 academic self-concept was also controlled, the remaining school-average ability effects were less negative. This study demonstrated the importance of academic self-concept as both a proximal outcome and a mediating variable that facilitated the attainment of more distal outcomes.

In summary, equally able students attending higher-ability high schools were likely to select less demanding coursework and to have lower academic self-concepts, lower GPAs, lower educational aspirations, and lower occupational aspirations in both their sophomore and senior years of high school. Attending higher-ability schools also negatively affected standardized test scores in the senior year of high school and subsequent college attendance, although these effects were smaller. For many senior year and post-secondary outcomes, there were statistically significant negative effects of school-average ability beyond those that could be explained in terms of sophomore outcomes. This implies that there are new, additional negative effects of school-average ability during the last two years of high school beyond the already substantial negative effects found early in high school. These results are consistent with previous research but are more compelling because of the High School and Beyond's large sample size, diversity of academic outcomes, and longitudinal nature.

It is important to evaluate the effect of school-average ability after controlling SES and academic ability. Whereas a disproportionate number of high-achieving students come from higher-ability schools, it is also apparent that a substantial proportion of students attending such schools are not achieving academic outcomes commensurate with their initial academic ability. Using an input-output analogy, the value added by higher-ability schools is negative compared to that of the lower-ability schools. Thus, the academic outcomes produced by higher-ability schools are not as good overall as would be expected on the basis of the quality of students who attend these schools. It is also important, however, to emphasize that the sizes of these negative effects of school-average ability are typically small and represent

an average across 1000 high schools and many thousands of students. Hence there will be some higher-ability schools that produce academic outcomes commensurate with the quality of their higher-ability students and some students who will be advantaged by attending such higher-ability schools. Nevertheless, it is unjustified to assume that higher-ability schools necessarily will advantage students. Attending higher-ability schools apparently disadvantages many students.

Unravelling Education Enigmas: New Applications of the BFLPE For Special Populations of Academically Gifted and Disadvantaged Students

Recent research expanding the scope and application of BFLPE theoretical predictions has begun to unravel some important, enduring issues in educational contexts. We now summarize some new developments of BFLPE research that greatly expands the scope of theoretical and practical implications. BFLPE studies have focused on the negative effects on academic self-concept of attending schools where the school-average ability level is high based on de facto segregation (e.g., the neighborhood where a student lives). In the theoretical basis underpinning the BFLPE, we emphasized that the observed effects are the net effects of two counterbalancing effects: contrast effects (negative social comparison effects or negative BFLPEs) and assimilation effects (labelling or reflected glory effects). However, BFLPE studies have not actually attempted to separate these two effects. This separation has important educational implications because critical policy decisions have been based on the assumption that labelling effects have beneficial implications for students at both extremes of the special education spectrum. Based in part on a labelling theory rationale, special educators working in the gifted and talented (G&T) area (e.g., Gross, 1993) argue that very bright students will have higher self-concepts if they participate in full-time G&T classes. Labelling theory has had even more profound implications for academically disadvantaged students. Much of the theoretical rationale for the worldwide phenomena of mainstreaming these low-achieving students is that they will be forever labelled as slow learners if they are placed in special classes with other slow learners. However, both these claims imply that the net BFLPE is a positive assimilation effect rather than the negative contrast effects observed in earlier research. Such claims also run counter to a growing body of research evidence based on the theoretical underpinnings of the BFLPE which described earlier.

Special Programs for Gifted and Talented (G&T) Students: The Big Fish Strikes Again

A major concern facing G&T researchers, policy makers, and practitioners is how best to educate G&T students. Debate has focused on whether full-time special programs best meet the needs of G&T students with educators supporting contradictory positions largely based on philosophical reasons rather than well-established research findings. Some

educators advocate that special G&T programs best meet the needs of these students and therefore foster their full potential. These educators claim that grouping and segregating G&T students ensures academic achievement is maximised by an enriched intellectual environment and curriculum. Others are convinced that individualised instruction in the context of the regular classroom best meets the needs of G&T students.

In recent years Australia has experienced a substantial growth in the numbers of both G&T primary classes and secondary selective schools. This growth reflects strong parental interest in, and political support for, special educational settings for academically able students. Several early studies were undertaken by the NSW government to evaluate support for special educational provisions for G&T students. Sampson (1969) matched students in regular classes (who had declined offers to participate in specialised GAT classes) with students who participated in GAT classes in Years 5 and 6 (the last two years of primary school), on the basis of information collected in Year 4. He found that the two groups did not differ significantly in subsequent Commonwealth Secondary Scholarship Examinations scores, Higher School Certificate scores, or school persistence. However, regular-class students performed significantly better than GAT class students on the aggregate School Certificate in Year 10, although this difference occurred primarily with boys. In subsequent research, Sampson (1977) compared a random sample of 240 students from eight selective high schools and a comparison group of comprehensive high school students matched on the basis of gender, age, socioeconomic status, IQ, and prior achievement. He found that there were no statistically significant differences between selective and comprehensive high school students on subsequent school certificate scores, higher school certificate scores, or school retention rates. This result was consistent across initial ability levels and for boys and girls. This research contributed to a ministerial report recommending that selective schools should be phased out, but this recommendation was not enacted due in part to parental pressure to maintain these schools. In both studies, Sampson emphasized that he was unable to consider affective variables (e.g. self-concept) that he suggested might be enhanced by attending selective schools.

Despite this early research providing no support for selective schooling in Australia, references to well-established research findings are often absent from education policy rationales. The Commonwealth Schools Commission (1981, p. 47) seminar on the education of G&T students found that “the paucity of Australian research and the absence of any real attempt to harness and interpret overseas research...means that hypotheses are being stated and programmes are being developed within a data base vacuum”. In part this was due to the dearth of educational research in Australia and elsewhere that systematically evaluates the different approaches to the education of G&T students, a problem identified a decade ago (e.g. Fox & Washington, 1985) and more recently (e.g. Craven, Marsh & Print, 2000; Goldring, 1990; Hoge & Renzulli, 1993; Marsh, Chessor, et

al., 1995; Marsh & Craven, 1994, 1997) that is still unresolved. Selective education settings are often assumed to enhance G&T students' self-concepts, yet research has typically not evaluated the impact of selective schools on psychological variables. Despite these weaknesses in current G&T research, "conventional wisdom" and some researchers assume that grouping G&T children together will enrich their education more fully than the regular classroom setting.

Gross (1992; also see Gross, 1993), in a study of profoundly gifted children, argued that "It might be anticipated that exceptionally gifted children who have been radically accelerated would score high on the index of academic self-esteem. By contrast, they display positive but modest scores, between the mean for their age groups and .7 of a standard deviation above... Interestingly, it is the children who have not been radically accelerated whose academic self-esteem is unusually inflated" (p. 97). Although Gross argued that students in non-accelerated settings have "inflated" academic self-concepts, her results support the BFLPE. Despite being 4 SDs above the mean IQ, radically accelerated children have "radically deflated" academic self-concepts that are only slightly above average because they compare their academic skills with those of their older, more able classmates. In contrast, the non-accelerated children have realistically high academic self-concepts because they compare their abilities with those students from a normal range of abilities. Thus, radical acceleration is likely to produce substantial declines in academic self-concept that are consistent with the BFLPE. The implication of Gross's argument is that it is somehow bad for gifted children to have academic self-concepts commensurate with their high levels of academic achievement and good for them to experience a substantial decline in academic self-concept, but she provided no evidence in support of this implication.

In contrast to proponents of G&T classes and selective high schools, social comparison and BFLPE research (e.g., Coleman & Fuhs, 1985; Craven & Marsh, 1997; Hoge & Renzulli, 1993; Marsh, 1987, 1991, 1993; Marsh & Parker, 1984; Reuman, 1989; Rogers, 1979; Zeidner & Schleyer, 1998)) supports predictions that participation in high ability selective classes or schools leads to declines in academic self-concept. In order to pursue this issue more fully, Marsh, Chessor, et al. (1995; also see Craven, Marsh & Print, 2000) designed two studies to test BFLPE predictions about the effects of participation in full-time G&T primary school classes over time and in relation to matched students attending mixed-ability classes. A major emphasis of their research was on the differential effects on academic and nonacademic self-concepts, and also on the effects of initial ability levels. In both studies, G&T students attending a G&T class were matched to students of equal ability who attended mixed-ability classes. In both Study 1 and Study 2, students in the G&T program experienced significant declines in three domains of academic self-concept over time and in relation to matched comparison students. In both studies this general pattern of results was reasonably consistent across gender, age, and initial ability. A critical feature of these studies was a multidimensional perspective of self-concept. Consistent

with a priori predictions based on theory and previous research, participation in G&T programs had a negative effect on academic self-concept and no effect on nonacademic self-concept. This result is important, because most previous G&T research has been based on a unidimensional perspective of self-concept and relied on a single self-concept score that confounded differences between academic and nonacademic self-concept.

In Study 2, measures were collected from only two occasions. Whereas there was a decline in the academic self-concepts of the G&T students across these two occasions, there was no way to determine when the decline occurred. In Study 3, however, measures were collected on three occasions. Here the results showed that there were declines between the first two occasions, but there were new, additional declines between the last two occasions. Hence, the BFLPE was not a short-term adjustment effect but continued to grow larger over the first year in the G&T setting.

Taken together the results above suggest that specialised educational settings for G&T students has an adverse impact on academic self-concept. This is problematic in that the attainment of a positive academic self-concept has been demonstrated in longitudinal panel studies (Marsh, 1990, Marsh, Byrne & Yeung, 1999b) to have a causal impact on coursework selection, educational aspirations, and subsequent academic achievement. Marsh and Craven (1997) on the basis of a review of aspects of this research noted that "short-term gains in achievement are unlikely to be maintained unless there are corresponding gains in academic self-concept" and concluded that "enhancing a child's academic self-concept is not only a desirable goal but is likely to result in improved academic achievement as well" (p. 155). These findings have important implications for educational policy in that placing G&T students in specialised educational settings may be counter productive if the goal of the educational program is to maximise academic self-concept and achievement.

Implications for Learning Disabled (LD) and Mildly Intellectually Disabled (IM) Students

The movement towards the inclusion of academically disadvantaged students in regular classrooms is also a contentious educational issue, which has generated many debates. Few topics in the field of special education elicit such a broad range of emotions and opinions. Labelling theory suggests that placing academically disadvantaged students in special classes with other low-achieving students will lead to lower self-concept and create a longlasting stigmatisation. On the basis of this theoretical argument, there has been widespread support for the practice of integrating academically disadvantaged students into regular classrooms (i.e., "mainstreaming"). In contrast, predictions based on BFLPE research contradict labelling theory in that academically disadvantaged students will have higher self-concepts when grouped with other academically disadvantaged students (compared to similarly disadvantaged

students in regular classroom settings). In a review of relevant research, Marsh and Johnston (1993) reported that moving academically disadvantaged students from special classes into regular, mixed-ability classes was likely to result in lower academic self-concepts for academically disadvantaged students. This result is consistent with social comparison theory and the negative BFLPE in that the average ability level of students in the mixed-ability classes is higher than in special classes for academically disadvantaged students. Thus, academically disadvantaged students are likely to feel less academically able in comparison with non-disadvantaged students in regular classrooms than with other academically disadvantaged students in special classes. Similarly, Burns' (1982) review of this literature led him to conclude that placement of academically disadvantaged students in special schools resulted in an improvement in self-concept and that self-concept was positively related to the length of time academically disadvantaged students spent in special schools. He interpreted these results as favoring social comparison theory, but also noted that part of the problem may be that special schools do not prepare students for integration into mainstream society.

In a study of academically disadvantaged children, Strang, Smith, and Rogers (1978) tested the self-concepts of children who attended some classes with other disadvantaged children and other classes with nondisadvantaged children. Academically disadvantaged children were assigned randomly to experimental and control groups. Students in the experimental group were given a treatment to enhance the saliency of their membership in the regular classrooms. This led to lower self-concepts for students in the experimental group than those in the randomly assigned control group.

Chapman (1988) conducted a meta-analysis of studies of learning disabled (LD) children's self-concepts. Of particular relevance to this chapter was his comparison of LD students who were: (a) completely segregated in special classes, (b) partially segregated for some work and partially integrated in regular classes with non-LD students, and (c) "unplaced" in completely integrated settings (i.e., LD students in regular classes who were not receiving LD remedial assistance). Whereas LD children in all three settings had poorer self-concepts than did non-LD children, the setting did make a difference. For general self-concept students in fully segregated and partially segregated settings did not differ from each other but had better self-concepts than did unplaced LD students in regular classrooms. For academic self-concept, fully segregated children had higher self-concepts than partially segregated students and both groups had substantially better self-concepts than unplaced LD students. The decrement associated with being an unplaced LD student in regular classrooms was substantially larger for academic self-concept than for general self-concept. These results support social comparison theory, but are complicated by the potential confounding between the type of setting and the amount of special assistance LD students received in the different settings. LD students apparently have substantially lower self-concepts than do non-LD students,

and these deficits were particularly large for academic self-concept. These deficits, however, were substantially reduced if LD students were placed in fully segregated classes with other LD students. There was clear evidence that this strategy increased the academic self-concepts of LD students and there was no evidence to suggest that this strategy had any systematic effect on academic achievement. These results are important because they support social comparison theory and contradict predictions from labeling theory that has been used to argue against segregated classes.

Recent research by Tracey and Marsh (2000) using children with mild intellectual disabilities (IM) is particularly relevant. They began with a measurement perspective. Historically, they argued, special educators have tended to treat self-concept as a unidimensional, global construct represented by a single score. Although much recent research argues against this perspective in normal populations, research in the special education area has not clearly supported the multidimensionality of self-concept. For example, in her review of self-concept instruments, Byrne (1996) emphasized that "a search of the literature revealed such instrumentation to be disappointingly sparse and serves to highlight this critical void in the availability of self-concept measures for special populations" (p. 221). Silon and Harter (1985) assessed the factor structure of the Perceived Competence Scale for Children for this population and concluded that "retarded children do not make distinctions about specific competence domains but rather simply make judgments about one's competence at activities in general, regardless of the nature. Thus they think one is either competent or not" (p. 223). Tracey and Marsh, however, argued that this apparent failure to support the multidimensionality of self-concept in responses by academically disadvantaged children probably reflected a failure to develop appropriate multidimensional instruments and apply appropriate measurement procedures. In support of this contention, they cited research based on the individualised administration form of the Self Description Questionnaire I (SDQI-IA; Marsh, Craven & Debus, 1991; 1998; Marsh & Craven, 1997) which provides clear support for the multidimensionality of self-concept responses by children as young as five years of age.

Tracey and Marsh (2000) evaluated the individualized administration approach with the SDQI for a sample of 211 IM students enrolled in Grades 2–6. These students had previously been identified as having a mild intellectual disability (i.e., an IQ of 56 to 75 based on an individually administered test of intelligence and impairment in adaptive functioning). Confirmatory factor analysis clearly identified all eight factors that the SDQI was designed to measure and resulted in a good fit to the data. Reliability estimates for the eight factors were generally adequate (mean alpha of .85) for the total sample and for separate analyses of responses by younger and by older students. Importantly, this study was apparently the first to find support for reliable, multidimensional self-concept responses for this special population of students.

On the basis of the students' current educational

placement, Tracey and Marsh compared 2 groups of IM students: 1.) 98 students who were enrolled full-time in regular classes, and 2.) 113 students were enrolled full-time in an IM Support Unit. Labeling theory predicts that students in regular classroom placements will have higher self-concepts. In contrast, social comparison theory and the BFLPE predicts that students in IM support units will have higher self-concepts and that these differences will be limited primarily to the three academic scales (math, verbal and school self-concepts) of the SDQI. The results demonstrated that students in the two placement settings differed significantly on several dimensions of self-concept. Consistent with BFLPE predictions, students in special IM classes had significantly higher self-concepts for all three academic scales (Reading, Math, School). In addition, however, these IM students had significantly higher Peer self-concepts and significantly higher General Self-concepts. The two groups did not differ significantly for the remaining three nonacademic self-concepts (Parents, Physical Ability, Physical Appearance). The results are clearly inconsistent with predictions based on labeling theory. The results for the academic self-concept scales and, perhaps, the General self-concept scales are consistent with predictions based on BFLPE. The negative effects of inclusion on Peer self-concept, although not predicted a priori on the basis of BFLPE research, are understandable. Despite the rhetoric of inclusion, it is apparent that IM children who were in regular classrooms not only suffered lower academic self-concepts but they also apparently felt excluded socially.

It should be noted that the Tracey and Marsh's (2000) results are based upon a cross-sectional design in which two intact groups are directly compared. Although potential counter-explanations based on nonequivalent groups are always worrisome, the direction of such a bias is likely to run counter to predictions of social comparison theory. Hence, to the extent that there were preexisting differences between the two groups, IM students in regular classes were likely to be more academically competent than those in the IM support units. From this perspective, these results are likely to be conservative and underestimate the negative effects associated with placing IM students in regular classes.

In summary current research supports the BFLPE and social comparison theory and contradicts the labeling theory upon which current special education philosophy is currently based. These results challenge special education policy makers and practitioners to recognise that inclusion of IM students in regular classrooms is likely to result in lower academic self-concepts. Hence, appropriate strategies are needed to counter this negative effect of inclusion rather than accepting the largely unsupported inference from labeling theory that the effects of inclusion on self-concept are positive.

Cross-Cultural and Cross-National Comparisons: Testing the Generalisability of the BFLPE and Extending the Theory

Sue (1999), along with many others, argues that psychological research has not taken sufficient advantage of cross-cultural comparisons that allow researchers to test the external validity of their interpretations, as well as to gain insights about the applicability of their theories and models. Tests of the cross-cultural support for predictions from a theoretical model developed in one culture to another culture provide an important basis for testing this generalisability. Theoretical models posit the cognitive basis that students use to determine appropriate frames of reference in the formation of their academic self-concepts. Because such frame-of-reference effects might be specific to particular cultural settings, it is useful to test the generalisability of predictions based in one culture in different cultures. Importantly, previous tests of the BFLPE have been conducted primarily in Western countries and, typically, in those where the native language is English. In this respect, the results of two recent investigations – based on a large, representative samples of East and West German students (Marsh, Koeller & Baumart, in press) and Hong Kong students (Marsh, Kong & Hau, 2000) – represents an important test of the cross-cultural generalisability of predictions based on the BFLPE.

Reunification of East and West German School Systems: A Unique Test of the Big Fish Little Pond Effect

In 1991 East and West German students experienced a remarkable social experiment in which the very different school systems of the former East Germany and West Germany were reunified. The Marsh, Koeller and Baumart (in press) study is part of a large longitudinal project designed to evaluate the implications of the reunification of the two school systems conducted by the Max Planck Institute for Human Development (see Baumert, et al., 1996). The former East German system differed from the former West German system and the newly reunified system in two ways that were particularly important to social comparison processes in the formation of academic self-concept.

First, the former East German students had explicitly not been grouped into schools or classes according to their achievement levels whereas the former West German students had attended schools based largely on their achievement levels for the two years prior to the reunification. Hence, it was predicted that the BFLPE should be initially larger for the West Germans at the start of the first year after the reunification. This difference in the size of the BFLPE, was also predicted to be much smaller by the end of the first school year following reunification.

Second, the former East German system placed considerably more emphasis on highly competitive, social comparison processes that are likely to undermine academic self-concept. Hence, the self-concepts of former East German students were predicted to be lower overall than those of the former West German students.

Description of the Study

The sample consisted of large representative samples of students (2,778 students, 161 classrooms) from the former East and West German education systems who completed surveys on three occasions in the first year after the reunification of the German school system following the fall of the Berlin Wall. Three waves of math self-concept responses were collected at the start of 7th grade (T1, the first month of the newly reunified school system), at the middle of 7th grade (T2), and at the end of 7th grade (T3). A math achievement test derived from prior research was administered at T1. Statistical analyses consisted of multilevel models relating individual and classroom variables to self-concept. The researchers began by evaluating the effects of the major substantive constructs (individual student achievement, class-average achievement, and region (East versus West Germany) to academic self-concept separately at each occasion. Then they evaluated the effect of these variables on T2 self-concept controlling for T1 self-concept, and on T3 self-concept controlling for T1 and T2 self-concept, in order to evaluate how change in self-concept over time was related to the substantive constructs.

Results

The most basic test of the BFLPE consisted of an evaluation of the combined effects of individual achievement and class-average achievement on T1 math self-concept. Social comparison theory predicts that the effect of class-average achievement should be negative (i.e., the negative BFLPE). Individual student achievement based on the standardized mathematics test had a positive effect on math self-concept (standardized path coefficient of .34) whereas class-average math achievement had a negative effect on math self-concept (-.17).

Region (East versus West Germany) was a central variable in terms of evaluating the effects of this critical social experiment—the reunification of the two former school systems—on the formation of self-concept. Consistent with predictions based on school policies emphasizing social comparison and a unitary system in the former East German school system, East German T1 math self-concepts were significantly lower than those of West German students (-.11). Furthermore, also consistent with a priori predictions, there was a statistically significant interaction between region and class-average achievement; the BFLPE at the start of the first year after the reunification was more negative for West German students (who had already been tracked according to achievement in the previous two years) than for East German students (who were attending academically differentiated schools for the first time). Hence, there were both main and interaction effects associated with Region. Overall, initial levels of self-concept were lower in East Germany (the main effect). However, the negative effect of class-average achievement on self-concept was smaller for East German students (the interaction effect). The BFLPE was also smaller for East German students at T1.

There was a substantively important change over time in the pattern of statistically significant effects for the region x class-average interaction. At T1 and, to a slightly lesser extent at T2, the negative effect of class-average achievement was more negative for West German than East German students. This is consistent with a priori predictions, because East Germans came from a system in which there was a strong policy against segregating students according to achievement levels, whereas for the previous two years the West Germans in this sample had attended schools that differed substantially in terms of school-average ability. In contrast to T1 and T2 but still consistent with a priori predictions, the region x class-average achievement interaction was not statistically significant at T3. By the end of the school year the frame of reference effects associated with the newly reunified school system over-shadowed those associated with the former East German system, at least in terms of the BFLPE.

Discussion and Implications

History may view the reunification of East and West Germany as one of the most important social interventions in the 20th century, and these effects were particularly profound for the German education system. Based on these cultural differences in the two school systems, the authors predicted what differences in the formation of academic self-concept would exist at the onset of the intervention and how these differences would change over the first year of the reunification into a single system based primarily on the West German model. The results of the Marsh et al. (in press) study replicate a growing body of BFLPE research, conducted primarily in English-speaking countries, showing that academically selective educational programs have negative effects on academic self-concept. The results are also important in: a) providing strong support for the external validity of the BFLPE in a country where English is not the first language; b) extending BFLPE research by showing how theoretical predictions vary consistently and logically in two groups (East and West German students) in a large-scale, quasi-experimental study; and c) demonstrating how system-wide educational policy differences at the system level can impact on the academic self-concepts of individual students.

Counterbalancing Contrast and Reflected Glory Effects in Hong Kong High Schools: Extending the Theoretical Predictions of the BFLPE

Whereas previous BFLPE research has focused on negative contrast effects, as discussed previously, the BFLPE is hypothesized to be the net effect of two counterbalancing processes: (1) negative contrast effects that have been emphasized and, (2) positive, reflected-glory, assimilation effects. Because the BFLPE is consistently negative, the negative contrast effect is apparently much stronger than the positive assimilation effect. Although reflected-glory assimilation effects have a clear theoretical basis, these effects have been implicit and have not been adequately operationalized in BFLPE studies.

To address this issue Marsh, Kong and Hau (2000) employed a four-year longitudinal study, to evaluate the

BFLPE and the juxtaposition between assimilation and contrast effects for a large cohort of high schools in Hong Kong. On the one hand, this is the most highly achievement segregated high school system in the world, which might be expected to lead to more negative contrast effects (i.e., the contextual differences are larger). On the other hand, because the Chinese culture is low on individualism and high on collectivism, Chinese students should be less susceptible to the negative contrast effects due to social comparison processes and should have a greater tendency to value their social group than those in individualistic settings. Consistent with this perspective, face — one's reputation — is of great concern in the Chinese culture and admission to a prestigious high school is highly valued in Hong Kong. Hence, the gain in status and face for oneself and one's family due to attending a prestigious high school (reflected glory, assimilation) may possibly overshadow the loss in academic self-concept due to negative contrast resulting from comparisons with high achieving classmates. Also consistent with this potential deemphasis of social comparison processes, Hong Kong students attribute their examination results more to effort than to ability and concentrate more on their own improvement over time than on comparison with other students as determinants of perceived academic achievement. If Chinese students do value being members of academically selective schools (stronger assimilation effects) and their collective orientation reduces attention to social comparison processes (weaker contrast effects), the net BFLPE may be substantially less negative or close to zero.

The Marsh, Kong and Hau (2000) investigation also incorporates several advantages over most previous BFLPE research in that it: specifically includes a new measure of perceived school status to infer reflected glory; uses particularly good measures of pretest achievement collected prior to the start of high school that are not confounded with true school effects; and employs multilevel modeling that more appropriately disentangles effects due to individual students and schools than inappropriate multiple regression analyses used in most previous research.

Description of the Study

In Hong Kong, at the end of Grade 6, secondary school places for Grade 7 are allocated according to parental choice in the order of merit of students' internal school examination results moderated by public examination performance. Students are largely free to apply to any high school in Hong Kong. The large sample (7,997 students from 44 high schools) is broadly representative of Hong Kong schools. Measures considered in this study were pretest (T0Ach) achievement, standardized achievement tests administered at T1, T2, and T3 (T1Ach, T2Ach, T3Ach), academic self-concept collected at T2 and T3 (T2ASC, T3ASC), and a measure of perceived school status. The survey instrument administered at T2 and T3 (in Grades 8 and 9) included a Chinese translation of the SDQ-II, but for purposes of our investigation, only responses to the academic self-concept scale were considered. The survey materials also contained

a School Status scale (e.g., "My school has a good reputation", "The academic standard of my school is high, many students want to get in"). Statistical analysis consisted of multilevel modeling.

Results: Negative Effects of School-average Achievement: The BFLPE

Prior to presentation of the multilevel analyses, Marsh, Kong and Hau (2000) presented some preliminary results to explicate the BFLPE. Academic self-concept was positively correlated with achievement. When both individual and school-average (pretest) achievement were regressed on academic self-concept, the effect of individual achievement was positive ($b = .34$ for Grade 8, $.39$ for Grade 9) whereas the effect of school-average achievement was negative ($b = -.20$ for Grade 8, $-.22$ for Grade 9). Although comparisons of beta-weights from different studies should be made cautiously, the sizes of these negative effects were comparable to those found in nationally representative samples of US students (e.g., $-.21$, Marsh, 1987; $-.23$, Marsh, 1991).

Marsh, Kong and Hau (2000) then conducted a series of multilevel regression analyses in which different predictor variables were related to different outcome variables. The main findings were the juxtaposition of the negative (contrast) effects of school-average ability on academic self-concept and the positive (assimilation, reflected glory) effects of school status on academic self-concept. The negative contrast effect was reflected in the negative effect of school average pretest achievement on academic self-concept after controlling at least individual pretest achievement (T0Ach). In the first set of models, the negative effect of school-average achievement on T2 academic self-concept varied from $-.22$ (when only T0Ach was controlled) to $-.24$ (when T0Ach, T1Ach, and T2Ach were controlled). This replicates the negative (contrast) effect found in many other BFLPE studies. Because academic self-concept was measured on two occasions, it was possible to evaluate the additional negative effects of school-average achievement at T3 beyond the negative effects at T2. These were models of self-concept change because the effects of T2 self-concept were partialled out of T3 self-concept. Not surprisingly, the largest effect on T3 self-concept was T2 academic self-concept, although individual academic achievement continued to have a positive effect. Of critical importance, the negative (contrast) effect of school-average achievement on T3 academic self-concept was still significantly negative even after controlling the negative effect of school-average achievement mediated by T2 self-concept. Hence, there were new, additional negative effects of school-average achievement on T3 academic self-concept beyond the negative effects at T2. In summary, the Marsh, Kong and Hau (2000) results provide clear support for the negative BFLPE in Hong Kong high schools. Not only were there negative BFLPEs for T2 and T3 academic self-concept considered separately, but the negative BFLPEs for T3 academic self-concept were larger than those that can be explained by the negative BFLPE already experienced at T2.

Results: Positive Effects of Perceived School Status: Reflected Glory, Assimilation Effects

In subsequent analyses, Marsh, Kong and Hau (2000) modeled perceived school status as a function of prior achievement, academic self-concept, and school-average achievement. School-average achievement had very large, positive effects (.56 to .60). Perceived status was substantially a function of the school-average ability levels of students attending the school. Interestingly, the researchers found that individual student achievement had a negative effect on perceived school status; better students perceived the status of their school to be lower than did poorer students. Furthermore, the negative effect of student achievement on school status was more negative when school-average achievement was low. This pattern of results is logical and consistent with the researchers' interpretation of reflected glory effects. Very high performing students performed better than most of the other students in their school – particularly if school-average achievement was low – so they did not experience as much “reflected glory” as did students not doing as well who could “look up to” the best students. Consistent with Buunk and Ybema's (1997) identification-contrast model, when students perceived themselves as being more able than their classmates there was little benefit in identifying with them. A more effective strategy, at least in terms of maximizing academic self-concept, was to contrast their relatively superior skills with the weaker skills of their classmates. However, when students perceived their academic skills to be weaker than those of their classmates, it was a more effective strategy to identify with the high-perceived status of the school rather than to contrast their poorer skills with the superior skills of their classmates.

Marsh, Kong and Hau (2000) also added students' perceived status of their school to models of T3 academic self-concept. The critical features of these models were the juxtaposition of the effects of school-average achievement in models that included school status with those in corresponding models that did not include school status. The effect of perceived school status on T3 academic self-concept was positive (.17) and continued to be positive even after controlling for T2 self-concept. In marked contrast, the effects of school-average achievement on T3 academic self-concept were substantially negative (-.33 and -.31). These negative effects of school-average achievement were substantially more negative than in corresponding models that did not include school status. Thus, for example, in corresponding models that differed only in the inclusion of school status, the negative effect of school-average achievement was -.33 when school status was included but only -.23 when school status was excluded. The negative effect of school-average ability was consistently more negative when school status was included in each of the different models that were considered. In summary, the juxtaposition of the positive reflected glory assimilation effects of school status and the negative contrast effects of school-average achievement supported a priori predictions. Furthermore, also consistent with a priori predictions, the inclusion of school status into

models of academic self-concept resulted in the negative effects of school-average achievement becoming more negative. These suppression effects were consistent with theoretical predictions that the BFLPE is a net effect of the positive assimilation and negative contrast effects. Hence, when the positive assimilation effects are controlled by the inclusion of school status, the negative effect of school-average achievement becomes a more pure measure of the negative contrast effects and school-average achievement effects become more negative.

Discussion

Hong Kong is an ideal setting for testing the generalisability of the BFLPE and extending this research to more fully evaluate the juxtaposition between negative contrast and positive assimilation effects. The contextual differences are larger – because Hong Kong is the most highly achievement segregated high school systems in the world – and so the contrast effects should be more negative than in most Western settings. On the other hand, due to collectivist values in this Chinese setting and the value placed on attending a prestigious high school, the typical social comparison processes underlying the negative BFLPE should be weaker, whereas the reflected glory processes may be stronger. Apparently reflecting these counter-balancing predictions, the size of the negative contrast effects in the Marsh, Kong and Hau (2000) study are comparable to those found in nationally representative US samples (e.g., Marsh, 1987; 1991).

As predicted, the inclusion of perceived school status into the BFLPE model resulted in a positive effect of school status on academic self-concept (the reflected-glory assimilation effect) and an even more negative effect of school-average achievement on academic self-concept (the social comparison contrast effect). More specifically: (a) there was a strong negative contrast effect of school-average achievement on academic self-concept when both individual and school-average pretest achievement (but not perceived school status) were included in the model; (b) the negative effect of school-average achievement became more negative when school status was included in the model whereas the effect of school status was positive; and (c) even in models of self-concept change there was evidence of new, additional contrast effects on T3 self-concept beyond the substantial negative effects on T2 self-concept and these additional negative effects also became more negative with the inclusion of perceived school status.

The results of this study imply that attending a school where school-average achievement is high simultaneously results in a more demanding basis of comparison for students within the school to compare their own accomplishments (the negative contrast effects) and a source of pride for students within the school (the positive reflected glory, assimilation effects). By including a separate measure of perceived school status, Marsh, Kong and Hau (2000) partialled out some of the reflected glory effects associated with school-average achievement so that school-average

achievement became a better (less confounded) basis for inferring social comparison contrast effects, leading to a more negative BFLPE. These results also imply that previous research may have underestimated the size of the negative contrast effects.

More clearly than any previous BFLPE research and the Marsh, Kong and Hau (2000) results differentiated between negative social comparison contrast effects and positive reflected glory assimilation effects that comprise the BFLPE. Whereas this finding is consistent with theoretical predictions and is implicit in previous explanations of the BFLPE, previous research has not operationalized the reflected glory effect. A major focus of BFLPE research has been on the substantively important and surprising implications of this research, undermining the assumed advantages of attending academically selective schools. Although obviously supportive of these well-established concerns, the present investigation provides stronger links between BFLPE and broader areas of social comparison theory.

Summary, Conclusions and Implications

BFLPE research reviewed in this chapter provides an alternative, contradictory perspective to educational policy on the placement of students in special education settings that is being enacted throughout the world. Remarkably, despite the very different issues, this clash between our research and much existing policy exists at both ends of the achievement continuum in that:

1. In gifted education research and policy, there is an increasing trend toward the provision of highly segregated educational settings – special G&T classes and academically selective schools for very bright students. This policy direction is based in part on a labelling theory perspective, suggesting that bright students will have higher self-concepts and experience other psychological benefits from being educated in the company of other academically gifted students. Yet, our BFLPE and empirical evaluation of the effects of academically selective settings show exactly the opposite effects. Placement of gifted students in academically selective settings results in lower academic self-concepts, not higher academic self-concepts.
2. In recent research and policy for academically disadvantaged students, there is a worldwide inclusion movement to integrate these students into mainstream, regular classroom settings. Although economic rationalist perspectives appear to be the underlying motive for such decisions, the espoused rhetoric is based on a direct application of labelling theory. According to labelling theory, academically disadvantaged children are likely to be stigmatized and suffer lower self-concepts as a consequence of being placed in special classes with other academically disadvantaged students. Yet, theory underpinning our BFLPE and empirical evaluation of the effects of including academically

disadvantaged students in regular mainstream classrooms show exactly the opposite effects. Placement of academically disadvantaged children into regular classrooms results in lower academic self-concepts, not higher academic self-concepts. Furthermore, the negative effects of inclusion on Peer self-concept reported by Tracey and Marsh (2000), makes it apparent that academically disadvantaged children in regular classrooms actually feel socially excluded, not included.

Based on our review of previous and new research, we recommend that research evaluating the potential effects of special settings (for academically disadvantaged students and for G&T students) in comparison to regular classroom settings needs to: (a) include measures of self-concept and, perhaps, other motivational variables; (b) utilise multidimensional self-concept instruments with demonstrated reliability and validity to fully explore the impact of different settings on multiple facets of self-concept; (c) gather data on student's academic achievement, self-concepts, and other psychological variables prior to selection into the special programs and at different points of time thereafter; (d) more fully explore teaching and learning activities in the classroom to assess the effects of different classroom environments on educational outcomes; (e) employ more sophisticated research designs and stronger statistical tools to more critically evaluate conclusions; and (f) use appropriate qualitative research procedures in combination with quantitative research procedures like those emphasized here to more fully explicate the nature of the effects. As noted by Marsh, Chessor, et al. (1995), previous research has focused on the definition and identification problems, but more emphasis is needed on identifying students who will benefit most from particular settings. Although special education researchers and policy makers give lip service to the adage that different programs must be tailored to the needs of particular students, there is a paucity of good research supporting this contention and pursuing its implications. More research is needed on how to optimally match special education programs and students with special needs rather than assuming that one type of setting is optimal for all students. In particular, special education programs need to be designed to ensure that curriculum activities include strategies to maintain and enhance students' self-concepts.

Important limitations may be inherent in studies seeking to evaluate the effects of special education settings for students at either end of the achievement continuum. Goldring (1990, p. 314-315) noted that “researchers of gifted education programs can rarely assign students randomly to groups”. A stronger research design might consist of actually matching GAT students in selective settings with GAT students from other settings (e.g., Marsh, Chessor, et al., 1995). Marsh (1998), however, demonstrated that even this matching design is inherently biased in favor of students in selective settings under a variety of different matching strategies. He argued that alternative quasi-experimental designs such as the regression-discontinuity design should be considered. Although there seems to have been less critical

evaluation of recent trends to include academically disadvantaged students in regular classroom settings, many of these concerns seem relevant here as well. Whereas true random assignment is a desirable design strategy, it is very rare that it can be implemented in special education research. Hence, it is likely that researchers evaluating the effects of placement at both ends of the achievement continuum will continue to struggle with interpretation complications that are inherent in quasi-experimental research designs with non-equivalent groups.

International interest in the BFLPE and its relevance to educational settings throughout the world provide exciting new opportunities to evaluate the crossnational and crosscultural generalisability of our theory and empirical findings. As illustrated in the German and Hong Kong studies reviewed in this chapter, these opportunities provide a basis for expanding existing research and theory – not just replicating the results of previous “Western” research. The German (Marsh, Koeller & Baumart, in press) study provided a unique opportunity to evaluate theoretical predictions based on social comparison theory relevant to the reunification of the East and West German school systems after the fall of the Berlin Wall. There were important cultural differences in the two systems prior to the reunification; East German students had only experience mixed-ability classes whereas West German students had been taught in ability-segregated classes for the previous two years. In the reunification, the ability-segregated model of West Germany was adopted across Germany. Consistent a priori predictions based on these cultural differences, the BFLPE at the very start of the reunification was stronger in West German schools than in East German schools. By the middle of the first post-reunification school year, the BFLPE was only slightly stronger in West German schools. By the end of this first year, however, there was not difference in the BFLPEs in East and West regions of the reunified Germany. The involvement of the BFLPE in the East and West German settings provided strong support for the social comparison processes posited to underlie the BFLPE. In the Hong Kong study, Marsh, Kong and Hau (2000) evaluated the generalisability of theory and research based on Western school settings that emphasize an individualist orientation in an Eastern setting with a collectivist orientation. The clear replication of results from Western research provided strong support for the generalisability of the BFLPE to different school settings. In addition, this study provided an important breakthrough in BFLPE research by successfully operationalizing the juxtaposition between assimilation and contrast effects that had been largely implicit in prior BFLPE research.

As demonstrated in the chapter, the juxtaposition between assimilation (reflected glory, labelling) effects and contrast (negative social comparison, BFLPE) effects has critical theoretical and substantive implications. On the one hand, assumed benefits associated with special settings for gifted students and with mainstreaming academically disadvantaged students are based in part assimilation effects predicted by labelling theory. On the other hand, BFLPE research has

demonstrated that contrast effects predicted by social comparison theory predominate. Although these two effects work in the opposite direction, it is important to emphasize that they are not mutually exclusive. Quite the contrary, as emphasized in this chapter, the BFLPE is the net effect of counterbalancing assimilation and contrast effects. Although this theoretical distinction has been emphasized in BFLPE research, it has not been operationalized and most emphasis has been placed on the negative contrast effects. Given this importance, it is surprising that BFLPE studies and evaluations of assigning extremely bright and very disadvantaged students to special settings have not more fully evaluated these processes. Hence, the inclusion of perceived school status as an indicator of reflected-glory, labelling effects is a unique feature of the Marsh, Kong, and Hau (2000) study. In addition to the face validity of the items in their perceived school status scale, there was empirical support for the construct validity of the perceived status responses. In particular, these responses were highly related to school-average achievement – hypothesized as a primary determinant of perceived school status – and contributed positively to the prediction of academic self-concept. Consistent with theoretical predictions, controlling the positive school status component in school-average achievement resulted in a more negative effect of school-average achievement on academic self-concept. More clearly than any previous BFLPE research and, perhaps, any other studies using the imposed social comparison paradigm, the Marsh, Kong and Hau results unmistakably differentiated between negative social comparison contrast effects and positive reflected glory assimilation effects that comprise the BFLPE. For these reasons, perceived school status or other measures operationalizing labelling effects need to be incorporated into future BFLPE studies .

Diener and Fujita (1997, p. 350) related BFLPE research to the broader social comparison literature. They emphasized that Marsh’s BFLPE provided the clearest support for predictions based on social comparison theory predictions in an imposed social comparison paradigm. They emphasized that the frame of reference, based on classmates within the same school, is more clearly defined than in most other research settings. Clearly, the importance of the school setting and the relevance of the social comparisons in school settings are much more ecologically valid than manipulations in the typical social psychology experiment conducted with university students. Indeed, except for opting out altogether, it is difficult for students to avoid the relevance of achievement as a reference point within a school setting or the social comparisons provided by the academic accomplishments of their classmates. A major focus of BFLPE research has been on the substantively important and surprising implications of this research, undermining the assumed advantages of attending academically selective schools and mainstreaming academically disadvantaged students. Although obviously supportive of these well-established concerns, research reviewed in this chapter also provides stronger links between BFLPE and broader areas of social comparison theory (e.g., Buunk & Ybema, 1997;

Diener & Fujita, 1997; Lazarus & Folkman, 1984; McFarland & Buehler, 1995; Taylor & Lobel, 1989; Tesser, 1988; Wills, 1981).

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Multidimensional Aspects of Motivation in Cross-Cultural Settings: Ways of Researching This

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This paper reports on a series of studies which examine the multidimensional nature of achievement motivation across a range of cultural groups, the determinants of this achievement motivation, and the relationship of achievement motivation to criteria of school success, such as attendance, retention, academic achievement, further education and occupational choice. A focus of the paper will be an examination of the multi-method approaches used to ensure the cultural validity and reliability of the information obtained, in particular, the paper pays special attention to the etic-emic considerations important in such research. The range of goal orientations and sense of self of self values considered in the research appear broadly relevant across all groups, and a narrow range of these appear important in explaining school achievement. Goals and values that are stereotypically used to distinguish between Western and other cultural groups (such as affiliation and social concern) do not appear to be salient in the school contexts studied. Factors which have been considered important by many as key determinants of indigenous minority student's poor achievement and dropping out of school, such as the supposed mismatch between the school's goals and values and the student's goals and values are, in general, not supported by the findings. These results are tempered by analyses of the qualitative studies. The qualitative interviews reveal the complex forces that operate in molding school motivation. In particular, the interviews reveal the dilemmas that indigenous children and children from non-Western backgrounds (and adults) face as they attempt, on the one hand, to preserve cultural traditions, while on the other hand, seek to modernise through education, in which alternative and sometimes competing values are seen to have a place.

Little is really known about the range of achievement values, goals and beliefs that are most salient to students from diverse cultural backgrounds in mainstream Western schools. For many of these children the language of the home is not English, and the culture of the home reflects the parents' culture of origin. Consequently, many children are brought up in a culturally different environment until they first go to school. Currently there is little 'scientific' information on what children from different cultural backgrounds value in their schooling, the goals they seek, and what gives purpose to their learning. Much policy and practice in education either ignores this issue and treats all children the same, or bases practices on stereotypical views of what these 'other' children are like. Among the aims of the research program reported here is to determine the salient values and goals that students from diverse cultural backgrounds hold, how these are developed in the context of cultural background, family, society and school, and how they are related to school motivation and achievement.

Theoretical Background

The research is embedded within a theoretical literature dealing with achievement motivation, especially that relating to goal theory, which has been very productive in stimulating research within the United States (e.g., Ames, 1992; Blumenfeld, 1992; Covington, 1992; Elliott, 1997; Maehr & Anderman, 1993; McInerney, 1992, 1994; 1995; McInerney, Roche, McInerney, & Marsh, 1997; McInerney & Sinclair, 1991, 1992; McInerney & Swisher, 1995; McInerney, Yeung & McInerney, 2000; Pintrich & Garcia, 1991; Pintrich, Marx & Boyle, 1993; Schunk, 1996; Urdan & Maehr, 1995; Urdan, 1997; Wentzel, 1991).

Many school systems today tend to reward children for achievement behaviours that conform to "standards"

reflecting Western values. It is commonly believed that cultural minority children may be poorly motivated to achieve at school because both schools and classrooms stress goals that are incompatible with their cultural values (James, Chavez, Beauvais, Edwards & Oetting, 1995; Kirkness & Bowman, 1992; Ledlow, 1992; Yates, 1987). The term goals refers to the different purposes that students may have in various achievement situations which guide their behaviour, cognition, and motivation as they become involved in academic work. Two types of goals have received considerable attention from researchers: mastery goals (also called task or learning goals), and performance goals (also called extrinsic goals). Central to a mastery goal is the belief that individual effort leads to success, and that learning has intrinsic value. With a mastery goal, individuals are oriented toward developing new skills, trying to understand their work, improving their level of competence, or achieving a sense of mastery. Mastery goals and achievement are "self-referenced". In contrast, central to a performance goal is a focus on one's ability relative to others. Ability is shown by doing better than others, by surpassing norms, or by achieving success with little effort. Public recognition for doing better than others through grades, rewards and approval from others, is an important element of performance goal orientation. Performance goals and achievement are, therefore, "other referenced" such that, "self-worth" is determined by one's perception of ability to perform and compete successfully relative to external criteria. Hence, when a student tries hard without being completely successful (in terms of the established norms), his or her sense of self-worth is threatened and motivation for learning is reduced. More recently, performance goals have been partitioned into performance approach goals and performance avoidance goals to account for anomalies in predicted relationships between performance orientation and academic outcomes (Elliott, 1997; Urdan,

1997).

In Western educational settings, both mastery and performance goals have traditionally focussed on individual achievement of goals. Little attention has been paid to group orientations such as working to preserve in-group integrity, interdependence of members and harmonious relationships. This social dimension of schooling (which includes the influence of parents, teachers and peers) may interact with both mastery and performance goals, and be extremely influential in affecting children's attitudes towards schooling in general, and to learning in particular. Furthermore, students may hold multiple goals such as a desire to please parents, to be important in the peer group, or to preserve their cultural identity, each of which may impact upon their level of motivation for particular tasks in school settings. Indeed, these multiple goals may interact providing a complex framework of motivational determinants of action.

Goals in Cross-Cultural Context

Mastery and performance goals may be of limited use in describing the motivational values of indigenous minorities. It is commonly believed, for example, that indigenous children are less likely to be motivated by individually oriented goals such as mastery and performance, and more likely to be motivated by social goals that reflect their need to maintain group allegiance and solidarity. Among the reasons given for this is the belief that many indigenous minority children are both past and present oriented, and hence do not set goals for the future. Their valuing of tradition encourages them to see little point in change; while their belief in the need to maximize and enjoy their present life means that they see no purpose in investing effort and time for an anticipated future. Indeed, for the traditional Native American, for example, thinking too much about the future is considered a taboo (McInerney, McInerney, Ardington & DeRachewiltz, 1997). As a consequence, it is often believed that indigenous children seek immediate gratification for what they achieve, rather than delaying gratification for the satisfaction of some future need (see for example, Cuch, 1987; Deyhle, 1989, 1992; Fergusson, Lloyd & Horwood, 1991; Fogarty & White, 1994; Giles, 1985; Platero, Brandt, Witherspoon & Wong, 1986; Sanders, 1987; Stokes, 1997; Tharp, Dalton & Yamauchi, 1994; Tippeconnic, 1983; Yates, 1987). The research support for many of these beliefs is very limited. The series of studies discussed in this paper, therefore, set out to discover some "hard data" on the nature of school motivation for a variety of cultural groups in mainstream school settings. In particular, the research examines the multidimensional aspects of motivation in cross cultural contexts employing, what is hoped to be, culturally appropriate techniques. The research program addresses the following questions:

1. Are the goals derived from achievement goal theory relevant to individuals from a range of cultural groups within cross-cultural school settings?
2. What are the most important goals of motivation for

3. these groups, and how do these relate to extant literature?
3. How do these goals relate to important criteria of school achievement such as school confidence, perceived value of school, school satisfaction, preferred occupation after leaving school, academic achievement, absenteeism and intention to complete schooling for these cultural groups?
4. What goals are emphasized by parents from different cultural groups; do these relate to goals drawn from goal theory; and what are their impact on student motivation and achievement in school settings?
5. What goals are emphasized by peers from different cultural groups; do these relate to goals drawn from goal theory; and what are their impact on student motivation and achievement in school settings?

Most recently my co-researchers and I (Hinkley & McInerney, 2000; McInerney, Yeung & McInerney, 2000) have attempted to examine and define the specific psychometric properties of each group's data that may or may not be the same as other groups, and to extract those psychometric features in common across the groups to enable effective cross-cultural comparison.

While the statistical techniques used in this program of research are regularly used with Western groups, they are rarely used with indigenous groups and other minorities. Hence a significant task was to demonstrate the applicability of these psychometric tools and analyses to these non-Western groups. Furthermore, in general, research with indigenous minorities is small scale. Our studies are large scale and hence have a capacity to make a significant contribution to research among these groups. Finally, our program of research combines sophisticated psychometric quantitative research with large scale qualitative research. This is unusual as much research with indigenous minorities is small scale qualitative (indeed, many believe that this is the only appropriate kind of research with indigenous minorities).

Methodological Issues

Psychometric Studies

The notion of achievement-motivation is difficult to operationalize psychometrically in cross-cultural settings if one is restricted to a generalized universal construct (i.e., everyone is presumed to be motivated by the same goals, irrespective of cultural background, which has been termed an etic approach), or to a particularistic view (i.e., motivation is group specific, and there are no generalities, which has been termed an emic approach). The dilemma of analyzing what are universal qualities of human behavior (therefore allowing some comparison across groups) and what are culturally specific qualities (therefore paying attention to the distinctiveness of groups) has been termed the etic-emic dilemma in cross-cultural research (Church & Katigbak, 1988a, 1988b; Segal, 1986). While attempting to elicit broadly comparable information from the groups surveyed

over the course of this research (what might be termed the etic component of the research), considerable effort has been taken to ensure its emic validity. In particular, care has been taken to ensure that shared meanings could be attributed to both the methodology and the survey items and scales (McInerney, Roche, McInerney & Marsh, 1997; McInerney, McInerney & Roche, 1994, 1995; McInerney & Sinclair, 1991; McInerney, 1992, 1995, 1998; McInerney, Yeung & McInerney, 2000).

Two primary approaches have been adopted to ensure the emic and etic validity of the psychometric data. First, prior to the psychometric studies, qualitative data were gathered through interviews and surveys on how the various cultural groups involved in the research conceptualized education and what they perceived as major issues in the motivation of their children in school settings. These conceptualizations are consistent with the items presented in each of the questionnaires used in the studies. Before use in each cultural setting the psychometric instruments were also subjected to the scrutiny of community members for cultural relevance/irrelevance. In each case a consultative group from within the cultural setting vetted the research for its cultural appropriateness. Second, in order to derive and validate psychometric scales for each of the groups independently, survey items were subjected to exploratory factor analysis to determine what might be termed the “emic scales”. The results of these analyses are reported in the research literature (McInerney & Sinclair, 1991, 1992). Two survey instruments derived from these analyses have been used, namely, the Inventory of School Motivation and the Facilitating Conditions Questionnaire. The Inventory of School Motivation deals with goals, values, and the sense of self components of motivation. The Facilitating Conditions Questionnaire deals with environmental pressures on school motivation and achievement, such as family, peer, and teacher influences. Confirmatory factor analysis has also been used for the Inventory of School Motivation (McInerney, Roche, McInerney & Marsh, 1997; McInerney, Yeung & McInerney, 2000) and the Facilitating Conditions Questionnaire (Hinkley & McInerney, 1998) in order to determine what might be termed “etic scales”, that is scales that have broad applicability across a range of cultural groups. These scales have recently been used to examine the motivational profiles of each of the groups in the various studies, any within and between group differences, and the relationship of the scales to achievement outcome measures.

The Inventory of School Motivation (ISM)

The specific model used to guide the motivational studies was derived from Maehr’s Personal Investment model (Maehr & Braskamp, 1986), a model posited to satisfy both etic and emic demands. The Inventory of School Motivation (ISM) was devised to reflect components of this model and to investigate the nature of school motivation in cross cultural settings (McInerney, 1988, McInerney & Sinclair, 1991, 1992; McInerney, Roche, McInerney, Marsh, 1997; McInerney, Yeung & McInerney, 2000). The Inventory is

broad enough to reflect the etic dimensions of the model in a variety of cultural settings. There are 100 questions relating to the following dimensions of the Personal Investment Model, each of which has two components: Sense of Self: sense of competence (e.g., I can do things as well as most people at school), sense of purpose (e.g., it is good to plan ahead to complete my schooling); Ego: competitiveness (e.g., winning is important to me), group leadership (e.g., I often try to be the leader of a group); Extrinsic: recognition (e.g., having other people tell me that I did well is important to me), token rewards (e.g., getting merit certificates would make me work harder at school); Social Solidarity: social concern (e.g., it is very important for students to help each other at school), affiliation (e.g., I try to work with friends as much as possible at school); Task: task involvement (e.g., the more interesting the school work the harder I try), and striving for excellence (e.g., I try hard to make sure that I am good at my schoolwork).

The Facilitating Conditions Questionnaire, consisting of thirty nine questions, was designed to reflect key environmental influences impacting student motivation and achievement, namely, family press for schooling, perceived teacher and school support, perceived peer influences (positive and negative), affect towards school, and perceived value of school.

Among the outcome variables considered in the research are academic achievement (mathematics and English, GPA), school absenteeism, affect towards school, intentions to complete further education, and desired occupation after leaving school

Among the key analyses conducted have been exploratory and confirmatory factor analyses, multivariate analysis of variance, and multiple regression. Factor analyses have been used to establish the validity and reliability of the scales used across the various groups, multivariate analysis of variance has been used to examine within and between group differences on motivational and facilitating scales, and multiple regression has been used to ascertain the relative importance of predictor variables across groups.

Qualitative studies

Interview Schedules

The survey studies referred to above did not examine the genesis of the achievement goals and values students held. Nor did they consider whether these goals change over time, and if so how, whether there is a movement from traditional cultural values to Westernised values for non-Western children as students move through a Westernized school setting, or whether some students maintain traditional goals and values while others combine the traditional and Western. Furthermore, they did not allow for an examination of the development of goals over time for mainstream students which is also of considerable interest and importance. In other words, these earlier studies did not consider ontological and change processes. A qualitative consideration of these processes forms an important component of the current

studies.

The major tool to elicit data on the ontology of values and change processes is individual semi-structured interviews. Through the use of these in-depth semi-structured interviews a richer understanding of important issues is gained, and in particular: How students from varying cultural backgrounds interpret themselves and their world; their affective reactions to schooling; what they consider of primary and secondary significance; and, how they build connections between life events which influence their sense of self, achievement and motivation within school settings. This more holistic approach provides important clues to understanding the process of adopting and maintaining/rejecting particular goal and value orientations within the school context, as well as the cognitive and affective factors involved.

Interviews last up to thirty minutes and are tape recorded. Each of the tape recorded interviews is then transcribed and content analysed using the NUD.IST (Non-numerical Unstructured Data Indexing Searching and Theorizing) Vivo program. The NVivo program was selected as appropriate for this qualitative data as it assists in the management of a thorough and systematic analysis of large quantities of qualitative data. Preserving the naturalistic quality of the data was of paramount concern, therefore the transcripts were only minimally edited.

Key concepts (nodes) emerging from the data are constructed as a 'tree' which allows for detailed conceptual linking of related phrases or concepts through indexing and coding of each text (interview) according to these concepts (nodes). Text is then examined and indexed to one or more of these to facilitate further analysis.

In all cases respondents to the interviews have also completed the psychometric survey which enables me to compare each in order to ascertain the convergence between the two.

Participants

The participants include Aboriginal Australian students, Anglo Australian students, Immigrant-background Australian students, Navajo students, Betsiamite Canadian Indian students, Anglo American students, and Yavapai students. The students attend broadly equivalent grades in High Schools teaching mainstream curricula. Interviews are conducted with volunteers from each of the grades surveyed with approximately four from each grade. There are approximately equal numbers of females and males in each group surveyed.

A Brief Overview of Findings

As this is an overview of a long period of research the results and conclusions are multifaceted. A major finding from the psychometric studies suggests the range of goal orientations and sense of self of self values considered in the research appear broadly valid and reliable across all groups. Furthermore, the motivational profiles of these diverse

cultural groups are strikingly similar (see, for example, McInerney, Roche, McInerney & Marsh, 1997; McInerney, Hinkley, Dowson & Van Etten, 1998; McInerney, 2000). Rather than the expected polarities between the indigenous, Anglo, and other cultural groups on key dimensions such as competition, affiliation, social concern, power and extrinsic rewards all groups were very similar in means and standard deviations across the range of scales analysed. Even where there were significant differences these are a matter of degree rather than kind, of little practical significance, and often run counter to the stereotypes. For example, much of the data indicates that while all groups are relatively low on competitiveness, Anglo groups are relatively lower than the others, and while all groups are relatively high on social goals, Anglo groups are relatively higher (see, for example, McInerney, Roche, McInerney & Marsh, 1997).

A narrow range of achievement goals and sense of self variables appears important in explaining school achievement on educational criteria across the groups, and these are broadly similar across the groups. Furthermore, goals and values that are stereotypically used to distinguish between Western and other cultural groups (such as competition, affiliation and social concern, and social power) do not appear to be salient in the school contexts studied. Similarly, factors which have been considered important by many as key determinants of indigenous minority student's poor achievement and dropping out of school, such as the supposed mismatch between the school's goals and values and the student's goals and values are, in general, not supported by the findings. What clearly emerge as important predictors of student academic achievement across all groups are:

- their values, beliefs and goals relating to a positive sense of self, in particular, the students' self esteem at school (feeling good about themselves as students) and sense of purpose (having a goal of doing well at school and getting ahead in life);
 - their level of mastery and intrinsic motivation, in particular striving for excellence and improvement in their work and being intrinsically motivated; and
 - their level of extrinsic motivation (in most cases negatively related to achievement criteria).
- Also emerging from the psychometric analyses are the clear findings that:
- perceived parental support is a major determinant of student academic achievement across all groups, and that,
 - the degree to which students value education for its instrumental purpose is strongly related to academic achievement across all groups

(McInerney, 1991ab, 1992, 1994, 1995; McInerney & McInerney, 1996; McInerney, Roche, McInerney, Marsh, 1997; McInerney & Sinclair, 1991, 1992; McInerney & Swisher, 1995).

These results are tempered by analyses of the qualitative studies. The qualitative interviews reveal the complex forces that operate in molding school motivation. In particular, the

interviews reveal the dilemmas and shifting value orientations that occur as indigenous and other children (and adults) attempt, on the one hand, to preserve cultural traditions, while on the other, seek to modernise through education in which alternative and sometimes competing values are seen to have a place. Clearly emerging from the qualitative interviews is the importance of mastery goals and social concern, and to a lesser extent, affiliation, recognition and praise, across all groups. In contrast, emerging from the interviews is the unimportance (and negative valuing) of competition, social power, rewards and tokens, again across ALL groups. Parental and community support for education and learning is consistently mentioned as important, as are the norms and role beliefs held by the students. Students argue that it is important for them to believe that it is “appropriate” for them to be successful at school; that they like and value school; and that they have access to models of successful schooling (either students, parents, or community members who do well at school and influence the student) (McInerney, McInerney, Ardington & De Rachewililtz, 1997; McInerney, McInerney, Ardington & Bazeley, 1998). According to the students themselves, students who espouse these norms and role beliefs, and have access to successful models, are more likely to be successful at school.

The dimensions of the Inventory of School Motivation (ISM) utilized in the quantitative studies discussed were also critically evaluated by the interviewees for cultural relevance and perceived importance in predicting school motivation and success. All dimensions of the ISM were considered culturally relevant. Dimensions that were considered most important to determining students’ level of motivation were: Task (intrinsic motivation) and sense of purpose. These qualitative results support the results of the psychometric studies.

Future Research Directions

School systems tend to reinforce children for achievement behaviour that conforms to “standards” that reflect Western values. Our results, therefore, which indicate the salience of common goals and external pressures for school achievement may simply reflect the reality of the school context in which children from diverse communities find themselves and to which they conform in order to be successful. The results, therefore, beg the question as to whether academic achievement could be enhanced for all children in more culturally appropriate ways e.g., by developing learning structures that are more consonant with cultural values (see, for example, McInerney, 1991, 1995; McInerney & McInerney, 1996, 1998). The findings suggest that many children from minority and other cultural groups appear to be effectively socialised into what it means to be a student in Western schools, with all that this implies in terms of the relevance of goals. Otherwise, there would, presumably, have been significant differences between the groups on the statistical validity of the instruments used, and/or statistical between-group differences on the goals and other dimensions studied, and/or differences in the predictive salience of the

goals and other dimensions for valued educational outcomes. In fact, the instruments seem to have equivalent statistical validity and reliability across the diverse groups, reveal very few significant differences between groups, and predict in similar ways achievement outcomes across groups. These studies have, therefore, left me with the following questions: Why do some children from minority cultural groups appear to successfully cross the cultural boundaries and do well at school while others fail? Are sense of self factors and achievement goals related to a child’s perception of his or her role as a student within a school setting, rather than related to the broader cultural community, which may be relatively unimportant in a school setting? Can, and (if so) how do, some children operate effectively at school while also maintaining strong cultural ties and values? And finally, how can we improve school so that more children from diverse backgrounds are successful? These questions need attention through carefully designed qualitative and quantitative research.

As this research progresses I am becoming more refined in my approach, and in particular, I am re-analysing earlier data with the value of hindsight gained from the more recent studies. While at the gross level earlier findings remain substantiated in these later re-analyses more fine-grained findings are beginning to emerge. In the current studies participants in the interviews have also completed the psychometric surveys and so it is possible to do a molar analysis of each individual’s psychometric data and to compare this with their interview data. This enables me to blend the strengths of both the psychometric and qualitative approaches to gain a much clearer picture of the salient values and goals of students from different cultural backgrounds, and how these are formed and transformed through life events.

Finally, I am coming to the conclusion that schooling is a context that is “pan cultural” or, putting it another way, schooling is a second culture for all students (Anglo, minority, indigenous) into which some students are more effectively socialised than others (many Anglo students don’t prosper at school). Basically, schooling requires the development of new social, cognitive, and motivational attributes in all children - however, some children become socialised to schooling more easily than others. The question is why? I don’t believe that the answer lies in cultural differences per se. These are, of course, important, but not the essential reason why many children do not thrive at school (there are too many successful minority cultural groups in Western school settings for this really to be plausible). An analogy can also be drawn with SES as a predictor of school achievement. Again, many low SES students thrive in schooling and use schooling to get ahead. So SES, in and of itself, does not explain why some children are successful and others are not. Once we dispense with cultural differences as the essential reason for lack of success (and also SES perhaps) we can examine the real issues - e.g., schooling processes that are dysfunctional for lots of children across lots of groups. I still need to become more refined in my analyses of the very rich data I have, so that I can be more definitive that cultural

differences don't really make the difference. Let me know what you think.

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Music Self-Concept: Instrumentation, Structure, and Theoretical Linkages

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The recent expansion of research into self-concept has included integration of music self-concept into theoretical models and multidimensional assessment instruments. In the research reported here, specialized aspects of music self-concept were used to test William James' (1890/1963) hypothesis that domain importance moderates relations between global self-esteem and domain-specific self-concepts. Results from two samples (early adolescents, $n = 461$ and college students, $n = 335$) supported the domain importance hypothesis with particularly noteworthy effects observed for college students. In all cases, the relation between self-esteem and the given aspect of music self-concept increased as domain importance increased, with the lowest levels of self-esteem observed for individuals with low domain self-concepts who placed high importance on being skilled in that area. These findings together with those from previous studies provide evidence that moderating effects of domain importance may vary with age and with the nature and specificity of the domain assessed.

Over the last two decades, substantial progress has been made in understanding self-perceptions due to advances in theory, instrumentation, and research methods. Self-concept is no longer viewed as a unidimensional construct but as a set of multifaceted constructs. Multidimensional theories of self-concept have simulated the development of a wide array of multi-scale self-concept inventories including the *Self-Description Questionnaires* (Marsh, 1992a, 1992b, 1992c) and *Self-Perception Profiles* (Harter, 1985, 1986a, 1986b; Messer & Harter, 1986; Neemann, & Harter 1986). These instruments are intended primarily to measure self-perceptions in broad but distinct domains such as academic skill, social skill, physical ability, and emotional development. Other inventories such as the *Academic Self-Description Questionnaire* (1990), *Reading Self-Concept Scale* (Chapman & Tunmer, 1992), *Physical Self-Description Questionnaire* (Marsh, Richards, Johnson, Roche & Tremayne, 1994), and *Physical Self-Perception Profile* (Fox & Corbin, 1989) measure more specialized subdomains within some of these broader areas. Self-concept theory also has been expanded to include self-perceptions of skill in other areas such as artistic domains. Instruments that assess artistic self-concept include the *Arts Self-Perception Inventory* (Vispoel, 1993a, 1996), which measures overall perceptions of skill in music, visual art, dance, and dramatic arts, and the *Music Self-Perception Inventory* (Vispoel, 1993b, 1994), which measure self-perceptions of skill in more specific areas such as playing musical instruments, singing, reading music, composing music, listening to music, and moving to music. Research into music self-concept has extended self-concept theory in several useful ways. Music self-concept has been integrated into the Shavelson, Huber, and Stanton (1976) hierarchical model as a sub-component of overall artistic self-concept (Vispoel, 1995a, 1999). Music self-concept itself is also multifaceted and hierarchically structured (Vispoel, 1994). In the two studies reported here, I sought to further our understanding of artistic self-concept by evaluating relations between components of music self-concept and overall self-esteem and how those relations might be moderated by the importance ascribed to being skilled at music.

Theoretical Framework

The recent trend in the design of multidimensional self-concept inventories has at least two distinct aspects: (a) the development of multi-item subscales that correspond to specific domains, and (b) the quest for a model to represent the relations between domain-specific and general self-concepts, perhaps through the differential weighting of the subscales by their relative importance. That the personal importance of a domain should affect the significance of self-perceptions in that domain is an idea that can be traced to the writings of William James (1890/1963). James suggested that one's self-perceptions in areas of great personal relevance and importance should impact one's overall sense of self-worth to a much greater extent than one's self-perceptions in areas of relative irrelevance or unimportance. To quote James "I, for the time have staked my all on being a psychologist, am mortified if others know much more about psychology than I. But I am contented to wallow in the grossest ignorance of Greek." (p. 310).

Although the idea that the contribution of domain-specific self-concepts to general self-esteem depends upon the personal importance of each domain is popular among many theorists, it has received surprisingly limited empirical support (Hoge & McCarthy, 1984; Forte & Vispoel, 1995, Marsh, 1986, 1993, 1994, 1995a, 1995b, Marsh, 1994; Pelham, 1995a, 1995b; Vispoel, 1995b; Vispoel & Forte, 1994). Despite many null findings, Marsh (1986a) and others (e.g., Pelham, 1995b) have emphasized that this "theoretical notion has too much intuitive appeal to be completely rejected, and so further examination of the issues is needed (Marsh, 1986; p. 1233). " In evaluating the status of research at the time of his 1986 study, Marsh made several suggestions for future investigations. First, to compare the relative meaningfulness of importance ratings across both individuals and domains, information about a wider range of domains should be elicited. In particular, domains of non-universal importance should be included to enhance the degree of variability on the importance ratings both inter-individually and across domains. Second, diverse groups of individuals should be sampled for the same reasons. Third, multi-item rather than single-item importance ratings should be used to

provide more reliable and valid information about domain importance. Finally, alternative forms of importance rating scales should be developed.

Marsh's recommendations for improving research into domain importance were implemented to varying degrees in several subsequent studies (Marsh, 1993, 1994, 1995a, 1995b; Marsh & Sonstroem, 1995; Vispoel, 1995b; Forte & Vispoel, 1995; Pelham, 1995a; Pelham & Swann, 1989; Vispoel & Forte, 1994). Results from these studies provided some support for the domain importance hypothesis, but improvements in explanatory power gained by taking the moderating effects of domain importance into account were generally small (typically accounting for an additional 1% to 3% of variance in global self-esteem beyond the effects of domain-specific self-concept and domain importance). Consistent with Marsh's (1986) speculations, the statistically significant results that did emerge in those studies were generally in domains of non-universal appeal (i.e., physical ability, religion, dance, art, foreign language, industrial arts, and music) in which importance ratings were generally more variable than in other domains. It may be the case, however, that these domains are still too broad to elicit strong support for the domain importance hypothesis.

Purpose of the Study

The purpose of the two studies reported here was to provide a better understanding of the role that domain importance might play in linking domain-specific self-concepts to global self-esteem by addressing limitations in many previous studies. Specifically, the objectives were:

1. To assess self-concept in a non-universal domain (music) for which domain importance ratings are expected to be highly variable, and therefore increase the likelihood of detecting differential relations between domain specific and global aspects of self-concept resulting from differences in perceived domain importance;
2. To assess self-concept in specialized subdomains of skill within music (instrument playing, singing, reading music, listening, composing, creating dance movements) to increase further the likelihood of detecting hypothesized domain importance effects;
3. To sample individuals with backgrounds and interests expected to contribute meaningfully to the variability of the subdomain-specific self-concept scores and importance ratings across individuals and subdomains;
4. To sample individuals at two distinct age levels (early adolescents, adults) when serious involvement and interest in specific areas was expected to be reliable and meaningful;
5. To assess self-concept and the importance attributed to each surveyed subdomain using psychometrically sound multi-item scales.

Study 1: Method

Participants

The participants were 461 students from two junior high schools in Eastern Iowa (39% male, 61% female; 64% seventh grade, 36% eighth grade; 86% Caucasian, 4% African American, 4% Latino, 5% Asian; 1% native American; mean age = 12.15). Approximately 38% of these students participated in a school choir, band or orchestra.

Measures and Procedure

Students completed three sets of measures: (a) the General Self-Esteem subscale from the *Self-Description Questionnaire-II* (SDQ-II; Marsh, 1992b), (b) the *Music Self-Perception Inventory – Adolescent Form* (MUSPI; Vispoel, 1993, 1994), and (c) domain importance rating scales from the MUSPI. Measures were administered during required general music and art classes. The SDQ-II Self-Esteem scale consisted of 10 items targeted at overall perceptions of self such as "I am self-accepting" and "Overall, I have a lot of respect for myself." The MUSPI consisted of 84 items that comprise one 12-item Overall Music Ability subscale and six 12-item subdomain-specific subscales: Singing, Instrument Playing, Reading Music, Listening, Composing, and Moving to Music. The domain importance measure consisted of six 3-item subscales that assessed how important each MUSPI subdomain (all except Overall Music Ability) was in determining how one felt about oneself in general (1 = extremely unimportant, 6 = extremely important). Prior factor analytic studies of the SDQ and MUSPI have verified that each subscale measures a construct distinct from that measured by other subscales. Construct validity of these instruments also has been supported by data demonstrating logical relationships between SDQ-II/MUSPI scores and external criterion measures (see Byrne, 1996, Marsh, 1992b, and Vispoel, 1994 for further details).

Analysis and Results

Preliminary analyses were conducted to evaluate the construct validity and reliability of the Self-Esteem, MUSPI and importance subscales using the present data set. Two sets of confirmatory factor analyses were run using items from two subsets of measures: (a) Self-Esteem and MUSPI scales, and (b) domain importance scales. In both cases, the Tucker-Lewis Index (TLI) and Relative Noncentrality Index (RNI) values were well above the conventional 0.90 cutoff for adequate model fit (TLI = 0.97 and RNI = 0.98 for the self-concept scales; TLI = 0.95 and RNI = 0.96 for the importance ratings). The alpha-reliability estimate for the SDQ-II Self-Esteem scale equaled 0.88, those for the MUSPI subscales all equaled either 0.95 or 0.96, and those for the domain importance subscales all equaled either .92 or .93. The median alpha-reliability estimate across scales equaled 0.94.

To test the domain importance hypothesis, seven

hierarchical multiple regression equations were derived, one for each of the six domain-specific areas of self-concept (singing, instrument playing, etc.) and one combining the six subdomain areas. Global Self-Esteem was the dependent variable in each analysis. In each domain-specific regression analysis, the subdomain self-concept scale was entered first, followed by the importance rating score, followed by the subdomain self-concept by importance rating interaction term. In the combined subdomain analysis, the six MUSPI subdomain self-concept scores were entered in the first step, the six importance ratings in the second step, and the six interaction terms in the final step. The final residual term was used to test all effects in each analysis. The key test of the domain importance hypothesis was that the interaction term be statistically significant and account for a substantively meaningful proportion of variance in self-esteem scores after subdomain-specific self-concept scores are taken into account. A statistically significant interaction indicates that the effects of subdomain-specific aspects of self-concept on self-esteem vary with the perceived importance of the domain.

The results in Table 1 show that the interaction term in four of the seven regression analyses (instrument playing, reading, listening, combined analysis) reached statistical significance ($p < .05$). The strongest effects were observed in the combined analyses in which the independent variables accounted for 18% of the variance in overall self-esteem scores. The interaction term in that analysis accounted for an additional 5% on variance beyond music self-concept scores and importance ratings—a figure somewhat higher than those reported in prior studies using a similar multiple regression procedure. In the regression analyses for separate MUSPI subscales, statistically significant interactions accounted for 1% to 3% of the variance in overall self-esteem scores. The interaction between domain importance and instrument playing self-concept is shown in Figure 1. The high and low importance lines in Figure 1 refer to importance ratings one standard deviation above and below the importance rating mean respectively. Consistent with the James' hypothesis, instrument playing self-concept is essentially uncorrelated with self-esteem for individuals who place little importance on instrument playing ability but is positively correlated with self-esteem for individuals who place high importance on that ability. Note in particular that self-esteem is lowest for individuals with low self-perceptions of instrument playing skill who placed high importance on that skill. Although not shown here, a similar pattern of relationships held for all of the other statistically significant interactions shown in Table 1.

Study 2: Method

Participants

The participants were 335 University of Iowa students enrolled in introductory statistics classes required in a wide variety of graduate and undergraduate programs (30% male, 70% female; 5% freshman, 35% sophomores, 24% juniors;

15% seniors; 21% graduates; 88% Caucasian, 1% African American, 2% Latino, 9% Asian; mean age = 22.92). Twelve percent of the sample had professional music performance experience.

Measures and Procedure

Students completed three questionnaires: (a) the General Self-Esteem from *the Self-Description Questionnaire-III* (SDQ-III; Marsh, 1992c), (b) *the Music Self-Perception Inventory-Adult Form* (MUSPI; Vispoel, 1993, 1994), and (c) domain importance rating scales. Questionnaires were distributed during the statistics classes, completed outside of class, and returned during the next class meeting. The SDQ-III Self-Esteem scale consisted of 10 items targeted at overall perceptions of self such as "I am self-accepting" and "Overall, I have a lot of respect for myself." The MUSPI consisted of 84 items that comprise one 12-item Overall Music Ability subscale and six 12-item subdomain-specific subscales: Singing, Instrument Playing, Reading Music, Listening, Composing, and Moving to Music (see Byrne, 1994, Vispoel, 1994 for evidence supporting the reliability and construct validity of the MUSPI). Importance ratings scales consisted of six 3-item subscales that assessed how important each MUSPI subdomain (all except Overall Music Ability) was in determining how one felt about oneself in general (1 = extremely unimportant, 8 = extremely important).

Analysis and Results

Preliminary analyses were conducted to evaluate the construct validity and reliability of the Self-Esteem, MUSPI and importance subscales. Two sets of confirmatory factor analyses were run using items from the following subsets of measures: (a) Self-Esteem and MUSPI scales, and (b) importance rating scales. In both cases, the TLI and RNI values were well above the .90 rule of thumb cutoff for adequate model fit (TLI = .95 and RNI = 0.96 for the self-concept scales; TLI = 0.92 and RNI = 0.94 for the importance scales). Alpha-reliability estimates for the self-concept subscales ranged from 0.95 to 0.98 ($\text{mdn} = 0.97$), and those for the domain importance scales all equaled either 0.97 or 0.98.

To test the domain importance hypothesis, the same series of hierarchical multiple regression analyses used in Study 1 was repeated. These results, as shown in Table 2, provide particularly strong evidence in support of the domain importance hypothesis. The contribution of both the main effect for importance and the interaction was substantially higher than the contribution of the self-concept scale, and both effects were statistically significant in each regression analysis. In the combined regression analysis, importance ratings and interactions accounted for 16.3% of the variance in self-esteem beyond the 3.3% of variance accounted for by the subdomain-specific self-concept scales. Interaction terms accounted for 3% to 7% of the variance in overall self-esteem scores across analyses. Although not depicted here, the nature

of all interactions was identical to that shown in Figure 1. Music self-concept had little relationship with global self-esteem for individuals who attributed low importance to being skilled at music, but these two variables were positively related for individuals who placed high importance on music proficiency. In all cases, self-esteem was lowest for individuals with low music self-concepts who placed high importance on being skilled at music.

Table 1:
Multiple Regression Results for the Effects of Music Self-concept and Domain Importance on General self Esteem (Adolescents, $n = 461$)

	Self-concept		Importance Rating		Interaction		Final R ²
	Part r	R ² Change	Part r	R ² Change	Part r	R ² Change	
Singing	.142	.020**	-.036	.001	.036	.001	.023*
Instrument Playing	.341	.116***	-.053	.003	.140	.020**	.139***
Reading Music	.309	.095***	.026	.001	.174	.030***	.126***
Composing Music	.243	.059***	.000	.000	.050	.003	.062***
Listening Skill	.262	.069***	.056	.003	.091	.008*	.080***
Moving to Music	.089	.008	-.044	.002	-.062	.004	.014
Scales Combined		.122***		.013		.047***	.182***

* $p < .05$; ** $p < .01$; *** $p < .001$

Figure 1: *Plot of Instrument Playing Self-Concept x Domain Importance Interaction for the Early-Adolescent Sample ($n = 461$)*

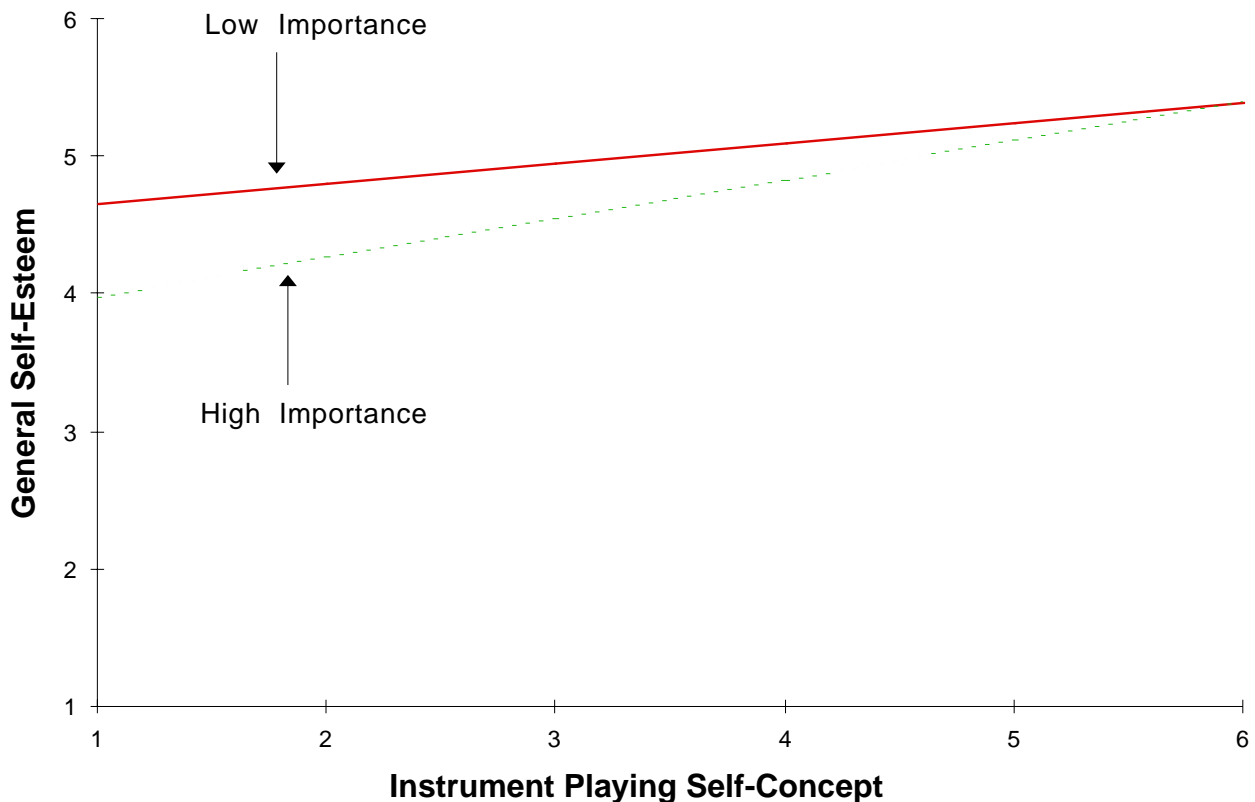


Table 2:
Multiple Regression Results for Effects of Domain Self-Concept, Domain Importance, and Their Interaction on General Self-Esteem (Adults, n = 335)

Domain	Self-Concept		Importance Rating		Interaction		Final R ²
	Part r	R ² Change	Part r	R ² Change	Part r	R ² Change	
Singing	.087	.008	-.281***	.079***	.212***	.045***	.131***
Instrument Playing	.024	.001	-.243***	.059***	.179***	.032***	.092***
Reading Music	.023	.001	-.231***	.053***	.218***	.045***	.099***
Composing Music	-.068	.005	-.253***	.064***	.180***	.032***	.101***
Listening Skill	-.003	.000	-.265***	.070***	.218***	.048***	.118***
Moving to Music	.065	.004	-.178**	.032***	.185***	.034***	.070***
Combined		.033*		.090***		.073***	.196***

Note: * p < .05; ** p < .01; *** p < .001

Discussion

It has long been postulated that domain importance plays a role in moderating relations between domain-specific self-concepts and global self-esteem (see, e.g., Byrne, 1996; Coopersmith, 1967; Harter, 1982, 1983, 1986b; Hoge & McCarthy, 1984; James, 1890/1963; Marsh, 1986, 1993; Pelham & Swann, 1989; Rosenberg, 1965, 1979; Wylie, 1974, 1979, 1988). Yet despite the strong intuitive appeal of this idea, it has generally received weak or no empirical support. Reasons offered to account for these findings have included the use of inappropriate research methodology, unreliable measures for self-concept and/or importance ratings, inappropriate measures of domain importance, homogeneous respondent samples, and self-concept domains too broad or too common to elicit differential importance effects. I designed the present investigation to address some of these limitations in prior research. To increase the chances for obtaining heterogeneous responses to self-concept and importance measures, highly specialized areas within music were evaluated (singing, instrument playing, etc.), and two age cohorts were sampled for which the level of involvement in music activities was highly variable. To address measurement and related methodological concerns, multi-item scales were used to measure both self-concept and domain importance, and these measures yielded strong evidence of internal consistency and factorial validity. The final results revealed stronger evidence in support of the domain importance hypothesis than has been obtained in prior studies, which may be attributable, in part, to the quality of the assessment measures, the variability of responses to those measures, and the use of very specific self-concept domains.

Attributing the present findings to the use of highly specialized self-concept domains is in keeping with James' (1890/1963) original illustration of the domain importance idea using the areas of psychology and Greek as domains of self-concept. The results are also consistent with findings from several studies in which domains of non-universal appeal (e.g., physical skill, religion, dance, music, art, foreign language, industrial arts) elicited statistically significant albeit weak domain importance moderation effects (Marsh, 1986,

1993; Forte & Vispoel, 1995; Vispoel, 1995b; Vispoel & Forte, 1994). Bearing this in mind, it might be speculated that stronger moderation effects were observed here because even narrower subdomains of self-concept were evaluated than in previous studies. There is some evidence that this speculation may hold in music, but caution needs to be exercised in generalizing this idea to other domains. Marsh (1994), for example, found no evidence that domain importance moderated relations between either global self-esteem or global physical self-concept and subdomain-specific aspects of physical self-concept (strength, body fat, endurance/fitness, sports competence, etc.) using a sample of 395 Australian high school students. Taken together, these results provide some indication that domain importance effects may be domain- and/or age-dependent.

Possible age-related or developmental differences in relations among global self-esteem, domain-specific self-concepts and domain importance were suggested in the two studies reported here. Consistent with findings from Vispoel (1994, 1995a, 1999), music self-concept was much more strongly correlated with global self-esteem for early adolescents than for adults. This result may reflect the greater average level of involvement and stakes associated with formal music activities for the younger sample. The junior high students all were taking and being graded in a required general music class, and proportionately more of them participated in music ensembles (choir, bands, orchestra).

A new and perhaps more noteworthy finding regarding possible developmental differences, however, involved domain importance. In the early adolescent sample, domain importance explained no significant variance in self-esteem beyond subdomain-specific self-concepts, and the statistically significant moderation effects of domain importance were fewer in number (4 out of 7 analyses) and lower in magnitude than for adults (accounting for 2% to 5% of the variance in global self-esteem beyond the main effects of subdomain self-concepts and importance ratings). In all regression analyses for the adult sample, the domain importance main effect and the domain self-concept by importance interaction were statistically significant and together accounted for 9% to 16% of the variance in global

self-esteem beyond that accounted for by subdomain self-concepts. Although the magnitude of these effects is still reasonably modest, they are more consistent and stronger than those observed in prior research.

The idea that mediation and/or moderation effects of domain importance may vary developmentally and by domain seems intuitively reasonable. As individuals mature, they generally gravitate to certain specialties and the importance of being skilled in particular occupational and leisure areas may have an especially noteworthy influence on how those individuals feel about themselves in general. These areas of personal significance may not be the ones that are assessed in most self-concept inventories, and this may account, in part, for the difficulty in obtaining verification for the domain importance hypothesis in prior research.

Differences in the pattern of regression findings between the two age cohorts sampled here also has some potentially important implications regarding two theoretical models (interactive and discrepancy) for the effects of domain importance on global self-esteem (see Marsh, 1986, for a more in-depth discussion of these models). In the interactive model emphasized throughout this paper (also see Rosenberg, 1965, 1979, Hoge & McCarthy, 1984), the positive effect of a domain-specific self-concept on global self-esteem will vary depending on how important facility in that domain is to the individual. High domain-specific self-concepts and high importance will maximize esteem, whereas low domain-specific self-concepts and high importance will minimize esteem. Support for this model in multiple regression analyses such as those used here would hinge on a statistically and substantively significant domain self-concept by importance interaction in the prescribed direction. In the discrepancy model (see Harter, 1986), esteem decreases as positive discrepancies between importance and domain-specific self-concepts increase. Support for this model in the multiple regression analyses would hinge largely on a significant main effect for domain importance in a negative direction after the main effect of domain-specific self-concept is taken into account. If both main effects for importance and an importance by domain self-concept interaction are found, the interactive and discrepancy models both could be supported depending on the direction and nature of the effects. The present findings provided support for the interactive model in both the early adolescent and adult samples but support for the discrepancy model only in the adult sample. As a result, the interactive model, although more complex, would appear to provide the more general and better explanation for the effects of domain importance in the music domain, and those effects were more pronounced for adults than for early adolescents.

The most important implication of the present findings is that domain importance may play a greater role in understanding self-esteem than many recent studies seem to suggest. Finding areas in which domain importance moderates overall self-esteem may not be easy, but it could provide a key to understanding how and why interventions designed to enhance self-esteem succeed or fail. Likewise, a

better understanding of the role domain importance plays in determining both specific and general self-perceptions could be beneficial in the development of future self-esteem-building programs and measurement tools. Thus, the further study of domain importance in specialized achievement domains may have significant implications for both the theoretical understanding of self-perceptions and the practical applications of self-concept theory.

Limitations and Suggestions for Future Research

In future research, it is important to evaluate the issues considered here with larger and more diverse samples of respondents and to extend the sampling to younger respondents. The scope of the future research also could be extended beyond having global self-esteem as the only dependent variable and perceived domain importance as the only moderating variable. It may prove useful, for example, to repeat the present analyses with global music self-concept as the dependent variable and to expand the overall analyses to incorporate additional importance weighing models (see, e.g., Marsh, 1993) and other possible moderating variables (e.g., certainty of ratings, similarity of importance and domain self-concept ratings). Researchers also are encouraged to investigate alternative measures of domain importance (see Forte & Vispoel, 1995; Vispoel, 1995b, Vispoel & Forte, 1994) and to evaluate the relation between domain importance and self-esteem more fully for individuals with different self-views and affective orientations (e.g., negative versus positive). Pelham (1995a), for example, reported that differential importance had a stronger effect on self-esteem for individuals who felt they were not very talented in most areas. It would be instructive to determine if such findings generalize to artistic-related domains.

About the Author

Professor Walter Vispoel is a faculty member at the University of Iowa, USA. His research emphasizes extensions of self theory and instrumentation into artistic domains and the use of computers in improving the validity and administrative efficiency of assessment tools. He is member of several journal editorial boards and the author of numerous journal articles, book chapters, and assessment instruments.

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The Nature of Self-Conception: Findings of a Cross-Cultural Research Program

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An influential paper by Markus and Kitayama (1991) argued that the independent model of self depicted in the literature was not appropriate for non-Western people. However, the research basis for such a claim was not convincing. The research program reported in this paper was designed to provide such a database. Study 1 involved content analysing the responses to the Twenty Statements Test of 2391 college and 459 school students from 16 countries. Study 2 involved ecological factor analysis and multidimensional scaling analysis of responses of 1662 adults and 5124 college students from 25 countries to the Adult Sources of Self-Esteem Inventory. It was concluded that cultures do differ in the basis of self-conceptions but such differences cannot be explained in terms of Western v Non-Western or a cultural dimension such as Individualism-Collectivism. Moreover, gender differences in self-construal were not consistent across countries being clearcut primarily in English heritage countries

For over twenty-five years this writer has been conducting research in the area of self-concept. This was despite the best attempts of my Australian professors to dissuade me from becoming involved in what was regarded in the early 1970's as a rather discredited area of research. Mentalistic constructs such as the self-concept were considered by behaviorists as not amenable to scientific study and research in the area had become the domain of sociologists and clinical psychologists. Unfortunately, an extensive critique showed that the great majority of the ensuing research was of poor quality (Wylie, 1974). In particular Wylie highlighted fundamental problems in the definitions, theories, measures, and research designs in this area which led to conflicting findings in the literature.

Happily Wylie's critical review served as a wake-up call to psychology and a number of leading researchers became interested in this field. A real turning point was the postulation of a hierarchical, multifaceted model of the self by Shavelson, Hubner, and Stanton (1976) which provided both a clear structure for the self and a number of accompanying theoretical propositions. This work served as the basis for the development of a number of instruments with strong psychometric properties (see reviews by Byrne, 1996; Hattie, 1992). Subsequent research using such instruments has done much to clarify our understanding of how self-concept develops and can be enhanced and how self-concept influences behaviour (Harter, 1998; Hattie, 1992).

The self-concept has also played a central role in the cross-cultural psychology literature in recent years. Indeed the publication of Markus and Kitayama (1991), which quickly reached the status of one of the most widely cited papers in all of psychology, has been credited as leading to the acceptance of the cross-cultural area by mainstream psychology (Bond, 1996). In that paper Markus and Kitayama argued that the psychological literature at the time, such as that of Shavelson et al., portrayed the self as independent, autonomous, separate, and agentic. While this view of self, may be appropriate for Western persons,

Markus and Kitayama (1991) and Triandis (1989) questioned its relevance for non-Western individuals. These writers claimed that the latter were more likely to view themselves as interdependent, communal, and relational.

An interesting parallel to these claims of cultural differences comes from the literature on gender differences in self-construals. Markus, Josephs, and Tafari (1992) and Cross and Madson (1997) argued that while men are likely to describe themselves in ways typical of the independent self, women are more likely to espouse interdependent self-conceptions. The question then arises as to whether cultural and gender differences in self-construal can be characterised by the same underlying psychological dimensions. Kashima, Yamaguchi, Kim, Choi, Gelfand, and Yuki (1995) argued that this is unlikely from a cultural evolutionary perspective. Gender-related roles have arisen within particular societies primarily based on a gender based division of labor due to women's roles as childbearers whereas differences between cultures are more likely to reflect the ways different peoples have tried to cope with different ecological systems.

Moreover, it will be argued below that the evidence for culture and gender differences in self-construal is by no means conclusive. Indeed, Bond (1996) questions whether we may have been too willing to accept the claims of Markus and Kitayama (1991) without sufficient empirical support. The purpose of the research program on which this chapter is based was to provide a more adequate data base to assess claims of culture and gender differences in self-construal. It should be noted that these claims may be fundamental to our understanding of basic psychological processes. Thus Cross and Madson (1997), Markus and Kitayama (1991), and Triandis (1989) all argue that differences in self-construal may explain culture and gender differences in cognition, emotion, and motivation.

Cultural Dimensions and Self-Construal

A number of recent in-depth indigenous studies of self-conceptions have provided rather different models of self than those developed in Western research (for example, Enriquez, 1993, with Filipinos; Hsu, 1985, with Chinese; Mpofo, 1994, with Zimbabweans; and Yamaguchi, 1994, with Japanese). These investigations have been relatively consistent in finding that non-Western subjects were more likely to report possessing a relational, collectivist, or interdependent self-conception which contrasted with the

idiocentric, independent, or individualistic self typically reported by Western (or at least American) subjects. Moreover a number of other studies have concluded that respondents from the United States of America tend to provide qualitatively different self-descriptions from those of China, India, and Japan respondents (Bond & Cheung, 1983; Dhawan, Roseman, Naidu, Thapa, & Rettek, 1995; Ip & Bond, 1995; Schweder & Bourne, 1982).

The cultural dimension of individualism-collectivism (I-C) seemed to be tailor-made as an explanatory variable for such findings. This dimension was used by Hofstede (1980, 1983) to describe a continuum from individualism, where persons are considered as distinct units clearly separable from their social context, to collectivism, where people think of themselves not so much as separate entities but rather as members of the groups to which they belong. Hofstede compared survey data from samples of IBM employees to construct an index of individualism-collectivism (I-C) and three other dimensions: power distance, uncertainty avoidance, and masculinity/femininity for 50 countries plus 3 multicountry regions.

However, the self-concept research discussed above involved either two-country etic-type research (typically America v India, China, or Japan) or contrasted findings from an emic study of the self in a non-Western society with Western models of self. Such evidence is not sufficient to show that a generalizable cultural dimension such as individualism-collectivism underlies the differences found between respondents of the different countries (Bond, 1996). Cross-cultural methodologists have pointed out that to avoid false generalizations based on irrelevant differences between any two cultures we need to do the minimum of a four culture study (Bond, 1994; Schwartz, 1994; Triandis, 1990). Data would be needed on the self-conceptions of matched participants from at least two individualist and two collectivist cultures. We could first test whether the self-conceptions of the two individualist (and also the two collectivist) culture subjects were similar to each other and then that there were differences according to the supposedly underlying I-C dimension. The larger the number of cultures sampled the greater the confidence that could be placed in such an interpretation.

Prior to this research program there had been two three-culture and two larger studies. In the former category, Bochner (1994) found as hypothesized that adults from a collectivist culture (Malaysia) gave statistically significantly more group and fewer idiocentric self-description responses to the Twenty Statements Test (TST; Kuhn & McPartland, 1954) than did subjects from the individualist cultures of Australia and Britain. However, the total sample size of 78 was rather too small for much confidence to be placed in an interpretation at a cultural level for the three countries concerned. The second three-culture study of university students questions a simple I-C / self-concept relationship (Bond & Cheung, 1983). Very similar responses were found for their individualist (USA) and one of the collectivist samples (Hong Kong Chinese) but their other collectivist sample (Japan) was very different. One of the larger studies

was that of Triandis, McCusker, and Hui (1990) who, analysed responses to the TST of Illinois, Greek, Hawaiian (of both European and Asian background), Hong Kong, and Chinese psychology college students. They showed that the percentage of the subjects' responses that were linked to a social entity increased as expected by the supposed degree of collectivism of the cultural group to which they belonged. While this finding was encouraging, three of the groups sampled were American and participants were undergraduate college students (except for the People's Republic of China sample which was not only small in number but was also composed of older graduate students). Possible gender differences in the relationship between the I/C dimension and the self-concept were not considered.

Gender and the Self

Josephs et al. (1992) pointed out that little attention had been paid to that time to gender differences in the basis of self-esteem. They argued that self-esteem is related at least in part to how well men or women feel they have satisfied culturally mandated norms which differ according to gender. Whereas for men, being independent, autonomous, and superior to others are often expected, for women sensitivity, nurturance, and interdependence are more common expectations. So Josephs et al. (1992) proposed that men are more likely to have self-conceptions based on individualist, independent self-cognitions, while those of women are relatively more likely to be based on the notion of a collectivist, interdependent self. They supported their claims with data from three small studies of American college students of psychology. A more recent major review of this research area reached similar findings (Cross & Madson, 1997). However, the latter writers urged caution in generalising these claims to non-Western cultures as there was little relevant data.

Undoubtedly the largest, most carefully planned cross-cultural studies in the area of gender and self were those reported by Williams and Best. While the focus of that research was on the masculinity and femininity of self-conceptions several of their findings are pertinent to this chapter. For example, Williams and Best (1990) reported that affective differences in the self-conceptions of male and female university students varied over the 14 countries they sampled. Gender differences in terms of affective meaning (men were seen as being stronger and more active) were greater in less developed than in more developed countries.

More direct evidence was provided by Luk and Bond (1992) who concluded that their sample of Hong Kong male and female university students based their self-esteem on the same dimensions of self-concept. Moreover, a recent article by Kashima *et al.*, (1995) addressed the issue of culture, gender and the self from the perspective of individualism-collectivism research. Kashima et al. analysed the responses to questionnaire measures of individualistic, relational, and collective dimensions of self-construal originally developed from concepts emic to Japanese culture, by a total of about 1,000 introductory psychology students

from five cultures: two supposedly individualist (Australia and mainland USA), two thought to be collectivist (Korea and Japan) and one 'in-between' culture (Hawaii). They concluded that whereas gender differences in self-concept were primarily due to differences in the extent that their respondents thought of themselves as emotionally related to others, such differences between cultures were primarily due to differences in the degree to which their respondents saw themselves as acting as independent agents.

Research Considerations

The research program described in this chapter was designed to provide a strong test of the claims that at least some of the self-concept differences between cultures can be explained by underlying cultural dimensions such as I-C and that consistent gender differences in the relative salience of individualistic and collectivistic self-conceptions will be found in different cultures.

In planning this research program the following considerations were taken into account:

1. several different methods should be utilized so findings are not due to cultural differences in responding to the same method (Triandis, 1990). However, as the focus of this research was the nature of self-conceptions it was argued that self-reports are the most appropriate but that these should be obtained in different ways. Thus in this research program the open-ended TST approach was used together with the fixed rating scales of the Adult Sources of Self-Esteem Inventory (ASSEI; Fleming & Elovson, 1988).
2. participants of different ages should be utilized so that any findings are not age specific (Western research indicates that the structure and content of self-concept tends to change by age; see, for example, Hattie, 1992). Therefore studies were planned to sample adolescents, college students, and older adults; and
3. as wide a range of cultures as possible should be obtained. Thus the author contacted a number of cross-cultural psychologists from a range of countries which either according to Hofstede's (1980) listing were clearly near one extreme or other of the I-C dimension or could be sensibly placed on this continuum in such a way based on existing research evidence. In particular we were careful to include Collectivist cultures varying in terms of dominant religion, geography, and ethnic backgrounds.

Exploring the Self-Concept

The Twenty Statements Test has been widely used for over 40 years to explore how individuals think about themselves in their own words. It is considered a valuable tool for understanding spontaneous self-conceptions and how these might vary according to variables such as gender and culture (Bochner, 1994; Dhawan et al., 1995; Triandis, 1989;

Verkuyten, 1989). The TST typically provides rich data which can be used to investigate various aspects of self-conceptions. However, problems arise when researchers try to categorize these responses. There are a number of different category systems, varying from 2 to 59 categories depending on the interests of the researcher (see Wells & Marwell, 1976, for further information). It has also been argued that respondents from non-Western, lesser developed, or non-English speaking backgrounds might have difficulty giving 20 responses about themselves and that the responses should be weighted according to the order of response on the assumption that those provided early in the order are likely to be more salient for the respondent's self-conception (Bochner, 1994).

Surprisingly given the hundreds of times the TST has been used by different researchers little focus has been placed on such measurement issues for American let alone other respondents. Reporting of high inter-judge reliability for assignment of responses to the categories chosen by the researchers is as far as most studies go. Spitzer and Parker (1976) found that US college students in the 1950's perceived the TST as the least but in the 1970's as the most valid of four established measures of self-concept they were asked to complete. These researchers also reported that the median number of responses to the TST rose from 8 in the 1950's to 20 in the 1970's. These findings were attributed to changes in the emphasis on self-discovery in US society over these 20 years. In a more recent US study, Rentsch and Heffner (1992) reported that, when subjects were asked to rate the importance and satisfaction of TST responses, 18 of the 20 responses correlated significantly with the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1979); overall self-esteem as estimated from the TST and RSE correlated an encouraging .66.

In research conducted by this author less abstract, shorter versions of the TST have been used to explore the self-concepts of adolescents from Nepal, New Zealand, and the Philippines (see, for example, Watkins & Regmi, 1996). A pilot study for this research program with Hong Kong Chinese secondary school students found that the TST was too difficult for 12 year olds but was suitable for 17 year olds responding in their own first language. Analysis using the same categories as used throughout this research indicated that the number of items and weighting in terms of rank order did make a difference to the proportions of responses classified. The fewer the number of items analysed (7, 10, and 20 items were examined) the fewer the proportion of Independent self responses was found. Weighting responses for order also had the same effect. However, testing of gender differences in self-conceptions were found to be consistent whatever the number of items or weighted or not (see Watkins, Yau, Dahlin, & Wondimu, 1996 for details). In another pilot study using the same coding system with 100 Swedish and 100 Ethiopian university student respondents to the TST, the weighting and number of items were found to have only very minor effects which did not affect testing of cross-cultural differences. Whatever version of TST scoring (7, 10, or 20 items; weighted or unweighted) the Ethiopians were statistically significantly less likely to

describe themselves in independent terms than did the Swedes. For the Swedish data no matter which TST estimate of the independent self was used, the correlations with a quantitative measure of the independent self via ASSEI were around .30, all statistically significant at the .01 level (Watkins *et al.*, 1996). It seems then that the number of items and weighting might affect the scoring of TST responses of subjects from different cultures but there is no evidence which is best and any differences are consistent across gender and culture.

In this research, we found that the means of the number of different, codable item responses to the TST varied from 13.15 for Australian female university students to 19.88 for Ethiopian male university students. While the number of usable responses did vary there was no evidence that those differences varied systematically according to either I-C, gender, or type of student (secondary school v university). Given the above, we concluded that we could find no reason that the TST could not be used validly with our school and university samples from different countries and that our coding system was appropriate.

The TST has been the primary tool used to date to probe possible gender and culture differences in the nature of self-concept. However, analysis of responses to the TST is relatively subjective and research findings in this area may be instrument dependent. Moreover, the components of self-concept of men and women and between different cultures may well vary more in terms of salience rather than kind. Thus a measuring instrument is required which will allow exploration of the salience of possible self-components. ASSEI was designed to fulfill this function. This instrument contains two sections with twenty identical items (see Appendix). The first section asks subjects to identify how important each item is to their self-esteem while the second section asks them to rate how satisfied they are with that aspect of themselves (Markus & Kitayama, 1991, have argued that in a cross-cultural setting self-esteem is more appropriately seen as self-satisfaction rather than in self-enhancement terms). The items of ASSEI were chosen to represent a wide range of sources of self-esteem and to be capable of reflecting gender, developmental, and ethnic differences in the source of self-esteem.

ASSEI has the advantage over measures such as the TST of being objective in measurement but also allowing for individual differences in self-construal. However, it could be argued that the twenty items of ASSEI, while carefully selected to include a wide range of possible self-concept aspects throughout the adult life-span, may still not consider relatively unusual aspects of the self-concept valued by individual subjects or those not salient to American society where ASSEI was developed. Therefore pilot studies were conducted to explore the bases of self-esteem of students and adults in Australia, Hong Kong, Nepal, New Zealand, Nigeria, and the Philippines. These studies supported the appropriateness of the ASSEI items in a range of cultures. For example, content-analysis of the responses (in Chinese) of 281 Hong Kong adults averaging 30 years of age to the open-ended question "What areas of your life are important

to you?" found most of the ASSEI items did reflect the life areas reported by these respondents (Tam & Watkins, 1995). Of course, it is most unlikely that precisely the same 20 items would be the most salient for individuals within the same culture let alone across cultures. The aim of ASSEI was to include a range of life areas likely to include the most salient areas for as many adults as possible whatever their culture, age, gender, or religion.

For a US sample the ASSEI Importance and Satisfaction items were found to have median test-retest reliabilities over a two-week period of 0.69 and 0.67, respectively: quite impressive for single items (Davis-Zinner, 1990). The overall unweighted self-satisfaction total score was found to have an excellent internal consistency coefficient alpha of 0.97 for Turkish students (Inelmen, 1996). ASSEI total satisfaction scores unweighted and weighted for importance, respectively, were also found in this former research to correlate as predicted moderately highly (0.37 and 0.52) with the Rosenberg Self-Esteem Scale and negatively (-0.14 and -0.37) with the Neuroticism scale of the Eysenck Personality Questionnaire. Social desirability as measured by the Marlowe-Crowne scale as expected had only a minor influence on these ASSEI satisfaction scores (respective correlations of 0.28 and 0.23). Further cross-cultural validity evidence comes from a study of 139 Turkish university students (Inelmen, 1996) which found correlations of 0.65 and 0.55 between the ASSEI unweighted and unweighted satisfaction scores and general self-esteem as measured by the Coopersmith Self-Esteem Inventory and from a Swedish study (Watkins *et al.*, 1996) which found a correlation of 0.45 with self-esteem as assessed by the TST (all correlations are significant at 0.01 level).

Independent qualitative pilot studies for this research conducted in Hong Kong and Turkey supported by factor analyses of response to ASSEI items from over 20 countries have shown that responses to ASSEI can be classified into two sub-components of the self; the independent self and the interdependent self. Internal consistency reliabilities for both importance and satisfaction ratings of these sub-components has consistently proved to exceed .80 in over 20 countries (and in all samples in this research).

Method

Research Design

To summarise, the aims of this research program were to investigate the relationships between cultural dimensions and gender and the degree to which respondents espoused an Independent or Interdependent conception of self. To accomplish this school and college student and adult participants from a wide range of countries were asked to complete the open-ended Twenty Statements Test and/or the fixed-response format Adult Sources of Self-Esteem Inventory. The responses to the TST were content-analysed to provide the percentage of each participant's responses classifiable as depicting the Independent self. Responses to ASSEI was also analysed to provide scores on the

Independent and Interdependent self. These TST and ASSEI summary scores were then analysed for within- and between-country gender differences and correlated with the country level dimensions of Hofstede (1983), Schwartz's (1994) value scores, and Gross National Product.

Participants

The TSST was completed by 3228 respondents (2850 university first or second year undergraduates; 378 senior secondary school students) from 18 countries. The university students averaged 22 years of age and the school students 17 years. Forty-two percent of the sample were male (see Table 1 for breakdown of sample by country).

ASSEI was completed by 6786 respondents from 24 countries (2043 male and 3081 university undergraduates and 868 male and 794 female adults). The students averaged 22 years of age while the adults 33 years. The latter were obtained by different sampling procedures in each country to be as representative as possible of middle class urban adults (see Watkins, Mortazavi, & Trofimova, 1999c for further details).

A breakdown of the ASSEI sample by country is given in Table 3. It can be seen that the countries involved ranged from Western countries such as Australia, Canada, Netherlands, New Zealand, South Africa (White), Sweden, and the USA all with high Individualism-Collectivism indices (Hofstede, 1983) of 90, 80, 80, 79, 71 and 92 to a range of non-Western countries such as Colombia, Ethiopia, Hong Kong, India, Iran, Malaysia, Nigeria, Philippines, Thailand, Turkey, and Zimbabwe with relatively low I-C indices of 13, 27, 25, 48, 41, 26, 20, 32, 20, 37, and 27 respectively. Four Eastern European, former communist countries for which little country level data was available were also included in the sample. For Hong Kong adult samples were also obtained for nurses and heart and mental patients.

The Instruments

ASSEI is a 20-item inventory that requests each respondent to rate on a 1 (very low) to 10 (very high) scale the importance for him- or herself and his or her satisfaction¹ with different aspects of a person's self-concept such as the physical, social, ethnical, familial, and intellectual (see Appendix). The items were translated into the local language by teams of bilingual social scientists using the approved translation/back-translation method (Brislin, 1986) for the Bulgarian, Chinese, Dutch, Lithuanian, Hong Kong, Iranian,

Russian, Polish, and Thai respondents. The items tapping the Independent self are 1, 2, 3, 9, 12, 13, 14, 15, 16, and 18.

Procedure

The student respondents were surveyed with the TST and/or ASSEI in their normal class groups (except in the case of Canada where they were selected randomly from a subject pool) and told that they were taking part in an international study comparing the self-conceptions of people from different cultures. They were asked to co-operate with the research by answering truthfully and were assured that their individual answers would not be identified. They were then asked to complete the survey form. For the TST the following instructions were also given:

"There are twenty numbered blanks on the page below. Please write twenty answers to the simple question 'Who am I?' in the blanks. Just give twenty different answers to this question. Answer as if you are giving the answers to yourself, not to somebody else. Write the answers in the order that they occur to you. Don't worry about logic or 'importance'. Go along fairly fast for time is limited."

In all but seven of the countries the students responded to the above questions in English but for China, Ethiopia, Hong Kong, India, Poland, Sweden, Taiwan and Turkey the instructions were translated into the relevant local language and the students responded in that language. Their responses were later translated into English by expert translators blind to the hypotheses of the study.

Analysis

The following criterion was used to code the TST responses²:

"Classify each statement according to whether it is an instance of the Independent Self which is defined as Statements about personal qualities, attitudes, beliefs, states, and traits that DO NOT relate to other people. Examples: "I am honest", "I am intelligent", "I am happy".

Each sample of TST responses were classified independently by the author and experienced post-graduate students majoring in Psychology. Each respondent's totals for the Independent Self category was then calculated (in the few cases where fewer than twenty categories were given or one or more responses were unclassifiable, the totals were prorated to give scores totalling twenty). An inter-rater correlation of over 0.90 was obtained on all occasions.

¹ As the focus of this chapter is the basis of self-conception only the results of the ASSEI importance ratings are discussed here. Readers interested in satisfaction ratings are referred to Watkins et al. (1998b)

² This is a simplified version of the four categories into which TST responses were classified (see Watkins et al., 1998a for details)

Results

Because of space limitations it will only be possible to summarise the main results in this chapter and readers are referred to the following paper for further details for the TST to Watkins et al., (1996, 1998a, 1999a) while for ASSEI to Watkins et al., (1997, 1998b, 1999b, 1999c).

The percentage of responses to the TST classified as representing the Independent Self are shown in Table 1 by gender.

Inspection of the data in Table 1 shows that the percentage of responses varies considerably by country and gender. For the university data, the six Western countries sampled (Australia, Canada, Netherlands, New Zealand, South African white, and Sweden) the percentage of respondents classified as Independent Self ranged from 53.08 to 75.96 with a median of 65.22. The corresponding percentages for the ten non-Western countries ranged from 40.54 to 78.54 with a similar median of 64.81 and for the one Eastern European country sampled, Poland, were 54.28 and 40.33 for males and females, respectively. For the school data the percentages ranged from 48.08 to 64.22 with a median of 57.66.

Culture (I/C) x Gender and Country x Gender Multivariate Analyses of Variance (MANOVA) indicated that main effects for Gender and Country and interaction effects were statistically significant at .01 level (Watkins 1998a, 1999a). However, the effect sizes were much less for gender and there was no significant main effect for the I/C dimension. Analyses indicated that while the TST data from the Anglophone Western countries were rather similar to the self-conceptions of respondents even from closely related culturally and geographically collectivist countries such as China, Taiwan, and Hong Kong differed markedly.

Interestingly the predicted gender difference (males providing a higher percentage Independent Self responses than females) was found only for three of the Anglophone Western countries (Australia, Canada, and New Zealand) and the one Eastern European country sampled, Poland.

Correlations between the TST Independent Self percentages and cultural level variables are shown in Table 2. As can be seen 4 of the 24 correlations were significant at the .05 level (it should be noted that because of the country level analysis and as several of the country level variables were not available for some countries the degrees of freedom of the correlations reported in both Tables 2 and 4 was small requiring correlations of the order of .50 before statistical significance was reached.

The TST Independent self scores were significantly correlated positively with the Schwartz Harmony (males only) and Intellectual Autonomy scores and negatively with the Hofstede Masculinity-Feminity scores (females only).

Table 1:
Percentage of TST Responses Classified as Independent Self by Country and Gender

Country	Sample Size	Male	Female
<i>University Students</i>			
Australia	207	70.68	53.08*
Canada	206	64.12	56.87*
China	187	71.06	78.54
Ethiopia	165	72.65	69.93
Hong Kong	115	40.54	49.25
India	214	50.30	49.25
Nepal	73	65.30	62.50
Netherlands	139	73.12	75.19
New Zealand	152	64.88	55.86*
Nigeria	107	61.77	64.32
Philippines	157	63.83	71.84
Poland	181	54.28	40.33*
South Africa (black)	171	68.74	68.33
South Africa (white)	179	65.56	61.52
Sweden	149	71.35	75.96
Turkey	156	71.13	71.02
Zimbabwe	302	47.35	52.25
<i>School Students</i>			
Hong Kong	60	55.20	48.08
Hong Kong	76	61.27	64.22
Philippines	166	50.85	53.44
Taiwan	76	60.12	63.49

* indicates within-country gender difference is significant at .05 level

Table 2:
Correlates of Country TST Independent Self Scores with Culture Level Variables for Males and Females

Variables	Males	Females
Affective Autonomy ¹	.13	.02
Conservatism ¹	-.38	-.43
Egalitarian	.46	.20
Commitment ¹		
Harmony ¹	.73*	.18
Hierarchy ¹	-.04	.42
Mastery ¹	-.20	.16
Intellectual Autonomy ¹	.66*	.55*
Individualism	.48	.00
-Collectivism ²		
Masculinity	-.36	-.61*
-Femininity ²		
Power Distance ²	-.42	-.01
Uncertainty Avoidance ²	.41	.25
Gross National Product	.21	.06

* indicates correlation is significant at .05

¹ from Schwartz (1994)

² from Hofstede (1983)

The means of the ASSEI ratings of the importance Independent and the Interdependent Self by country and gender are shown in Table 3. As the midpoint of both scales 55.00 was exceeded in every case it is clear that the majority of the student and adult respondents from each of the countries whether Western or non-Western, male or female considered both aspects of the self as relatively important. In about 80% of the cases the Interdependent self was considered the more important.

The six highest ratings for the Independent self were provided by the black South African, Colombian, American, and Zimbabwean student and the Lithuanian and Turkish adults for the males and the Bulgarian, Iranian, Colombian, Filipino, black South African, and American students for the females. These countries are a mix of supposedly Individualist and Collectivist in terms of Hofstede's (1983) I-C indices. The same is true for the countries rating the Interdependent self as very important. Indeed there were several samples such as black South African, Zimbabwean, and US students and Turkish adults who provided amongst the highest importance means for both aspects of the self for both males and females.

Gender differences within country were found to be statistically significant at the .05 level for 18 of the 64 instances, including 7 out of the 8 adult samples for the Interdependent self. There was an apparent trend for the females to rate the Interdependent self to be more significantly more important than their male counterparts. Unfortunately in five cases the females also rated the Independent self as more important than did their male peers. It seems therefore that in some cases at least the females tended to rate both aspects of the self as more important than the males.

The correlations between the importance ratings of the Independent and Interdependent self and culture level variables for males and females are shown in Table 4. While 11 of the 48 correlations are statistically significant at the .05 level, there is little evidence of gender differences except in the cases of Intellectual Autonomy and Conservatism for the Independent Self; Hierarchy and Power Distance for the Interdependent Self; and Gross National Product for both aspects of the self (correlations being more highly negative for the males in this case).

Analyses of University Student v Adult samples for Hong Kong, Iran, Russia, and the USA by Watkins *et al.*, (1999b) found a complex picture. In America, contrary to our predictions, it was the older respondents who tended to rate the Independent self as more important than did the college students. The opposite (predicted) trend was found for both the Hong Kong and Iranian samples.

Conclusions

This research program was initiated in the hope of providing a sound data base for inferring how the nature of self-construal varied according to culture and gender. To that end a large scale program was designed to improve on existing data by using two very different research instruments both subjected to rigorous pilot testing in a number of cultures; by obtaining evidence from a much wider range of cultures than ever before; and by utilising samples of adults and school children rather than relying only on college student samples. In addition both in-depth content analyses, checked by independent raters, and sophisticated statistical techniques such as ecological factor analysis, MANOVA, and multidimensional scaling were utilised.

The big question, of course, is what does all this data tell us about culture, gender, and the self-concept? Unfortunately the answer is clear: there is NO easy answer! While it may be comforting to believe that we can explain the basis of self-conceptions in terms of cultural level variables such as individualism-collectivism or West v East, etc. the data just does not support such a simple explanation. In both studies it is clear that while there are clear differences between cultural groups these differences are not easily explainable by the cultural indices of Hofstede or Schwartz or indeed Gross National Product. Where such significant correlations were found in one study they were not supported in the other (indeed in some cases significant correlations in the opposite direction were found). Perhaps the main message here is not to be too easily persuaded by the wonderful rhetoric and even the sophisticated theoretical rationale provided by Markus and Kitayma. I would have liked nothing better than my research program to have supported their claims (and so would many of the leaders of the cross-cultural psychology field who often would rather ignore my results). But it failed to do that or even suggest an alternative explanation.

This data does indicate how careful we need to be before inferring that our differences are due to an underlying cultural dimension from two country studies. Depending which two countries were chosen a very different picture could be drawn about the I-C dimension and the self-concept from this data base.

Moreover, the data also indicate that we should not be too ready to generalise claims about gender and the self-concept based on US research. In both studies occasional gender differences were found in non-Western countries but there was virtually no support for the hypothesis that males are more likely to espouse a more independent self-conception than females. Interestingly such support was found for the US research claims came from other English heritage countries of Australia, Canada, and New Zealand for the TST. Although hardly supported by the Study 2 data this does suggest that it may be worth further study of English heritage cultures to investigate their possible impact on the self-conceptions of men and women.

Table 3:
Means of Independent and Interdependent Self Importance Ratings by Country and Gender for University Student and Adult Samples and Hofstede Individualism-Collectivism Indices (where available)
Independent Self Interdependent Self I-C Index^a

Country	Males	Female	Male	Female		
University Students						
Australia (34M, 170F)	64.17	71.60*	70.88	79.51*	90	
Bulgaria (50M, 158F)	76.04	81.75	75.82	78.95	—	
Canada (74M, 48F)	73.02	72.30	82.70	82.17	—	
China (90M, 99F)	76.20	77.05	73.98	80.10*	80	
Colombia (42M, 199F)	80.47	79.70	77.34	79.82	13	
Ethiopia (147M, 18F)	69.56	65.11	79.57	76.73	27	
Hong Kong (175M, 183F)	67.80	67.71	71.39	74.30	25	
India (110M, 105F)	66.95	70.10	79.92	81.42	48	
Iran (101M, 80F)	75.03	80.56*	77.84	82.11*	41	
Malaysia (75M, 185F)	73.33	75.95	82.10	83.86	26	
Nepal (205M, 177F)	70.62	62.22*	80.16	78.27	—	
Netherlands (19M, 114F)	69.82	66.96	70.22	71.68	80	
New Zealand (43M, 108F)	66.53	66.71	68.99	73.06*	79	
Nigeria (71M, 122F)	76.20	75.23	77.00	77.57	20	
Philippines (48M, 116F)	77.72	80.46	81.38	82.19	32	
Poland (20M, 167F)	72.22	74.17	75.38	80.62	—	
Russia (120M, 96F)	75.64	76.30	74.70	76.06	—	
South Africa (black; 46M, 124F)	80.66	79.47	84.00	85.29	—	
South Africa (white; 74M, 105F)	74.58	75.42	79.83	77.10	65	
Sweden (31M, 117F)	64.58	65.34	73.48	80.01	71	
Thailand (50M, 128F)	71.76	74.74	77.80	79.24	20	
Turkey (80M, 132F)	76.19	78.86	79.40	82.86	37	
USA (201M, 192F)	79.55	79.12	79.64	82.61*	91	
Zimbabwe (147M, 138F)	79.34	78.02	82.02	83.56	27	
Adults						
Hong Kong (58M, 88F)	66.28	66.97	74.82	79.65*	25	
HK (heart; 82M, 69F)	60.31	67.47*	75.55	82.41*	25	
HK (mental; 68M, 54F)	63.10	65.23	67.92	72.63*	25	
HK (nurses; 56M, 256F)	70.68	72.93	76.29	80.20*	25	
Iran (101M, 80F)	71.48	72.90	80.27	79.85	41	
Lithuania (96M, 40F)	78.83	73.33*	80.32	74.18*	—	
Russia (52M, 51F)	69.50	70.59	67.63	74.64*	—	
Turkey (20M, 30F)	77.56	78.91	82.49	85.83	37	
USA (166M, 161F)	71.47	77.95*	75.20	84.41*	91	

* indicates within-country gender difference is significant at .05 level for corresponding aspect of self

^a from Hofstede (1983)

Table 4:
Correlates of Country Importance Ratings of Independent and Interdependent Self with Culture Level Variables

	<i>Independent Self</i>		<i>Interdependent Self</i>	
	Males	Females	Males	Females
Affective Autonomy ¹	.24	.07	.01	-.05
Conservatism ¹	.38	.63*	.49*	.51*
Egalitarian Commitment ¹	-.12	-.18	-.42	-.29
Harmony ¹	.38	.47*	.07	.07
Hierarchy ¹	.31	.31	.51*	.31
Mastery ¹	.13	-.02	.35	.23
Intellectual Autonomy ¹	-.25	-.50*	-.28	-.35
Individualism-Collectivism ²	-.09	-.07	-.29	-.06
Masculinity-Femininity ²	.11	.30	.09	.16
Power Distance ²	.20	.27	.51*	.31
Uncertainty Avoidance ²	.62*	.58*	.39	.25
Gross National Product ³	-.44*	-.31	-.58*	-.24

* indicates correlation is significant at .05 level

¹ from Schwartz (1994)

² from Hofstede (1983)

³ from Encyclopaedia Britannica (199

Another intriguing finding was the age trend found in our analyses described in detail by Watkins et al., (1999b). In that paper we speculated that our data was consistent with the contention that while in previously Western, individualist countries the younger generation was becoming more collectivist in previously collectivist countries the younger generations may be becoming more individualist. Perhaps cultural differences are shrinking over time. It would be comforting to believe that this was due to a greater degree of intercultural understanding.

At least these findings do indicate that we should be careful in overrelying on college student samples. Also perhaps we need to be cautious of data collected many years ago. Perhaps even the Hofstede data which has been such a great boon to cross-cultural research may be reaching its 'used-by' date.

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Self-Efficacy and Externality in Adolescence: Theoretical Conceptions and Measurement in New Zealand and German Secondary School Students

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It is argued that the development of self-efficacy represents a central aspect of development in adolescence for three reasons. First, self-efficacy is an important predictor for actual efficacy and thus a major component of the individual's ability to act successfully. Second, self-efficacy is a major action-guiding aspect of the self-concept. Third, both aspects can be combined in an action-model of personality, which provides the framework for the development of a standardized questionnaire for self-efficacy and externality from a personality psychology point of view. In order to validate this questionnaire, a study was conducted with 215 New Zealand and 221 German secondary school students aged 16-17 years using a German and an English version of the inventory. Item parameters as well as scale parameters of the English and the German versions of the inventory were satisfactory and comparable. First validity analyses reveal no significant scale differences for females versus males, no significant scale differences between New Zealand and German adolescents, and some rather weak, but significant positive correlations of self-efficacy to academic performance and perceived classroom climate. The purpose of the present investigation is twofold. First, a theoretical argument is presented that self-efficacy represents one of the core aspects of development in adolescence. Second, results from a cross-cultural study on self-efficacy and externality of adolescents from Germany and New-Zealand are presented in order to validate a standardized research instrument.

Three reasons of our theoretical position are discussed as follows. First, self-efficacy is a central predictor of intentions and behaviour (Ajzen, 1991, 1996; Krampen, 2000). The development of self-efficacy reflects the development of actual efficacy, that is the development of the capacity to act autonomously and efficiently. The development of personal action competence is the necessary prerequisite for success in the adult's life in modern societies and it is central to a person's self-regulation of own development (Brandtstädter, 1998). Second, the self-perception of personal efficacy (i.e., self-efficacy) is a core aspect of the individual's self-concept. Actually, the development of a differentiated and integrated self is certainly the most important developmental task of adolescence (Garcia, Hart & Johnson-Ray, 1997; Harter, 1990, 1998; Petersen, 1988; Petersen & Leffert, 1995; Pinquart & Silbereisen, 2000; Silbereisen & Noack, 1988; Waterman, 1993). Thus, the self-concept of one's own competencies and capabilities is, as it were, the "interface" between the developing person and his or her development (Brandtstädter, 1999).

Third, and most important with respect to the present investigation, both perspectives – the development of the capability to act and the development of the self-concept with respect to one's efficacy – can be fruitfully combined to form a central aspect of personality development during adolescence. As an attempt to integrate an action-theoretical perspective on development and the action-guiding function of the self into a concept of personality, the action-theoretical model of personality (AMP; Krampen, 1988, 2000) is presented.

One implication of this theoretical approach is that self-efficacy has to be assessed reliably and validly. Consequently, a questionnaire is introduced that attempts to assess self-efficacy and externality according to the theoretical position outlined. An application to an important social developmental context of adolescents (i.e., school) indicates that this measure

is a useful tool in understanding the central importance of self-efficacy in adolescent development.

Self-Efficacy as a Central Developmental Task of Adolescence: Towards a Developmental Perspective on Personal Control

Without doubt, the major feature of the second decade in our lives is that it is a phase of individual and social consolidation. Viewed from a life-span perspective for adolescence (Lerner, 1987), the various developmental tasks addressed during adolescence can all be seen as part of the meta-task of preparing for adulthood (Crockett & Crouter, 1995). Coping with physical changes and sexual maturation, developing interpersonal skills (e.g. for relationships with the opposite sex), acquiring education and, particularly forming a personal and social identity are storms to be weathered during adolescence. Successfully negotiating these developmental challenges prepares young people for solving the tasks and meeting the demands of adult life (Petersen, 1988; Petersen & Leffert, 1995). As a consequence, adolescence is a period of transition which is rarely straightforward, and usually perplexing and disquieting both for the juveniles themselves and for the adults around them (Compas, 1995; Hauser & Bowlds, 1990).

This developmental transition has, as it were, two faces. On the one hand, adolescent individuals have to develop certain competencies and meta-competencies that enable them to become the "producers of their own development" (Lerner & Busch-Rossnagel, 1981; Featherman & Lerner, 1985). From an action-theoretical perspective on development (Brandtstädter, 1998, 1999), the major developmental task of adolescence is to achieve the prerequisites for the active regulation of one's own path of life. This includes not only achievement of certain competencies (such as education) and social integration (e.g., acquisition and acceptance of sufficient social support,

assimilation of social norms), but also the development of meta-competencies, in particular the ability to actively shape one's own personal development by planning and goal-setting. In short, during adolescence the cognitive and behavioral preconditions for a successful pursuit of one's personal goals have to be developed.

On the other hand, the individual has to reconcile the developmental task of autonomy with the task of social integration - the acceptance of social norms and the achievement of certain social roles and positions. Because social roles include behavioural prescriptions and restrictions, social integration entails limits to autonomy. Moreover, this tension has to be integrated into the individual's self-concept, that is into a differentiated and coherent concept on who the person is as a social and individual being. The core of this developmental task is represented by the task of developing an adequate self-conception of one's personal ability to act autonomously.

Self-Development: The Inside of Adolescent Development

Actually, the most important precondition for human action is the acting person. In particular, objective ability has to be accompanied by perceived autonomy to lead to performance. This entails a personal belief in one's self-efficacy, that is, the control over one's behavior, one's life, one's future (Taal & Samaio de Carvalho, 1997). Hence, most theories of action include beliefs of personal control as a core explaining variable (e.g., Ajzen, 1996). Consequently, the development of a sense of personal autonomy is a central task during adolescence (Petersen & Leffert, 1995). This is a vital pre-condition necessary for the individual to be able to act. In order to select goals, decide for means, accept or reject values and norms, one has to have an "identity", that is a differentiated and integrated system of self-describing and self-evaluating beliefs (Greve, 2000a). This is why establishing a stable integrative identity is usually viewed as the central developmental task in a person's youth (Harter, 1990, 1998).

Actually, achieving a stable, differentiated and integrated self-concept is what "adulthood" means (Greve, 2000b). To fail in this task represents a major risk factor for deviant and delinquent developmental pathways in adolescence (Greve, 2000c). However, self development is a difficult task: "In search of self" ... defines a major drama that unfolds on center stage during adolescence, with a complicated cast of characters who do not speak with a single voice." (Harter, 1990, p. 353; Petersen, 1988; Petersen & Leffert, 1995; Silbereisen & Noack, 1988; Waterman, 1993). However, whatever adaptations, upheavals, transitions and other changes the individual goes through (ie. in whatever way the person develops), it is important that he or she should maintain and experience a feeling of biographical continuity (Brandstädter & Greve, 1994). One specific and central aspect of self and identity is one's personal experience of being an actor, that is, of self-efficacy. Both from an action-theoretical perspective and a personality point of view, this

is a major factor which produces continuity and stability of individuals across situations (Cervone, 1997).

Personality Development: The Outside of Adolescent Development

The successful accomplishment of the developmental task of social integration requires not only the achievement of individuality and autonomy, but also a sufficiently predictable social environment. Actually, the interaction between the individual and his or her social environment is the "motor", as it were, of adolescence (Lerner & Galambos, 1998). "Successful adaptation always involves appropriate coordination between our changing selves and our changing contexts. But it is in adolescence, and particularly early adolescence, that such adaptational stresses may be most critical, due to their simultaneity and multidimensionality" (Lerner, 1982, p. 361).

In short, the developing personality has to reach a certain degree of stability and reliability during adolescence. Beyond adolescence, the person "has" his or her personality, as it were. An adult person is provided with a set and a profile of attributes, competencies, traits and dispositions, which characterizes him or her across various situations and social contexts as "the" person. At the same time, these competencies are necessary to enable the person to act and react flexibly, that is appropriately in a particular situation. This is precisely why the individual's self-concept has to reflect a person's competencies, dispositions, and deficits (i.e. personality) sufficiently (Ryan, 1991), and what makes the self the "interface" between personality, action and development.

Social-cognitive as well as action-theory based models of individual differences and personality share some of their central axioms such as dynamic interactionism, social learning foundations and conceptualizations of humans as goal-directed, expectancy-regulated, and reflecting organisms. These models also all postulate self-efficacy beliefs and internal external locus of control beliefs as having great importance in predictions and explanations of behaviours (i.e., actions, action scripts, and action tendencies) and experiences. Their common foundation are motivation and action theories, primarily those of the expectancy-value type, which describe, reconstruct, and predict action with reference to subjective valencies and subjective expectancies. Reviews of these theories reveal not only broad empirical evidence for their hypotheses but also a high convergence of theoretical approaches in psychology to their central statements (see, e.g., Ajzen, 1996; Atkinson, 1964; Feather, 1982; Krampen, , 1982, 2000).

Several important differentiations of the basic expectancy-value constructs have to be noted (see also Figure 1). The differentiation of competence and contingency expectancies can be found in the models of Bandura (1977, 1982, 1986), Weisz (1983), and Skinner (1985). Outcome-consequence expectancies (instrumentalities) are extensively described in instrumentality-theoretical approaches (e.g., Vroom, 1964; Mitchell & Biglan, 1971). Situational

expectancies, which refer to the expectancy of certain outcomes/events without own action, were established in cognitive models of achievement motivation (e.g., Heckhausen 1977, 1989). Together with the valence of outcomes/events and their consequences these various expectancy constructs constitute an elaborated predictive model for action intentions and, thus, for actions. It is worth noting that all these constructs are explicitly defined in a situation- and action-specific manner (e.g., Ajzen, 1996).

There is only one expectancy-value approach, which includes personality variables, and that is the social learning theory of personality (Rotter, 1955, 1982). Rotter described a list of generalized expectancies (e.g., internal versus external locus of control of reinforcement, interpersonal trust, problem-solving strategies) and formulated a hypothesis which is central for interactionistic personality theory: “An expectancy ... is a function of the expectancy for a given reinforcement to occur as a result of previous experience in the same situation ... and expectancies generalized from other situations ... divided by some function of the number of experiences in the specific situation” (Rotter, 1982, p. 92). Put less formally this hypothesis means that in “relatively novel situation(s) a person’s expectancies would be largely a function of such generalizations” (Rotter, 1982, p. 92). Thus, the subjective perception of the action or life situation of the agent is crucial. In relatively novel or ambiguous (ill-defined) situations personality variables are primarily predictors of personal intentions (generalized expectancies), whereas in known, well-defined situations situation-specific cognitions and evaluations (expectancies and reinforcement values or valencies) are the best predictors of intentions. However, Rotter restricts himself—even in newer publications (e.g., Rotter, 1982, 1990, 1992) to a pure listing of various constructs of generalized expectancies without specifying their relations to the situation- and action-specific constructs of social learning theory or, more generally, those of expectancy-value theory.

The Action-Theoretical Model of Personality

Precisely at this juncture, the action-theoretical model of personality (AMP; Krampen, 1988, 2000) further develops and differentiates Rotter’s (1955, 1982) social learning theory of personality. The AMP starts from the differentiated expectancy-value model presented in the inner part of Figure 1. Its basic axioms conform to those of Rotter’s social learning theory (Rotter, 1972) and partially to those of Rychlak’s (1982) logical learning theory. It is worth noting, however, that the proposed action-theoretical model of personality does not claim to be a comprehensive personality model (like most factor-analytically derived ones). Rather it is a partial model, which supplements and differentiates other personality models in those cases where human actions, action scripts, and action-related cognitions, motivations, and emotions are involved.

Action: Theoretical Personality Variables

A central assumption in the action-theoretical model of personality is that each situation- and action-specific cognition and/or evaluation of the differentiated expectancy-value model is (potentially) generalized over time and across situations. These generalizations depend on experiences in sufficiently similar situations and result in the development of personality variables which are relatively stable across situations and time, thus establishing interindividual differences. The following deductions constitute the AMP (see fig. 1):

(1) *Situational expectancies* which refer to the expectation of situational outcomes without the need for any action on the part of the individual are generalized to an orientation across situations and time that positively valued events will occur (or that negatively valued events will be prevented) without own action. The person who has an expectation that positively valued events will occur has a high level of trust (versus mistrust) in situational dynamics and forces, which include social as well as physical factors. Although there is some overlap between earlier conceptions of trust (e.g., psychoanalytic approaches: Erikson, 1968; social psychological approaches: Lerner, 1980; Marsh, 1977; and social learning theory: Rotter, 1967, 1982), the definition of trust within the AMP is more specific since it is deduced merely from situational expectancies. In particular, it explicitly excludes control orientations (Lerner, 1980; Wrightsman, 1974).

(2) *Situation-action/competence expectancies* which refer to the situation-specific expectation that one can choose voluntarily between two or more action alternatives or that there is at least one action possibility at one’s disposal are generalized to self-concepts of own competence. A high self-concept of own competence refers to the belief that a person subjectively perceives him/herself as competent in various situations. Low self-concept refers to the generalized belief that in many situations there is only one or no action possibility. This definition is in agreement with the concepts of self-efficacy (Bandura, 1977, 1982), perceived behavioural control (Ajzen, 1991) and of political efficacy (Balch, 1974). Supporting the notion of such generalizations, Cervone (1997) argues in a recent paper that cross-situational coherence in perceived self-efficacy may occur despite intra-individual variations between various situations.

(3) *Action-outcome/control expectancies*, which refer to the controllability of outcomes are generalized to control orientations. Rotter’s (1966, 1982) concept of internal versus external locus of control of reinforcement is closest to this personality variable. However, construct differentiations and specifications proposed by Bandura (1977, 1986), Weisz (1983), and Skinner (1985, 1996) are considered in the AMP definition. Control orientations refer to contingency expectancies, not to competence expectancies of self-efficacy.

(4) *Outcome-consequence expectancies* or instrumentalities are generalized to a person’s subjective knowledge about the dynamics of situations and his/her subjective competence to predict (multiple) consequences

of action outcomes or events. Whereas this personality variable is similar to general conceptions of problem-solving competence and intelligence, within the AMP it is named level of conceptualization because it refers mainly to the subjective level of beliefs (not performance). Perhaps it is best described in terms of subjective environmental theories, which constitute, together with the subjective theories of the self, the subjective theory of reality of individuals (see Epstein, 1973).

(5) *Valencies* of outcomes and their consequences, which are related to situations or situation-specific actions, are generalized to the general value orientations of the individual. Rotter's (1955, 1982) need values and the terminal values described and listed by Rokeach (1973) are in accordance with this AMP definition as are the general notions of the theoretical approach toward a theory of goals by Pervin (1983). But it is worth noting that the AMP conception of value orientations includes not only terminal values and generalized action goals, but also emotionally, socially, and culturally mediated valuations.

In this way cognitive, motivational, actional, social, and emotional aspects of the human life are integrated into a conception of personality which is similar to Pervin's definition of personality of an "integrative, holistic concept involving an overall structure which changes according to internal and external demands while retaining its inherent qualities" (Pervin, 1983, p. 45).

Structure of Action-Theoretical Personality Variables

Situation- and action-specific person variables as well as the action-theoretical personality variables must be seen as continua rather than as dichotomies. Weisz (1983) illustrates this for the special case of controllability and generalized perceptions of control. At one extreme there are broad questions about whether life is working out the way one wants (generalized perception of control), at the other extreme there are questions for specific task or activity judgments (controllability). In between there are moderately general or domain-specific self-perceptions summing up several situation/action-specific questions about one's life sphere or life domain. Up to now cognitive approaches to personality have been restricted mainly to investigating the extreme of situation-specificity. Empirical research on locus of control, self-concept, and value orientations on the other hand has been mainly restricted to the extreme of high generalization. However, in some publications an approximation to domain-specific measurement is evident (e.g., Bandura & Cervone, 1983; Lachman, 1986).

With reference to the structural organization of personality, several levels of generalization can be distinguished (Krampen, 1988). The lowest level refers to the situation- and action-specific person variables. Higher levels refer to domain-specific person variables, or to the generalized (personality) variables respectively. The most general level refers to the total system of action-theoretical variables. At this level, this partial model is open to additions from other global personality models and personality

variables (such as neuroticism, extraversion, etc.).

As in social learning theory, in the AMP it is assumed that domain-specific variables are the product of generalization across situation- and action-specific experiences, and that generalized variables are the product of generalization across experiences in various life domains. This assumption holds for all action-theoretical cognitions as well as evaluations. The development of the action-theoretical personality variables is attributed to learning processes based on specific person-situation interactions. This is in agreement with an action-theoretical perspective in the study of life-span development (see Brandtstädter, 1984, 1998; Brandtstädter, Krampen, & Heil, 1986; Chapman, 1984). With reference to Piaget's (1954) analyses of the construction of reality by the child and adolescent, it must be assumed that this generalization of experiences in person-situation interactions will not be a continuous (linear) learning process but a process, which is accompanied by discontinuities, overgeneralizations, and regressions. Weisz (1983) described this for the development of competence and contingency judgments (and their generalization) in childhood, and Fiedler (1985) for adulthood.

Thus, the hierarchical conception of action-theoretical person variables with different levels of generalization integrates views about the consistency (higher levels) and variability (lower levels) of person and personality variables (see Pervin, 1983, 1985; Roberts & Nesselroade, 1986). Moreover, the AMP includes an interactional perspective. For instance, experiences with subjectively novel or ambiguous situations may produce new situation- and action-specific expectancies and goals which may be further generalized to higher levels of personality, thus inducing personality change (for a more elaborated discussion see Krampen, 1988, 2000).

Measurement of the Action-Theory Personality Variables of Self-Efficacy and Externality in Educational and Developmental Psychology Contexts

Recent discussions of control and self-efficacy (e.g., Krampen, 1982, 2000; Skinner, 1996) are in clear contrast to the development of standardized, psychometrically tested and sound inventories for their measurement. In particular, these constructs are still not integrated in personality inventories (e.g., there are no subscales measuring control beliefs and/or self-efficacy in NEO-FFI, MMPI, CPI, 16 PF). International research is dominated by *ad hoc* instruments, which are changed frequently in item contents, item number, answer format, etc. between different empirical studies. This is particularly true for self-concepts of competence, control and self-efficacy in adolescence. Although empirical relations between self-efficacy and decision making (Taal & Samaio de Carvalho, 1997), leadership aspirations (Singer, 1990), risk behaviour (Murphy, Roteram-Borus & Reid, 1998), prosocial behaviour (Chase-Lansdale, Wakschlag & Brooks-Gunn, 1995), emotional reactions (McCauley, Lerner, Lerne & von Eye, 1999), social adjustment (Connolly, White, Stevens & Burstein, 1987) and problem solving interactions

in families (Jory, Xia, Freeborn, & Greer, 1997) are frequently investigated and well documented in the literature, an integrative approach both from an empirical and a theoretical perspective is still lacking. Moreover, heterogeneous and inconsistent assessments of self-efficacy make literature reviews and meta-analyses difficult. This may become an obstacle for research on control and self-efficacy beliefs as well as for the integration and implementation of such constructs in applied psychology.

Within the theoretical framework of the AMP, a questionnaire of self-efficacy and generalized externality was developed, psychometrically tested and standardized (Fragebogen zu Kompetenz- und Kontrollüberzeugungen, FKK; Krampen, 1981, 1991). With reference to the differentiation between internality, powerful others' control, and chance control (Levenson, 1973, 1981), this inventory includes on its primary level of measurement scales measuring generalized internality (I), powerful others' control (P) and chance control beliefs (C) as well as a scale measuring the self-concept of own competence (SK). Each of the primary scales are combined on the secondary level of measurement to form scales assessing self-efficacy (SKI = SK plus I) and generalized externality in locus of control (PC = P plus C). Item contents, instruction, and answer format of the FKK allow applications from adolescence (from an age of 14 years) to late adulthood. Objectivity, reliability, and validity of the FKK are confirmed in studies with various German samples (Krampen, 1991), as well as broad applications in psychological research (see, e.g., Bilsky & Hossler, 1998; Gomez, Zimmermann, Fröhlich & Knop, 1994; Kirschbaum *et al.*, 1995; Korunka, Zauchner, Litschauer & Hinton, 1997; Lasar, 1997; Marz, Dickenberger, Betsch & Siebler, 1996; Prüssner *et al.*, 1997; Weber & Anderle, 1997).

The first objective of the present study is the development and empirical test of an English version of a standardized inventory, which has been broadly applied with good results in Germany. The second aim of our study is an application of this inventory to an important adolescent developmental context. In educational psychology there is a strong research tradition concerning the relations of control and self-efficacy expectancies to academic achievement. In a recent meta-analysis Kalechstein and Nowicki (1997) conclude that there are significant and consistent correlations between academic achievement and internality, supporting the findings of earlier reviews. In no instance do specific control expectancies predict academic achievement better than generalized ones. Furthermore, the control expectancy—academic achievement relationship was not moderated by variables such as gender or type of measurement.

Age moderated the relationship such that it was similar and significant for elementary school students and college students but significantly greater for secondary school students. Therefore, our study refers to secondary school students and includes indicators of academic achievement, academic achievement motivation, and classroom environment perceptions of students. In addition the German sample was asked about their subjective personal problems and subjective problems experienced in school as well as

perception of social support from teachers, family members, and peers.

Empirical Study

Samples

Questionnaire data were gathered from samples of 215 New Zealand and 221 German secondary school students (aged 16-17 years). Distribution of age and sex (121 females from New Zealand and 125 females from Germany) were comparable in the two samples.

Method

Data were gathered with the German and an English version of the “Fragebogen zu Kompetenz- und Kontrollüberzeugungen (FKK)” (Krampen, 1991, English version: Inventory for the Measurement of Self-Efficacy and Externality, I-SEE; items are presented in Table 1). Participants are instructed to respond to statements by marking the symbol that best corresponds to their personal opinion. Answer categories are “strongly” (+++), “moderately” (++) or “slightly” (+) agree versus “slightly” (-), “moderately” (—) or “strongly” (—) disagree with each of the 32 statements (see Table 1). On the primary level this inventory measures the self-concept of own competence (SK), internality in locus of control (I), powerful others' control (P), and chance control (C). On its secondary level such scales are combined to more general scales measuring self-efficacy (SKI) and externality (PC; for item-scale assignments see Table 1).

For validity analysis purposes, generalized externality in locus of control was measured using the English and German versions of the unidimensional Nowicki-Strickland locus of control scale (Nowicki & Strickland 1973; Schneewind, 1989).

School Certificate Results were obtained in the New Zealand sample for English education from school records from the previous year, in the German sample as measures of previous academic achievement. School motivation was measured by an indicator of the need value (in terms of Rotter, 1955, 1982) of good marks in English education (New Zealand sample) and of good marks/school grades in general (German sample) using 5-point scales (high numerical scores mean high need values).

Five scales from the “Classroom Environment Scales” (CES; Tricket & Moos, 1973, 1974; see also Nielsen & Kirk, 1974) were used: (1) competition (CES C) (“how much students compete with each other for grades and recognition and how hard it is to achieve good grades”), (2) order and organisation (CES OO) (“the emphasis on students behaving in an orderly and polite manner and on the overall organisation of assignments and classroom activities”), (3) rule clarity (CES RC) (“the emphasis on establishing and following a clear set of rules and on students knowing what the consequences will be if they do not follow them; the extent to which the teacher is consistent in dealing with

students who break the rules”), (4) teacher control CES T (“how strict the teacher is in enforcing the rules, the severity of punishment for rule infractions, and how much students get into trouble in class”), (5) affiliation CES A (“the level of friendship students feel for each other, as expressed by getting to know each other, helping each other with homework, and enjoying working together”). The ‘Involvement’ scale (CES-I) of the CES instrument, which measures the “extent to which students are attentive and interested in class activities, participate in discussions, and do additional work on their own” (Tricket & Moos, 1974, p. 2) was adapted, by changing statements into “I” statements, to obtain a measure of ‘engagement’, or self-reported motivated classroom behaviour (= CES-I/E). In addition some of the wording of other CES-items were changed to make the items more appropriate for the present New Zealand sample (e.g., using ‘marks’ instead of ‘grades’; see Fraser, 1982). The German sample filled out the German version of the CES (Humpert, Tennstädt & Dann, 1987). The items were presented in the same sequence in which they appear in the original full instrument. A high numerical score on each scale means a high level of that measure.

In the New Zealand sample additional data were gathered on (1) teacher ratings of ‘participation’ (rating of the level of participation of each student on a scale from 1 to 7, a high numerical score means a high level of classroom participation) and (2) task completion. This measure of task completion was obtained by counting the number of Year 12 English assignments the student completed to the time of testing, and how many of these were completed on time. This is reported in per cent completion rate.

In the German sample additional data gathered was measures of (1) the subjectively experienced personal problems, (2) the subjectively experienced problems in school, (3) the perceived social support given by teachers, (4) the perceived social support given by the own family, (5) the perceived social support given by peers, and (6) social desirability (Marlow-Crowne Social Desirability Scale). Experienced problems were measured by a checklist including 14 possible personal problems (e.g., “I have problems with my best friend”, “... with my body and attractiveness”) and 9 possible school problems (e.g., “I have problems with a teacher”, “... with bad grades”). Perceived social support was measured by 7-point ratings of help and support experienced by teachers, family members, and peers.

Results

Psychometric Evaluation of the Inventory for the Measurement of Self-Efficacy and Externality (I-SEE)

Item parameters of the I-SEE from the New Zealand and the German sample are presented together with all items and item-scale-assignments including scoring in Table 1. Parameters of item difficulty range between $.22 < p_i < .93$ (mean $p_i = .51$) in the New Zealand and $.23 < p_i < .80$ (mean $p_i = .51$) in the German sample, indicating that they are satisfactory and highly comparable. This is confirmed by

the correlation (Spearman rank correlation) of $r = .73$ ($p < .01$) between the two national rank orders of item difficulties. With one exception all item-total-correlations for the I-SEE measurement at the secondary level proved to be significant - again in both samples. However, there are national differences in their range (New Zealand sample: $.09 < r_{it} < .56$; German sample: $.29 < r_{it} < .64$) and in some of their variations between the same items. Item-total-correlations tend to be numerically higher in the German sample, which is confirmed by their means (New Zealand sample: mean $r_{it} = .39$; German sample: mean $r_{it} = .45$), but without a significant mean difference ($|d_z| = .07$, $p > .10$)

As a consequence of the lower item-total-correlations in the New Zealand sample coefficients of internal consistency (Cronbach’s alpha) of the Internality-Scale (I) turned out to be too low ($r_{tt} = .43$; German sample: $r_{tt} = .68$). This holds also for the reliability of scale differences in the New Zealand sample at the primary level of measurement of the I-SEE ($_{prof}r_{tt} = .49$; German sample: $_{prof}r_{tt} = .62$).

Therefore, all analysis results on the I-SEE presented refer to the secondary level of measurement, i.e., the I-SEE-Scales on self-efficacy (SKI) and externality (PC). Reliability coefficients of these two secondary-level scales are satisfactory in both national samples. Both scales proved to be sufficiently reliable (self-efficacy: Alpha (G): $.72$, Alpha (NZ): $.79$; externality: Alpha (G): $.82$, Alpha (NZ): $.80$). In both samples, self-efficacy and externality were numerically low, but significantly negatively correlated ($r(G) = -.31$, $r(NZ) = -.23$; for both $r: p < .01$).

Consequently, the reliability of scale differences were sufficient ($_{diff}r_{tt}(G) = .67$, $_{diff}r_{tt}(G) = .73$). There are no significant differences for any reliability parameters between the two national samples, indicating that reliability of the second-level I-SEE-Scales is sufficient and comparable in both, the German and English version.

Concurrent validity of the I-SEE is supported by the moderate positive, significant correlation of its Externality-Scale (PC) to the unidimensional Nowicki-Strickland-Locus of Control Scale (NS-LOC) in both national samples (see Table 2). The Self-Efficacy Scale is negatively and less strongly correlated to the NS-LOC, indicating a high externality determination and low self-efficacy determination of the contents of the unidimensional Nowicki-Strickland I-E-Scale. For the German sample, there is empirical evidence that the I-SEE-Scales are not biased by social desirability (self-efficacy: $r = -.01$, externality: $r = .04$; for both $r: p > .10$).

Table 1:
Items and Item-Scale-Assignment (+ with positive, - with negative scoring) as well as Item Difficulty (p_i) and Item-Total-Correlation (r_{it}) of the Self-Efficacy and Externality Scales in Samples of New Zealand and German Adolescents

Item- No.	Item	Scale ^a	New Zealand (N = 215)		Germany (N = 221)	
			p_i	r_{it}	p_i	r_{it}
01.	Whether or not other people respect my wishes is mostly up to me.	SKI +	.30	.28	.55	.46
02.	To a great extent my life is controlled by accidental happenings.	PC +	.32	.36	.47	.51
03.	I feel like what happens to me in my life is mostly determined by powerful people.	PC +	.28	.42	.45	.47
04.	Sometimes I feel I have no ideas and don't want to do anything.	SKI -	.43	.35	.41	.31
05.	Whether or not I have an accident depends entirely on my behaviour.	SKI +	.54	.10	.46	.41
06.	When I make plans, I am almost certain to make them work.	SKI +	.79	.42	.67	.35
07.	Often there is no chance of protecting my personal interests from bad luck happenings.	PC +	.46	.41	.41	.48
08.	I don't like ambiguous situations, because I don't know to behave or what to do.	SKI -	.51	.31	.42	.58
09.	When I get what I want it's usually because I'm lucky.	PC +	.30	.39	.58	.49
10.	Other people often prevent my plans from becoming reality.	PC +	.36	.48	.39	.30
11.	I can do a lot to protect myself from disease.	SKI +	.82	.35	.61	.51
12.	I often don't know what to do to make my wishes come true.	SKI -	.56	.38	.43	.63
13.	Much of what happens to me in my life is a matter of coincidence.	PC +	.32	.49	.41	.46
14.	My life is chiefly controlled by powerful others.	PC +	.23	.53	.44	.33
15.	Whether or not I have an accident is mostly a matter of luck.	PC +	.34	.41	.32	.36
16.	I know many ways of protecting myself from disease.	SKI +	.83	.43	.68	.62
17.	I have little chance of protecting my personal interests when they conflict with those of other people.	PC +	.38	.45	.24	.44
18.	It's not wise for me to plan too far ahead because many things turn out to be a matter of good or bad luck.	PC +	.44	.47	.45	.47
19.	Getting what I want requires pleasing those people above me.	PC +	.48	.55	.60	.41
20.	In unclear or dangerous situations I always know what to do.	SKI +	.64	.40	.63	.30
21.	It is sheer coincidence when somebody else ever considers my wishes.	PC +	.31	.47	.28	.57
22.	My wellbeing depends to a great extent on the behaviour of other people.	PC +	.34	.37	.43	.42
23.	I can pretty much determine what will happen in my life.	SKI +	.47	.28	.64	.36

24. Sometimes I just don't know at all what to do in a given situation.	<u>SKI</u> -	.50	.45	.48	.52
25. I am usually able to protect my personal interests.	<u>SKI</u> +	.87	.44	.78	.36
26. Whether or not I have an accident depends to a large extent on the behaviours of others.	<u>PC</u> +	.39	.34	.41	.49
27. When I get what I want, it's usually because I worked hard for it.	<u>SKI</u> +	.90	.21	.79	.59
28. I can usually think of many alternative ways of dealing with even difficult situations.	<u>SKI</u> +	.48	.49	.64	.60
29. In order to have my plans work I make sure that they fit in with the desires of people who have power over me.	<u>PC</u> +	.52	.37	.49	.44
30. My life is determined by my own actions.	<u>SKI</u> +	.92	.40	.58	.51
31. Whether I fall ill or not is a matter of fate.	<u>PC</u> +	.50	.27	.42	.34
32. I can usually think of many ways of solving problems.	<u>SKI</u> +	.83	.54	.70	.38

^a SKI = Self-Efficacy (underlined SK = self-concept of own competence, underlined I = internality);
PC = Externality (underlined P = powerful others control, underlined C = chance control)

Table 2:
Correlates of Measures of Self-Efficacy (SKI) and Externality (PC) in Samples of New Zealand and German Adolescents

	New Zealand (N = 215)		Germany (N = 221)	
	Self-Efficacy	Externality	Self-Efficacy	Externality
Nowicki-Strickland I-E-Scale	-.38**	.45**	-.15*	.63**
Need Value of School Mark/Grade	.16*	.01	.32**	-.16*
Task Completion (English Education)	-.02	.04	-	-
Participation Activity (Teacher Rating)	.05	-.08	-	-
School Certificate Results	.11	-.13	.22**	-.11
CES-I/E: Involvement/Engagement	.21**	-.18**	.20**	-.15*
CES-A: Affiliation	.12	-.06	.05	-.09
CES-T: Teacher Control	.10	-.01	.04	.03
CES-RC: Rule Clarity	.18**	-.08	.21*	-.12
CES-OO: Order & Organization	.08	-.04	.13	.00
CES-C: Competitiveness	.01	.03	.07	.05
Subjective Personal Problems	-	-	-.16*	.28**
Subjective School Problems	-	-	-.07	.25**
Perceived Teacher Support	-	-	.04	.04
Perceived Family Support	-	-	.09	-.02
Perceived Peers' Support	-	-	.24**	-.03

**p < .01, *p < .05

Descriptive results with respect to these secondary-level I-SEE scales are presented in figure 2 for both national samples. Without significant heterogeneity of variances (Levene's Test $F < 0.45$, $p > .10$) the results of analyses of variances indicate neither significant main effects of nationality [self-efficacy: $F(1/434) = 1.73$; externality: $F(1/434) = 2.27$] and of gender [self-efficacy: $F(1/434) = 0.91$; externality: $F(1/434) = 1.62$] nor any interaction effects for nationality and gender [self-efficacy: $F(1/434) = 1.94$; externality: $F(1/434) = 0.27$]. Thus the I-SEE-Scales measure generalized self-efficacy and externality beliefs without any gender-bias (see, e.g., Kalechstein & Nowicki, 1997; Krampen, 1982, 1991) with comparable sensitivity in New Zealand and German adolescents.

Correlates of Self-Efficacy and Externality in Educational and Developmental Psychology Contexts.

In both national samples indicators of academic achievement and of academic achievement motivation show weak relations to generalized self-efficacy and externality of the secondary school students (see Table 2). In line with the meta-analytical results presented by Kalechstein and Nowicki (1997), need value of school mark/grade is correlated negatively with externality in the German sample. However, positive relations of the Self-Efficacy Scale to need value of school marks/grades in both national samples are larger than their negative relationships to the Externality Scale. School certificate results correlated significantly to self-efficacy only in the German sample.

The correlative results for the I-SEE Scales and the Classroom Environment Scales in both national samples are in very good agreement. Self-efficacy of students is positively related to personal involvement and engagement in classroom activities as well as to the perception of rule clarity in the classroom setting. Externality shows a numerically somewhat lower, but still significant negative correlation to personal involvement/engagement in both national samples. All other correlations between I-SEE and the CES are not significant and inconsistent.

Additionally results on the relationship between the I-SEE Scales and some developmental aspects are presented for the German sample in Table 2. Externality is significantly correlated with the number of personal problems and of school problems reported by the secondary school students, while there are no relevant relations to perceived social support. Furthermore, self-efficacy is negatively correlated with the number of personal problems reported and positively correlated with perceived peer support. Perceived support of teachers and of family show no significant relations to self-efficacy and externality. Thus, self-efficacy may be a protective factor for developmental problems in adolescence, and is accompanied by a higher level of perceived social peer support, whereas externality indicates developmental problems.

Discussion

The results presented confirm the good psychometric properties of the I-SEE Scales, the English version of a German inventory for the measurement of generalized self-efficacy and externality beliefs in adolescents. With a total of only 32 items, the I-SEE Scales can be administered economically in many settings of basic as well as applied psychological research. Since the I-SEE is integrated into the action-theoretical model of personality (AMP; Krampen, 1988, 2000), it allows further research within a theoretical framework of personality psychology (e.g., Bandura, 1977, 1986; Rotter, 1982), cognitive theories of motivation (e.g., Heckhausen, 1977, 1989), and an actional approach to life-span development (Lerner & Busch-Rossnagel, 1981; Brandtstädter *et al.*, 1986; Brandtstädter, 1998). Item contents of the I-SEE Scales allow its application from adolescence

(from age 14) over adulthood up to old age. However, the psychometric quality of the English version has up until now only been tested in the age-range of 16-17 years. Experiences with the original German scale, however, suggest that good psychometric properties can also be expected for other ages.

The results presented here on the correlative relations of self-efficacy and externality to some indicators of developmental tasks in adolescence (academic achievement, developmental problems and social integration) confirm and extend existing empirical results. Firstly, academic achievement motivation (and—weaker—academic achievement) is correlated negatively to externality (see Kalechstein & Nowicki, 1997). Moreover, the correlations of self-efficacy with the indicators of academic achievement (motivation) prove to be numerically higher and consistent for both national samples. However, the common variance remains rather low, and the hypothesis that this relationship may be moderated by classroom environment perceptions of students (Tricket & Moos, 1973, 1974) is not supported by our data. This holds also for significant but rather weak correlations between self-efficacy and personal involvement in classroom activities and perceived rule clarity.

The relations of self-efficacy and externality to developmental problems and perceived social support of adolescents confirm the hypothesis from research on coping and social support networks (see, e.g., Bilsky & Hossler, 1998) that self-efficacy is a protective factor and generalized externality is a risk factor for developmental problems. Moreover, the positive correlation between self-efficacy and perceived support by peers suggests that the increasing importance of the social peer-group during adolescence is actively produced by the adolescent individual.

However, several aspects of our theoretical and empirical arguments beg further empirical research. In particular, the predictive value of self-efficacy and generalized externality for adolescent development has to be further investigated. Longitudinal data should be gathered in order to investigate the protective effects of self-efficacy on personal progress as well as on social integration. Moreover, the relationship of self-efficacy to other facets of the self-concept and in particular to the development of self-esteem remains to be shown empirically. The protective effects of a differentiated and competence-founded self-esteem (in contrast to a high but instable self-esteem) are indicated in recent literature on juvenile delinquency (Baumeister, Smart & Boden, 1996; Greve, Enzmann & Hossler, 2000.). This is an important task for developmental research since across cultures, many adolescents face crises including school problems and drop-out, violence and delinquency, drug and alcohol (ab)use, unsafe sex, and other kinds of deviant and risk behaviour (Lerner & Galambos, 1998). We clearly need to know more about regulatory functions and the effects of these kinds of problem behaviours (Silbereisen & Noack, 1988). Specifically, since the development of the self is a necessary prerequisite for successful self-development, we need to know more about the consequences of developmental interventions in adolescence (Lerner & Galambos, 1998; Greve, 2000c). Thus, empirical research on self-efficacy as

a central aspect of personality development in adolescence is relevant from theoretical as well as practical perspectives.

Without doubt, education is the most important way to influence the development of self and personality positively in adolescence. Thus, from an educational perspective the poor predictability of school achievement (particularly for the New Zealand sample) reported in this study demands further investigation. Despite measurement problems (i.e., validity of school certificate results), moderating effects both of individual and social influences on school achievement require further research.

From the perspective of self-concept development in adolescence (Harter, 1990) as well as from an actional perspective on development (Brandtstädter, 1998), the AMP offers a framework which allows us to integrate this discussion also into a personality approach on adolescence. In particular, the central importance of self-efficacy is stressed from both perspectives and is well accommodated within the AMP. The present study paves the way for further investigations on the developmental function of self-efficacy by introducing a standardized measure of self-efficacy which is applicable both for adolescents and adults (which is a precondition for longitudinal studies). At the same time it is constructed from the perspective of an action-theoretical model of personality development.

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Figure 1: *Differential expectancy-value model associated with action-theoretical personality variables (modified from Krampen, 1988, p. 42, fig.1)*

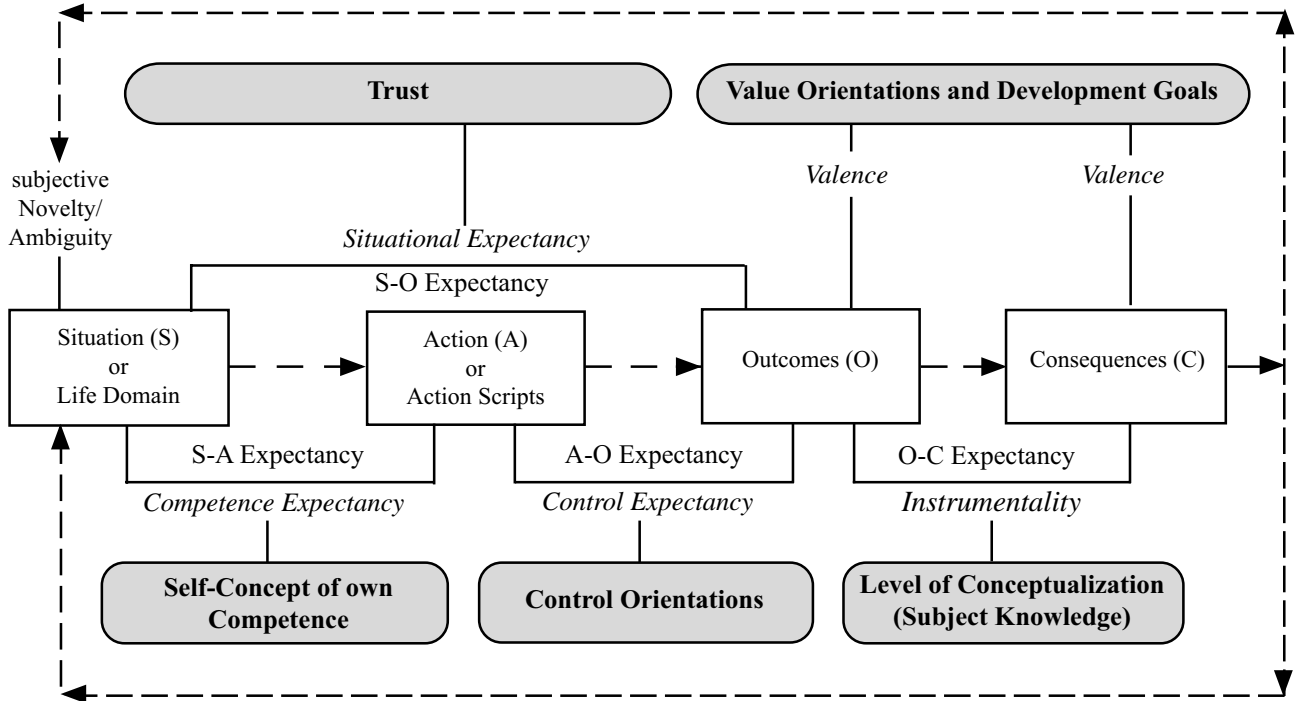


Figure 2: Self-efficacy and Externality for Male and Female students in New Zealand and Germany



Children's Ability Self-Perceptions and Interests: Grade Level, Gender, and Race Differences for Music, Reading and Math

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The purpose of this study was to examine young children's ability self-perceptions and interests in three elementary school achievement domains: music, reading and math. Seventy-three elementary students enrolled in grades K-2 completed an 18-item questionnaire. Our results showed that young children do differentiate between ability self-perceptions and interests within varied academic domains. Girls reported more positive ability self-perceptions than boys in music and reading, but not in math. Second-graders were less interested in music than kindergarten or first-grade students. No reliable differences in ability self-perceptions or interests were found for race. Overall, children reported more positive ability self-perceptions in music than in reading or math, but had a similar degree of interest in all three domains. Relations between self-perceptions of ability and teacher ratings of ability were statistically significant in reading, but not in math or music.

Contemporary motivation theorists (Bandura, 1986; Covington, 1984; Eccles, 1993; Schunk & Zimmerman, 1994; Weiner, 1979) propose that children's ability self-perceptions (including self-concept) and task values are important determinants of academic motivation (activity choice, course selection, effort expenditure, persistence) and academic performance or achievement. Most research related to ability self-perceptions and task values has involved older children (ages 8 or above), adolescents, or adults (Byrne, 1996; Harter & Pike, 1984; Wylie, 1989). Self-concept researchers, however, have increasingly focused on children younger than age 8 in an effort to understand how self-perceptions and values evolve during the primary school years. By developing new age-appropriate measurement techniques, researchers have demonstrated that children as young as age five can differentiate self-perceptions of ability and interest in different subject matter areas (Eccles, Wigfield, Harold, & Blumenfeld, 1993; Marsh, Craven, & Debus, 1991).

Despite the increased quantity and quality of research related to young children's beliefs, most studies examining children's academic self-perceptions have focused on a limited number of domains, principally reading and/or math. In the present study, we applied advances made in measuring young children's self-perceptions and interests to the music domain, as well as reading and math. Important issues underlying this study included (a) the dimensionality of children's self-perceptions and interests, (b) grade level, gender, race, and domain differences for self-perceptions and interests, and (c) relationships between ability self-perceptions and teacher ratings of ability.

Issues of Dimensionality

The traditional notion of self-concept as a unidimensional construct (Coopersmith, 1967; Piers, 1969) has been discarded in favour of multidimensional self-concept theories (Harter, 1985; Marsh & MacDonald-Holmes, 1990; Shavelson, Hubner, & Stanton, 1976). According to these theories, individuals may possess positive self-views in some areas (e.g., physical appearance or social relations) while

harboring negative self-views in others (e.g., general school ability or morality). Even within the academic domain, individuals' views of themselves may vary markedly depending upon the specific domain or subject area being considered (Marsh, 1990; Marsh & Yeung, 1996). The degree to which a child's concept of academic competence becomes differentiated, however, likely depends on the cognitive development of the child as well as the appropriateness of the procedures used to assess self-concept (Harter & Pike, 1984; Marsh, 1989; Marsh, Barnes, Cairns, & Tidman, 1984; Stipek & Mac Iver, 1989). Marsh *et al.* (1991), for example, demonstrated that when an individually administered version of the Self Description Questionnaire (SDQ-I) was used with children in grades K-2, correlations among self-concept factors became smaller with age. Put another way, dimensions of self-concept were more distinct or differentiated for 2nd graders as compared to 1st graders or kindergartners.

Measures of academic self-concept developed since 1980 often vary with respect to the number academic dimensions considered, but in general, self-concept is being measured with increasing degrees of specificity. Harter's Self-Perception Profiles (Harter, 1985, 1988; Neeman & Harter, 1986), for example, yield a single score that reflects overall scholastic competence, whereas Marsh's Self-Description Questionnaires (Marsh, 1992a, 1992b, 1992c) measure an individual's self-concept in reading, math, and school in general. Marsh (1990) also has developed measures that assess self-perceptions in 15 different school academic areas (including music), and Vispoel (1994) created the Music Self-Perception Inventory, which examines self-concept within six specific music subdomains or activity areas (singing, instrument playing, reading music, composing, listening to music, and moving to music).

Beyond the issue of domain specificity, there is increasing concern about the nature and number of constructs represented by individual academic self-concept scale scores. Most often these scores reflect perceptions of competence to one degree or another. Yet, some scales contain items representing a combination of competence beliefs and task values (e.g., interest, importance). Recent research (Craven, McInerney, & Marsh, 2000; Marsh, Craven, & Debus, 1999;

Wigfield *et al.*, 1997) shows that while related, competence beliefs and task values form distinct constructs, even for young children. Individuals, for example, might view themselves as having low ability but high interest in a given subject area, or vice versa.

Assessing Self-Perceptions of Young Children

Prior to 1980, most self-perception research was conducted with individuals age 8 and older. Although there has been growing interest in assessing self-perceptions of young children, it has been difficult to do so because of the limited number of psychometrically sound and age-appropriate measures available (Byrne, 1996; Wylie, 1989). To elicit more valid responses from young children, researchers have used a number of techniques, including simplified language, pictorial formats to clarify item content and response options, and individualized interviews (Eccles *et al.*, 1993; Harter & Pike, 1984; Joseph, 1979; Marsh *et al.*, 1991; Measelle, Ablow, Cowan, & Cowan, 1998). Marsh *et al.* (1991), for example, demonstrated that individual interviews are psychometrically superior to group-administered questionnaires when assessing the self-perceptions of 1st- and 2nd-graders.

Age and Gender Differences

Research shows that children's ability self-perceptions ("Can I succeed on this task?") and task values ("Do I want to succeed on this task?") change in several important ways over the early elementary years. Young children's ratings of their performance often are extraordinarily positive. When asked about their academic ability, for example, most kindergarten-age children claim to be among the smartest in their class. As students progress through the upper elementary grades, however, self-perceptions of ability and achievement task values in academic domains typically become more negative and variable (Eccles, Midgley, & Adler, 1984; Eccles *et al.*, 1993; Marsh, 1989; Marsh, Craven, & Debus, 1998; Stipek & MacIver, 1989; Wigfield & Eccles, 1992; Wigfield & Eccles, 1994; Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991; Wigfield *et al.*, 1997).

As children's self-perceptions of ability decline, they actually become more accurate in the sense that they correlate more strongly with external indices of achievement. The strong positive bias in young children and the ensuing decline in perceived competence can be explained, in part, by changes in children's conceptions of ability and the criteria they use to assess competence (Dweck, 1998). Primary grade children possess a broadly defined concept of ability that includes social behavior and work habits (i.e., most young children also equate ability with effort or believe that increased effort can improve ability). By age 7 or 8, however, children begin to base self-perceptions of ability, to a larger extent, on actual academic performance.

Children's achievement values refer to constructs such as their interest in different subjects or tasks, the importance of those tasks to them, or the potential usefulness of those

tasks in the future (Eccles & Midgley, 1989; Eccles *et al.*, 1993). Many researchers believe that the influence of self-perceptions of ability on motivation and achievement outcomes is largely mediated by the value individuals attach to a particular activity. Generally, children value academic tasks less as they get older and value nonacademic tasks (particularly sports) more.

Gender differences in self-perceptions of young children frequently have been reported, although the nature of these differences appears to vary from one achievement domain to the next. In general, boys' ability self-perception scores are higher for math and sports/physical ability, whereas girls' ability self-perceptions are higher for reading and music (Eccles *et al.*, 1989; Eccles *et al.*, 1993; Marsh *et al.*, 1998; Wigfield & Eccles, 1994; Wigfield *et al.*, 1997). Eccles, Wigfield, and their colleagues (Eccles *et al.* 1993; Wigfield & Eccles, 1994; Wigfield *et al.*, 1997) also have demonstrated that girls' ratings of importance/usefulness and interest are higher for reading and music, whereas boys' ratings are generally higher for sports (gender differences for math are typically nonsignificant). Moreover, it appears that these gender differences reflect cultural stereotypes and some gender differences may become more pronounced with age (Eccles *et al.* 1989; Marsh *et al.*, 1998).

Race Differences

Race differences in ability self-perceptions are infrequently examined or reported for K-12 student populations, but the consideration of race (alone or in conjunction with socioeconomic status) may be important for a more complete understanding of motivational behaviors exhibited by children of different racial or ethnic backgrounds. Conflicting results often have emerged from the literature. Some researchers (Cicirelli, 1977; Douglas, 1970; Richman, 1984; Tashakkori & Thompson, 1990), for example, have found that African American children exhibit higher academic competence beliefs or more positive self-concepts than Caucasian children. Trowbridge (1972) found that low socioeconomic students possessed more positive self-concepts than middle class students (grades 3-8), regardless of race. Overall, however, African American children possessed more positive self-concepts than Caucasian children. Conversely, Hare (1986) reported that Caucasian middle school students possessed more positive academic self-perceptions than African American students. Samuels (1977) found that lower class African American children had lower self-concepts than lower class Whites or middle class children of either race. Eight years later, however, lower class African American children had the most positive self-concepts. Most researchers have found no statistically significant race differences in ability self-perceptions at either the elementary or secondary level (Bruneau, 1984; Corkery, 1984; Crain & Bracken, 1994; Martin & Coley, 1984; George & Hoppe, 1979; Healey & DeBlasie, 1974; Smith, 1988; Strein, Simonson, & Vail, 1999; Trent, 1986; Wade, 1991). Tashakkori & Thompson (1990) observed that when significant effects for race are

found, they are rarely of a large magnitude and tend to dissipate over time as children become adolescents and adolescents become adults.

Domain Differences

As was noted above, researchers frequently interpret age or gender differences in relation to various academic and nonacademic domains. Developmental changes in ability self-perceptions or gender differences in interests, for example, may be more marked in some domains than others. Mean ratings of self-concept or interest across domains also may be directly compared to determine the extent to which these beliefs are contextually dependent. Wigfield *et al.* (1997) compared children's competence beliefs and task values across four domains: math, reading, instrumental music, and sports. At each time of measurement (spring of three consecutive years), children's competence beliefs were highest for reading and sports, followed by math and then instrumental music. Post hoc tests indicated that means for the instrumental music competence beliefs were consistently lower than means in the other three domains. A parallel analysis for children's interests revealed that at each time of measurement, children reported being more interested in sports than the other three domains. Children also rated reading and math as being the most useful and important subjects. While rated less useful/important than math and reading, sports was rated more useful/important than instrumental music.

Relations with Teacher Ratings

Researchers commonly examine relations between children's self-concept ratings and teachers' ratings of children's self-concepts (inferred self-concepts) or abilities. According to Marsh and Craven (1991), elementary school teachers' ratings are useful for a number of reasons. Elementary teachers interact intensely with the same group of students for most of the school day and so, have a broad base of experience upon which to know or judge their students. Because elementary teachers also interact informally with a large number of children at different developmental levels, they have an expansive frame of reference upon which to base their ratings of self-concept or ability. Finally, elementary teachers are trained to be sensitive to children and thus, might be expected to provide accurate assessments of self-concept and ability in academic areas as well as nonacademic areas. The extent to which children's ability self-perceptions and teachers' rating of ability are related, however, likely will be mediated by the degree to which the elementary teacher truly knows the student and has opportunities to directly observe the student at work in a given domain or subject area (Marsh, 1990).

In prior research, it has been demonstrated that self-concept or competence beliefs are positively related to teacher ratings of ability (Harter & Pike, 1984; Marsh & Craven, 1991; Measelle *et al.*, 1998; Stipek & Hoffman, 1980; Strein & Simonson, 1999; Wigfield *et al.*, 1997) as well as to teacher

ratings of self-concept within a given domain (Marsh, 1990; Marsh & Craven, 1991). These positive correlations range from .01 to .64, but typically are of a greater magnitude as children get older (Stipek & Hoffman, 1980; Wigfield *et al.*, 1997). Marsh (1990) also observed that relations between the ratings of children and teachers were strongest in areas in which teachers could most easily make relevant observations (e.g., math, reading, physical ability). Strein and Simonson (1999) found that correlations between children's self-ratings and teacher ratings were stronger for African American children than for Caucasian children.

Purpose of the Study

The purpose of this study was to examine the development of young children's ability self-perceptions and interests in three elementary school achievement domains: music, reading and math. We drew upon and extended prior research in this area (Craven *et al.* 2000; Eccles *et al.*, 1993; Marsh & Yeung, 1997; Marsh *et al.*, 1991; Marsh *et al.*, 1998; Marsh *et al.*, 1999; Wigfield & Eccles, 1994; Wigfield *et al.*, 1997) by (a) employing age-appropriate and psychometrically sound measurement techniques, (b) examining both ability self-perceptions and interests, (c) including classroom music (offered and required for the general student population) as an achievement domain, (d) focusing on young children in grades K-2, and (e) collecting data from a racially diverse sample. Four research questions guided the investigation:

1. Are primary grade children able to distinguish between ability self-perceptions and interests?
2. Do children's interests differ on the basis of grade level, sex, race, or domain?
3. What is the nature of relationships among ability self-perceptions, interests, and teacher ratings of ability in music, reading and math?

Method

Participants

Seventy-three children (44 boys and 29 girls) enrolled in kindergarten (N=27), first- (N=22) or second-grade (N = 24) in a large, urban elementary school were participants in this study. The sample represents a majority of all students in grades K-2 at this elementary school. Children came from families of predominantly low socioeconomic status; 45% were Caucasian whereas the remaining individuals represented African-American (30%), Hispanic (15%) and Asian-American (10%) racial groups. A comprehensive school curriculum provides students with learning experiences in a large number of varied subject areas; all students received a minimum of 30 minutes of instruction per week in music, reading and math.

Measure and Procedures

An 18-item questionnaire, consisting of six 3-item subscales, was developed to measure children's self-perceptions in music, reading and math, as well as their interest in those subjects. Item stems were derived from similar measures developed by Marsh *et al.* (1984) and Eccles *et al.* (1993). Questionnaires were administered individually to each child by a classroom teacher in a private setting. Children were assured of the confidentiality of their responses, encouraged to respond honestly (i.e., "There are no right or wrong answers") and reminded to tell the teacher if they did not understand any items or the response format. Very few students indicated that they needed help in understanding or responding to questionnaire items.

The directions, two practice items, and all questionnaire items were read aloud. Children were asked to indicate how good they are at each subject (in general, in relation to other students, and in relation to other school subjects) and how interested they are in each subject (how much fun it is, how much they like doing it, how enjoyable it is compared to other school subjects). Five-point Likert-type scales were represented by stars of increasing size, and the endpoints and midpoint of each scale also were labelled with appropriate verbal descriptors (e.g., "Not good at all," "OK," and "Very Good" for the item "How good are you at music?"). Children responded by pointing to the appropriate star or scale point. Classroom teachers also rated children's skill level or ability (compared to other children) in each of the three subject areas using a five-point Likert-type scale (1 = much less skilled, 3 = about the same, 5 = much more skilled).

Results

Confirmatory Factory Analysis

Children's responses to questionnaire items were analyzed to assess the dimensionality of their ability self-perception and interests. Confirmatory factor analyses were used to determine whether children's self-perceptions and interests formed separate factors within each subject area (6 factors in all), as opposed to a single factor for each subject area (3 factors in all). Goodness-of-fit results demonstrated that the 6-factor model ($df = 120$, Chi-square = 170.79; Chi-square/ $df = 1.42$; comparative fit index = .89; Bentler-Bonett non-normed index = .86; Bentler-Bonett normed index = .73; RMSEA = 0.08), fit the data better than the 3-factor model ($df = 132$, Chi-square = 230.98; Chi-square/ $df = 1.75$; comparative fit index = .79; Bentler-Bonett non-normed index = .76; Bentler-Bonett normed index = .63; RMSEA = 0.10). For the 6-factor model (shown in Table 1), factor correlations between self-perceptions and interests were .62 for music, .64 for reading, and .71 for math. Other correlations among factors ranged from .16 to .48, with a median correlation of .34. The median factor pattern loading was .74 (min. = .36, max. = .98). Overall, these results provide some indication that, while related, ability self-perceptions and interests may be distinguishable constructs for primary

grade children.

Based on the factor analysis, subscale scores for self-perception and interest were calculated for each domain/subject area by averaging responses to the three items constituting each subscale. Reliability estimates (coefficient alpha) for the six subscales ranged from .56 (reading self-concept) to .81 (reading interest), with a median coefficient of .78.

Analysis of Grade Level, Gender, Race and Domain Differences for Ability Self-Perceptions

Analysis of variance was used to examine grade level, gender, race, and domain differences in children's self-perceptions and interests, as well as related interactions (see Table 2). An alpha level of .05 was used for all statistical tests. ANOVA and follow-up tests for ability self-perceptions revealed statistically significant gender differences for music, $F(1, 67) = 7.47$, $p = .008$, and reading, $F(1, 67) = 4.88$, $p = .031$, but not for math, $F(1, 67) = 1.75$, $p = .190$. For both music and reading, girls' self-perceptions were more positive than those of boys. Domain differences also were statistically significant, $F(2, 134) = 3.25$, $p = .042$; children reported more positive self-perceptions in music than in reading or math. There were no statistically significant grade level or race differences for ability self-perceptions. Means and standard deviations for ability self-perceptions appear in Table 3.

Analysis of Grade Level, Gender, Race and Domain Differences for Interest

The ANOVA results for children's interests (see Table 4) showed a marginally significant difference for gender, $F(1, 67) = 3.98$, $p = .051$, and a statistically significant grade level by domain interaction, $F(2, 134) = 2.93$, $p = .024$. Follow-up analyses for gender differences were not statistically significant, though marginal differences merged for math, $F(1, 67) = 3.90$, $p = .052$, and music, $F(1, 67) = 3.35$, $p = .072$. The grade level by domain interaction was further explored by examining grade level

differences within each domain. There were statistically significant grade level differences in interest for music, $F(2, 67) = 3.74$, $p = .029$, but not for math or reading. Post-hoc Scheffe' tests demonstrated that the music interest scores of second-graders were significantly lower, $F(2, 67) = 6.20$, $p = .015$, than those of kindergarten or first-grade students (see means and standard deviations for children's interests in Table 5). There were no statistically significant race differences for children's interests.

Table 1: Factor Pattern Matrix for Confirmatory Factor Analysis (6-Factor Model)

	Factor loading					
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Reading Self-Perception						
1	.47					
2	.80					
3	.36					
Math Self-Perception						
1		.72				
2		.76				
3		.49				
Music Self-Perception						
1			.81			
2			.83			
3			.64			
Reading Interest						
1				.77		
2				.88		
3				.65		
Math Interest						
1					.76	
2					.82	
3					.70	
Music Interest						
1						.62
2						.98
3						.63
Factor correlations						
	Reading Self-Perc	Math Self-Perc	Music Self-Perc	Reading Interest	Math Interest	Music Interest
Reading Self-Perception	1.00					
Math Self-Perception	.48	1.00				
Music Self-Perception	.45	.21	1.00			
Reading Interest	.64	.38	.32	1.00		
Math Interest	.16	.71	.23	.34	1.00	
Music Interest	.43	.21	.62	.42	.34	1.00

Note. Each item/variable was allowed to load on only the factor that it was designed to measure and all other factor

Table 2: Analysis of Variance Results for Ability Self-Perceptions

Source	df	F	Sig of F	Eta Sqd
<i>Between Subjects</i>				
Grade (GR)	2	.36	.698	.012
Gender (GE)	1	7.85	.007	.114
Race (R)	1	2.04	.158	.032
GR x GE	2	.60	.553	.019
GR x R	2	.22	.801	.007
GE x R	1	.62	.434	.010
G x GE x R	2	.33	.722	.011
Within	61			
<i>Within Subject</i>				
Domain (D)	2	3.25	.042	.051
G x D	4	.66	.621	.021
GE x D	2	.38	.682	.006
R x D	2	.64	.529	.010

G x GE x D	4	.99	.414	.032
G x R x D	4	.21	.932	.007
GE x R x D	2	1.09	.339	.018
GR x GE x R x D	4	1.58	.183	.049
Within	122			

Table 3. Means and Standard Deviations for Ability Self-Perceptions in Music, Reading and Math

Subscale	Gender		Grade			Race		Total
	Girls	Boys	K	1	2	C	NC	
Music	4.61/0.61	3.97/1.07	4.05/1.16	4.59/0.60	4.08/0.60	3.88/1.15	4.52/0.63	4.22/0.96
Reading	4.26/0.70	3.76/0.98	3.85/0.99	4.02/0.75	4.03/0.98	3.84/0.90	4.06/0.92	3.96/0.91
Math	4.16/0.88	3.83/1.03	3.83/1.00	3.98/1.05	4.08/0.92	3.89/1.02	4.02/0.96	3.96/0.98
Total	4.34/0.47	3.85/0.71	3.91/0.80	4.20/0.61	4.06/0.54	3.87/0.66	4.20/0.65	

Note. Race designations are Caucasian (C) and Non-Caucasian (NC)

Table 4: Analysis of Variance Results

Source	df	F	Sig of F	Eta Sqd
Between Subjects				
Grade (GR)	2	.10	.909	.003
Gender (GE)	1	3.98	.051	.061
Race (R)	1	.87	.356	.014
GR x GE	2	.28	.758	.009
GR x R	2	.21	.814	.007
GE x R	1	.78	.380	.013
G x GE x R	2	.26	.773	.008
Within	61			
Within Subject				
Domain (D)	2	2.17	.118	.034
G x D	4	2.93	.024	.088
GE x D	2	.09	.912	.002
R x D	2	1.03	.361	.017
G x GE x D	4	.71	.585	.023
G x R x D	4	.55	.701	.018
GE x R x D	2	.94	.394	.015
GR x GE x R x D	4	.97	.428	.031
Within	122			

Table 5: Means and Standard Deviations for Interest in Music, Reading and Math

Subscale	Gender		Grade			Race		Total
	Girls	Boys	K	1	2	C	NC	
Music	4.68/0.66	4.38/0.90	4.63/0.62	4.70/0.57	4.17/1.10	4.43/0.87	4.56/0.79	4.50/0.82
Reading	4.66/0.61	4.43/0.93	4.53/0.71	4.56/0.87	4.47/0.92	4.44/0.95	4.59/0.69	4.52/0.82
Math	4.56/0.76	4.12/0.93	4.11/0.92	4.21/0.96	4.58/0.73	4.14/0.89	4.44/0.87	4.30/0.89
Total	4.34/0.47	3.85/0.71	3.91/0.80	4.20/0.61	4.06/0.54	4.34/0.64	4.53/0.57	

Note. Race designations are Caucasian (C) and Non-Caucasian (NC).

Correlational Analysis for Ability Self-Perceptions, Interest, and Teacher Ratings of Ability

The analysis showed consistently strong, positive correlations between ability self-perceptions and interest within each domain ($r = .52$ for music, $r = .49$ for reading, $r = .54$ for math). Because these scale correlations were not disattenuated for measurement error, they are consistently smaller than factor correlations reported earlier. Correlations between ability self-perceptions and teacher ratings of ability ($r = .15$ for music, $r = .19$ for math, $r = .34$ for reading) were nominally larger than correlations between interests and teacher ratings of ability ($r = .13$ for music, $r = .18$ for math, $r = .22$ for reading). The only statistically significant correlation involving teacher ratings was for ability self-perceptions in reading ($r = .34$, $p = .004$).

Discussion

Several noteworthy findings emerged from our exploratory study. First, children in kindergarten through 2nd-grade were able to differentiate among ability self-perceptions and interests in diverse subject areas. This finding has important implications for the measurement of young children's self-perceptions and research that focuses on the emergence of differentiated self-perceptions or values in academic settings. Because perceptions of ability and task interest in different domains appear to be distinct constructs, they should be assessed separately.

Practitioners working with young children should not infer ability self-perceptions in one subject area on the basis of self-report or observational data obtained in another subject area. Children who possess very positive ability self-perceptions in math, for example, may not necessarily believe they are very good at music. Though ability self-perceptions and interests were strongly correlated within domains, practitioners also should not assume that because children possess very positive ability self-perceptions in a given subject area, they also attach great value or importance to that same subject area. It is quite possible for a child to believe he is very talented in music, while not believing it is important to do well in music classes (or vice versa). Given that children's self-perceptions and interests can be measured distinctly and reliably, teachers may wish to use similar techniques to gather important information about their students. In turn, such information may be used to appropriately modify instruction and optimize motivation for learning.

A second important finding of this study is that children's ability self-perceptions in music were significantly more positive than those for either math or reading. This contradicts prior findings by Wigfield *et al.* (1997). Participants may have responded more positively to music self-perception items in this study because of the frequency and amount of music instruction provided by this school (30 minutes daily as compared to the more typical 30 minutes three times per week or 45 minutes twice a week). Though the specific impact of the music instruction program was not directly

considered in this study, the general implication is that contextual factors or interventions operating at school and classroom levels might be expected to impact on ability self-perceptions, task values and other important motivational outcomes. It also should be reiterated that participants in this study referenced their music ability self-perceptions and interests to experiences they had in a required general music class, as opposed to the elective instrumental music class scenario employed by Wigfield *et al.* (1997) in their research.

In agreement with prior research, our results showed that girls' ability self-perceptions in music and reading were more positive than those of boys (we found no statistically significant gender differences for math). Because we did not collect actual achievement data, it is impossible to determine whether these gender differences are grounded in fact or fiction. As has been suggested by Eccles *et al.* (1989), such findings may simply reflect gender stereotypes about the relative appropriateness of these various domains for young boys and girls. It is troubling to consider the possibility, however, that boys might believe they are less capable in music and reading when, in reality, they are achieving as much as girls in those areas. Over time, boys who believe they are less capable than girls in music might begin to devalue or disengage from such activities.

As opposed to other researchers, we found no trustworthy evidence of grade level differences in children's ability self-perceptions, and statistical evidence of grade level differences in interest emerged for music alone. The significant decline in music interest (similar to results obtained by Eccles *et al.*, 1993 and Wigfield *et al.*, 1997) among second-graders is problematic because music courses offered after 5th-grade are often elective in nature. Beyond the potential influence of ability self-perceptions in music (which also declined from grade one to grade two, but not to a significant degree), students may have lost interest in music because of the manner in which instruction was delivered. Alternatively, there could have been a mismatch between the types of activities employed in the music classes and the types of activities students are naturally interested in or value. A special instructional unit involving individualized instruction on music keyboards, for example, was implemented for a period of time just prior to when this study was conducted. Music specialists may need to collaborate with classroom generalists to more closely monitor the level of music interest expressed by students, and when necessary, intervene to stem the tide of declining interest. It also would seem important for researchers to determine whether students develop interest in alternative music activities (more commonly experienced outside of school) as their interest in school-based music experiences diminishes, or whether the decline in music interest is all-encompassing (i.e., generalizable to all forms of musical activity).

In agreement with most prior research, we found no statistically significant race differences for ability self-perceptions or interests. It is important to note, however, that because of the small sample size, we did not analyze the data in a way that would distinguish among the responses of different Non-Caucasian races (African-American, Hispanic,

and Asian-American). It is possible, for example, that the responses of Asian-American children may be more similar to those of Caucasian children than those of African-American or Hispanic children.

Finally, correlations between teacher ratings of ability and children's ability self-perceptions within subject areas were of a rather small magnitude. Because no actual achievement data were collected, it is impossible to determine whether the ratings of teachers or children were more accurate. It is not surprising, that classroom teachers' ratings of children's abilities were most strongly correlated to children's ability self-perceptions in reading and least correlated in music, given that all classroom teachers are responsible for teaching children to read, but are seldom involved in providing music instruction to children at these grade levels (i.e., the responsibility is typically assigned to a general music specialist).

Recommendations for Future Research

The results of this study must be interpreted with great caution given the exploratory nature of the investigation and the modest number of participants. When conducting additional studies in this area, researchers should target larger but equally diverse samples of young children. Self-perceptions and task values for closely related subject areas (music, visual art, and dance; math and science; reading and social studies) or for diverse activities within a given subject area might be compared to determine whether distinct constructs continue to emerge both across and within domains. The research focus also might be expanded to include additional affective constructs (importance, usefulness, anxiety, cost, etc.). Linkages among domain-specific affect, motivational outcomes, self-regulatory processes, and achievement outcomes might be explored. Researchers also might consider how the school or classroom environment influences relations among these variables. Lastly, multi-wave, multi-cohort studies employing longitudinal designs and causal modeling analyses might further clarify whether relationships among various motivation and achievement variables are reciprocal or directional in nature.

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Ambivalent Self-Esteem as Meta-Vulnerability for Obsessive-Compulsive Disorder

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Despite the success of cognitive models for describing cognitive biases associated with Obsessive-Compulsive Disorder (OCD), these models have typically ignored the role of self-esteem in the maintenance of OCD. This study tested one model that positions ambivalent self-esteem as vulnerability not only for OCD symptoms, but also for the specific OCD cognitive vulnerabilities. Two hundred and thirty two undergraduate psychology students (mean age = 19.52; sd = 3.23), completed measures of OCD and cognitions, including the Self Ambivalence Measure (SAM), a questionnaire of ambivalent self-esteem. Hypotheses relating to the model were supported. SAM related significantly to measures of OCD symptoms and obsessive-compulsive cognitive factors. Further, SAM accounted for 66% of the covariance between cognitive factors. These findings were interpreted as supporting a model of OCD, where ambivalent self-esteem occupies a dominant position in a hierarchy of cognitive vulnerabilities.

The role of self related constructs such as self-image, and self-esteem is poorly understood in the development and maintenance of Obsessive-Compulsive Disorder (OCD). OCD is classified as an anxiety condition where the sufferer experiences obsessions – i.e., intrusive thoughts, images or impulses that are persistent, ego-dystonic and distressing—and/or compulsions – i.e., repetitive and stereotypic behavioural or mental rituals that are performed in order to alleviate distress (APA, 1994). Cognitive models have been particularly useful in describing the characteristic thinking styles involved in OCD, and have resulted in efficacious treatment models (Freeston, Rheaume & Ladouceur, 1996). However, there has been little attempt to investigate whether the thinking patterns and beliefs involved in OCD vulnerability relate to self-esteem and early attachment experiences.

The Cognitive Model of OCD

A plethora of cognitive factors – beliefs, thinking styles, personality traits and appraisals - have been implicated as vulnerability for OCD (eg., Bhar & Kyrios, 2000; McFall & Wollersheim, 1979; OCCWG, 1997; Salkovskis, 1989). According to the cognitive model, the disability in OCD involves faulty interpretations and beliefs. Many of the beliefs implicated in OCD relate to the necessity for high standards of responsibility, caution and perfection in order to ensure the safety of self and others. Six belief domains have been identified as particularly important (OCCWG, 1997). These are (1) an inflated belief of personal responsibility; (2) an excessive importance place on the importance of thoughts; (3) an excessive importance placed on the need to control one's thoughts; (4) a tendency to overestimate threat; (5) an intolerance of uncertainty, and (6) perfectionism (OCCWG, 1997; see appendix A for definitions). A measure called the Obsessive Beliefs Questionnaire measures these cognitive domains (OCCWG, 1997).

The core assumption within the cognitive model of OCD is that these belief domains facilitate the maintenance and/or development of obsessive-compulsive (OC) phenomena. Some support is available for this causal hypothesis from treatment studies that have produced changes in OC symptom severity by reducing convictions in particular beliefs

(Freeston *et al.*, 1996). Such models have typically been depicted as two-layered, with OCD symptoms and cognitions occupying sequential positions (eg., Salkovskis, 1986). The interrelationships between the cognitions themselves or the precursors to these cognitions have been relatively ignored. This oversight limits our understanding about the mechanisms involved in maintaining the beliefs and symptoms in OCD, and thus detracts from a sophisticated approach to the assessment, treatment and classification of OCD.

At least two specific unresolved issues remain about the cognitive model of OCD. The first issue relates to the aetiology of OCD beliefs. Although cognitive models of OCD explain the aetiology of OCD with reference to the presence of dysfunctional beliefs, there has been little theoretical or empirical exploration about the utility of, or motivation for having such beliefs. Specifically there is a gap in knowledge about whether such beliefs relate to particular developmental and self-related needs.

The second issue pertains to the relational structure of these belief domains. These various domains have been found to intercorrelate highly with each other (OCCWG, 1997; Hordern, 1996). As yet no explanation has been forwarded to account for the substantial correlations between the various domains. The interrelationships may reflect one or more of these possibilities: (1) There is conceptual overlap between the constructs (eg., Intolerance for uncertainty is a variant of perfectionism); (2) Beliefs are ordered hierarchically, in that some beliefs make others more likely (eg., if one believes that thoughts are important, then one may also be more likely to believe it necessary to control the flow of thoughts); (3) Beliefs are primed because of mood factors (eg., when depressed, one experiences decreased ability to control the emergence of mood-congruent thoughts); (4) The covariance is due to the mono-assessment method (eg., some of the covariance between the constructs emerges because they have been measured through similar psychometric formats, using likert type scales). Alternatively, these beliefs may all reflect to some extent common developmental experiences (eg., early attachment issues) and/or a common disturbance in self-related processes.

Self and Attachment in OCD

A model proposed by Guidano and Liotti (1983) involves references to early attachment experiences and self-image as vulnerability for OCD. Essentially, Guidano and Liotti argue that individuals prone to OC phenomena such as obsessions and compulsions are ambivalent about their self-worth. They purport that such individuals find it difficult to arrive at a synthesis in evaluating self-worth. Instead, they continually doubt personal worth.

According to Guidano & Liotti (1983), the development of self-doubt relates to experiences during childhood - particularly to the experience of receiving contradictory and ambiguous messages about self-worth from a dominant parent, in context of demands for maturity, verbal reasoning, achievement and morality. Consequently, such individuals mature with an unclear image of their self-worth, and believe

that self-worth is strongly related to the extent to which significant others give approval (ie., to the extent to which one is “fulfilling other’s requirements” and to the extent to which “moral rules” are followed (Guidano & Liotti, 1983, p. 177).

According to this account, obsessions and compulsions reflect a preoccupation with self worth and a complementary drive towards the resolution of ambivalence about self worth. Intrusive thoughts are primed because they are appraised as threats to a positive self view, in that they defy internalised standards of moral purity and social approval. Compulsions serve to lessen the gap between actual and ideal representations of self. In other words, whilst obsessions reflect fears that one is violating, or will violate social or moral standards, compulsions function to align the self-concept with ideals of moral perfection and social approval (see Figure 1).

Figure 1: Guidano & Liotti’s Model (1983)

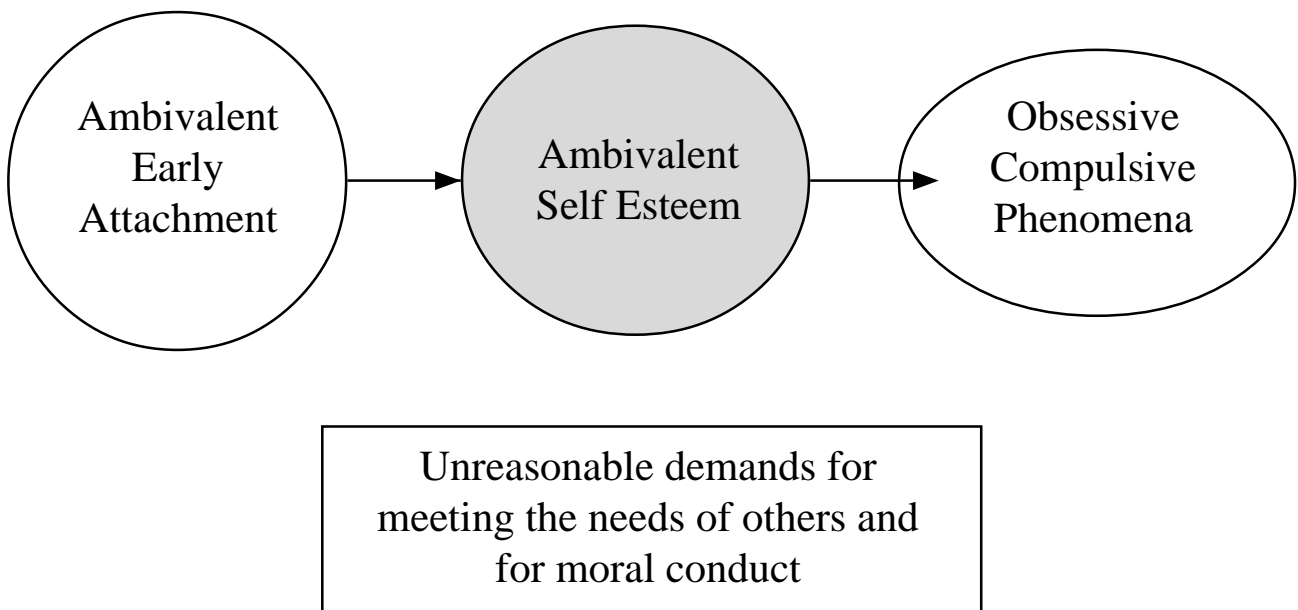
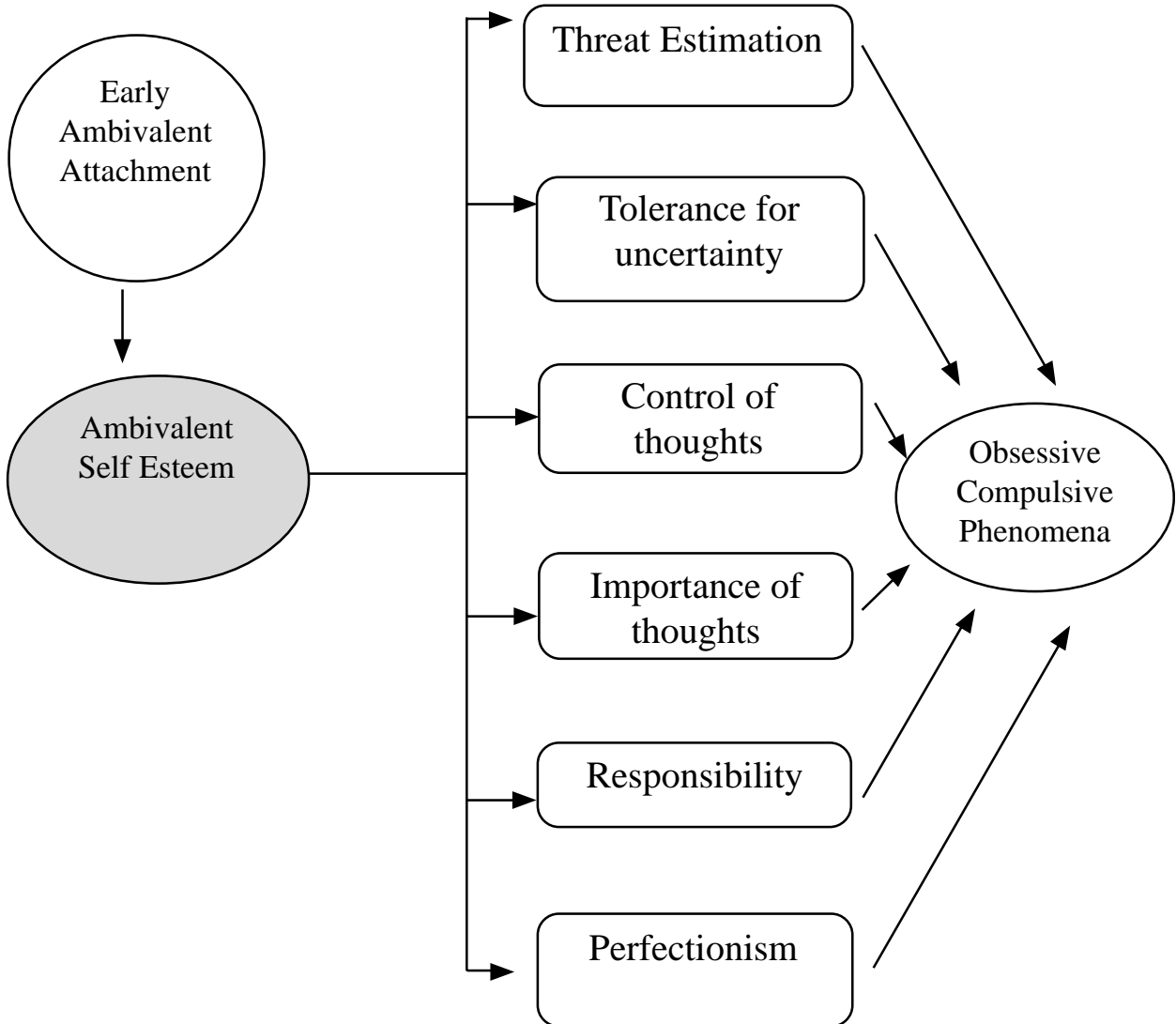


Figure 2: *Guidano & Liotti's Model Revised (2000) Model Revised (2000)*

Guidano and Liotti's Theory Extended



The empirical literature on the relationship between self-esteem and OC phenomena is scarce. Arguments for OC phenomena representing the struggle for identity or self-worth (Sookman et al) are supported mostly by case studies (eg., O'Neil, 1999; Sookman, Pinard & Beauchemin, 1994). Studies that statistically examine the link between self and OC phenomena tend to look specifically at the relationship between OCD and self-esteem level, rather than between OCD and self-esteem ambivalence (eg. Ehntholt, Salkovskis & Rimes, 1999). Such studies find that OCD is associated with low self-esteem, but are not able to comment on whether OCD is characterised by ambivalence as well. One study did find that OCs were more indecisive about their personal qualities compared to normal controls (Ruegg, 1994). However, the study did not specify whether such indecision was specific to self view, or whether it reflected a broader impairment in decision making capabilities (Frost & Shows, 1993).

Some indirect evidence exists that relates OCD to ambivalent self-esteem. Individuals with OCD show similar attributes as those with fragile self-esteem. Researchers in the areas of social psychology and personality have nominated a range of strategies that are associated with fragile self-esteem, which serve to regulate, protect or enhance self-esteem. These strategies include behaviours such as avoiding risks, being defensibly pessimistic, self-handicapping, and avoiding social disapproval (eg., Harris & Snyder, 1986; Perosa, 1996). Since individuals with OCD show many of these regulatory behaviours, in particular a sensitivity to social disapproval (Ehntholt, Salkovskis & Rimes, 1999; Bhar et al), it can be inferred that OCs too feel insecure about self-worth.

The role of self-esteem in predisposing certain belief styles has likewise not received much research attention. Guidano and Liotti (1983) argue that perfectionist beliefs, like compulsions, function to protect a sense of self worth. The authors do not consider whether the other cognitive beliefs implicated in OCD also assist to regulate self worth (see Figure 2). It could be argued that the various cognitions reflect moral or social rules that simplify the assessment of self-esteem. Such rules represent clear criteria for self worth, which when met through the execution of compulsions, allows the OC individual to escape negative self-appraisal, and thus to temporarily resolve self-ambivalence.

This paper proposes that the crucial dysfunction involved in OCD is not only the various belief domains, as argued in cognitive models of OCD, but also the underlying ambivalence associated with self-esteem. This ambivalence is posited to underlie not only the development of OC phenomena such as obsessions and compulsions, but also the various belief domains.

This study investigates the interrelationship between OC phenomena, OC cognitions, ambivalence associated with self-worth and ambivalence associated with early parental approval. It also explores the extent to which ambivalent self-esteem moderates the relationships between OC cognitions.

It was hypothesised that measures of ambivalence about

self-esteem and about parental approval would relate to measures of OC phenomena and cognitions, as depicted in Figure 2. The basic hypotheses relating to Figure 2 are: (1) Individuals high in ambivalence about self worth or parental approval will report high levels of OC phenomena and cognitions; (2) Ambivalent self-esteem would relate independently to OC cognitions after controlling for OC phenomena and ambivalent parental approval; (3) The relationship between ambivalent self-esteem and OC phenomena would be fully mediated by OC cognitions; and (4) The relationship between ambivalent parental approval and OC cognitions would be fully mediated by ambivalent self-esteem. The extent to which ambivalent self-esteem moderated relationships between OC cognitions was also explored.

In order to test these hypotheses, a measure of ambivalent self-esteem was developed (Study 1). The hypotheses were then tested using this measure in a non-clinical student sample (Study 2).

Study 1: The Development of a Measure of Ambivalent Self-Esteem

The notion of ambivalent self-esteem is derived from Guidano and Liotti's (1983) developmental-cognitive account of the developmental pathways associated with obsessional disorders such as OCD and Obsessive-compulsive personality disorder. As elaborated in this model, ambivalent self-esteem reflects the interlocking of three schematic-structural processes: (1) An uncertainty about self worth - ie., a "non articulate view" of self worth (Guidano, 1987, p. 177); (2) The tendency to appraise the self in dichotomous and absolute categories (eg. I am worthwhile or worthless; "split patterns of self recognition", p. 181); and (3) A preoccupation with self worth - a "looking for the true nature of things and the right way to behave" (Guidano & Liotti, 1983, p. 264).

The concept of ambivalent self-esteem as distilled from Guidano and Liotti (1983) represents a composite of three processes that individually do not fully capture the nature of self-unrest described by the concept. Even though self-uncertainty, -dichotomy, and -preoccupation may occur independently from each other, the term ambivalence - ie the "simultaneous attraction and repulsion" (Webster dictionary, 1965) - is used to highlight not only a vagueness about self worth, but also a tension and preoccupation in choosing between dichotomous possibilities of self-worth.

The relationship between ambivalent self-esteem and global self-esteem level however is unclear. Whilst self-esteem level pertains to an evaluation of self as positive or negative, ambivalent self-esteem reflects the extent to which the view is dichotomous, held with certainty, and is a source of preoccupation. The distinction between self-esteem level and ambivalence is supported by some studies. For example, studies have found that self-esteem instability is found in individuals with either high or low self-esteem (Harris & Snyder, 1986; Kernis *et al.*, 1989, 1991, 1993). However, more commonly, studies have found that individuals who

are unsure about self-worth tend to score low on measures of self-esteem (Baumgardner, 1990; Campbell *et al.*, 1996; Rosenberg, 1986). These studies support the views that: (1) low self-esteem is pliable, held with less confidence and therefore is more vulnerable to change (see Campbell *et al.*, 1996) and/or (2) individuals who are unsure about their self-worth are more prone to negative self-evaluation in context of inevitable perceived failures. Thus, although self-esteem level and ambivalence are conceptually different, they are strongly associated with each other.

Several questionnaires measure processes such as self-dichotomy, self-uncertainty and self preoccupation. However, these questionnaires do not: (1) Incorporate all three processes in the one measure, (2) Measure self-esteem as distinct from self-definition, or (3) Investigate ambivalence specifically associated with the extent to which one meets social and moral standards for self-esteem. For example the Rosenberg Stability of Self Scale (Rosenberg, 1986) measures the instability in self-esteem but does not measure the extent to which the self is evaluated in terms of dichotomies. The Rumination-Reflection Questionnaire (Trapnell & Campbell, 1999) measures the preoccupation associated with self, but does not measure the uncertainty associated with self-view. Other questionnaires such as the Self-Concept Clarity Scale (Campbell *et al.*, 1999) and Splitting Index (Gould *et al.*, 1996) measure the clarity and dichotomy respectively associated with self-definition (ie; pertaining to Who am I?), but do not investigate these features specifically in relation specifically to self-esteem (ie., pertaining to “Am I worthwhile?”; see Campbell, 1999 for a review of the distinction between self -definition and self evaluation).

The Self Ambivalence Measure (SAM)

A questionnaire called the Self-Ambivalence Measure (SAM) was therefore constructed to reflect three processes – uncertainty, dichotomy and preoccupation - involved in the assessment of self-esteem. A pool of 52 items was derived from sources such as related questionnaires, OCD patient disclosures, and clinicians familiar with Guidano and Liotti’s (1983) model. The items measured insecurity about whether various standards of self-esteem were met, such as living up to moral rules, acquiring social approval, performing competently at work or study and being physically attractive. In order to target Guidano and Liotti’s emphasis on the importance of moral and social standards for self-esteem in OCD, only 22 items pertaining to global, social or moral aspects of self worth were retained for psychometric analyses.

These items were examined for the extent to which they factor analysed into a single factor, but also avoided repetition in terms of content. The items were also examined for the extent to which they met face validity with respect to Guidano and Liotti’s (1983) definition of ambivalent self-esteem. Criterion validity was tested with respect to: (i) Age – i.e., an increase with age was expected to bring a decrease in ambivalent self-esteem (Erickson, 1968) –(ii) Attachment – i.e., ambivalent self-esteem was expected to relate strongly

with ambivalent parental approval (iii) The avoidance of social disapproval and (iv) Moral rigidity – i.e., an increase in ambivalent self-esteem was expected to be met by an increase in dependency and moral rigidity. In addition, the items were examined for the extent to which they were: (1) Divergent with respect to self-esteem, and general indecision, and (2) Convergent with respect to measures of self-clarity, self-dichotomy, self-preoccupation, and self esteem instability.

Study 1: Method

Participants

The sample comprised 232 non-clinical psychology undergraduates, who volunteered for the study (mean age = 19.52; sd = 3.23, range = 17 to 43). 71.5% of participants were females (mean age = 19.54, sd = 3.53, range = 17 to 43) and 28.5%, male (mean age = 19.45, sd = 2.33, range = 18 to 33). Eighty percent of participants were born in Australia, while 83% spoke only English at home. Participants reported having an average of 14.34 years of formal education (sd=1.50).

Procedure and Materials

In small groups, participants completed 19 questionnaires pertaining to self-uncertainty, self-preoccupation, self-dichotomy, mood, OC phenomena, and personality. No verbal instructions were given. The eight measures (see Appendix B for sample items) relevant to this study were:

- 1) Self-Concept Clarity Scale (SCC; Campbell *et al.*, 1996) is a 12 item questionnaire measuring the extent to which self-beliefs are clearly and confidently defined, internally consistent and stable. Participants are required to indicate the extent to which they agree with these items, using a 5 point scale (0 = strongly disagree; 4 = strongly agree).
- 2) The Splitting Index (SI; Gould, *et al.*, 1996) is a 24 item self report measure of Kernberg’s (1984) concept of splitting - i.e., the tendency to see oneself or others as all good or all bad. Subjects rate the extent to which they agree with statements on a 5 point scale (1 = strongly disagree; 5 = strongly agree). The SI comprises three subscales pertaining respectively to the splitting of self (8 items), others (8 items) and family (8 items). Only the self-scale was used in this study.
- 3) The Rumination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999) is a 24 item self-report questionnaire that measures tendencies to reflect and ruminate about the self. Reflection represents inquisitive self-focus, while rumination reflects an anxious preoccupation with the self. Items are rated on a five point scale (1 = strongly disagree to 5 = strongly agree).

- 4) Rosenberg Stability of Self Scale - Amended New York version (RSS; Rosenberg, 1986) is a 5 item self report measure of self-concept stability. Participants endorse each item on a 4 point scale (0 = not at all, to 3 = a lot). Complex items reflected items that loaded more than 0.35 on two or more factors. Based on these specifications, less than five items loaded significantly and in a non-complex manner on two of the three factors. A two-factor model yielded a factor with also less than five significant items. Therefore, a single factor model was extracted. Three items were deleted from subsequent analyses because they failed to load significantly on this factor. The single factor consisting of 19 items, explained 37.05% of the total variance, and reproduced the item correlation matrix with 63% non-redundant residuals over .05. Cronbach's alpha for this factor was .90 indicating excellent internal consistency (see appendix C for items in SAM).
- 5) The Early Developmental Influences Inventory (EDII; Kyrios, 1999) is a newly developed 67 item self-report questionnaire that measures secure, avoidant and ambivalent attachment and appraisals of identity. Items are rated on a 5 point scale (1 = Not at all accurate; 5 = Completely accurate). Preliminary data from the United States indicate adequate internal consistency and convergent validity for this measure (Frost, 1999, personal communication). Only 9 items comprising an ambivalent attachment scale of the EDII were used in this study. This factor is referred to in this study as ambivalent parental approval.
- 6) The Rosenberg Self-Esteem Questionnaire (RSEQ; Rosenberg, 1986) is a measure of global self-esteem, comprising 10 self-descriptive statements regarding self-worth. Respondents rate each item on a modified 9 point scale (1 = "Definitely disagree"; 9 = "Definitely agree").
- 7) The Self Description Questionnaire - Accuracy/Importance scale (SDQ-AI; Marsh & O'Neil, 1984) is a 12 item scale that measures the extent to which positive statements about the self are endorsed (accuracy scale), and the importance of different characteristics such as sporting ability, honesty, and social relationships for self-esteem (importance scale). Responses are made on a 9 point scale (1 = very inaccurate/very unimportant; 9 = very accurate/very important).
- 8) The Decision-Making Scale (DEC; Frost & Shows, 1993) is a 15 item Likert type measure of general indecisiveness. Items are rated on a 5 point scale (1 = strongly disagree; 5 = strongly agree).

Study 1: Results and Discussion

Singularity and Factor Structure

From the 22 items, no items were found to intercorrelate more than .80 with each other. The 22 items were subject to Principle Components Analysis with Varimax rotation. Inspection of the scree plot suggested the presence of 1 to 3 components. Five components were associated with Eigen values over 1. Based on the scree plot, three factors were extracted. Item loadings over .40 were deemed significant.

Face Validity and Criterion Validity

Although items specific to all three processes were retained in single factor, only three of the 19 items reflected the tendency to evaluate the self in terms of dichotomies (eg., "I tend to move from one extreme to the other in how I think about myself"). In contrast, 7 items measured preoccupation with self-worth (eg., I think about my worth as a person"), and 9 items measured self-esteem uncertainty (eg., "I have mixed feelings about my self worth"). Global, moral and social domains of self worth were represented by 6, 7 and 6 items respectively.

Criterion validity of the SAM was found to be acceptable. Multiple t tests, with Bonferonni correction of table-wise type 1 error indicated that individuals scoring above the SAM median of 28, in contrast to those scoring below (difference in means between high and low groups was significant; $40.65 \text{ v } 17.93$, $t(196)=-21.07$, $p<.005$), were more ambivalence about childhood parental approval [$17.33 \text{ vs } 13.36$, $t(187)=-3.66$, $p<.005$], were more morally rigid [$44.75 \text{ vs } 40.09$, $t(113)=-2.99$, $p<.005$], and were more dependent on social approval [$104.43 \text{ v } 88.64$, $t(180)=-5.89$, $p<.005$]. Age was not different between the groups [$19.84 \text{ v } 18.94$, $t(191)=1.97$, ns].

Convergent and Divergent Validity

In addition, convergent validity of the SAM was supported. As shown in table 1, the SAM correlated significantly with measures of self-clarity (SCC), self-dichotomy (SI), self-preoccupation (RRQ), self esteem instability (RRS). The strong correlation between SAM and SI suggests that the SAM still measures self-dichotomy, even though only three items in the SAM specifically inquire about this tendency.

Table 1:
Correlations between SAM and Various Validity Measures

	SAM	SCC	SI	RRQ	RSS	RSE	SDQ-A
SAM	1						
SCC	.75***	1					
SI	.69***	.88***	1				
RRQ	.56***	.52***	.55***	1			
RSS	.59***	.78***	.82***	.50***	1		
RSE	-.53***	-.53***	-.42***	-.23*	-.41***	1	
SDQ-A	-.20***	-.46***	-.38***	-.10	-.34***	.61***	1
DEC	.50***	.53***	.45***	.32***	.36***	-.56***	-.53***

*** $p < .005$ * $p < .05$

Key: SAM = Self Ambivalence Measure; SCC = Self Concept Clarity Scale; SI = Splitting Index - Self Scale; RRQ = Rumination Reflection Questionnaire; RSS = Rosenberg Stability of Self Scale; RSE = Rosenberg Self esteem Questionnaire; SDQ-A = Self Description Questionnaire - Accuracy Scale; DEC = Decision Making Inventory.

In terms of divergent validity, there was a lack of independence between the SAM and measures of self-esteem (RSE, SDQ-A) and indecision (DEC; see Table 1). There are two explanations for this finding. First, it may be that the SAM is a poor measure of ambivalent self-esteem, being indistinguishable from being a measure of low self-esteem or indecision. In order to explore this hypothesis, two additional analyses were conducted. First, items from SAM were individually correlated with RSE and DEC, in order to determine if similarities in item content between the three measures explained their correlations. Even when four items from the SAM correlating more than .40 with RSE or DEC were deleted, the SAM still correlated highly significantly with RSE ($r = -0.47, p < .001$), SDQ-A ($r = -0.29, p < .005$), and DEC ($r = 0.48, p < .001$). These items were thus retained in the SAM. These results suggested that item content per se in the SAM does not adequately explain the covariance of SAM to RSE, SDQ-A or DEC.

The second analysis tested for whether the SAM was a better measure of self-esteem level, and of general indecision rather than self-esteem ambivalence. Correlation effect sizes between SAM and measures of self-esteem and general indecisiveness were compared to the correlation effect sizes between SAM and SCC, SI, RRM, and RSS. Results show that on average, the SAM related more closely to SCC, SI, RRQ and RSS than to RSE, SDQ-A and DEC (average- $r = 0.65$ v average- $r = 0.44, z = 2.8, p < .01$). This indicated that SAM was more strongly associated with measures approximating the construct of self-esteem ambivalence than measures of indecision and self-esteem level.

Collectively these results suggest that although self-esteem level, indecision and self ambivalence are related, the SAM reflects a concept that is different to self-esteem level. As seen in Table 1, the criterion measures SI, and SCC also correlate strongly with measures of self esteem level and indecision. This suggests that the linear relationship between SAM, RSE, SDQ-A and DEC is not an unique artefact of SAM's scale construction.

Study 2: The Relationship of Ambivalent Self-Esteem to OC Phenomena and Cognitions

Using the 19 item SAM, the hypotheses pertaining to the relationship of ambivalent self-esteem to OC phenomena and cognitions were tested.

Study 2: Method

Study 1 and 2 utilised the same participants and procedure. In addition to the questionnaires described in study 1, the following 2 measures were also used.

- 1) The Padua Inventory - Revised (PI-R; Burns, Keortge, Formea & Sternberger, 1996) is a 39 item inventory measuring the degree of disturbance caused by a range of intrusive thoughts and compulsive behaviours, on a 5 point scale (0= not at all to 4 = very much).
- 2) Obsessive Beliefs Questionnaire (OBQ; OCCWG, 1997) is a 80 item self report measure of six domains of OC beliefs: (1) Inflated responsibility, (2) Over importance of thoughts, (3) Need for control over thoughts, (4) Overestimation of threat, (5) Intolerance of uncertainty, and (6) Perfectionism. Participants rate the extent to which they agree with each item, using a 7 point rating scale from strongly agree to strongly disagree.

Study 2: Results

Preliminary Analyses

Summary statistics and Chronbach's alphas for the measures are presented in Table 2. Males had a significantly more positive self esteem than females [69.62 v $64.39; t(119)=2.78, p=.006$]. No gender difference was observed for the other measures, including SAM and EDII.

Table 2:
Descriptives and Cronbach's Alphas

Scales	Mean	Sd	α
SAM	29.15	13.49	.90
PI-R	22.41	19.04	.94
OBQ	232.09	79.71	.98
TFU	35.63	12.49	.86
TE	32.71	14.83	.92
COT	37.74	13.74	.89
IOT	30.00	12.95	.89
R	48.67	17.63	.91
P	45.85	18.24	.92
RSE	66.45	10.65	.76
DEC	66.45	13.49	.86

Key:

- SAM** = Self Ambivalence Measure
- PI-R** = Padua Inventory 39 item Revised Version
- OBQ** = Obsessive Beliefs Questionnaire
- TFU** = Tolerance for Uncertainty subscale of the OBQ
- TE** = Threat estimation subscales of the OBQ
- COT** = Control of thought subscale of the OBQ
- IOT** = Importance of thoughts subscale of the OBQ

- R** = Responsibility subscales of the OBQ
- P** = Perfectionism subscale of the OBQ
- RSE** = Rosenberg Self esteem Questionnaire
- DEC** = Decision Making Inventory
- a** = Chronbach's alpha

Hypotheses Testing

It was hypothesised that participants, who were highly ambivalent about self worth or early parental approval, would report more severe OC symptoms and cognitions, in contrast to those with low ambivalence. Participants scoring above the median for SAM ($m = 30$) and EDII ($m = 13$) were defined as highly ambivalent about self worth and about early parental approval respectively. A multivariate analysis of covariance (MANCOVA) was conducted to test for whether low and high scorers on the SAM or EDII differed on measures of OC phenomena and cognitions, whilst controlling for self esteem level and general indecisiveness. Results showed high SAM scorers, and high EDII scorers respectively reported more severe OC phenomena and cognitions [Pillais = .28, $F(14, 216) = 2.47$, $p < .005$ and Pillais = .37, $F(14, 204) = 3/29$, $p < .005$; see Table 3.

Table 3:
Means of Scales for High and Low SAM and EDII Scorers, and Univariate Results from MANCOVA Controlling for RSE and DEC

	Low SAM	High SAM	Univ. F	Low EDII	High EDII	Univ. F
PI-R	15.18	31.12	10.28	15.68	28.33	25.22
TFU	29.14	41.31	16.57	29.62	40.86	18.58
TE	24.04	40.51	23.60	24.02	40.91	36.74
COT	30.07	44.56	26.00	30.26	44.34	26.95
IOT	22.66	36.39	24.53	24.19	36.03	18.62
R	40.16	56.66	13.69	41.32	55.57	12.70
P	35.27	55.82	26.59	38.94	52.93	31.90

Note: All univariate Fs are significant at $p < .005$

Key: **PI-R** = Padua Inventory 39 item Revised Version; **TFU** = Tolerance for Uncertainty subscale of the OBQ; **TE** = Threat estimation subscales of the OBQ; **COT** = Control of thought subscale of the OBQ; **IOT** = Importance of thoughts subscale of the OBQ; **R** = Responsibility subscales of the OBQ; **P** = Perfectionism subscale of the OBQ; **SAM** = Self Ambivalence Measure; **RSE** = Rosenberg Self esteem Questionnaire; **DEC** = Decision Making Inventory

In order to examine the importance of the relationship of the various OC cognitions to SAM and EDII, a backward stepwise multiple regression was conducted. All six OC cognitions were entered into a regression model predicting SAM [$R = .72$, Adj. $R^2 = .49$, $F(6) = 20.19$, $p < .001$], and EDII respectively [$R = .54$, Adj. $R^2 = .25$, $F(6) = 7.40$, $p < .001$]. The cognitions that contributed least to SAM and to EDII variance were sequentially eliminated from the model. The three remaining significant predictors of SAM in the model were perfectionism ($b = .26$, $p < .05$), importance of thoughts ($b = .24$, $p < .01$) and control of thoughts ($b = .28$, $p < .05$). The remaining significant predictors of EDII in the model were overestimation of threat ($b = .37$, $p < .005$), importance of thoughts ($b = .26$, $p < .05$), and control of thoughts ($b = .30$, $p < .05$).

In order to investigate the pathways as hypothesised in Figure 2 between ambivalent self-esteem, ambivalent parental approval, OC cognitions and OC phenomena, a series of multiple regression models were constructed. Three hypotheses were tested. First, it was expected that SAM would relate to OBQ independently from PI-R and EDII. Second, it was expected that the relationship between SAM and PI-R would be fully mediated by OBQ. Third it was predicted that the relationship between EDII and OBQ would be fully mediated by SAM. Results indicated that: (1) SAM significantly predicted OBQ variance after accounting for PI-R and EDII ($b = .50$, $p < .001$); (2) SAM did not significantly predict PI-R after controlling for OBQ ($b = .09$, ns); and (3) EDII significantly predicted OBQ variance after controlling for SAM ($b = .09$, $p < .005$).

Explained Covariance Between OBQ Factors

In order to explore the extent to which ambivalent self-esteem moderates interrelationships between OC cognitions, the correlations between the OBQ factors were reproduced using path coefficients (ie., rs) between SAM and OBQ factors. The reproduced correlations were then compared to the observed correlations between OBQ factors. Reproduced correlations were computed as products of path coefficients between SAM and the respective OBQ factors (Kim &

Kohout, 1975). The difference between the reproduced and observed correlations was interpreted as indicating the extent to which SAM explains covariance between OBQ factors (Pattison, 2000). The smaller the difference between the reproduced and observed correlations, the better SAM explains the intercorrelations between OBQ factors. Table 4 shows the observed and reproduced correlations between the factors. On average, SAM explained 66% of the covariance between OBQ factors (see Table 4 for computations)

Table 4:
Observed and Reproduced Intercorrelations between OBQ Factors

	Observed Zero Order Correlations					SAM
	TFU	TE	COT	IOT	R	
TFU	1					.69***
TE	0.79***	1				.65***
COT	0.80***	0.77***	1			.64***
IOT	0.74***	0.81***	0.76***	1		.64***
R	0.73***	0.74***	0.67***	0.64***	1	.57***
P	0.85***	0.74***	0.75***	0.68***	0.74***	.63***

	Reproduced Correlations SAM				
	TFU	TE	COT	IOT	R
TFU	-				
TE	0.45	-			
COT	0.44	0.42	-		
IOT	0.44	0.42	0.41	-	
R	0.39	0.37	0.36	0.36	-
P	0.43	0.41	0.40	0.40	0.36

	Difference between observed and reproduced correlations				
	TFU	TE	COT	IOT	R
TFU	-				
TE	0.34	-			
COT	0.36	0.35	-		
IOT	0.30	0.39	0.35	-	
R	0.33	0.37	0.31	0.28	-
P	0.42	0.33	0.35	0.28	0.38

Note 1: Reproduced correlations are computed by multiplying the observed correlations between SAM and the relevant OBQ factors. Eg., .69 * .65 reproduces the correlation between TFU and TE.

Note 2: Average difference between observed and reproduced correlations was computed by the formula: Sum of differences between observed and reproduced correlations/N, where N refers to the number of differences, ie., 15. So, 5.14/15 =.34.

Note 3: Given that .34 of the magnitude of observed intercorrelations are not explained by reproduced correlations, .66 of the magnitude of observed intercorrelations are accounted for by reproduce correlations.
*** p < .005

Key: **TFU** = Tolerance for Uncertainty subscale of the OBQ; **TE** = Threat estimation subscales of the OBQ; **COT** = Control of thought subscale of the OBQ; **IOT** = Importance of thoughts subscale of the OBQ; **R** = Responsibility subscales of the OBQ; **P** = Perfectionism subscale of the OBQ; **SAM** = Self Ambivalence Measure.

Discussion

This study investigated the relationships between OC phenomena, OC cognitions, ambivalent self-esteem and ambivalent early attachment experiences. Three of four hypotheses were supported. First, individuals who were highly ambivalent about self worth or about parental approval experienced more severe OC phenomena and cognitions than those who were less ambivalent about self worth or early attachment. Second, as expected, ambivalent self esteem related independently to OC cognitions after accounting for attachment experiences and OC phenomena. Third, as predicted, the relationship between ambivalent self esteem and OC phenomena was fully mediated by OC cognitions. However, contrary to the prediction, early ambivalent attachment related to OBQ even after controlling for ambivalent self-esteem.

A significant finding in this study is that ambivalence about self worth or about parental approval was related to high levels of OC phenomena and OC cognitions. Given the correlational design of this study, it cannot demonstrate that ambivalence leads to the development of OC phenomena or cognitions. However, according to Guidano and Liotti (1983), ambivalence at the level of self-evaluation reflects vulnerability for the development of obsessions, compulsions, and perfectionism. They propose that individuals who are highly ambivalent about self worth, become preoccupied with their flow of thinking and behaviour because of the potential of thoughts or behaviour to transgress ideal social or moral standards. Accordingly, obsessions develop from intense cognitive scrutiny; compulsions develop as protective strategies against social disapproval and moral transgression. The findings of this study support the claim that individuals who are highly ambivalent about self-worth or early parental approval are highly dependent, morally rigid, and have high levels of OC phenomena.

Moreover, this study also found that the various belief domains purported as vulnerability for OCD (such as inflated personal responsibility, the over-importance of thoughts, control of thoughts, overestimation of threat, intolerance for uncertainty, and perfectionism) significantly related to ambivalent self-esteem and to ambivalent parental approval. More specifically, it found three cognitions related particularly strongly to ambivalent self esteem: Perfectionism, importance of thoughts (IOT) and control of thoughts (COT). These findings are consistent with Guidano and Liotti's (1983) thesis that individuals high in ambivalent self-esteem: (1) Attempt to resolve ambivalence about self esteem through perfectionism; (2) Regard thoughts as highly important indicators of self-worth, and (3) Place emphasis on controlling the content of thoughts as a method of preserving self-worth. The strong links between IOT and COT to ambivalence about parental approval reaffirm the importance of early upbringing for these cognitions.

This study helps clarify the relationship pathways of the model presented in Figure 2, which incorporates issues of early upbringing and self esteem into more recent cognitive

aetiological frameworks of OCD. It supports a direct relationship between ambivalent self-esteem and OC cognitions after controlling for ambivalent early attachment and for OC phenomena. However, once OC cognitions are controlled, ambivalent self-esteem fails to relate to OC phenomena. These results suggest that whilst a fragile sense of self-esteem may constitute a direct vulnerability for OC cognitions, it impacts only indirectly on OC phenomena (as shown in Figure 2). Perhaps this mediation occurs primarily through IOT, COT and perfectionism, since these cognitions best relate to ambivalent self esteem.

This study suggests that approximately 66% of the covariance between OC cognitions is attributable to a common underlying ambivalence in self-worth. It suggests that the various cognitions may in part reflect strategies to simplify the assessment of self worth. Cognitive styles characterised by perfectionism and beliefs about the significance of having and controlling thoughts, could be construed as providing concrete criteria for moral and/or social standards of self-esteem, which if met allow the individual to preserve a sense of self worth.

Future research needs to clarify various issues raised in this study. First, experimental research is required to validate the causal postulations made in this study. Second, other statistical methods would offer further insights into the relationships between OC phenomena and ambivalent self esteem. For example modelling techniques such as structural equation modelling may help clarify the mechanism by which ambivalence about parental approval translates into the development of OC cognitions. Trend analysis would be useful to detect the presence of non-linear relationships between ambivalent self-esteem and other variables. Third, there is also a need to investigate whether self-esteem varies in importance for the different OC phenomena and subtypes. Fourth, more research is needed to explore the extent to which ambivalence about self worth may be measured and operationalised. For example, confirmatory factor analysis would be instrumental in testing the factor structure of SAM. Fifth, further work employing clinical participants is also required to investigate the efficacy in addressing attachment and self esteem in the occurrence and treatment of OCD.

This paper provides a starting point for an aetiological model of OCD, that incorporates attachment, self and cognitive constructs. It provides correlational support for the notion that ambivalent self-esteem constitutes a meta-vulnerability factor in its capacity to promote maladaptive beliefs that in turn facilitate the development of OC phenomena.

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Appendix A:

Definitions of OBQ Belief Domains (OCCWG, 1997)

Inflated responsibility (R) is defined as the belief that one has the power, which is pivotal to bring about or prevent subjectively crucial negative [moral or actual] outcomes.

Over importance of thoughts (IOT) reflects the belief that “thinking about something increases its likelihood of occurrence, [and] that thoughts are...morally equivalent to actions.

Over importance of controlling one’s thoughts (COT) represents the belief that one should and can exercise control over one’s thoughts.

Overestimation of the probability and severity of threat (TE) includes the belief that the self is vulnerable to danger.

Intolerance of uncertainty (TFU) includes the belief that one has poor capacity to cope with unpredictable change.

Perfectionism (P) refers to the belief that there is a perfect solution to every problem, and is associated with black/or white thinking, and unrealistic high standards.

Appendix B:

Sample Items from Convergent and Divergent Validity Measures

Measures	Author/s	Sample item
Self Concept Clarity Scale (SCC)	Campbell, <i>et al.</i> , 1996	In general I have a clear sense of who I am and what I am
The Splitting Index (SI)	Gould <i>et al.</i> , 1996	The different parts of my personality are difficult to put together
The Rumination-Reflection Questionnaire (RRQ)	Trapnell & Campbell, 1999	I spend a great deal of time thinking back over my embarrassing or disappointing moments (rumination)
The Rosenberg Stability of Self scale (RSS)	Rosenberg, 1986	My opinion of myself changes a good deal
Rosenberg Self Esteem scale (RSE)	Rosenberg, 1986	I feel I am a person of worth
The Decision-Making Scale (DEC)	Frost & Shows, 1993	I become anxious when making a decision
The Self Description Questionnaire - Accuracy scale (SDQ-A)	Marsh & O’Neil, 1984	I am good at sports and physical activities

Appendix C:

The Self Ambivalence Measure (SAM 13R)

Please rate the **extent to which you agree** with the following statements. Indicate your answer by circling the appropriate number on the scale beside each statement.

Not at all	Agree a little	Agree moderately	Agree a lot	Agree totally
0	1	2	3	4

Uncertainty about self worth (9 items)	Domain
1. My opinion of myself depends on what others think of me	Global
2. I doubt whether others really like me	Social
15 I fear that I am capable of doing something terrible	Moral
26. I question the extent to which others want to be close to me	Social
31. I have mixed feeling about my self worth	Global
35 I question whether I am a moral person	Moral
36 I doubt whether I actually have “true” friends	Social
37. I question whether I am morally a good or bad person	Moral
38. If I inadvertently allow harm to come to others, this proves I am untrustworthy	Moral
Evaluation of self-worth in terms of dichotomies (3 items)	Domain
29. I tend to evaluate myself in terms of “good” and “bad”	Moral
30. Deep down I feel as if I <u>have</u> OR <u>don’t have</u> what it takes to be popular	Social
39. I tend to move from one extreme to the other in how I think about myself	Global
Preoccupation with self worth (7 items)	Domain
5. I am mindful about how I come across to others	Social
17. I think about my worth as a person	Global
18. I am constantly aware of how others perceive me	Social
40. I think about how I can improve my self	Global
41. I am constantly concerned about whether I am a “decent” human being	Moral
45 I am constantly worried about whether I am a good or bad person	Moral
50. I am told that I take things too personally	Global

Children's Self-Concepts and Preferences for Number, Reading and Drawing Activities

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This study examined children's sense of competence in relation to task choices by younger and older girls and boys. The main comparison is between a general model of self concepts for task choice and a model based on traditional gender stereotyping. For instance, links between self concepts and choices may be stronger for girls about reading, and boys about number activities. Participants in the study were children aged 5 to 12 yrs ($N = 70$). Children were asked about drawing, reading and number self concepts and made choices among a range of activities. The results were similar across content domains. For instance, children who see themselves as quite good at reading also prefer reading to other activities and tend to choose age-appropriate reading tasks. It seems that moderate positive self concepts relate to children's preferred activities and choices among specific tasks. The study shows how children's sense of competence relates to the task choices that their shape learning experiences.

Children's perceptions of their competence are considered here in relation to children's choices of activities, and show what these choices mean to the child. In principle, self concepts optimize the personal and social resources that children bring to activities (Oppenheimer & Valsiner, 1991; Brewer, 1991; Oakes, Haslam & Turner, 1994; Bornholt, 1999). Once the child chooses an activity, a sense of competence is also related to effective task strategies that complete the learning spiral. Previous studies suggest that a sense of competence relates to getting started on an activity, task persistence, engagement and items attempted in reading activities (Stipek, 1993; Harris, 1994; Bornholt, 1994), in terms of global self esteem (Harter & Connell, 1984; Harter, 1990) as well as confidence at an item level in computer assisted assessment (Stankov & Crawford, 1997; Kleitman, 1999). From the child's point of view, systems of perceptions, choices and engagement with activities create and are created by changing personal and social environments. In taking this approach, children's self concepts are *not* considered in direct relation to actual task performance (Hattie, 1992). Instead, indirect links are proposed through children's sense of competence and choice of activities. In principle, children's preferences among activities and choice of tasks at an appropriate level of difficulty are important first steps in the learning spiral.

The purpose of the present study is to relate a sense of competence and task choices. Applied research in social psychology supports the idea that self evaluations are a component of models for intentions and choices among a range of immediate options. Theories of reasoned action and other expectancy-value models reviewed by Eagly and Chaiken (1993) present basic models (e.g., Ajzen & Fishbein, 1980; Ajzen, 1988) that prompt a wide range of research applications. These include blood donation (Chamg, Piliavin & Callero, 1988), recycling waste (Schultz & Oskamp, 1996) quit smoking (McInman & Grove, 1991) and voting (Granberg & Holmberg, 1990). The main focus here is on self concepts that predict educational behaviours. For young adults and adolescents this includes, for example, decisions to stay on at college (Biddle *et al.*, 1987) and the social basis of participation in Mathematics (Eccles, 1985, 1994; Watt & Bornholt, 1994). Although these studies suggest variations and additions, basic models of educational choices include actual performance and perceived competence, task values (utility and interest), behavioural intentions and choices among activities. We know that even

quite young children distinguish domain specific self concepts and task values (Eccles & Wigfield, 1995; Marsh, Debus & Craven, 1991; Eccles, Wigfield, Harold, & Blumfield, 1993) and recent research about educational choices with adolescents shows that self concepts relate to plans for further study and careers (e.g., Meece, Wigfield, & Eccles, 1990; Watt & Bornholt, in press). Yet few studies examine the basis of actual educational choices (Bornholt, 1992), especially for younger children. It is therefore proposed that younger and older children also tend to choose activities that concur with a sense of competence.

The present study focuses on links between children's sense of competence and task choice. The first proposal is that self concepts are linked to children's choices among activities. In this study, core learning activities are used. Children are asked to make choices among reading, number and drawing activities. For example, this means that children who express a sense of competence at reading would choose reading activities in preference to other activities. The second proposal is that self concepts are linked to the choices children make among sets of reading tasks, number tasks and drawing tasks. The choices rely on children's awareness of the apparent difficulty of tasks. This means that children with a sense of competence about number activities choose more challenging number tasks. The links with preferences among activities and task choices among a range of immediate options suggest that a sense of competence plays a key role in the learning spiral. The project was designed to relate children's sense of competence to their choices among reading, number and drawing activities and to children's free choices among tasks. Ongoing research is examining children's choices among an ordered set of tasks within reading, number and drawing activities.

Gendered Perceptions and Task Choices Across Content Domains

Gender issues in education are highlighted in policy decisions, teaching and learning practices, and the research literature (Bornholt, 1993). Although much of the work is on gender differences in performance, broader conceptualisations include gendered patterns of participation as well as the students' perceptions of their competence and task values. The basic question is whether self concepts are linked to task choices for girls and boys (Burton, 1990; Eccles, 1994; Meyer & Koehler, 1993). For adolescents,

models of intentions for choices in Mathematics and English tend to be similar for boys and girls (Eccles, 1984, p.118; Bornholt, Goodnow & Cooney, 1994; Bornholt, in press). Such general findings suggest that links between self concepts and task choices are similar for younger girls and boys, about number, reading and drawing. A general model implies that gendered preferences and task choices draw on gendered perceptions of competence. Any variations in the findings would highlight diverse ways that boys and girls conceptualise these school activities as gendered contexts for action.

Variations for Younger and Older Children

This proposal raises further questions about developments in links between self concepts and choices. In a general model, links between self concepts and task choice would appear similar for younger and older children. One possibility is that the meaning of children's perceptions and preferences is reformulated as situations change (Vallacher & Wegner, 1987). Similar links between a sense of competence and task choice would demonstrate quite a fluid system of self concepts for action. The other possibility is that links between self concepts and task choice vary for younger and older children. What may seem like arbitrary categorizations of activities for younger children would have more personal and social meaning for older children. It is plausible that younger children express quite a positive sense of competence and show various preferences for number, reading and drawing activities, with less awareness of the difficulty of tasks within these activities. This suggests weaker links for younger children between self concepts and choices. For older children who have more experience with activities, diverse self concepts would be closely linked to their preferences and a more regulated choice among tasks.

The research asks three main questions. Is a sense of competence related to children's preferences and task choices? Are links between self concepts and task choice similar for younger and older girls and boys? To what extent do links between a sense of competence and task choices depend on children's awareness of the apparent difficulty of the tasks?

Method

Design

The pilot study was a trial of task choice materials. The main study used a repeated measures design for number, reading, drawing activities to examine self concepts in relation to children's preferences among activities and choice among four tasks, for younger and older girls and boys.

Participants

The children are from diverse family backgrounds in terms of socio-economic indicators (Index of Education and Occupation 1005 to 1064, ABS, 1990) and community language groups. Languages spoken at home included English only (40%), Cantonese, Mandarin, Korean, Japanese, Tamil, Tongan, Singhalese, Hindi, Cambodian or Filipino (17%) with English

(34%), as well as English with European (6%) and other community languages (3%). *The pilot study* included boys and girls ($N = 17$) aged 5 to 11 years (mean 8.0, sd 1.8). *The main study* ($N = 70$) included five girls and five boys in each year at school (Kindergarten, Year 1 to 6, in two groups - younger (4.4 to 8.5 years) and older children (8.6 to 11.8 years).

Materials

Task Choice materials were designed in separate booklets for children in each year at school. Children's preferences included 1st, 2nd and 3rd choices among reading, number and drawing, as well as choices among four tasks within each activity (green, blue, white, yellow).

Tasks increase in difficulty, so that the age-appropriate task was between the second and third task. Each task has five items including two items that overlap with the next task.

Cognitive Assessment

A brief cognitive screening test, SYSTEMS (Ouvrier, Hendy, Bornholt & Black, 1999) has 46 items scored correct (1) incorrect (0). Test scores indicate cognitive functioning for children ages 5 to 11 years. Scores are strongly correlated with Differential Abilities Scales (Elliott, 1990) General Cognitive Ability and achievement scores. SYSTEMS scores are unbiased by gender, socio-economic indicators and home language.

Children's self concepts were evaluated using the ASK-KIDS Inventory (Bornholt, 1996) about reading, number and drawing (see Figure 1). Profiles are created for ASK-KIDS from five direct questions about each activity. For instance, 'How good are you at reading?', 'How naturally talented are you at reading? [prompt - just natural... clever]', 'How much do you try at reading?', 'How hard is reading for you?', and 'Next year when you are in Year __, how good will you be at reading activities?'. Children's responses use five-point dot rating scales, so scores range from (1) low to (5) high. Domain specific self concepts (see Marsh, 1990) are derived by reversing some items for some children (Bornholt, 1999). This mainly applies to variations in children's perceptions that effort may be consistent with or inversely related to natural talent.

Procedure

The study was approved by the University Ethics Committee, the school principal and parents. Trained researchers conducted one-to-one interviews with each child in a quiet room at school. Self concept materials were presented after ASK-Choice activity saying "I'd like to show you some activities that you do at school - number, reading and drawing activities. Now, you choose one to do. Which one - number, reading or drawing?" and repeated for each activity and then for choices within reading, number and drawing booklets.

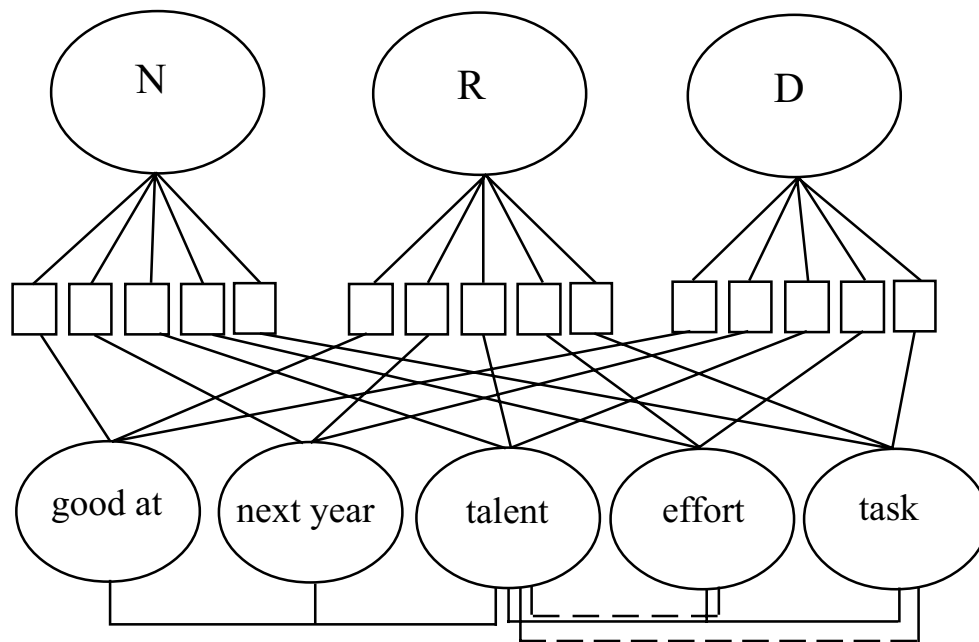


Figure 1. Conceptual Model of Aspects of Self Knowledge about Academic Activities

Key. — positive links - - - negative links Activities (N) Number (R) Reading, (D) Drawing

Table 1: Pilot Study - Description of Children's Performance and Task Choices

		mean	SD	min.	max.
Performance					
Task choice items	Reading	3.9	1.2	1	5
	Number	3.6	0.9	3	5
	Drawing	4.4	1.1	1	5
Cognitive screening SYSTEMS		35.6	6.7	23	44

Choices	Choice of activity			Task choices			
	1st	2nd	3rd	green	blue	white	yellow
Reading	29%	24%	47%	24%	35%	24%	18%
Number	24%	41%	35%	12%	77%	6%	6%
Drawing	47%	35%	18%	29%	18%	53%	0%

Table 2: Description of Children's Self Concepts and Task Choices

		mean	SD	min.	max.
Self concepts					
Self concepts	Reading	3.98	0.86	1.8	5.0
	Number	4.23	0.62	2.4	5.0
	Drawing	4.08	0.84	1.8	5.0

Choices	Choice of activity			Task choices			
	1st	2nd	3rd	green	blue	white	yellow
Reading	24%	33%	43%	17%	36%	21%	26%
Number	24%	40%	36%	30%	36%	16%	19%
Drawing	51%	27%	22%	20%	24%	27%	29%

The instructions were repeated for each colour turning back and forth in the ASK-Choice Booklet. A moderate pace allowed the child to acknowledge the tasks without solving the sample items. For example, “Now which reading activity do you think you can do? Let’s look at the green reading activities”, for example... [the interviewer points to the page of sample items and reads out sample item 1 and sample item 5].

Results

Pilot Study to Evaluate the Task Choice Materials

The Pilot Study showed that task materials were appropriate for children aged 5 to 11 years. A summary of the results in Table 1 shows that children expressed a range of choices among reading, number and drawing activities, as well as choices across sets of tasks (except the fourth drawing task). Analyses of items used in the task choice materials show that children’s responses were unbiased by gender for the reading ($t_{(15)} = 0.21$ ns), number ($t_{(15)} = 1.58$ ns) and drawing tasks ($t_{(15)} = -0.28$ ns). Sample items in each task appear to be appropriate for children across the age range. Children’s performance on task choice items were associated with performance on the cognitive screening test (reading $r = 0.51$, number $r = 0.53$, drawing $r = 0.45$, $p < .05$). Children’s performance and choices varied considerably, and, on average, task performances and sense of competence at activities were moderately high.

Main Study

Description of Children’s Self-Concepts and Choices

Children’s sense of competence at reading, number and drawing varied considerably and on average, children express a moderate to strong sense of competence at these activities. It seems that children tend to prefer drawing activities to reading and number, and children’s task choices appear spread among the four reading, number and drawing tasks.

Self Concepts in Relation to Children’s Choices

Children’s self concepts described in Table 3 relate to their preferences among activities, and not to children’s choices among tasks in terms of difficulty. Predicted mean self concepts control for age, gender and related self concepts (as covariates). Cross-links for activities were not evident (except a weak link between reading preferences and low number self concepts, $F(2,54) = 3.06$, $p = .06$).

This means links between task choice and self concepts were domain specific. Children’s choice of reading as first preference relates to a sense of competence at reading, number preferences relate to number self concepts, and drawing preferences relate to drawing self concepts. Comparisons of means for preferences were statistically significant with moderate effect sizes (proportion of standard deviation). In contrast, children’s self concepts did not vary systematically with children’s free choice among the set of four tasks.

Table 3:
Predicted Means for Children’s Self Concepts in Relation to Task Choices

Predicted self concepts					effect size	F (p)
Choices among activities	1st	2nd	3rd			
Reading	4.41	4.07	3.73		0.79	4.10 (<.05)
Number	4.65	4.08	4.24		0.66	3.13 (<.05)
Drawing	4.37	3.56	3.89		0.57	5.68 (<.01)
Task choice within activity	green	blue	white	yellow		
Reading	4.03	4.10	3.90	4.25		0.63 (ns)
Number	4.31	4.32	4.28	4.38		0.03 (ns)
Drawing	3.78	4.13	3.84	4.00		0.48 (ns)

Notes. Means were predicted for self concepts taking into account age and gender. Interaction terms for choices among activities and task choices were not significant.

The results were similar for younger and older, girls and boys, in reading, number and drawing activities. Variations in self concepts for girls and boys were estimated over and above age and related self concepts, and variations for younger and older children were estimated over and above gender and related self concepts. Table 4 shows results for girls and boys, and Table 5 for younger and older children. A sense of competence at reading is consistent with reading as first choice among activities by younger and older girls and boys. The comparisons for self concepts were statistically significant moderate effects, and results were similar for reading, number and drawing activities. In contrast, self-

concepts were not consistent with children’s choice among the four asks for younger and older girls and boys, in reading, number and drawing. There were few exceptions, where self concepts seem consistent with task choices for girls about reading activities, and for older children about number activities.

The results show links between children’s sense of competence and preferences among activities. However, self concepts were not systematically related to children’s task choices. Findings may be explained by children’s limited awareness of the apparent difficulty of reading, number and drawing tasks. Preliminary findings from ongoing research

supports this proposal (see Figure 2). Self concepts do link to tasks that are presented as ordered sets of tasks A B C D. In addition, the children appear to be unable to put colour-coded tasks in order of difficulty.

Table 4:
Predicted Self Concepts in Relation to Task Choices for Boys and Girls

Predicted self concepts		1st	2nd	3rd		Effect Size	F (p)
Reading	boys	4.2	4.2	3.6		0.75	3.42 (<.05)
	girls	4.5	4.1	3.6		1.14	4.06 (<.05)
Number	boys	4.8	4.1	4.3		0.76	3.58 (<.05)
	girls	4.5	4.2	4.0		0.76	4.43 (<.05)
Drawing	boys	4.4	3.1	3.9		0.88	8.37 (.001)
	girls	4.5	4.1	3.6		0.72	8.31 (.001)
Task choice within activity		green	blue	white	yellow		
Reading	boys	3.9	3.7	3.8	4.2	1.3	0.73 (ns)
	girls	3.5	4.3	3.8	4.6		3.78 (<.05)
Number	boys	4.4	4.2	3.5	4.5		2.31 (ns)
	girls	4.1	4.3	4.0	4.1		0.53 (ns)
Drawing	boys	3.9	4.1	3.4	3.9	0.41 (ns)	
	girls	4.1	4.3	4.4	4.0	0.73 (ns)	

Note. Means were predicted for self concepts taking into account age and related self concepts

Table 5:
Predicted Self Concepts in Relation to Task Choices for Younger And Older Children

Predicted self concepts		1st	2nd	3rd		Effect Size	F (p)
Reading	younger	4.3	3.9	3.5		1.01	3.50 (<.05)
	older	4.3	4.2	3.8		0.63	5.96 (<.01)
Number	younger	4.7	4.1	4.2		0.76	3.11 (=0.05)
	older	4.5	4.3	3.9		0.91	8.02 (<.01)
Drawing	younger	4.6	3.9	4.4		0.35	4.62 (<.05)
	older	4.2	3.3	3.5		1.23	5.20 (<.05)
Task choice within activity		green	blue	white	yellow		
Reading	younger	3.5	4.0	3.5	4.2	0.24	1.26 (ns)
	older	4.1	4.1	4.0	4.5		2.60 (ns)
Number	younger	4.5	4.2	4.1	4.0		1.18 (ns)
	older	4.2	4.2	3.7	4.4		3.63 (<.05)
Drawing	younger	3.7	3.8	3.9	3.7	0.14 (ns)	
	older	4.2	4.2	4.4	4.4	0.12 (ns)	

Note. Means were predicted for self concepts taking into account gender and related self concepts.

Discussion

This study examined the self perceptions of competence expressed by younger and older girls and boys in relation to academic preferences and task choices to show what these choices mean to the child. The results show that children’s sense of competence relates to their preferences among reading, number and drawing activities. This means that developing children’s sense of competence at these activities is an important first step in the learning spiral. The results were similar for younger and older girls and boys across reading, number and drawing activities. The findings suggest a fluid and multi-faceted

model of self judgements in relation to context and content, as well as action in terms of task choice. It supports the work of Vallacher and Wegner (1987) in that the meaning of children’s perceptions and preferences is reformulated as situations change. The results extend previous research with adolescents on the responsiveness of adolescent’s self concepts within the gendered context of schooling (Bornholt, 2000). Such similar findings demonstrate a general system of academic self concepts for action.

In contrast, children’s self concepts were not related to children’s free choices among sets of reading, number and drawing tasks. Preliminary findings from ongoing research

highlights the importance of apparent task difficulty by using sets of reading, number and drawing tasks presented as ordered sets. Labelling tasks in an explicit order A B C D provided a frame of reference for children's choices among tasks. Direct

investigation showed that few children nominated tasks in the appropriate order of difficulty. It seems that further research is needed to find ways to develop skills so that children are free to choose the next most challenging task.

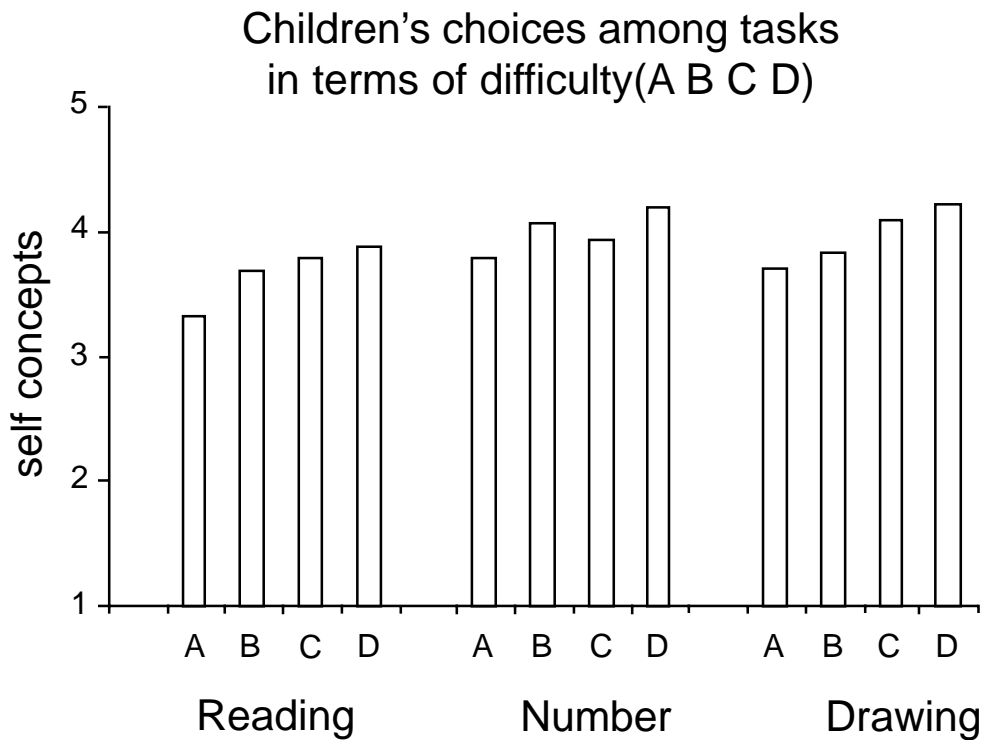
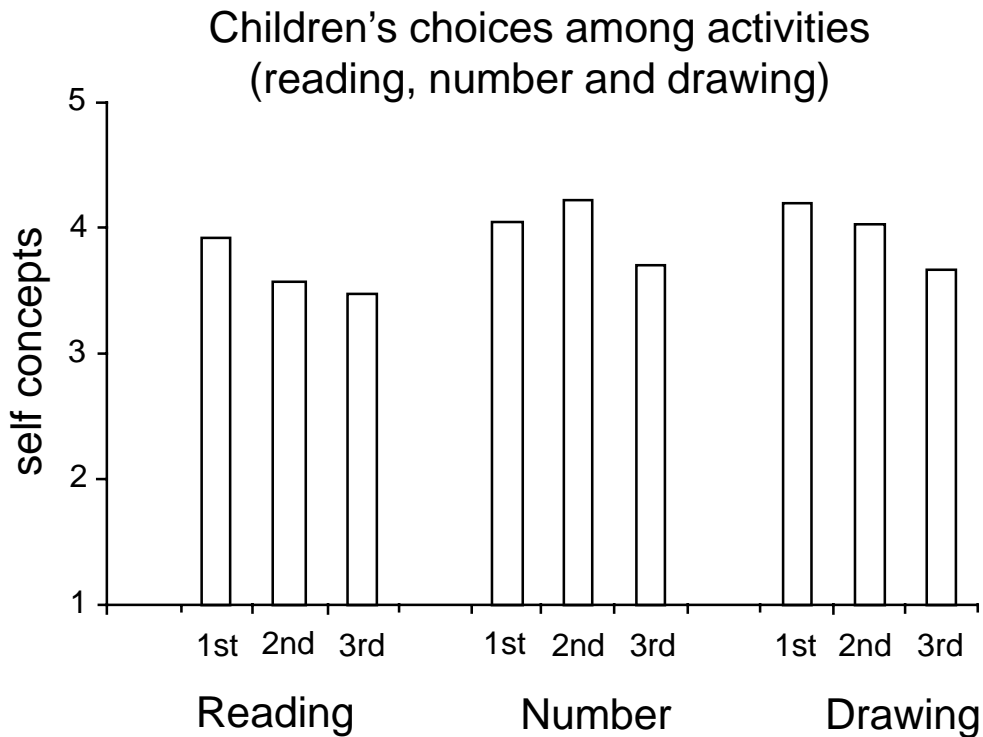


Figure 2: Self-Concepts in Relation to Choices for Reading, Number and Drawing Activities

For instance, a recent study of reading strategies showed that children who are aware of task difficulty tend to use more effective task strategies (Bornholt, 1994). In practice, these children choose appropriate tasks and tend to complete tasks making use of item difficulty. Others children may limit their learning experiences by inappropriate task choice, getting stuck on earlier difficult items and not completing the task.

The findings demonstrate predictive validity of self concepts in terms of a sense of competence at academic activities in relation to children's preferences, and support previous research on children's self esteem by Harter (e.g., Harter & Connell, 1984; Harter, 1990). Domain specific links between children's sense of competence and preferences among activities support expectancy-value models of educational choice demonstrated by Eccles and colleagues (e.g., Eccles *et al.*, 1993) within a general theory of action such as Oppenheimer and Valsiner (1991). Previous research with adolescents highlights contributions of self concepts to intentions and choices about further study in Maths (e.g., Meece *et al.*, 1990; Bornholt, 1992; Watt & Bornholt, in press; Bornholt, in press). The present study extends these findings for younger children to reading, drawing and number activities. However, it seems that further research is need to examine variations in the meaning of choices in the school systems, because a sense of competence relates to children's choices among an ordered set of options and not as free choice among tasks. Results were similar for reading, number and drawing activities. The conclusion is that children tend to be unaware of the apparent difficulty of these tasks.

Self concepts are considered here as cognitive evaluations within dynamic and multi-faceted self systems that fulfil various personal and social functions (Valsiner & Oppenheimer, 1991; Bornholt, in press). At a personal as well as a social level, this means that an optimal self concept in reading, for example, expresses a sense of competence at reading without boasting, in relation to other activities, as well as oneself in relation to other children. The present study focuses on academic self concepts as one key aspect of educational choices, for example, children's preference for reading over other activities. It opens up possibilities of dynamic systems of self concepts about other activities that are meaningful to children's developing self.

About the Author

Dr Laurel Bornholt is Senior Lecturer in Human Development at the University of Sydney. Her teaching and research are mainly concerned with the personal and social basis of self concepts for children and adolescents. As Honorary Psychologist at the New Children's Hospital, she is also part of the research team developing new screening tests of cognitive functioning for young children. The research projects are well funded by national competitive grants and include several local projects in education, juvenile justice and hospital settings.

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The Cultural Context of Social Self-Concept in High School Students

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This exploratory case study examined the cultural context of social self-concept in one Australian high school ($N = 142$) and one U.S.A. high school ($N = 141$). Students responded to the SDQ II self-concept inventory and an open-ended self-concept questionnaire. In addition, students and school counsellors were interviewed, and ethnographic data was collected. The results from ANOVA tests used to analyse the SDQ II profiles indicated that the U.S. students scored significantly higher on the General Self subscale than the Australian students. Significant results were also found on the Same-Sex Relations, Emotional Stability and Honesty/Trustworthiness subscales via country and gender variables. Other subscales indicated very similar results between countries. The open-ended self-concept questionnaire, interviews and ethnographic data indicated general agreement with these findings and suggest that not only the culture, but the school structure in each country supports diversity in the levels of self-concept.

While many people cannot remember what formulas they learnt in their high school mathematics class, most people are aware of the social standing they occupied during their high school years in comparison to their peers. Often, this experience impacts on a person's view of him or herself, and is carried through life. If different cultures can suggest ways to improve this view of oneself, the subject is worth investigation. To many Australians, Americans are seen to be very self-confident about themselves, their possessions and achievements even though Australians may indeed have achieved the same or higher levels of success. At the same time, Australians have a tendency to downplay and understate their achievements. Whether they feel less confident, or choose not to verbalize their confidence is conjecture. Cultural factors are probably expressed in such self-concepts. It is proposed that the school experience for individuals of both countries has some influence on the profiles of their students' social self-concept. Is it possible that similarities in the school systems and variations in the school structures have influences on social self-concept? More specifically, is this link between an adolescent's social self-concept facilitated by the form and climate of schooling in Australia and the U.S.A.?

The Nature of Self-Concept

Various labels are used to describe the construct of self-esteem, self-worth, identity, self-image, self-perception, self-confidence and self-concept. Each conveys slightly different nuances in meaning. For the purposes of this study, the descriptive label of self-concept is defined as how an individual perceives him or herself, consequently affecting thought processes, emotions and behaviour (Healy, 1969, p.8; Byrne, 1996, p.5; Harter 1990, p. 118, 131). Marsh defines self-concept according to the way in which a person actually views himself or herself rather than how a person should view himself or herself (Marsh, 1990, p. 22). As the current study aims to describe rather than evaluate similarities and/or differences, the label of self-concept has been deemed most appropriate.

Studies of self-concept in the 1960s and 1970s assumed that self-concept was intrinsically related to various areas of study, such as education, however, rarely with any strong theoretical basis or empirical justification (Marsh, 1990, p. 79, 81). Prior to the 1980s, Marsh indicates that self-concept was studied by some (such as Coopersmith) as a uni-dimensional

construct (Marsh, 1990, p. 80). That is, that self-concept was seen to be one general construct. Other theorists, such as William James as early as 1890 and Shavelson in the 1970s hypothesized that self-concept was multi-dimensional, meaning that self-concept has separate components (Marsh, 1990, p. 80). The Multifaceted Hierarchical Self-Concept Model by Shavelson, Hubner and Stanton supports the theory that general self-concept is divided into two distinct sections: that of academic self-concept and non-academic self-concept (Marsh, 1990, p. 623). This model purports that while distinct aspects of self-concept are interrelated, they can be measured separately (Byrne, 1996, p. 23). Much educational research has been particularly focused into the area of a student's academic self-concept (e.g., Marsh, 1990, p. 623), while less attention has been paid to students' non-academic self-concept. It is therefore difficult to identify consistent results in this area (e.g., Smith, Sapp, Farrell & Johnson, 1998, p. 165, and Byrne, 1996, p. 23).

For the current study, it is important to link social self-concept with the school experience. Whilst certainly a large portion of self-concept development will occur in a family situation, many schools are now taking on more responsibility for the maintenance of students' social self-concept. Harter suggests that although feedback from parents is critical to a child's development of a positive view of the self, support from classmates has a much greater impact on self-esteem than that of a close friend. (Harter, 1990, p. 123). Certainly in the Australian educational community, the school is beginning to take more responsibility for the self-concept of the students. In the Australian Effective School Project, which has a focus on the development of non-academic skills, researchers defined effective schools as being those that encouraged "learning and the love of learning; personal development and self-esteem; life skills, problem solving..." (Townsend, 1994, p. 18). He also reports a Catholic school study where results indicated that parents would rather their children were "self-confident", "happy", "well-balanced", rather than be the smartest child in the class (Townsend, 1994, p. 69). Townsend also indicates that while research of academic goals in effective schools has been widespread, further work is required in areas such as non-academic self-concept (Townsend, 1994, p. 50). Studies focusing on social issues for high school studies have also been undertaken in the U.S.A. (see Hollingshead, 1975, and Coleman, 1961).

Purpose of the Present Study

This exploratory case study examined an Australian and a U.S.A. high school in order to investigate the differences and similarities in the self-concept expressed by the students. This study accepted Shavelson's theory that self-concept is multi-dimensional, and focused on four questions:

- R.Q.1** What are the similarities and differences in social self-concept between students at the Australian school and those at the U.S.A. school? If so, in what dimensions are these differences?
- R.Q.2** What are the explanations for these similarities and differences?
- R.Q.3** Are similarities and differences linked to the structural or cultural factors of each school?
- R.Q.4** What are the implications for each school?

Method

Selection of Schools

A high school in Australia and a high school in the U.S.A. was selected for this study based on the following criteria: that the schools and students were as demographically similar as possible, and that the researcher could conduct her

practicum and internship at both the Australian and U.S.A. school. The U.S.A. school was arranged first for a 10-week internship program. Arrangements were then made at a similar Australian school for a four-week practicum.

Selection of Respondents

As the U.S.A. school only contains Years 9-12, respondents selected in both schools were selected only from these year levels. Students were initially selected by their availability to the researcher, either being in her classes, or other classes taught by teachers who were willing to give up class time in order that data could be collected. The target number of participants was 30 students per year level per school. See Table 1 for participant details.

Students were selected for interview from their responses on the self-concept questionnaire, in particular, question 4, which asked: "Do you consider that you have high self-concept? Why/why not?". Students who responded in a particularly positive and negative way were approached for interview. There were two Australian and two U.S.A. students interviewed. Counsellors at both schools were also invited to participate. From the Australian school, three counsellors gave interviews and two counsellors from the U.S.A. school participated in the interview process.

Table 1:
Respondents

	<i>Australian School</i>			<i>U.S.A. School</i>		
	<i>Girls</i>	<i>Boys</i>	<i>Total</i>	<i>Girls</i>	<i>Boys</i>	<i>Total</i>
<i>Year 9</i>	17	14	31	20	21	41
<i>Year 10</i>	25	20	45	19	16	35
<i>Year 11</i>	14	17	31	15	15	30
<i>Year 12</i>	28	7	35	16	19	35
		Total:	142		Total:	141

Materials

SDQII

The SDQ II, a measure of non-academic self-concept was used to collect data from both the Australian and U.S.A. students. This measure has been extensively tested and has received wide support (Byrne, 1996, p. 153). This scale contains 102 statements, measuring 11 subscales. Of the 11 subscales, seven are non-academic, three are academic and one subscale is a global measure. Students use a six point Likert scale to indicate the degree to which they think a statement is true or false. See Table 2 for more detailed information on the SDQ II. Self-Concept Questionnaire.

A second questionnaire was also used. This survey asked students overtly to give their opinions on their own level of

self-concept, what they thought it was, and how (if at all) the school may have an impact on their self-concept.

Interview

Interviews were then conducted with students who responded in a particularly positive or negative way on the open-ended survey. Interviews were completed during school hours and administered by the researcher. These interviews were largely unstructured, allowing students to discuss their perspective of the topic of self-concept. Counsellors at the school were also interviewed using this style, asking for their input on the topic of the students' social self-concept, and whether the school impacts on this.

Table 2:
SDQ II

<i>Subscale</i>	<i>Number of Statements</i>	<i>Sample statement</i>
<i>Non-academic</i>		
Physical Appearance	8	I am good looking
Honesty/Trustworthiness	10	I sometimes tell lies to stay out of trouble
Physical Abilities	8	I hate things like sport, gym and dance
Emotional Stability	10	I often feel confused and mixed up
Parent Relations	8	My parents treat me fairly
Same-Sex Relations	10	Most boys (or girls) try to avoid me
Opposite-Sex Relations	8	I have lots of friends of the opposite sex
<i>Academic</i>		
Math	10	I enjoy studying for mathematics
Verbal	10	I'm not very good at reading
General School	10	I'm good at most school subjects
<i>Global</i>		
General Self	10	Overall I am no good
<i>Total:</i>	<i>102</i>	

Journals

Data was also collected in an ethnographic fashion via journal writing by the researcher, paying particular attention to those factors at the schools that may have an impact on the students' social self-concept. These journal observations were written while the researcher completed practicum and internship at each school. Literature including school handbooks, diaries, and annual reports was also collected.

Procedure

Students were given time to read the instructions that appear on the front page of the SDQ II. The researcher also went over the main points verbally with the students, who were given an opportunity to ask any questions. When students had completed the SDQ II, they raised their hands and were given the second, open-ended self-concept survey. Students were encouraged to put their names on both forms. If students were uncomfortable doing this, they were informed that they could select an alias name. The students were asked to use the same alias on both forms in order to be able to identify a set of questionnaires filled in by one respondent. This was checked when the papers were collected, as well as a check to ensure that no pages had been left blank unwittingly. Once the questionnaires were completed, further data was collected via in-depth, largely unstructured interviews. In the case of the counsellors, the interviews took place in their offices or staff rooms. In the case of the students, a quiet but visible area within the school was selected. Interviews lasted anywhere from 20 minutes to just over one hour.

Analysis of SDQ II

Initially, raw scores for the SDQ II for Australian respondents and U.S.A. respondents were separated into the 11 subscales of self-concept. Scores were then added together to give a single raw score for each subscale. The raw scores for each subscale

were then added together to give each respondent a Total Self-Concept Score. To determine whether SDQ II scores differed significantly across Australian and U.S.A. students, the 11 subscales were then grouped into three conceptual sets: a global measure of self-concept, non-academic self-concept, and academic self-concept. Separate analyses of variance (ANOVAs) were then performed on the dependent measures within each conceptual set. Scores on the single General Self measure and the Total Self-Concept scores were subject to univariate ANOVAs. Separate multivariate analyses of variance (MANOVAs) were performed on the academic and non-academic subscales sets to take into account any correlations amongst the subscales within each of these sets.

Results

SDQ II

To determine whether global self-concept scores differed across Country, Sex and Year Level, a 2 (Country) by 2 (Gender) by 4 (Year 9 – 12) ANOVA was performed, with General Self as the Dependent variable. The ANOVA on these scores indicated a significant main effect for Country ($F(1,267)=7.24$, $p=0.008$), but no significant main or interaction effects for either Year or Gender. Means and standard deviations are presented in Table 3. These results suggest that for the measure of General self (or global self-concept) the U.S.A. students in the study had significantly higher scores than the Australian students tested.

The univariate ANOVAs indicated that the effects of Country were significant on only two of the subscales: Opposite Sex Relations ($F(1,267) = 16.17$, $p = 0.00$) and Physical Appearance ($F(1,267) = 30.10$, $p = 0.00$), both of which were significant at stepdown ($F(1,264) = 25.41$, $p = 0.00$; $F(1,262) = 15.78$, $p = 0.00$ respectively). U.S.A. students in general were found to have higher Opposite-Sex Relations and Physical Appearance scores than did Australian

Table 3:
Combined Means and Standard Deviations for General Self Collapsed over Country

Australia	U.S.A
47.70 (8.90)	50.60 (7.80)

Table 4:
Combined Means and Standard Deviations for Non-Academic Self-Concept Collapsed Over Country

	Emotional Stability	Honesty/Trustworthiness	Same Sex Relations	Opposite Sex Relations	Parent Relations	Physical Appearance	Physical Abilities
Australia	39.40 (10.60)	46.30 (8.70)	51.20 (7.10)	36.10 (8.30)	38.00 (8.50)	28.80 (9.90)	33.00 (11.00)
U.S.A.	39.40 (11.00)	45.30 (10.00)	49.80 (8.70)	39.80 (6.70)	37.40 (8.90)	35.10 (8.50)	35.00 (10.50)

students. Table 4 presents the means and standard deviations for the non-academic subscales. Significant results were also found on the Same Sex Relations subscale ($F(1,267) = 14.88, p = 0.00$), which remained significant at stepdown ($F(1,265) = 14.00, p = 0.00$). Based on the means, the significant interaction effect on the Same Sex Relations variable indicates that while American males report having better relations with the same sex ($M = 51.80, SD = 7.10$) than Australian males ($M = 49.20, SD = 9.00$), the opposite pattern was found for U.S.A. versus Australian females ($M = 47.70, SD = 9.60; M = 52.60, SD = 5.00$, respectively).

Emotional Stability and Honesty/Trustworthiness subscale scores were also found to be significant over gender ($F(1,267) = 12.94, p = 0.00; F(1,267) = 10.61, p = 0.001$ respectively). It was found that males had higher Emotional Stability scores than girls, however, girls had higher Honesty/Trustworthiness scores than did the boys.

All other subscales yielded similar results for both Australian and U.S.A. students.

Self-Concept Survey

Results from the open-ended Self-Concept Survey were collated to show the students' overt beliefs about social self-concept, their own self-concept, and whether they believed the school contributed to self-concept. When asked for their own definitions of any of the self-concept array of labels, Australian students answered in terms of how you think and/or feel about yourself. U.S.A. students tended to use different language by talking about a belief in yourself. In response to a question which asked students what it meant to have a high self-concept, Australian students generally reported statements such as "feeling good about yourself". There was, however, a noticeable negative connotation about having a high self-concept within the Australian group. For them, a high self-concept may indicate that you "loved yourself" and perhaps had a "big-head".

Students were also asked to describe their own level of self-concept. Results indicated that more U.S.A. students self-reported

higher levels of self-concept than the Australian students, and more Australians reported lower self-concept than U.S.A. students. A larger proportion of Australian students did not know whether they had high self-concept or not. More Australian students reported being "average" than U.S.A. students. When asked for the reason for their high or low self-concept, Australian students who had indicated a low self-concept tended to blame physical appearance as the cause. U.S.A. students were overall, more positive. When asked how they think they develop a high or low self-concept, Australian students felt overwhelmingly that high or low self-concept comes from the reactions of others. The U.S.A. students echo this sentiment, however, they associate positive self-concept with what they actually do; "doing things right" or "doing things that are good".

When asked for the affect that school has on self-concept, some Australian students felt that school does not do anything to help improve your self-concept. Other Australian students felt that teachers were instrumental in developing a positive self-concept. U.S.A. students echoed this sentiment, but seemed to feel that teachers were more like friends, who helped students.

In general, the U.S.A. students seemed to have more experience to draw from regarding social self-concept, and responses indicated that they had probably given this topic more thought prior to this investigation than the Australian students. Overall, the responses from the U.S.A. students were more positive, as were their attitudes about how school impacted on their non-academic self-concept. The U.S.A. students seemed to have an opinion about what kind of self-concept they had, and were able to express fairly sophisticated theories. In contrast, the Australian students did not seem to be able to express an opinion about what self-concept was, nor could they express themselves as eloquently.

Interviews

From the three Australian counsellors interviewed, two believed that the student population had a reasonable level

of self-concept, one of them conceding that “adolescents as a rule only have a very vague understanding of themselves ... I think the capacity to view oneself is a very sophisticated concept”. One Australian counsellor, however, disagreed, saying that: “They don’t have the confidence ... (self-concept) is probably fairly lowish”. This counsellor attributed this belief to the fact that the students at the school are very concerned with how they are viewed by others. All counsellors at the Australian school agreed that as far as the students were concerned, the importance of social life outweighed the importance of academic goals. One counsellor stated that extra-curricular activities are vital for the development of social self-concept and that ignoring these activities “... marginalizes kids. The institution that they belong to doesn’t reflect them and all that they are. And hence, the playground, really ... it’s just about the playground”. Australian students interviewed did not have a clear idea about what self-concept was, however, felt that school did not contribute to improving how students feel about themselves.

U.S.A. counsellors both felt that while levels of self-concept were probably on average, they felt that levels should be higher. One counsellor emphasised that positive reinforcement alone was not enough to enhance students’ self-concept. This counsellor felt that only by “... young people doing things that deserve self-esteem ... it’s not the activity, it’s feeling like what they are doing is contributing to the world, or their community or their family as a whole”. The U.S.A. student interviewed with higher levels of self-concept focused on activities to enhance self-concept. He knows that while his parents taught him the skills and rules to be successful in life, they “... didn’t teach me who I was supposed to be. That I got from going out and doing the stuff”. The other interview with a U.S.A. student indicated that her lower levels of self-concept were a reflection of how peers and family viewed her.

Discussion

The interpretation of data is constrained by the limitations of the study design. However, the data do suggest some trends, and implications for schools.

The first research question was concerned with whether or not there were any significant differences in the dimensions measured in Marsh’s Self Description Questionnaire II between the Australian and U.S.A. schools in the current study. Results indicated that there were substantial similarities as measured on the SDQII and there were also some statistically significant differences on certain subscales of the SDQ II. For the purposes of the current discussion, however, differing results for Country only will be mentioned here. Results indicated that there were significant differences between the Australian and U.S.A. students in the study; however, only on certain dimensions. The measure of General Self, indicated that U.S.A. students exhibited higher levels of global self-concept than did the Australian students. Results also indicated that U.S.A. students had a more positive concept of their own physical appearance. Other Country differences included a significant difference on the “Opposite-Sex Relations” and “Same-Sex Relations” subscales for Sex and Country. Here, results indicated that in general, the U.S.A. students in the current study had better relationships with

the opposite sex than did the Australian students in the study. When examining results for relationships within the same sex, not only were differences apparent for Country, but for Gender as well. These results indicated that American male students had better same sex relationships than female students, however, the pattern found in the data for Australian students was reversed. Australian female students had significantly better same sex relationships than the Australian male students.

The second research question asked if these results could be explained in any way by data which were collected in the form of open-ended self-concept surveys, interviews, and journals. The result from the General Self subscale on the SDQ II showed significant support for the finding that U.S.A. students reported higher levels of self-esteem than did their Australian counterparts. Self-Concept Survey results pertaining to whether or not students felt they had a high or low general self-concept supported the results found on the General Self measure. A majority of students from the U.S.A. reported high levels of self-concept as opposed to a minority of Australian students. The pattern was reversed for Australian students who reported lower levels of self-concept than the U.S.A. students. Hence, Australian students largely reported that their low levels of self-concept were due to their poor concept of their own physical appearance. This response is also supported by the results generated by the SDQ II pertaining to physical appearance. In the current study, U.S.A. students were found to have a better image of their physical appearance than the Australian students. These data are in agreement with results found in the study by Offer, Ostrov, Howard and Atkinson, (1988), where U.S.A. students reported the highest body image of adolescents in the ten countries (including Australia) that participated in the study.

In their positive responses regarding their own social self-concept as reported in the open-ended Self-Concept Survey, U.S.A. students talked about their belief in their own abilities, while this trend was largely absent in the Australian responses. Observation entries compiled at the U.S.A. school provide many clues as to where this “belief” may come from. U.S.A. culture is fiercely patriotic, and Americans in general seem to be proud of their country and its achievements. This seems to translate down to all levels of American life – even to a school pep rally on the very first day of the school year to enhance school spirit and pride in the school. The emphasis on sport gives the students a sense of belonging and teamwork. For example, a football game, which is usually held on a Friday night, has the Principal, Assistant Principals, the vast majority of teachers, and most students in attendance. It is not just the football players that people have come to see. The students who are not watching the game are either Cheerleaders, in the Dance Team, in the school band, which also performs at games, or in the R.O.T.C., who has the responsibility of the Colour Guard (re-emphasising school patriotism) before the game begins. Sometimes the school choir performs at the game. Other students work on the refreshment stands in order to raise money for their particular club. This kind of event is not only one that fosters pride in the school, or teaches social skills to students, or one that enhances school “connectedness”; it is a regular school activity that acknowledges the social life of the students. As mentioned by an Australian Counsellor, this is an important point; if the school

does not acknowledge the students' social life, this marginalizes the students by not acknowledging "all that they are". A sporting event at a U.S.A. high school, particularly football, is an event that the whole school feels a part of, affirming and developing pride in the school, clubs and individuals, and consequently, enhancing self-concept.

While the high school sporting scene may be considered an inherent part of American culture hard to replicate elsewhere, there are also some more structural clues as to the origin and/or maintenance of this belief exhibited by U.S.A. students. The fact that each teacher has their own classroom, which they fill with positive self-concept messages in the form of attractive posters, may also have a positive impact on students' self-concept. Younger students are mixed in classes with older students, perhaps allowing them to feel more confident with different age groups. The school has the same "advisory teacher" from Year 9 – Year 12, who can follow the progress of their students, developing a closer relationship with them. Many other teachers have developed a more personal or friend-like relationship with the students. This may result from the increased violence in U.S.A. schools. Teachers may feel that it is more important to listen to the students and be there for them in order to prevent them from being violent at school in a cry for help. This closer relationship between teachers and students was also mentioned by the students in the Self-Concept Survey as being a way that the school positively impacts on students' self-concept.

Another point, which emerged in both the Self-Concept Survey and U.S.A. counsellor interviews, was that of action. A U.S.A. counsellor felt that students needed to affirm their own worth by doing meaningful things that they could feel good about. The students in the Self-Concept Survey replicated this idea, where students reported that the way students gained high self-concept was to do the right thing and help people. In the interview, a U.S.A. student also touched on the idea that his identity (who he was) was developed by "going out and doing the stuff".

In contrast, the students at the Australian school almost associated having high self-concept as being a negative quality, and even had a derogatory term for this (love-o). This is probably associated with the well-known Australian Tall-Poppy Syndrome, where it is not accepted to give praise to anyone, due to the fear that they will become conceited. One of the Australian counsellors also mentioned this aspect of Australian culture and the negative influence it could have on students. It must be acknowledged that perhaps Australian students did not respond on the Self-Concept Survey in a positive way due to this negative connotation of having high self-concept, although there was no incentive for the students to respond in either direction.

It is possible that school could exacerbate rather than improve low levels of self-concept. As stated by one Australian Year 11 student on the Self-Concept Survey: "If you have high self-concept, then (school) brings out the best in you, but if you have low self-concept, then it makes you feel sad, worthless and angry". In the interviews, Australian Student #1 and U.S.A. Student #2, who exhibited lower levels of self-concept, seemed to be much more worried, upset and affected by the reactions or

comments from others, their peers in particular. Students interviewed with higher levels of self-concept indicated that they were not bothered by the opinion of others. A vast number of Australian students also reported in the Self-Concept Survey that a positive self-concept occurred directly through the response of others. This link between lower General Self scores and the influence of others' comments are both evident in the Australian students results in quantitative and qualitative data.

Results from the SDQ II Opposite Sex Relations subscale indicated that U.S.A. students overall had better relationships with the opposite sex than did Australian students. Qualitative data is not so clear in supporting these results; however, some possible explanations for these will be discussed. The social structure of the U.S.A. high school allocates high status to those students who are dating. The girl traditionally takes possession of the boy's class ring, and wears it on her ring finger to indicate she is going steady with someone. In fact, marriages do occur at high school age, or high school sweethearts marry soon after high school, therefore, many teachers do take high school relationships quite seriously. Teen pregnancy is also an issue; at levels which warrant a special school program designed and staffed to help pregnant girls stay at school. This mirror of adult relationships found at the U.S.A. high school may explain the effort that students go to in order to appear attractive to the opposite sex.

At Australian schools, in contrast, while desirable to have a boyfriend or girlfriend, it is far more accepted to socialize as a group. Therefore, perhaps the need to attract the opposite sex in order to improve self-concept is not such a priority in the Australian school.

The situation regarding the levels of Opposite Sex Relations may in themselves, explain reasons for results in the Same-Sex Relations subscales. American females may have more of a focus on developing relationships with the opposite sex, and therefore not concentrate so much on developing relationships with their own sex. American males, through the serious activity and higher status of male sport within the school, may develop better relationships with their own sex than American females develop with other females. In contrast, Australian females with lower levels of self-esteem than their U.S.A. counterparts, as well as the Australian school having seemingly less status associated with "going steady", may feel more secure developing relationships within their own sex.

The third research question was concerned with whether or not the data had identified differences in culture or structure between the Australian and the U.S.A. schools. Certainly, the "Tall Poppy Syndrome" would be associated as an Australian cultural trait. For the U.S.A. school, the pride and patriotism that was referred to in the introduction of this paper would certainly be seen as a cultural characteristic. This cultural trait almost directly opposes the Australian Tall Poppy Syndrome.

Many of the differences already discussed, however, pertain to the structure and/or attitude of the education system in place at each school. It would be theoretically possible to introduce many of the suggestions revealed by the data in either school. In most cases, however, these would result in huge structural changes of a costly nature. However, the data do suggest some factors to keep in mind in the maintenance of social self-concept of students

at the high school level.

Finally, the fourth research question was related to the implications for schooling suggested by results. Due to the fact that participants selected for the current study were not randomly sampled, the data for the both schools must be interpreted cautiously. However, results from the Australian school suggest that while the students who attend the school are likeable good kids, those selected for the study exhibit lower levels of self-esteem than do the students at the U.S.A. school. Interview data and questionnaire results in particular suggest that the Australian students do not take academics that seriously, and it seems that many of these students view high school as a social occasion. Results also suggest that more and more, students of the Australian school are leaving school in preference for full-time employment. Those that are remaining at school are spending much of their spare time working at their part-time job in preference to study. In these ways, data seem to indicate that students are becoming somewhat alienated from their school.

Some students from the U.S.A school even articulate the alienation they feel from their school. However the vast majority of those U.S.A. students who participated in the current study felt that, although academically the U.S.A. school was also performing at or below other schools in the area, school was an essentially affirming experience for them. Data suggest that this seemed to be related to the affirming activities available to the students via sports, clubs and activities, with the unquestionable support from the school administration. A closer relationship with the teachers seemed to promote a feeling amongst the students that the teachers were their friends, increasing school connectedness.

Previous research suggests that school is becoming responsible for not only the academic development of young people, but their social development as well. If this is held to be true, schools – particularly in Australia - should perhaps award this issue more status and resources. If, in fact, the Australian cultural Tall Poppy Syndrome is in part responsible for the lower levels of self-esteem in students, then perhaps education and / or overt controls are needed to combat this. The results from the U.S.A. school indicate that there are a variety of different ways to assist in the maintenance of positive self-concept of the students. All counsellors at both schools agreed that self-concept is an incredibly important part of a young person's life. If schools are to take responsibility for this issue, then they should do so in an effective and comprehensive manner. Students may not remember what they learnt in the math class, but their self-concept will have a vast affect on the rest of their life.

About the Author

Jane M. Capon has just completed her Masters of Teaching degree at the University of Sydney where the above study made up the Honours component of her degree. She completed her undergraduate Bachelor of Arts degree in 1989, majoring in Psychology, Sociology and Japanese. She is currently teaching Japanese and English at Bossley Park High School in Sydney.

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Conceptualizing the Role of Beliefs in Self-Concept Research

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The importance of self-concept has been well recognised in the psychosocial development of children and adolescents, which accounts for many behavioral and academic problems of students' learning. Self-concept research has examined self-concepts' nature, structure and formation as well as its relation with culture, and impact on personality development, self-identity, academic attribution and learning. As well, the influence of socio-milieu - including parents' attitude and rearing process, teachers' expectations and peer group interaction - on the development of children/students' self concept and effort has been examined to enhance children's/students' self-concept and related self-esteem in counselling process and teaching/learning. A close examination of the literature on self-concept formation and structure revealed beliefs should have a definite role to play in self-concept's formation and development. How beliefs are related to the nature, structure and formation of self-concept and self-esteem are not clearly and fully understood as researchers in this area are not plentiful and under-developed. Research depends on whether a sound and well articulated theoretical framework is available, based on which possible directions of research on the role/relationship of beliefs and self-concepts can be further explored to enhance understandings of the self-concept construct. This paper intends to conceptualise the relationship of beliefs and beliefs system (and other variables) with self-concepts in proposing a theoretical framework that explains the formation/composition of self-concepts (based on available research findings) and the subsequent impact on teaching and learning in the classroom.

Research on Self-Concept: Its Nature and Structure

The importance of self-concept has been well recognised in the psychosocial development of children and adolescents. It is a construct that is central to personality and accounts for many behavioural and academic problems of students' learning. Previous research with adolescents has suggested that self-concept is a major determinant of delinquent behaviour (Kaplan, Johnson, & Bailey, 1986; Leung & Drasgow, 1986). Also, in a study among Hong Kong primary school children, delinquency (at different levels and of different types) was shown to be consistently predicted by appearance self-concept and general self-concept (Lau & Lee, 1997).

In general, people assume that self-concept has some moderate and positive association with measures of performance and achievement. Positive self-concept is often valued as a goal of education and as a potential facilitator of motivation and achievement. The relationship between self-concept and achievement (or other constructs) has been a topic of research since the 1970s. Many research studies have shown that academic self-concept is significantly related to achievement. For example, Marsh (1984), West, Fish and Stevens (1980), Marsh's (1984) study, and later research have suggested that there is a consistent relationship between the multidimensional self-concept and multidimensional self-attributions for the causes of academic outcomes. Nevertheless, the notion that self-concept causes achievement /academic outcomes or vice versa, that is, the causal relationship between self-concept and achievement (or other desirable outcomes), are still debatable and have to be demonstrated in empirical research with further investigation.

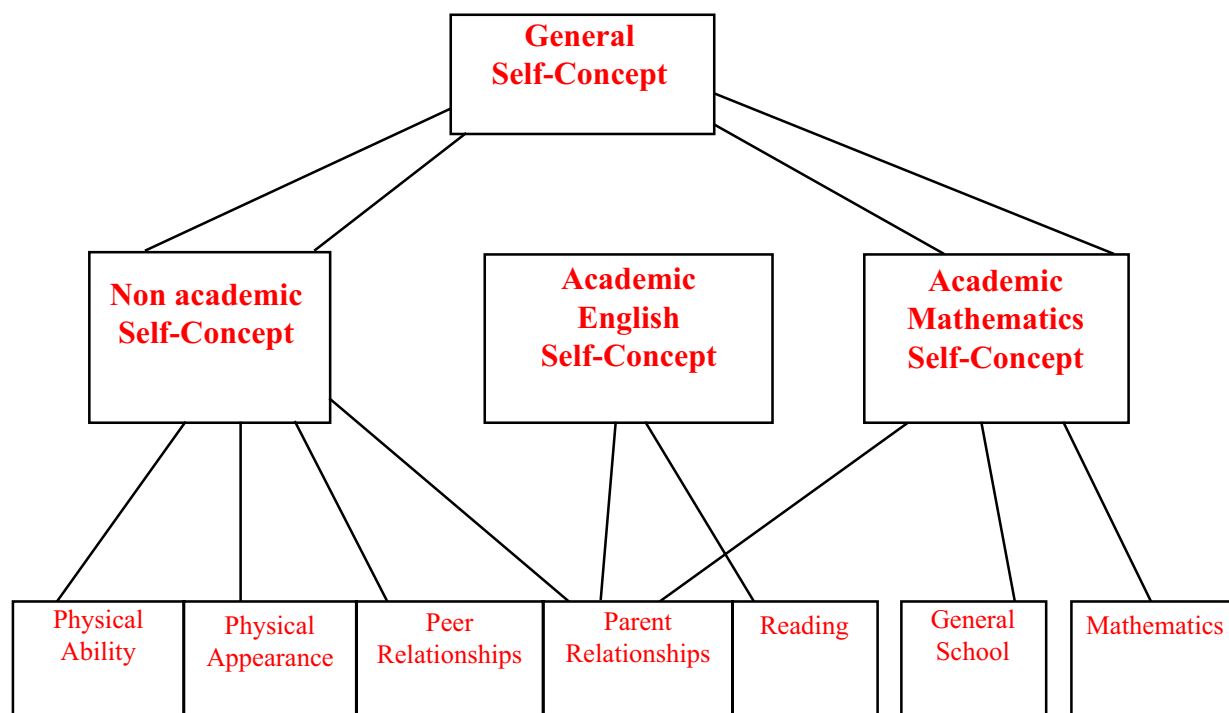
In addition, many studies have been done on self-concept including its nature, structure and formation as well as its relation with culture, and impact on personality development, self-identity, academic attribution and learning. Amongst which, much attention is given to study of the properties and structure of self-concept. Great advances have been made in

the study of the structure of self-concept. A multilevel model of the self was proposed by Shavelson, Hubner and Stanton (1976) which highlighted the multifaceted and hierarchical nature of self-concept (Harter, 1982; Marsh, Byrne, & Shavelson, 1988; Shavelson *et al.*, 1976). In this multilevel and multifaceted model, it was postulated that self-concept is composed of different domains or dimensions which can be hierarchically organized (with general self-concept subsuming other facets of the self-concept). The general or global self-concept is at the top; the second level is a split into academic and non-academic selves, and moving down, the facets get more and more specific (refer Figure 1). Based on this multilevel model, previous reliance on measuring only general self-concept or self-esteem is judged to be inadequate in understanding self-concept. Research in cultures as diverse as Nepal, Nigeria, and the Philippines strongly supports the cross-cultural validity of the Shavelson model for school students. The model seems to be equally valid for Chinese students whether from Beijing or Hong Kong (Chung & Watkins, 1992; Lo, 1989; Watkins & Dong, 1994). Recent research on Chinese people's self-concept has in fact adopted this multidimensional approach (Lau & Leung, 1992a; Leung & Lau, 1989).

Self-concept: Its Multifaceted, Hierarchical Structure

Research on the nature of self-concept has also revealed the properties of self-concept in that it is multifaceted, hierarchical, organized (with a coherent structure emerging at about 11 years of age), stable, developmental and evaluative (Watkins, 1995). Support of the hierarchical and multidimensional structure of students' academic self-concept has also been demonstrated by a study with commercial students in an educational institution in Hong Kong (Yeung, Chui & Lau, 1999).

Figure 1: Self-Concept: Its Multifaceted, Hierarchical Structure



* Source: H.W. Marsh and R.J. Shavelson (1985). Self-concept: Its multifaceted, hierarchical structure, *Educational Psychologist*, 20, p. 114 as in Woolfolk, A. E. (1998), p.74, *Educational Psychology*.

Self-Concept and Related Constructs

With the properties and nature of self-concept identified and theorized from research, it is possible to define the meaning of self-concept. "Self-concept" can be taken as a term for the core of what one thinks about oneself, which involves self-description and overall evaluation of oneself (one's global self-esteem) (Watkins, 1995). Self-description is a non-judgemental statement about oneself. Self-esteem, however, is an overall evaluation of oneself.

The unifying centre of everything that makes up oneself is one's self-concept. When self-concept is mentioned, there are many possibly related constructs involved, such as self-esteem (self-evaluation), self-efficacy (self-perceived competency in a given task), self-characterization (beliefs about the self's character), and sex-role. Together, these and other constructs constitute an individual's self-concept or identity.

Previously, it was predicted that low (global) self-esteem is related to academic failure and that if a child had a success in a school test or won a popularity contest, then it would boost the child's self-esteem. However, it is realized now that academic success or failure may only have an impact on academic self-esteem. It will have an impact on global self-esteem only if the academic part of one's life is very important to oneself. The relationship of the global, academic and non-academic self-esteem can be illustrated and understood from Shavelson *et al.*'s (1976) multifaceted model of self-concept as well as based on the close relation between self-concept and self-esteem. The Shavelson model, however, suffered from a limitation in that it

assumes the respondent is still being educated (and that this education is important to him/her) and requires modification/adaptation for use with adults, and children for whom education is unimportant (Watkins, 1995).

With the model at hand, it is assumed that individuals can only perform to their true potential in any walk of life if they have a positive image of themselves. Many forms of psychotherapy have as their primary aim the development of positive self-esteem. Teachers and educators also appreciate the importance of self-esteem/self-concept, and enhancement of self is seen as a goal of many different curricula throughout the world. Accordingly, self-esteem/self-concept is also perceived as a major determinant of academic achievement and is especially relevant to the behavior problems of school children and adolescents. According to Kaplan's (1972, 1980) self-enhancing theory of delinquency, under a self-esteem motive, individuals tend to minimize the experience of negative self-attitudes and maximize the experience of positive self-attitudes. If an individual's self-esteem is threatened, whether due to parental and/or peer rejection, lack of competence, or school failure, he/she may develop an attitude of self-rejection (Leung & Lau, 1989; cited in Lau & Lee, 1997) and develop alternative behavioural patterns - often labeled by the normative group as "deviant" or delinquent" to enhance his/her self-esteem. In sum, according to Kaplan's self-enhancing theory of delinquency (1972, 1980), low self-esteem predisposes a person to delinquent behaviours. A study by Leung and Lau (1989) with high school adolescents (grades 7 to 9) from three secondary schools has indicated that while higher delinquency was related to lower

self-concept of academic ability, higher delinquency was related to higher self-concept of social and physical abilities. The enhancement of one's self-concept and low self-esteem is a likely way of alleviating problems like disruptive classroom behaviour, drug and suicide problems within teenagers (Watkins, 1995) and even primary school children (Lau & Lee, 1997). Within a competitive system in Hong Kong, the "Big-Fish-Little-Pond-Effect" or the opposite effect - "Little Fish in a Big Pond" - could be a useful point of reference in considering the impact of school experiences on the academic self-concepts of students and hence suggests means of enhancing the self-concept or self-esteem of students to assist students' learning (Marsh, Kong & Hau, 2000).

Self-Concept, Culture and Values

Much of what is known about the structure of self-concept (and self-esteem) comes from studies with North American or Australian subjects. Theories developed in western countries may have applicability in some aspects within another country, for example, the robust patterns of relationship demonstrated in the Big-Fish-Little-Pond-Effect study by Marsh, Kong and Hau (2000). However, it is inappropriate to apply such a structure totally to a population of other culture, for example, Asian or Chinese people where variations may occur. This is well understood since one's self-concept depends very much on the value system of the individual, which usually has strong societal roots.

Studies on self-concept across culture have indicated that in the American culture, individuals seek to maintain their independence from others by attending to the self and by discovering and expressing their unique attributes. This cultural value is known as "Individualism". No overt connectedness among individuals are assumed or demonstrated. This view of the self derives from a belief in the wholeness and uniqueness of each person's configuration of internal attributes. Such view involves a conception of the self as an autonomous and independent person and was referred to as the independent construal of the self. Various labels have been given by social psychologists to such construal of the self, including individualist, egocentric, separate, autonomous, idiocentric and self-contained (Markus & Kitayama, 1991). It gives rise to processes like "self-actualization," "realising oneself," or "developing one's distinct potential". In general, it is assumed that relatively more individuals in Western cultures hold this view than individuals in non-Western cultures (Bond, 1986). On the contrary, many non-Western cultures (e.g. Asian or Chinese) insist on the fundamental relatedness of individuals to each other. The cultural value existing within the Asian or Chinese society has been known as "collectivism". A normative imperative of this culture is to maintain this interdependence among individuals. The emphasis is on attending to others, fitting in, and harmonious interdependence with them. This view of the self and the relationship between the self and others distinctly shows the person is not separate from the social context, rather the person is more connected and less differentiated from others. Such a view of self is called the independent construal of the self and is also known by various labels including sociocentric,

holistic, collective, allocentric, ensembled, contextualist, connected and relational (Markus & Kitayama, 1991). Many non-Western cultures insist the basic elements including self and other, person and situation are not separable. Within the Chinese culture, emphasis is laid on the synthesis of the constituent parts of any problem or situation into an integrated or harmonious whole. The Chinese people tend to act primarily in accordance with the anticipated expectations of others and social norms rather than with internal wishes or personal attributes (Yang, 1981 cited in Markus & Kitayama, 1991). Collective welfare and showing a sympathetic concern for others are the values considered important by the Chinese people. Studies by Bond (1986) and other researchers on the Chinese have shown a clear imprint of the Confucian emphasis on interrelatedness and kindness.

Amongst the studies of Chinese people, Lau (1996) argued that there is a concept of self in Chinese culture or thinking which is different from the western approach. According to Lau's (1996) suggestion, there are two possible philosophies, which help understand the concept of self of Chinese people. The first one is Confucianism, which can provide a ready framework to study the structure of self within the Chinese people. Confucianism is the theoretical base commonly used to explain the cultural influence in the study of personality and self-concept of Chinese people in cross-cultural comparisons. In traditional Confucian thinking, the self is very well defined within the societal context or milieu. An individual's self, identity, and roles derive meaning from his relations with others. Distinctions are made between the *ta wo* (big me) and *hsiao wo* (small me). There is emphasis on putting *ta wa* for the good of a larger entity, such as family and society. Selflessness is encouraged and honored; selfishness is discouraged. On the surface in Confucianism, there is a self-defined in relation to others. Self is defined in the hierarchy of relationships, however, there is no individuality underneath. Everything connected with "I" is subsumed under "We". The rules, regularities, and priorities for every relationship leave little room to maneuver in one's mind. This conception of self may be connected with Confucianism's great emphasis placed on authority, the thinking that fits in well with the wishes of the ruling class or ruling figures (like parents). Influenced by the societal and cultural values, the self-concept of the Chinese people deviate from what was postulated in Shavelson *et al.*'s model in having the family, social and moral factors included in the hierarchy besides the academic and non-academic (e.g. physical) self-concept/self-esteem components. These include familial relationship, filial piety, peer relationships, social skills, conduct/virtues and altruism (Cheng, 1993, cited in Watkins, 1995).

The second philosophies to study and explain the self-concept of Chinese people is Taoism. In contrast to Confucianism, there seems to be no concept of self on the surface in Taoism and no rules or roads are provided. In the thinking of Taoism, to find one's inner self is to unite with the universe, and the approach is spontaneous and free-spirited. Underneath, there is certainly a concept of self. Compared with Confucianism, Taoism is more elusive and harder to capture. While there may be a non-self or no self (a lack of selfhood) in the very extreme of Confucianism, it may

mean the opposite in Taoism (Lau, 1996).

Research on the self-concept of Chinese people provided findings that are similar to that reported for westerners – self-concept has been found to relate positively to academic performance and personal control, and negatively to delinquency (Lau & Leung, 1992a, 1992b; Leung & Lau, 1989). Also, similar common findings are observed when self-concept is examined in terms of sex role and sex difference, for example, the masculine sex role is found to relate positively to achievement-related values (Lau & Wong, 1992); males tend to endorse success as a personal goal more so than females (Wang & Creedon, 1989).

Self-Concept and Beliefs

While Shavelson *et al.*'s model explains the hierarchical multifaceted structure of self-concept, some psychologists tend to conceptualize self-concepts in a cognitive approach by means of schemas collection. In terms of conception, self-concept is perceived as central self-schemas. According to this line of thought, self-concept is “a system of affective and cognitive structures (schema) about the self that lends coherence to each individuals’ self-relevant experiences” (Baron & Byrne, 1994, p. 214). Through a self-schema, a collection of beliefs and feelings about some aspect of the world, as well as our self-knowledge is organized (Markus & Nurius, 1986). A person’s self-schema serves the function of a cognitive framework, to guide behaviour and process information about the self. It represents “all of our current knowledge and exiting memories about ourselves; and our conceptions of what we were like in the past, what we are like now, and what we may be like in the future” (Baron & Byrne, 1994, p. 1750). Thus, self-concept is taken as a collection of self-schema that is based on self-relevant information (Higgins & Bargh, 1987). Such a collection could help to elaborate and categorise information related to one’s self-concept (see Lau, 1996). The assumption that self-concept is a collection of self-schema suggests a possible relation between self-concept and beliefs since Piaget’s schema formation (assimilation and accommodation) has been utilised by Pajares (1992) to explain for the function of beliefs.

A close examination of the above conception of self-concept indicates one’s self-concept is probably related to ones’ cognitive and affective structure or constructs. Research findings on self-concept formation and structure revealed that how one evaluates and sees oneself has a certain relationship with one’s beliefs, viz. belief in ability and intelligence (Dweck & Leggett, 1988), and belief in working hard/effort (Weiner, 1994), etc. Therefore, beliefs should have a definite role to play in self-concepts formation and development. How beliefs are related to the nature, structure and formation of self-concept and self-esteem are not fully and clearly understood as studies in this area are not plentiful and underdeveloped. In turn, it depends on whether a sound and well articulated theoretical framework is available, based on which possible directions of research on the role/relationship of beliefs and self-concepts can be further explored and to enhance the understanding of self-concepts and development.

With this in mind, the author intends to conceptualize the

relationship of beliefs and beliefs system (and other variables) with self-concepts in proposing a theoretical framework that explains the formation/composition of self-concepts (based on available research findings) and the subsequent impact on teaching and learning in the classroom. Before hypothesizing a framework to illustrate the relation of beliefs and self-concept, it is necessary to have a fundamental idea of the meaning and nature of beliefs and belief system.

Beliefs and Belief System

Beliefs are studied in diverse fields, e.g. philosophy, social psychology and anthropology, and this has resulted in a variety of meanings and definitions for the fundamental concepts. A wide range of definitions of beliefs has been noted in the reviews by Hofer and Pintrich (1997), Pajares (1992) and Richardson (1996). For example, Green (1971) described belief as a proposition that is accepted as true by the individual holding the belief. It is a psychological concept and differs from knowledge, which implies epistemic warrant. According to Fishbein and Ajzen (1975, p. 12), beliefs convey “the information that a person has regarding some attributes of an object... the object of a belief may be a person, a group of people, an institution, a behaviour, a policy, and event, etc., and the associated attribute may be any object, trait, property, quality, characteristic, outcome or event”. Brown and Cooney (1982) explained that beliefs are dispositions to action and major determinants of behaviour, although the dispositions are time and context specific. Siegel (1985) defined beliefs as “mental constructions of experience often condensed and integrated into schemata or concepts” (p. 351) that are held to be true and guide behaviour. Harvey (1986) defined beliefs as an individual’s representations of reality that has enough validity, truth, or credibility to guide thought and behaviour.

The different definitions of beliefs, exemplified above, indicate that the educational research community has been unable to adopt a specific singular working definition. The discrepancies in naming and defining the construct, beliefs, reflect different theoretical assumptions about the nature of beliefs as a result of the disagreements about the boundaries of the construct in terms of what should be included or excluded as part of beliefs.

As mentioned in the previous sections, a person’s self-concept is connected with his or her cognition (knowledge about self-description) and affection (beliefs and self-evaluation of one’s attributes). Following this, Fishbein & Ajzen’s (1975) definition of belief seems appropriate in the study of belief’s role in self-concept research since it refers to the beliefs held toward one’s attributes, e.g. physical appearance, abilities, academic achievement, relationships with others that may be used to account for one’s academic and non-academic self-concept/self-esteem.

Depending on its source, a belief may be one of three types - descriptive, evaluative or prescriptive, but elements of each are present in most beliefs. Thus, it may be claimed that there are three types of belief viz. descriptive, inferential and informational beliefs. Descriptive beliefs arise from personal observation or direct encounters with objects. Inferential beliefs

arise from inferences about these observations or encounters. Informational beliefs come from sources outside of personal observation or direct encounters with objects. Informational beliefs come from mass media or communication including text (Fishbein & Ajzen, 1975; Rokeach, 1968).

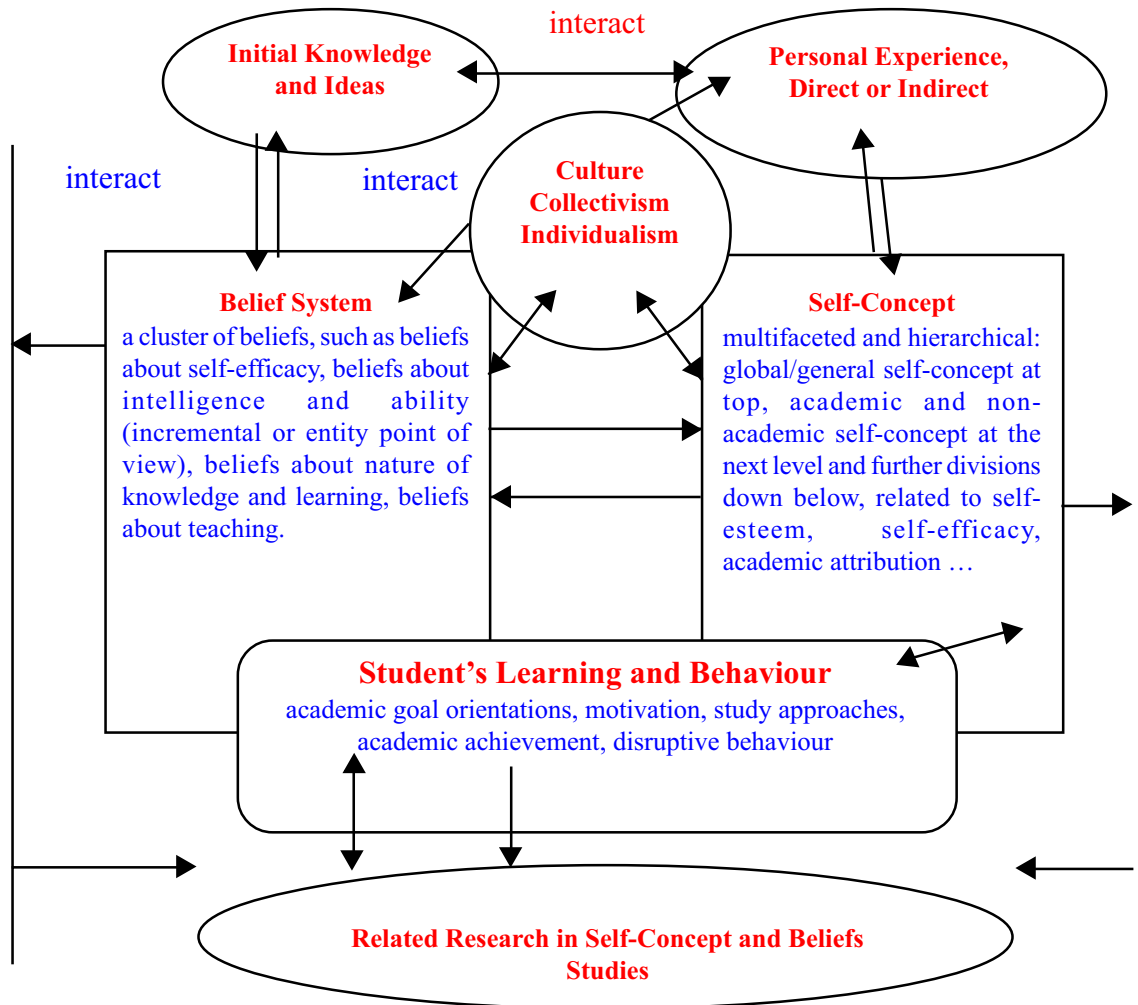
A person's belief about his or her attributes, for example, his or her physical appearance, intelligence and ability, peer relationship may have its roots in his previous experiences, through encounters/observation with other people including his parents, teachers and peers. Continued remark or feedback on a child's academic performance from parents or teachers either directly, or from observation or inference may gradually shape his or her perception, evaluation and beliefs about his or her intelligence and ability. This in turn constructs a positive or negative self-concept or self-esteem about his or her academic performance and ability, known as academic self-concept/self-esteem. Beliefs, whether descriptive, informational or inferential definitely have a role to play in the formation of a person's self-concept. Therefore, to conduct research in self-concepts and related constructs, such as self-esteem, self-efficacy and academic attribution, correlational studies with a person's (child or adolescent) beliefs would be a rewarding area of research that facilitate further understanding of the area.

It is understood that beliefs fall within a belief system. Similar to beliefs, the nature and structure of belief system is still not very comprehensive and awaits further investigation. The author (Chan, 2000) has attempted to define and describe a hypothetical belief system based on an adaptation of the idea of Rokeach (1968) and Roseman (1994). According to the hypothesis, a belief system is ecology of all the beliefs held by an individual. Within the system, there are many beliefs, such as beliefs about values, beliefs about authority and freedom, beliefs about knowledge (epistemological beliefs), beliefs about teaching and learning (educational beliefs) and beliefs about self-efficacy. The situation is likened to the existence of many planets in a solar system of the universe. Just as planets are related to each other in a gravitational network, in a belief system, individual beliefs are related to each other in a network structure. Within this network, the strength of any particular relationship is determined by the number of elements shared by the individual beliefs. Further, those beliefs formed early in life form the central part of the network. These beliefs are often descriptive in nature and are resistant to change. Beliefs based on personal experience are often most salient and located in the centre of the network. For this reason they are difficult to change and are often the building points for other related beliefs. While beliefs are components of a belief system, beliefs also constitute the cognitive and affective schemas of a system of self-concept, the relation between the system of beliefs and self-concept undeniably exist. Different beliefs within the belief system are likely to have an impact in shaping one's self-concept, whether it is academic or non-academic. An understanding of the characteristics and functions of different kinds of beliefs within the belief system is likely to help research in the study of the formation of self-concept. To address this need, the author has attempted to illustrate the role and function of beliefs in self-concept formation and research with a theoretical framework in the following section.

Hypothesizing a Theoretical Framework: The Role and Function of Beliefs in Self-Concept Formation and Research

Integrating the above discussions of beliefs, belief system and self-concept, the role and function of beliefs/belief system in self-concept formation and research are illustrated in a theoretical framework as illustrated in Figure 2. In the hypothesized theoretical framework, the system of beliefs and self-concept are connected through the common components of beliefs, e.g. the cognitive, affective and evaluative elements, source of which originated from one's initial knowledge, ideas and experiences. Personal experiences represent the social-milieu influence, including parenting style in the upbringing process, teachers' expectations, peer group interaction, formal (school) and informal learning experience, societal and culture demands. The experiences can be obtained through direct encounters or observation with objects and other persons, as well as inferences drawn from information available. All these experiences will interact with one's prior or existing ideas, beliefs and self-concept system, reinforcing or modifying the present status in developing the new ones. As an illustration, a child who is brought up in a Chinese family with traditional culture and values would experience the parents' emphasis on education, diligence and academic achievement. The ideas and knowledge of Chinese cultural values on education and diligence, the glory (known as the "face" in Chinese studies) brought to a person's family/parents through excellent academic results are repeatedly experienced and stressed in the development of a child. Gradually, this takes shape and becomes part of the child's belief system – the beliefs about values, beliefs about effort, beliefs about knowledge and learning. Here the collectivist and interdependent nature of the self-construal functions. The child is closely connected to his/her parents or family, his/her teachers or school context with emphasis on the importance of study, effort and achievement. The cultural value becomes part of the child's beliefs system and poses a focus on his/her academic achievement. The academic self-concept emerges as an important component of the "self". If the child achieves well in academic study, a positive academic self-concept or self-esteem is developed/maintained. This explanation is supported by research literature, which has indicated a positive relationship between academic self-concept and achievement. However, no definite cause effect relation is affirmed until demonstrated by empirical research. The positive academic achievement and academic self-concept formed are likely to reinforce the child's beliefs in effort and diligence, a value predominantly valued by the Chinese people. In case, the child fails in examinations and tests a number of times, fear and anxieties are likely to develop in the child's mind, lowering his/her academic self-concept or self-esteem, which may lead to timid and withdrawal behaviour in class learning. This speculation is in line with Erikson's fourth stage of psychosocial development - industry versus inferiority. According to Weiner's attribution theory (Woolfolk, 1998, p. 388), there are two possible causal attributions to account for the child's failure, either due to lack of effort or ability. The former is an attribution of failure often given by the Chinese

Figure 2: The Role and Function of Beliefs/Belief System in Self-Concept Formation and Research



people, especially parents and teachers to account for the poor performance of the children or students. This attribution failure, either due to lack of effort or ability.

The former is an attribution of failure often given by the Chinese people, especially parents and teachers to account for the poor performance of the children or students. This attribution falls in line with the Chinese cultural value on diligence. This attribution also provides an opportunity for one to restore or maintain one's self-concept/self-esteem – if one works hard, there is a possibility of achieving well. Sometimes, despite working hard repeated failure of the child may cast an entity view of intelligence/ability – whereby the child has lower ability and this level of ability cannot be changed. If this happens together with an adverse comment on his academic achievement by his/her teachers, parents and peers, (the social context affects), probably his/her beliefs on fixed and limited ability will be reinforced. All these happenings will gradually build up a negative child's self-concept or self-esteem in the academic aspect (the academic self-esteem) that he/she falls behind others in academic achievement and drives the child to other alternatives to maintain his/her self-esteem (Kaplan, 1972, 1980). Either disruptive behaviour results or the child turns to non-academic areas such as sports or arts to demonstrate his/her ability. Poor

self-esteem (academic self-concept) together with a strong belief of his unsuccessful academic learning due to his/her attribution of lack of ability may account for the child's reduced learning motives and increased misbehavior in class. Later on, the child may even become a member of the gang involved in drug abuse or delinquency without proper counselling and remedial measure. Based on these understandings and the available research findings, teachers and educators have been striving to enhance students' self-concept/self-esteem in counselling process and in teaching and learning.

The previous discussion highlights some possible relations existing among beliefs, self-concept/self-esteem and students' class learning and behaviour such as motives, academic goal orientations, academic achievement and even study approaches of students. In short, beliefs and self-concept have certain influences on students' learning. The possible relations which exist among these variables open many opportunities in different areas of research, including cross-cultural studies in beliefs and self-concepts. Speculations or hypotheses can be generated from the proposed framework, subject to empirical research for investigation or verification. For example, research work can be conducted to examine the following hypotheses or relationship:

- The relation between academic goal orientations and the well being of students – mastery or achievement goals are related to positive academic self-concept while performance or ego goals are related to negative academic self-concept;
- The causal effect relation between beliefs in ability with academic self-concept across different cultures/contexts – an incremental view of ability results in positive academic self-concept and an entity view of ability leads to a negative academic self-concept irrespective of western and non-western cultures; and
- The interrelationship or causal effect relation between the collectivist view of self in the Chinese/Asian culture with beliefs in authority knowledge and study approaches adopted by Chinese/Asian students.

In conclusion, the proposed theoretical framework attempts not only to explain the formation of self-concept with reference to beliefs/beliefs system and experiences but also highlights the possible contribution of beliefs study in self-concept research. For instance, in studying the interrelation of students' self-concept/self-esteem, academic attribution with academic achievement, the researcher does not only analyze the impact of hard data such as the scores or GPA of students on their academic self-concept, implications are there that the affective side, the beliefs of the students have to be investigated (e.g. through interviews to account for the students' attribution of their academic performance). As well, the analysis of the students' beliefs and attributions possibly help the researcher to have a better understanding of the internal state of students, their self-concept and personality. After all, learning of the personality and self-concept of a child/adolescent is a complicated matter, with much still left to be resolved. The cognitive and affective aspect of an individual, his/her beliefs and belief system certainly have a functional role to play in the research of personal constructs, such as self-concept. It is hoped that the hypothesized theoretical framework outlined may contribute to further research in this area, increasing our understanding of human nature which guides and facilitates learning and counselling of students in school.

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The Self-Concept of Nurses and the Relationship of Multiple Dimensions of Nursing Self-Concepts to Job Satisfaction

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Little is known of nurses' self-concept in light of their professional identity or as working adults. This paper explores the development and rigorous testing of a new self-concept instrument designed specifically for nurses. The new measure is based on the self-concept measurement theory of Shavelson, Hubner and Stanton (1976). An expert panel was utilised to critique and aid refinement of the measure. The dimensions of nurses' self-concept were measured in six scales: general nursing, caring, staff relations, communications, knowledge and leadership. Two groups have participated in this study: Group One consisting of nursing students prior to graduation (n=506) and Group Two consisting of randomly selected, experienced working nurses (n=528). A series of exploratory and confirmatory factor analyses were conducted to test the fit of 'a priori' models. The results indicate that all scales possess good construct validity and a satisfactory fit with the data.

How we think and feel about ourselves is fundamental to how we perceive ourselves and also how we perceive our potential in our personal lives. This same idea can be transposed onto our working lives, whereby how we perceive our professional selves will ultimately affect our view of ourselves and associated happiness with what we achieve within our working lives. How nurses perceive themselves within their work environment is cited by nurse academics and authors as a significant source of problems relating to professional identity, recruitment and retention for nurses.

The nursing workforce is aging. The question now commonly asked in nursing education worldwide is, who will replace this workforce. Currently the nursing profession is not an attractive proposition in comparison to new fields now open to women. Once people, in particular young women, were attracted to nursing for the opportunity to help and care for people however, annual recruitment to nursing has been progressively falling resulting in an alarming shortfall of nurses in health services.

The newly graduated nurse suffers from fragile levels of self-confidence and professional self-worth that can make the difference between continuing with nursing or leaving the profession (Madjar, 1997). Our new nurses are in danger of finding the workplace too stressful and unsatisfying and therefore may be lost to the health system (Brighid, 1998). Madjar contends that the 'culture shock' syndrome of the newly graduated nurse is affected by the level of their self-confidence as much as the concern of a theory/practice gap (1997, p.2). The "reaction of new graduates to their initial period of employment vary but commonly include physical and specially emotional exhaustion; a sense of inadequacy; frustration; loss of ideals and at the extreme, the abandonment of nursing as a career" (Madjar, 1997, p.4).

Despite the potential importance of self-concept research for nurses, as well as the knowledge that self-concept is raised as a critical element in the recruitment/retention dilemma, very few nursing researchers have paid more than a cursory interest into this area of research. In fact, to date, nursing theorists have been unable to present a united picture of the constituents for nurses' self-concept. There is however, strong evidence from nurse researchers that suggests self-concept has a critical impact on other important mediating employment factors such as job

satisfaction, stress, burnout and attrition (Beeken, 1997; Dewe, 1987; Hackett & Bycio, 1996; Harvey & McMurray, 1997; Moore, Lindquist & Katz 1997).

Whilst the number of nursing authors alluding to the possible importance of nurses' self-concept continues to rise, well orchestrated and theoretically sound investigations remain rare. As Arthur (1995, p.328) states "many authors in nursing literature make concerned statements regarding self-concept". The author contends that the importance of self-concept is related to nursing's ability to remain "compatible" with other professionals (1992, p.712). Arthur, (1992) claims the constantly changing landscape of nurses' identity in the health field is a central reason for developing new instruments to identify and measure nurses' self-concept.

Theoretical Background

Marsh and Craven point out that historically, self-concept research stagnated because "everybody knows what it is" so that researchers have not felt it necessary to develop theoretical foundations or psychometric evaluations for their self-concept measures (1997, p.133). Previous investigations included the notion that self-concept is a global or all encompassing aspect of the 'self'. Key features, such as the hierarchical structure and multiple dimensions or factors remained hidden and unexplored.

Pivotal work by Shavelson, Hubner and Stanton (1976) addressed these very issues. The researchers developed a multifaceted, hierarchical model of self-concept that was to revolutionise the underlying fragmented theories of self-concept for future instrumentation. This theoretical model was of such importance that it has provided the prototype for a new generation of self-concept instruments that explore and expand the multidimensionality that now underpins self-concept research.

Understanding our self-concept is an important goal not just in our formative educational years but throughout life. The recent advances in self-concept research have occurred on multiple fronts from the theoretical underpinnings through to models and instrumentation. The most significant aspect of these new advances in self-concept research is the current ability to reveal the multidimensional structure and to clarify our understanding of how the domains within the multidimensional structure may

link together.

The significance of these major conceptual advances for nursing is that measures can now be constructed that contribute to the growing body of evidence on how discrete these domains within self-concept become in adulthood (Byrne, 1996). A solid theoretical base now exists that can provide a framework to explore and examine the various dimensions of self-concept that arise from a profession such as nursing.

A lack of understanding of the self-concept of graduate nurses is viewed as a potential problem in maintaining our new nursing work force. If nurses' self-concept can be confidently measured, then further research that focuses on exploring causal relationships such as self-concept with job satisfaction becomes possible. Previous predictors on absenteeism, job turnover, stress, poor job satisfaction and ultimately recruitment and retention have alluded to an incomplete understanding on the psychological constructs of the nurse. It is posited that accurately assessing nurses' self-concept will contribute powerful predictors needed to help solve the puzzle of low recruitment and retention.

At present, nurses' self-concept theory languishes in the grips of previous theoretical and methodological weaknesses that once plagued the broader field of self-concept research. Nurse researchers have relied upon the quick and easily administered global self-concept measures that were the hallmark of earlier self-concept research. Earlier research on nurses' self-concept has suffered from atheoretical frameworks, and a lack of attention to within-construct issues whereby instrument construct validity and reliability is demonstrated. Studies on nurses' self-concept by Arthur (1992), Dagenais & Meleis, (1982), and Walter, Davis & Glass (1999) continue to establish the nursing profession's interest in self-concept. However, there remains a difficulty in establishing a multidimensional approach that incorporates current self-concept theory.

Current nurse researchers have contributed greatly to the body of nursing knowledge through their research into clinical practices however, nurse researchers continue to use theoretically outdated and psychometrically weak measures when researching the identity and self-concept of the nurse. Current self-concept theory offers a chance to investigate the profession of nursing. As Christman explains, "Nurses are more concerned about how and less concerned about why than any other professional group" (1998, p.213). For a profession that is required to be not only technically expert but also psychologically orientated to care for people, any knowledge relating to nurses' self-concept will be crucial for the continued development and growth of the profession.

Methods

The initial construction of the nurses' self-concept measure began from informal discussions with 17 clinical nurses over a six-month period. The aim of these discussions was to obtain the opinions of working nurses regarding what they felt about themselves as nurses, and what aspects of nursing had the greatest impact on how they felt about being a nurse.

From a content analysis of the interview transcripts, several themes became evident. These same themes also appeared significant after a review of literature relating to nurses' self-

concept. The major themes established were professionalism, communication, working with others, teamwork, nursing knowledge and skills, leadership and the importance of caring.

After extensive consultation with self-concept experts (Professor Marsh and Associate Professor Craven) from the Self-concept Enhancement and Learning Facilitation (SELF) Research Centre (a research centre at the University of Western Sydney, Macarthur that specialises in self-concept research) the categories of themes developed from the initial interviews were reduced and condensed to form a group of six subscales. The group included, general nurse self-concept, caring, staff relations, communications, knowledge and skills and lastly leadership. Each of the subscales was then conceptualised in nursing terms and a pool of items was developed for each subscale.

Each pool of items contained a balance of affective (I feel) and cognitive (I think) declarative statements. For example, 'being a nurse gives me great enjoyment' (affective) and 'I am a good nurse' (cognitive). The aim of creating a balance of both affective and cognitive items was so that these items could be logically paired for analysis. An analysis of these two types of self-concept items could also be undertaken at a later stage.

The final pool of items contained 80 declarative type statements in six subscales. A small number (two in each subscale) were negatively worded with the aim of deterring respondent bias. For example, 'I find it difficult to communicate with my colleagues'. An eight point Likert type scale was utilised for the nurses' self-concept measure with nurses being asked to rate each item from a scale of one (definitely false) through to eight (definitely true). The eight point scale is also utilised in the preceding section of the survey so it made considerable substantive sense to continue with the same type of scale.

The preceding section of the survey contains four subscales from the Self-Description Questionnaire III (SDQIII), (Marsh, 1987). Of the 13 subscales that make up the SDQIII, four were viewed as of particular relevance for the older adult and consequently the nursing profession. The subscales Emotional Stability, Honesty/Trustworthiness, Problem Solving and General self-concept were thought to provide some insights into nurses' personal self-concept.

An expert panel was asked to review and comment on the newly created self-concept measure. The panel consisted of nine people who were deemed by their peers to be sufficiently expert in the area of measurement development, professional nursing and self-concept. Six people from the expert panel were nursing experts, one of which is also the author of a nursing self-concept instrument. The other three people were self-concept experts.

The expert panel recommended changes to the nurses' self-concept measure such as rewording items that contained triple groupings. For example, 'I get along well with doctors, nurses and other health professionals'. It was felt that the participant might be unable to respond to such items due to differences in these three groups. Consequently, such items were changed to single groups. For example, 'I get along well with other health professionals'.

The subscale of knowledge and skills was also deemed potentially problematic by the expert panel. Confusion may arise over whether knowledge and skills can be understood as one category or whether in fact, the subscale would be measuring

two different aspects of nurses' self-concept. The subscale was recast as knowledge only with all items reflecting this change. The revised pilot instrument consisted of 80 items in six subscales.

The Pilot

A pilot study of the new nurses' self-concept measure was conducted with a group of nursing students who were graduating midyear (1999) from the University of Western Sydney Macarthur. The sample size of the group (n=50)

allowed for initial analysis of the six subscales. Exploratory analyses were conducted as well as correlational and reliability analyses on all items and scales.

The initial reliabilities, although performed on a small sample, were extremely encouraging with coefficient alphas ranging from 0.89 through to 0.95 (see Table 1). After a careful review of the correlations, reliabilities, exploratory and confirmatory factor analyses, and in consultation with the Self Research Centre, the self-concept measure was shortened from the original pool of 80 items to 63.

Table 1:
Scale Reliabilities for Each Cut to Nurses' Self-Concept Measure

Scale	80 items	Number of items in each scale	63 items	Number of items in each scale	50 items	Number of items in each scale	36 items	Number of items in each scale
	Pilot n=50		Group one n=506		Group two n=528		Combined n=1034	
General	.9568	20	.9336	13	.9082	10	.9331	6
Care	.9236	12	.9139	10	.9050	8	.8897	6
Staff Relations	.9455	12	.9233	10	.9207	8	.8938	6
Communication	.9159	12	.9167	10	.9220	8	.9214	6
Knowledge	.8752	12	.8614	10	.8809	8	.8321	6
Leadership	.9364	12	.9340	10	.9432	8	.9298	6

Participants

The participants for this study came from two different sources. The participants for Group One were in the last semester of the Bachelor of Nursing program, at six universities in the Sydney region. Since the aim was to measure the self-concept of this group again as registered nurses, and many in this group moved from their addresses once they graduated, all universities were approached. Five hundred and six students consented to participate in the study with 482 providing a follow up address for T2 administration.

Once all data was collected and analysed from Group One (n=506) the nurses' self-concept measure was again shortened. The bases for removal of items were poor item/scale correlations and poor indicators in exploratory and confirmatory factor analyses. The newly trimmed measure of 50 items in six subscales was then utilised for Group Two administration.

Due to the longitudinal nature of this study, a decision was made to provide as many working nurses as possible, the opportunity to participate in the study. This decision was also determined on the history of notoriously low response rates from working nurses. The participants for Group Two were randomly selected from the NSW Nurses Registration Board confidential database for 1999. Two thousand working nurses were selected, and invited by mail, to complete the survey and return it in a reply paid envelope. A reminder letter was sent three weeks after the initial mail-out. At the end of two months 528 (26.4%), nurses had completed the survey.

Demographical Details

Group One

Five hundred and six students nurses participated in the survey from six universities in the Sydney region between August and October 1999. Over half of the participants gave their country of birth as Australia (64%). One hundred and sixty three students came from 55 countries ranging from Mozambique to Brunei. The mean age of participants was 22 years, however, one quarter of all participants were over 32 years of age. Females dominated the sample at four hundred and twenty seven (85%) with seventy five (15%) being male.

Although two hundred and eighty nine (58%) of students had no nursing experience, over 40% ranged from at least one year in the health industry through to 27 years. Similarly to experience 55% of students had no formal nursing qualification. Of the remaining 45% most either were assistants in nursing or registered enrolled nurses (18% for both categories).

Group Two

Of the five hundred and twenty eight participants in group two who participated in this survey from November 1999 to January 2000, most (79%), listed their country of birth as Australia. Of the remaining 21%, the United Kingdom and New Zealand were the most often cited countries. The age of participants ranged from 22 through to 79, with a mean age of 42.4 years of age. Most participants were female

(94.6%) and most participants utilised the mail version of the survey (96.8%).

The mean number of years for experience in nursing was 22 and the range was from one year through to 54 years. Over 64% of participants stated their qualifications at the certificate level and only 18% had obtained a degree in nursing.

The Internet Website

The University of Newcastle provided access for their students to participate only via the Internet. Consequently a website was constructed using the survey in its entirety and participants submitted their responses via a secure encoded email to the researcher. A commercial Website designer (Liquidweb) created the electronic survey. The registered nurse group (group two) was also invited to use the Website. Participants were asked for an email address for T2 administration.

The use of three different types of data collection formats may have an impact on the validity of the results. Group One participants were approached for their cooperation in the study at their universities and the survey was administered in a group situation. Group Two participants received a letter of invitation and a survey via a mailout and both groups were invited to use the electronic survey. In all cases though, the ideology of self-report and self-evaluation was not undermined.

All participants who have elected to complete the electronic version of the survey will be compared to paper versions at the end of T2 administration for any possible variation in results. Over 350 participants have nominated to complete the electronic version in T2 by supplying their email address for contact. As electronic surveying is a relatively new approach to data collection in nursing research, there is very limited literature that discusses this method of data collection (Lakeman, 1996 & 1997).

Results

The creation of a valid and reliable measure for nurses' self-concept occurred through a series of statistical analyses and consequent trimming of the items within the six subscales. In each step reliabilities, item/scale correlations, exploratory factor analysis and confirmatory factor analyses were utilised and carefully scrutinised as a guide for logical trimming of the scales.

The initial pilot run with 50 cases could only provide limited insight into the validity of the measure. The small sample size justified the need to progress cautiously with the trimming of items. Negatively worded items performed poorly in all analyses from the original 80 item measure and were amongst the first items to be trimmed. The original six factors appeared to be justified with eigenvalues being greater than 1.0 so 17 items across the subscales were trimmed leaving a measure of 63 items for use in Group One.

The results of the statistical analyses for the 63 item, six factor measure, as administered to Group One, showed a greatly improved factor structure utilising principal axis factoring with an oblique rotation. Both item and scale reliabilities ranged from .86 to .93 (see Table 1). The goodness-of-fit index (GFI), utilising

maximum likelihood (ML) methods in LISREL (Linear Structural Equation Modeling) had improved greatly but remained well under the desired level of .9. In addition, item and total scale correlations remained extremely problematic. Four scales correlated over .8 (general nurse self-concept with care, staff relations with communication) and some items correlated more with other scales than their own. As a result of the problematic results the self-concept measure was trimmed for the second time to 50 items in six scales and administered to Group Two via a mailout.

An analysis of the 50 item nurses self-concept measure again showed marked improvement in both exploratory and confirmatory factor analyses with over 68% of the variance now explained by the six factors. The self-concept measure contained ten items in a general scale and eight items in the care, staff, communication, knowledge and leadership scales. All items were positively worded and each scale contained a balance of affective and cognitive items. Analyses that were run using item pairs (one cognitive item with one affective item) showed clear factor loadings and goodness of fit indices (GF, TLI, and RNI) of over .8. Reliabilities remained over .88 for each item (see Table 1). Scale and correlations for each item and total scale had improved.

After an in-depth review of the modification indices, correlated uniquenesses and item/scale correlations, and consultation with the Self Research Centre, the measure was again trimmed to a 36 item, six-factor measure. This was to be the final change to the item number and structure of the nurses' self-concept measure. All analyses for the 36 item measure were run on individual groups as well as on a sample size of 1034 cases (combined Group One and Two) (for EFA see Table 2). After item pairing, factor loadings showed a very clear six factor model (see Table 3) and the goodness-of-fit index on paired items now exceeded .90 (see Table 4).

The correlations between the scales had now dropped to a more acceptable level but remained quite high for staff relations and communications. There are a number of reasons why these two scales might correlate more highly than other scales in the nurses' self-concept measure. Arthur (1992) found, in developing an instrument for professional nursing self-concept, that the original communications scale was so problematic in statistical analysis it all but disappeared in the final version in favour of a staff relations scale. Participant response was also found to be somewhat undifferentiated in these two scales suggesting either response fatigue (there were five instruments in the entire survey) or bias due to item wording and placement in the overall nurses self-concept measure. Further scrutiny of these two scales will occur in the T2 administration.

Preliminary analysis of scale correlations between the four scales of the SDQ and the six scales of the nurses' self-concept measure reveal some correlation between the two self-concept measures and individual scales. However, these correlations are not high which in turn helps to establish that the two sections are measuring similar constructs such as self-concept and yet maintain their discreteness in the multidimensional constructs of self-concept.

Table 2:
Factor Analysis Both Groups (N=1,034) 36 Single Items

Factor	1	2	3	4	5	6
Item number	Factor Pattern Matrix					
General						
NSDQ1	-.04	.80	-.00	.02	.05	.17
NSDQ6	-.07	.75	-.10	.02	.06	.18
NSDQ17	-.01	.79	.00	.05	.06	.17
NSDQ25	.12	.75	.00	-.07	.08	.14
NSDQ28	.04	.66	-.17	.20	-.01	.10
NSDQ37	.01	.61	-.09	.27	-.03	.05
Care						
NSDQ33	.08	.38	.11	.19	.42	.02
NSDQ46	.13	.45	-.07	.13	.43	-.12
NSDQ2	-.11	-.13	-.01	-.07	.80	.14
NSDQ9	-.02	-.08	-.00	.02	.75	.09
NSDQ29	.15	.08	-.18	.00	.47	-.05
NSDQ38	.24	.04	-.01	.06	.68	.02
Staff Relations						
NSDQ3	-.18	.03	.03	.07	.23	.76
NSDQ10	.00	.21	-.26	-.05	.00	.57
NSDQ18	.06	.19	-.02	.19	-.00	.63
NSDQ15	.42	-.04	-.10	-.02	-.09	.54
NSDQ24	.26	-.13	-.00	-.00	.01	.71
NSDQ34	.30	-.10	.03	.06	.09	.60
Communication						
NSDQ20	.33	.07	-.04	.42	.12	.16
NSDQ30	.71	.03	-.03	.02	.20	.06
NSDQ7	.67	.01	-.08	.01	.03	.04
NSDQ35	.74	-.00	-.06	-.05	.09	.11
NSDQ40	.67	-.02	.00	.08	.17	.16
NSDQ48	.70	-.01	-.16	.11	-.00	.14
Knowledge						
NSDQ26	.08	.28	.00	.55	-.18	.03
NSDQ49	.00	.20	.02	.71	-.02	.17
NSDQ5	-.15	.04	.07	.66	.13	.24

NSDQ13	.05	-.24	-.08	.67	.22	.08
NSDQ21	.14	-.28	-.12	.68	.15	.02
NSDQ31	.12	.11	-.30	.56	.06	-.08
Leadership						
NSDQ14	.09	.12	-.75	-.03	.04	.15
NSDQ22	.04	-.04	-.76	.25	.07	.00
NSDQ32	.02	.02	-.75	.18	.01	.04
NSDQ45	.15	-.09	-.75	.09	.13	.05
NSDQ8	.05	-.02	-.78	-.08	.11	.03
NSDQ16	.12	.06	-.78	-.11	.05	.13

Table 3:
Factor Analysis Both Groups (N=1034) 36 Paired Items

Factor	1	2	3	4	5	6
Item Pair number	Factor Pattern Matrix					
GENP1	.03	.82	.00	.04	.11	.14
GENP2	.07	.79	.06	.12	.06	.12
GENP3	.08	.75	.02	.10	.08	.14
CAREP1	.04	.15	-.03	.08	.15	.74
CAREP2	.11	.09	.03	.07	.04	.77
CAREP3	.20	.03	.16	.03	.05	.67
STAFFP1	.10	-.03	.04	.04	.81	.09
STAFFP2	.09	.10	.11	.01	.75	.08
STAFFP3	.19	.11	.00	.14	.69	.06
COMMP1	.74	.06	.02	.14	.09	.06
COMMP2	.76	.02	.05	-.03	.15	.13
COMMP3	.65	.05	.13	.13	.13	.10
KNOWP1	-.01	.35	-.04	.72	.07	-.07
KNOWP2	.14	.08	.17	.67	.02	.22
KNOWP3	.10	-.00	.01	.80	.09	.07
LEADP1	.03	-.00	.83	-.02	.13	.11
LEADP2	.16	.01	.84	.03	.06	.03
LEADP3	.10	.04	.78	.13	.06	.06

Table 4:
Excerpt from CFA Using Both Groups (N=1034) 36 Paired Items

PHI	T1GEN	T1CARE	T1STAFF	T1COMM	T1KNOW	T1LEAD
T1GEN	1.000					
T1CARE	.501	1.000				
T1STAFF	.514	.523	1.000			
T1COMM	.295	.556	.715	1.000		
T1KNOW	.442	.550	.550	.543	1.000	
T1LEAD	.305	.425	.466	.532	.469	1.000

CHI-SQUARE WITH 120 DEGREES OF FREEDOM = 373.93 (P = .000)
 GOODNESS OF FIT INDEX = .908
 ADJUSTED GOODNESS OF FIT INDEX = .869
 ROOT MEAN SQUARE RESIDUAL = .054

Discussion

The development of the nurses' self-concept measure has been deliberately arduous and cautious. Each step in the development has been systematically examined which helps to further the evidence for strong construct validation. Whilst both exploratory and confirmatory factor analyses were utilised in the step by step construction of factors and overall model, it was primarily the use of confirmatory factor analyses that affirmed the 'a priori' six subscale measurement model.

The final 36 item, six factor model demonstrates a reasonable overall model fit. Some correlation between scales could be expected based on the Shavelson *et al.* (1976) and subsequent Marsh Shavelson (1988) models of multidimensionality in self-concept models. However, the staff and communications scales have continued to be problematic from the initial conceptualisation and are now best represented in the six item scales. Perhaps a reason for such problems lies with the fact that nurses may not readily distinguish any differences between communicating with other persons and working together with other persons. A nurse might assume if she/he is able to relate comfortably in the former then the later must also true.

The final trim of the nurses' self-concept measure from 50 items to 36 items unfortunately destroyed the balance of affective and cognitive items in four of the six scales. Exploratory factor analysis revealed a clear picture of the six factors however, the items that correlated most highly with other scales were mostly found to be of one type, either cognitive or affective. A 12 factor model was attempted through analysis but unfortunately revealed even stronger evidence of correlation amongst some items again, particularly in communication and staff relations subscales. The decision was made to trim the measure irrespective of the cognitive or affective design of the item; therefore, the original balance has been lost in three of the six scales.

Nurses in Group One (student nurses) have rated their self-concept in the six subscales in a highly positive manner. This suggests that student nurses expect they will be comfortable and confident with how they feel and think about themselves as graduate nurses. Total scores for group one (see Table 5) shows an even range of scores for all subscales except for Leadership. Any exposure to leadership roles is unlikely to have occurred during their nursing course. The lower mean score for leadership may also highlight the need to incorporate further studies on leadership through the undergraduate course.

Nurses in Group Two (experienced nurses) have also rated their self-concept in a positive manner suggesting that experienced nurses are currently comfortable and confident on how they feel and think about themselves as nurses (see Table 6). Again however, leadership is the lowest of all mean scale scores. This may suggest that nurses are less comfortable with their self-concept in areas requiring leadership throughout their careers.

As this is the first trial after construction of the nurses' self-concept measure confidence has yet to be gained in test/retest reliabilities and model stability for different nurse samples. Interest will centre on any changes to the self-concept of Group One nurses in Time two after they have traversed the chasm of

student to registered nurse. What will be the impact on graduates' self-concept from the health/hospital system?

Table 5:
Totals For Scales Group One Based On 36 Item Model (N=506)

Scale	Mean	S.D.	Range	Min	Max
General self-concept	38.59	6.87	40.00	8.00	48.00
Caring	38.84	5.25	36.00	12.00	48.00
Staff Relations	37.66	5.17	36.00	12.00	48.00
Communication	37.58	5.42	38.00	10.00	48.00
Knowledge	37.57	5.22	39.00	9.00	48.00
Leadership	29.74	7.82	42.00	6.00	48.00
Total	219.91	29.25	209.00	79.00	288.00
	1				0

Table 6:
Totals For Scales Group Two Based On 36 Item Model (N=506)

Scale	Mean	S.D.	Range	Mini	Maxi
General self-concept	39.54	6.12	34.00	14.00	48.00
Caring	41.17	4.09	26.00	22.00	48.00
Staff Relations	40.28	4.08	28.00	20.00	48.00
Communication	40.52	4.28	23.00	25.00	48.00
Knowledge	38.50	5.05	34.00	14.00	48.00
Leadership	36.04	6.74	40.00	8.00	48.00
Total	236.05	24.21	126.00	162.00	288.00
				0	0

Implications

The creation and development of a new and psychometrically sound instrument to measure nurses' self-concept has national and international application across a broad spectrum of nursing specialties. This project offers a vision for the future by providing the opportunity to evaluate the self-concept of the largest working group within the health care industry. Desirable outcomes for nurses in their graduate year can be the target of programs that support and enhance the graduate's self-concept with realistic goals for workplace reforms. Finally, substantial advances in the theory of discreet factors within adult self-concept can be explored.

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Self-Concept and Social Comparisons in Learning Disabled Students Attending Mainstream and Special Schools: Does Integration Have an Impact?

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This study explored the self-concept and social comparisons made by two groups of learning disabled (LD) students, aged 11-16. One group attended special schools (n = 111), whilst the other group attended mainstream schools in which they received special educational support (n = 69). The Harter Self-Perception Profile for Learning Disabled Students (SPPLD) was used to measure the students' self-perceptions in ten domains. A questionnaire entitled 'Who Am I Like' was used to assess the social comparison groups the students employed when completing SPPLD. The findings suggest that school placement has a significant effect on the self-concept of LD students. Mainstream school students were found to have significantly lower perceptions of their General Intellectual Ability and Maths Competence than students attending special schools. School placement also had an effect on the social comparison groups employed by the two groups of students, this in turn influencing self-concept. The findings have implications for policies of inclusive education.

Self-concept and Social Comparisons

It has been proposed that students with learning disabilities are vulnerable to poor self-concepts due to their academic failure, the stigmatising nature of their learning problems, and the segregation from mainstream schooling that many learning disabled students experience (e.g. Calhoun & Elliot, 1977; Gorlow, Butler & Guthrie, 1963; Meyerowitz, 1962; Piers & Harris, 1964). In contrast more recent research that has investigated the self-concept of students with learning disabilities attending special schools compared to students without learning disabilities has often found fewer differences than expected (e.g. Forman, 1988; Crabtree & Rutland, in press). The lack of any major difference in self-evaluation between adolescents with learning disabilities and non-disabled individuals suggests that adolescents with learning disabilities may develop strategies to maintain positive self-evaluations. Indeed, Crocker & Major (1989) outlined three mechanisms or processes by which stigmatised individuals may protect their self-concept: (a) attributing negative feedback to discrimination against the group; (b) selectively comparing outcomes with those of the in-group, rather than with a relatively advantaged out-group, and (c) strategically devaluing those dimensions of comparison on which their group typically performs poorly and valuing those attributes on which their group excels.

The second mechanism identified by Crocker and Major (1989) is the main focus of this study. This mechanism involves the selective comparison of outcomes with in-group members rather than with members of relatively advantaged out-groups. The tendency of individuals to make in-group social comparison as a means of buffering the self-concept has been noted by various psychologists (e.g. Festinger, 1954; Gibbons, 1986; Tajfel & Turner, 1986). Previous research has indicated that the reference group used by children with learning disabilities affects self-esteem (Gibbons, 1981; 1985b; Harter, 1986). For example, Harter (1986) found that 'mainstreamed' children with a mental handicap perceived their scholastic ability as equal to that of 'normal-IQ' children, whereas 'mainstreamed' children with a learning disability (but 'normal IQ') perceived their scholastic competence as lower than that of 'normal-IQ', non-learning-disabled children. Harter explained this paradox by examining the comparison groups that each group reported using when

making their self-perceptions. Children with a mental handicap regularly compared themselves with their mentally handicapped peers, whereas children with a learning disability reported comparing themselves consistently with 'normal-IQ' children without a learning disability.

It has been suggested by Veroff and Veroff (1980) that the school environment emphasises social comparison. It would appear that from the very start of their school career, children experience some form of evaluation with reference to the ability of other children that surround them. This is initiated through practices such as the grading of students, ability-level class grouping and the various forms of praise that are given to students. Therefore, this is a particularly pertinent issue for children with learning disabilities, as they are a minority group who generally have low levels of academic achievement amongst a majority group of children without learning disabilities who generally display higher levels of academic achievement.

Research Investigating Self-Concept and Social Comparison Processes in Stigmatised Groups

Research which has specifically investigated the social comparisons used by individuals who belong to stigmatised groups, such as individuals with learning disabilities, has had mixed findings. The proposition that a special classroom environment provides the opportunity to engage in positive social comparisons has been demonstrated in two related studies conducted by Towne and Joiner (1966) and Schurr (1967). In the first study, conducted by Towne and Joiner, 62 students placed in special classes were given the General Self-Concept of Ability (GSCA) measure to complete. It was found that their GSCA scores increased over the period of a year. In the second study, Schurr found that if the students remained in the special classes for a second year their GSCA scores continued to rise, whereas if they were placed back in mainstream classes their GSCA scores were reduced.

Coleman (1983) also found that part-time and full-time special class placement had the effect of enhancing the self-esteem of children with learning disabilities compared to those who were placed in mainstream classes. This was despite the prediction made by the students' mothers that special class

placement would reduce their self-esteem. In the three studies conducted by Towne and Joiner (1966), Schurr (1967) and Coleman, the assumption is made that the students in special class placement must be making different social comparisons to those who are placed in mainstream classrooms. The social comparisons made by the students are not directly assessed in any of the studies, leaving the possibility open for other factors to account for the observed differences in self-esteem. For example, in all three studies, all those students with higher levels of self-esteem attended special classes. Therefore, it may have been some supportive element of these special classes that promoted a positive self-esteem, rather than the opportunity for them to make social comparisons with students of similar ability.

In a study by Strang, Smith and Rogers (1978) an attempt was made to directly manipulate the social comparison group used by academically handicapped children (aged between 8 years and 3 months and 11 years) when completing a measure of self-concept. The children either had to compare their abilities with normally achieving peers or complete the measure without any explicit reference to a comparison group. It was found that those children asked to compare themselves with normally achieving peers had significantly lower perceptions of themselves than those children who had not been specifically told to compare themselves with another group. While this study appears to clearly show that social comparison with a more able group reduces self-perceptions, it is not without problems. A criticism of this study is that it is unclear against whom the group that was given no explicit instructions regarding social comparison group were comparing themselves. This is particularly significant because in other research it has been found that learning disabled children do not necessarily spontaneously choose other learning disabled children as a social comparison group (Renick and Harter, 1989).

Both Coleman (1983) and Strang *et al.* (1978) used the Piers-Harris scale to measure the self-perceptions of the children involved in their studies. A criticism of this measure made by Renick and Harter (1989) is that, although this scale includes items from a diverse range of areas, it provides only a global measure of self-esteem. Harter (1982; 1983; 1985) and others (Shavelson, Hubner & Stanton, 1976; Marsh and Shavelson, 1985) have found, though, that children make clear distinctions between specific domains of their lives when evaluating themselves. Therefore, studies that have used the Piers-Harris scale suffer a limitation in that they cannot take account of the fact that children may evaluate themselves differently in different domains of their lives.

Renick and Harter (1989) conducted a study investigating the effect of altering the social comparison groups used by learning disabled students on their self-concept. The learning disabled students were placed in mainstream schools but attended learning disabilities resource rooms for a certain period of time each day. This provided the students with two possible social comparison groups: Other learning disabled students and mainstream students without learning disabilities. The students completed the Harter Self-Perception Profile for Children (SPPC), initially spontaneously choosing one of the available comparison groups. The students then completed the SPPC again, this time using the comparison group they had not used

previously. It was found that the LD students perceived themselves to be more academically able in the learning disabled classroom compared to the regular classroom.

Unexpectedly, 84% of the learning disabled students spontaneously compared themselves with their regular classroom peers. This result is contrary to Festinger's (1954) social comparison framework, which theorises that individuals are more likely to make comparisons with similar rather than dissimilar others, which in turn should result in more positive self-evaluations than comparisons with more able out-groups. If this were the case then the vast majority of learning disabled students should have spontaneously chosen their learning disabled peers in the resource facility they attended as their social comparison group.

Regardless of these findings, Renick and Harter's study clearly demonstrates that the use of different social comparison groups can have an impact on the self-perceptions of students with learning disabilities. Whether the study would be particularly valid in real life settings is somewhat questionable, since the students were artificially made to make social comparisons with a group they did not spontaneously choose to make social comparisons with. Renick and Harter (1989) also suggested that the SPPC might not be an appropriate measure of self-perceptions for students with learning disabilities. In fact, they have developed a measure of self-perceptions specifically designed for students with learning disabilities, known as the Self-Perception Profile for Learning Disabled Students (SPPLD) (Renick & Harter, 1988). It could also be argued that the explicit instructions given to participants in studies, such as with Renick and Harter (1989) and Strang *et al.* (1978), may have focussed the participants' attention on the social comparison process, highlighting the idea that differing social comparison groups can result in a difference in rating one's competence.

Smith and Nagle (1995) conducted a study investigating the self-perceptions and social comparisons made by US LD students in grades 3 and 4. All students attended 'regular' elementary schools in which they received special educational services in a resource setting for 1 to 2 hours a day. The SPPLD was used to measure the students' self-perceptions and a scale relating to social comparison choice was used to assess the social comparison group used when evaluating their self-perceptions. Students' self-perceptions were not found to be affected by their choice of reference group. This finding is contrary to social comparison theory, which proposes that making social comparisons with similar others is likely to protect or enhance an individual's self-perceptions. Smith and Nagle (1995) suggest that their findings may be influenced by the relatively young age of their sample (mean age 117 months). Previous research by Renick and Harter (1989) has also suggested that older children are more likely to make use of social comparisons than younger students.

Current UK Educational Policy

Research into the influence that social comparison groups have on the self-concept of students with LD is of particular interest at this present time. This is because current UK policy regarding the education of children with LD highlights the

promotion of inclusion into mainstream schooling wherever possible. Therefore it would appear that the social comparison groups students with LD are exposed to will undergo a great deal of change in the near future.

The current educational policy adopted by the UK was prompted by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) Salamanca World Statement on Special Educational Needs (1994). It was proposed by UNESCO that the inclusion of children into ‘regular’ schools is the most effective means of combating discriminatory attitudes, creating welcoming environments building an inclusive society and achieving education for all. It could therefore be argued that according to the UNESCO statement inclusive education should promote positive self-concepts in children with learning disabilities.

Aims

This study will investigate the multidimensional facets of self-concept using the Self-Perception Profile for Learning Disabled Students (Renick & Harter, 1988) of students with LD, aged 11 to 16 years, either attending special schools or integrated into mainstream schools. The social comparison group used by the two groups of LD students will also be explicitly examined by asking with whom they compared themselves when evaluating their competencies. It is expected that the two groups of students will use different social comparison groups due to the differing social groups that are accessible to them.

Previous research would suggest that students attending special schools should make social comparisons with other LD pupils, as this is the most accessible comparison group to them. According to the social comparison approach this will result in positive self-evaluations, as levels of competence amongst LD students are likely to be equivalent. In contrast, it is expected that integrated LD students will be more likely to use students without LD as their social comparison group, as this group is more accessible than other students with LD. It is predicted that this may result in more negative self-evaluations, since students without LD are likely to have higher levels of competence than students with LD. Since this study is investigating multidimensional facets of self-concept, it is expected that any differences observed between the two groups of LD students will be limited to academic domains, as these are the domains in which LD students primarily differ from students without LD.

Methodology

Participants

In total there were 180 participants involved in this study, 111 of these were secondary school students with learning disabilities who attended one of two special schools. The other 69 participants were secondary school pupils with learning disabilities who attended one of five mainstream schools with educational resource units. These students spent the majority of their time in school in mainstream classes, attending the educational resource units for 1 to 2 hours a day for numeracy and literacy classes. All participants came from schools within

in one local education authority (LEA) in the South of England. In both settings the proportion of males to females reflects the make up of the learning disabled population, with a greater proportion of males receiving statements of special educational needs (Table 1). The mean age of the LD participants who attended special schools was 13.3 years (standard deviation (SD) = 1.6), the mean age of LD participants attending LD units in mainstream schools was 13.4 years (SD = 1.6). All pupils completed the questionnaire in the spring and summer terms of 1999.

Table 1:
Number of Participants by School Placement, Age And Gender

	Special Schools		Mainstream Schools	
Age	Males	Females	Males	Females
11	11	5	5	5
12	20	6	14	2
13	15	5	7	3
14	15	2	4	4
15	20	3	14	8
16	8	1	2	1
Mean age:	13.4	12.8	13.3	13.5
Total	89	22	46	23

All participants in this study had received statements of special educational needs labelling them as having moderate learning difficulties (MLD). Lewis (1995) stated that “in the UK, MLD has traditionally referred to children with learning difficulties with, in IQ terms, scores in the 55-70 range” (p. 57).

Instruments

A modified version of the Self-Perception Profile for Learning Disabled Students (SPPLD) (Renick and Harter, 1988) prepared for English LD samples was used to measure the self-concept of the participants. This instrument is designed to measure the self-perceptions of LD students in ten domains, five of these domains are academic, four are non-academic and one is Global Self-Worth. In progress research by Crabtree has shown the SPPLD to have sound psychometric properties with regard to UK samples of students identified as having moderate learning difficulties (MLD) aged between 11 and 16.

The social comparison groups used by the participants when evaluating their self-perceptions in the nine domain specific subscales of the SPPLD was assessed using the ‘Who I Am Like’ questionnaire. This questionnaire enabled the assessment of whether the LD participants chose other LD individuals with whom to make social comparisons or whether they chose individuals without LD. The ‘Who I Am Like’ questionnaire used in this study was based on the questionnaire designed by Renick and Harter (1988) for assessing comparison groups. Both groups of students were provided with several alternative social comparison groups that they might use when evaluating their self-competencies. These social comparison groups reflected two general comparison groups: in-groups (others with LD) and out-groups (others without LD). This study employed several

versions of the 'Who I Am Like' questionnaire to ensure that the questionnaire was relevant to the participants who completed it. For instance, each of the mainstream schools from which LD students were sampled had different names for their educational resource unit which the LD students attended for certain classes. Each school therefore received a specific version of the questionnaire that included the particular name given to their educational resource unit as one source of individuals with which social comparisons could have been made.

Procedure

In the special schools involved in the study, the researcher supervised the administration of the questionnaires. This was done with the help of class teachers and classroom support assistants. The instructions for completion of the questionnaires and the questions were read out to students by the researcher. This was done due to the possibility that some of the students may have encountered difficulties in reading the questionnaire if they were left to complete it by themselves. In some cases, further explanation of questions had to be given, but at no point was any attempt made to answer the questions for the students. The SPPLD and 'Who I Am Like' questionnaire were administered to a whole class at once (i.e. to groups of 6 to 12 students) at a convenient time during the school day.

In the mainstream schools, the researcher again supervised the administration of the questionnaires with help from the class teacher and classroom assistants. The questionnaire administration took place at a time during the school day when all of the LD students were timetabled to be taught in the educational resource unit. Administration was conducted for groups of between 10 and 15 students. As with the LD students attending LD schools, the instructions for completion of the questionnaire and questions on both questionnaires were read out to the students in order to aid completion.

The duration of the administration of the questionnaires for both groups of LD students was between 35 minutes and 1 hour. In both samples the students first completed the SPPLD and only then did they complete the 'Who I am like' questionnaire to assess which social comparison group they used when evaluating their self-perceptions. Not unlike self-esteem, it is thought that student self-perceptions on the Global Self-Worth subscale would not arise through social comparisons. This domain is designed as a more general measure reflecting how the individual feels about him/herself. The social comparison group used when making evaluations on each of the remaining nine domain specific subscales was analysed using chi-square, to assess if an association existed between school placement and social comparison group selected. Providing parametric assumptions were met, comparisons were made between the mean subscale item scores on the SPPLD of the two groups of students using t-tests.

Results

Social Comparison Groups Chosen by Integrated and Special School LD Students

Frequencies of selected social comparison group for the two groups of LD students are given in Table 2. It can be seen that there was a trend for students attending special schools to make social comparisons with other individuals in their social group, whilst for LD students attending mainstream schools there was a trend for them to make social comparisons with individuals in their out-group. Chi-square analyses revealed a significant association between school placement and selected social comparison group on each of the nine domain-specific subscales of the SPPLD (shown in Table 2). The results from the chi-square analyses provide statistical support for the frequency trends observed in Table 2.

The mean subscale item scores on the Self-Perception Profile for Learning Disabled Students for the two groups of LD students can be seen in Table 3, along with standard deviations and the number of students in each group. The participants mean scores on each of the domains were found to be normally distributed and variances across groups were found to be homogenous. It was therefore considered appropriate to use t-tests to analyse group differences.

Significant differences were found between the groups on two subscales. On the General Intellectual Ability subscale a significant difference was found ($t(170) = 2.388, p = 0.001$) showing students attending LD schools to have significantly higher scores than students with learning disabilities attending mainstream schools. Similarly, on the Maths Competence subscale a significant difference was found between the two groups ($t(172) = 2.385, p = 0.018$) showing students attending LD schools to have significantly higher scores than students with learning disabilities attending mainstream schools.

Discussion

The Association Between School Placement and Selected Social Comparison Group

It was found that in all nine domain specific subscales of the SPPLD there was a significant association between school placement and the social comparison group selected by students when evaluating their self-competencies. As expected, the majority of students with LD attending special schools chose other LD peers within their school as their social comparison group. In contrast, the majority of LD students in mainstream schools chose students in regular classes as their social comparison group rather than other students with LD in the educational resource units they attended (Table 2). This finding may explain why LD students attending mainstream schools displayed more negative self-perceptions on the academic domains of General Intellectual Ability and Maths Competence compared to individuals attending special schools.

Table 2:
Frequencies of Selected Social Comparison Group on Each Subscale for LD Students Attending Special Schools and Mainstream Schools, and Chi-Square Results

Subscale	Special Schools		Mainstream Schools		X ²	P
	In-group	Out-group	In-group	Out-group		
General Intellectual Ability	81	29	17	46	35.5	<0.001
Reading Competence	94	16	26	37	36.8	<0.001
Writing Competence	86	24	15	49	49.7	<0.001
Spelling Competence	85	25	25	36	22.5	<0.001
Maths Competence	88	22	19	42	39.9	<0.001
Athletic Competence	82	26	9	53	59.7	<0.001
Social Acceptance	71	39	14	48	27.9	<0.001
Behavioural Conduct	89	20	10	52	69.6	<0.001
Physical Appearance	79	30	10	50	48.3	<0.001

Group comparisons of subscale scores

Table 3:
Mean Subscale Item Scores for the Three Samples, Standard Deviations and Number of Subjects Shown in Parenthesis

Subscale	Special Schools		Mainstream Schools		Difference
	Mean (SD)	n	Mean (SD)	n	p-value
General Intellectual Ability	3.10 (0.61)	107	2.40 (0.50)	65	0.001
Reading Competence	2.54 (0.79)	108	2.64 (0.80)	67	0.447
Writing Competence	2.59 (0.78)	107	2.52 (0.69)	67	0.851
Spelling Competence	2.55 (0.84)	108	2.53 (0.75)	69	0.523
Maths Competence	2.70 (0.81)	105	2.41 (0.71)	69	0.018
Social Acceptance	2.96 (0.69)	106	3.04 (0.72)	66	0.468
Athletic Competence	2.85 (0.74)	109	2.69 (0.76)	66	0.177
Behavioural Conduct	2.95 (0.73)	106	2.88 (0.70)	63	0.575
Physical Appearance	2.90 (0.81)	105	2.76 (0.79)	67	0.271
Global Self-Worth	3.02 (0.67)	108	3.02 (0.71)	68	0.952

SD = standard deviation

n = number of participants

School Placement and Self-Concept

The findings offer some support for the social comparison approach to self-concept formation. LD students attending special schools were found to have generally positive self-concepts, scoring significantly higher than did integrated LD students on the General Intellectual Ability and Maths Competence subscales of the SPPLD. It has been shown that the majority of LD pupils attending special schools use their LD peers as a social comparison group. Therefore, as their performance in these domains is relatively similar to that of their LD peers, they should perceive their competence in these domains positively. In contrast, LD students attending mainstream schools were shown to use students without LD as a social comparison group since in mainstream schools there is a smaller population of LD students to use as a social comparison

group. As the students without LD generally display higher levels of academic ability than students with LD, it is likely that the LD students attending mainstream schools would display poorer self-perceptions.

Interestingly on the Reading, Writing and Spelling Competence subscales no significant differences were observed between the two groups of LD students. This finding is contrary to the social comparison approach which would predict that special school LD students would display higher self-perceptions in these areas due to making social comparisons with other individuals of similar ability, whilst LD students attending mainstream schools would have lower self-perceptions due to making social comparisons with individuals who have higher levels of ability. The domains of Spelling, Writing and Reading are particularly salient to students with LD, as these are the academic areas in which

their learning disability tends to have greatest impact. In the case of special school LD students, it would appear that making social comparisons with similar others does not promote a positive self-concept in the Reading, Writing and Spelling Competence domains. It is possible that students with LD are too aware of their difficulties in these particular areas of their lives to engage in social comparisons that enhance their perceptions of competence.

The other domain-specific subscales upon which no significant differences were found between the two groups were Physical Appearance, Social Acceptance, Athletic Competence, and Behavioural Conduct. Previous research that has investigated the self-perceptions of students with learning disabilities in comparison to students without learning disabilities has found that differences generally exist between these groups on academic domains only. Therefore, the fact that no differences were observed between the two groups on these domains supports previous research.

Overall, the results of the comparison of domain scores between the LD special school group and LD mainstream school groups suggest that LD special school students have higher academic self-perceptions than LD mainstream school students. In terms of non-academic self-perceptions and Global Self-Worth the results suggest that LD students differed little with respect to school placement. The results also provide some evidence for the social comparison approach to self-concept formation, with special school LD students scoring higher than LD students attending mainstream schools on the General Intellectual Ability and Maths Competence subscales. The social comparison approach could not account for all of the results since the two groups of LD students were not found to significantly differ in their perceptions of Reading, Writing and Spelling Competence, whilst it is unlikely that they all share the same social comparison group. It would appear that other mechanisms are involved in the formation of the self-concept of students with LD besides social comparisons.

The results of this study need to be interpreted cautiously for several reasons. It was not possible to match the two groups of LD students in the different school settings. This gave rise to the possibility that other differences exist between the two groups that may account for the findings discussed. It is possible that the two groups of LD students may significantly differ in their academic abilities, thus accounting for the observed differences in their academic self-evaluations. However, this would appear to be somewhat unlikely since it was the integrated LD pupils who displayed lower academic self-evaluations rather than the LD students attending special schools. If a significant difference were to exist between integrated and special school LD students, it would most likely occur in the opposite direction, with integrated LD students displaying higher academic self-evaluations than special school LD students. This is because LD students who are academically more able are also more likely to be considered for integration into mainstream schooling.

Another reason why the results of this study should be treated with some caution relates to the instrument used to measure self-concept. The use of inadequate self-concept measures is a problem that has long plagued self-concept research. More research is needed to assess the Self-Perception Profile for Learning Disabled

Students validity and reliability on LD samples outside the US. Although it may appear to be the best measure available at present, it does not mean that improvements could not be made in the measurement of self-concept in LD samples.

It would be of additional benefit to this area of research if future studies focus on the development of improved measures of self-concept designed for use with minority groups. Furthermore, future research could examine the effect of integration on self-concept amongst groups of students moving from special schools to integrated placements in mainstream schools. Although one of the aims of this study was to examine the effect of integration on LD students, confounding variables could account for this study's findings because two independent groups of LD students were used. Future research might consider studying just one group of students measuring self-concepts whilst initially in special schools and after integration into mainstream schools. This would provide clearer evidence of the effects of integration on self-concept and social comparison group choice.

Conclusion

This study has shown that LD students attending special schools generally have more positive academic self-perceptions than LD students integrated into mainstream schools. One possible explanation for this is that LD students attending special schools are more likely to make social comparisons with other LD students, whereas integrated LD students are more likely to make social comparisons with students who do not have LD. It would appear that social comparison group selection is not the only determinant of LD students' self-concept, because expected differences on three of the academic domains were not found. Despite the observed difference in academic self-perceptions, the two groups were not found to significantly differ in their perceptions of Global Self-Worth, suggesting that academic self-perceptions in integrated LD students have less impact on this domain. Interestingly, these findings have mixed implications for policies of inclusive education, which warrant further investigation. In terms of current UK integration policy it would appear from the findings of this study, that integration does not have its expected positive benefits on self-concept. Thus it appears that integration policy is not meeting one of its central aims of combating discriminatory attitudes. Instead the results of this study imply that LD students who have been integrated into mainstream schools may face greater levels of stigmatisation than those attending special schools, leading them to refrain from making social comparisons with other LD students.

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The Self at Work

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Investigation of self theories has shown some potentially important results for work performance in organizations. However, a major limitation of this research is that the findings are not integrated into a coherent framework for more general applications. A distinction is proposed to provide definitional accuracy for concepts related to self, identity and role for the application of self theory to people working in organisations. Then a research framework is proposed to incorporate evidence for self theories which includes three component processes interacting in a self system. The research findings in the areas of self-efficacy, self-regulation and self-protection are briefly reviewed to show how these constructs provide a good coverage of self components for work oriented analysis. The potential aggregation of these self theories into both a subsystem of competence and into a higher level construct of perceived control also is discussed. A macro-level analysis of effects of loss of perceived control is discussed in terms of the self theories incorporated in the framework as well as a micro-level analysis based on a case study of a person with sensory impairment who was offered counselling for return to work based on the self theories in the framework.

Introduction

In 1995, Furnham pointed out that while occupational and organisational theorists readily admit the importance of individual differences in action and behaviour, they seem unable to deal with the subject appropriately. Similarly, sociological approaches emphasise only broad socio-cultural factors in determining behaviour at work. Furnham argues there is a need for a rational approach to the investigation of personality factors at work.

The present paper is an attempt to provide a principled approach through a heuristic framework (one to guide thinking) into the relationship between self theories and work.

Scope

Our major focus in this framework is on self theory components associated with work and organisational performance and not the consequence of those components in specific work applications.

When approaching self theories and their potential applications to understanding work performance it is easy to be swamped by bucket-loads of seemingly overlapping constructs and concepts. In the present framework we therefore try to provide some potential for integration of concepts by first differentiating them. Another aim is to provide a multi-level analysis of the concepts to show how an integrated theory might work.

The proposed scheme does not address the developmental nature of the self theories. The focus is on the 'mature' worker and not how the worker got to be that way. Nevertheless, the notion of work here is not defined and is construed broadly. That is, the self theories described may also apply to the notion of school work and therefore might be established even by that stage of development.

Finally, this paper suggests how self theories may be used to provide an understanding of the interaction between permanent disability (primarily sensory) and work behaviour.

Assumptions about the Self

In the framework we see the self as an integrating function within the psychological space of the individual. This assumption is common to many theorists since James (1890) with theories as diverse as the psychometric approach of Cattell (1950) and the psychodynamic approach of Kohut (e.g Kohut, 1971) all stressing the importance of some central integrating mechanism of self knowledge. Arguments about how and what is integrated depend on the nature of the psychological theory proposed. One approach comes from theories that propose a structural, reasonably static view of self-concept (what the person thinks and feels about themselves at some point in time). Structural viewpoints typically discuss stability of the self-concept over time and the underlying components that best describe the concept and involve a psychometric approach to produce a measured self-concept profile of an individual. The results may then be used to predict future actions.

Another approach is to describe the dynamic processes that are involved in the response of the integrated self in situations. Cognitive, information-processing orientations to the self (e.g., Killstrom, Cantor Albright, Chew, Klein and Niedenthal, 1988; Markus and Wurf, 1987) are examples of this approach.

There is no inherent reason why structural and processing approaches are not compatible. Structural approaches assume measurement of a snap-shot of the self at a point in time, while processing approaches assume that underlying this snapshot there may be a number of interacting psychological forces at work.

In addition to the structural and processing approaches to self, there are more eclectic approaches that focus on a single aspect of the self system and attempt to determine its explanatory power. One example of this is the construct of self-esteem, which has been the focus of considerable interest over the past 50 years. One unfortunate outcome of the eclectic approach is that because only single constructs are investigated they cannot easily be integrated with each other. Another disadvantage is that without the guidance of a model of self, isolated constructs often become defined multiply

making clear comparison of studies difficult. While these criticisms relate to some of the self-esteem literature they can also be extended to notions of self-control, and self-competence.

The framework presented here also incorporates the assumption that the self is at least multi-faceted and possibly multi-levelled. This has been a dominant assumption in integrated theories about the self and can be traced back to James (1890). How these different facets or levels are defined and what parts of them are integrated remains the challenge for self theories and is the focus of this framework.

Integrating a Multi-Levelled Self

An integrated self theory must be able to deal with both the known self and the shown self. The underlying contributions to these known and shown selves have been argued from the beginning of modern self theorisation. James (1890) argues for mainly intrapsychic and social influences. Cooley (1902) argues for primarily social influences. Mead (1934) argues for an interaction between the internal and social influences mediated by language. The known self can be defined as self-knowledge that is only known to the individual. In some cases 'known' may be too strong a word – maybe it is just not disclosed. The shown self is that image or impression that the self attempts to project, typically within a social context.

One persistent confusion in the literature on the self as a process, is between the known and shown self. This can be seen in relatively indiscriminate use of terms such as self, identity and role, which are frequently used to describe similar functions. Elaborating on an approach by Stryker (1980) we will make an initial, macro-level distinction between the self, an individual's identity and the roles that it must try to accommodate. This is an attempt to provide some definitional accuracy in the use of specific terms for specific constructs. The proposal for this definitional clarity is presented in Figure 1.

In Figure 1 the term 'self' is used to describe an individual's knowledge about their thoughts and feelings. The term 'role' is used to describe the situational social constraints that operate on individuals (the notion of role is used here in a compatible way with role theories –e.g., Biddle and Thomas (1966) and is meant to imply local situation requirements not the meta-role construct of norms although these have related influences). The term 'identity' is a type of negotiation space in which the self and role requirements are worked out to the satisfaction of their contributors. The following example is given to illustrate this process. A job occupant is in a job comprised of routine and menial tasks. He feels that he is capable of doing different, more challenging work. Confronted by this conflict between his role and his self, he is unable to negotiate an identity that leaves his self intact in that role. He therefore leaves this position to his material disadvantage. In this example there is a failure of identity negotiation in a work and organisational context. Another job occupant in the same situation may be able to negotiate an identity to their satisfaction. This might

be as simple as more freedom from dress codes – wearing jeans to do the photocopying. He is therefore able to leave his self intact despite the role. The relationship of positive feedback from identity negotiation leading to more or less organisational ambition is an area where there is little research.

Examples of identity negotiation also can be offered in terms of sensory disability. An individual with a hearing loss may seek work with more demanding communication requirements even though this will place more cognitive load on them and will offer little chance of initial increased extrinsic reward. One explanation is that they are negotiating a more satisfactory identity for themselves to push back the boundaries of the role placed on them of worker with sensory disability.

Of course, these observations about identity are not new. However, the outline proposed in Figure 1 suggests a scheme for talking about how the self might need to contribute to the negotiation of these identities when confronted by roles (and their even more restrictive partner – norms).

The Self

The attempt to define the self as only an internal focus, leaving definitions of identity and role to take up its other potential meanings, might provide some clarity but doesn't provide any clue about how and what is constituted as the self.

Our approach to this issue is based on an extensive review of cognitive conceptions of the self as a process. One conclusion of this review is that an adequate description of the cognitive self system can be achieved with the use of three major constructs. These include self-efficacy for completion of tasks, self-presentation for social interaction and self-protection mechanisms that are sensitive to failures in the other components. The proposed scheme is diagrammed in Figure 2. In order to satisfy a multi-level viewpoint it is postulated that these three components are intermediary in a psychological sense. That is, there may be unconscious intrapsychic influences that produce these components (e.g personality, needs, motivations etc) and these components might be aggregated into higher level psychological constructs (most notably that of perceived control). The relationship of these intermediate constructs to aggregated constructs will be discussed after a definition and example of the components is provided.

Self-Efficacy

In an impressive and extensive series of studies spanning the last several decades, Bandura (1977; 1986; 1997) has collected data for a construct of self-efficacy as a major self determiner for action and behaviour. Self-efficacy is defined as the belief that an individual can successfully execute the action or behaviour necessary to produce an outcome. Bandura (1977) was able to show that self-efficacy predicted future behaviour, over and above the effects of past behaviour. There is also evidence, for instance, in the school achievement

area, that self-efficacy accounts for significant variance in school grades and achievement tests after the effects of intelligence have been controlled (e.g. Schmitz and Skinner, 1993).

Bandura has provided convincing support for a theory of how self-efficacy is formed and how it might be improved. The present requirement is only to show how it works to provide cognitive support for action and behaviour. The behavioural consequences of self-efficacy have been described by Williams and Lillibridge (1992) from a work and organisational perspective. These authors reviewed the literature and show that self-efficacy can affect a range of behaviours including persistence on a task and goal setting which can be elaborated as intensity of performance, persistence, response initiation and goal setting.

Williams and Lillibridge also describe other behavioural consequences of self-efficacy related to attributions and coping and these are included in another component in the present framework.

Bandura (1997) has reviewed the effects of self-efficacy in a number of work and organisational contexts. Just to take one example, it is noted that perceived managerial efficacy plays a significant role when many external constraints are imposed on carrying out the managerial role (e.g. Jenkins, 1994).

Self-Presentation

The construct of self-presentation, adopted in the present framework, is based on the construct of self-control discussed by Baumeister (e.g. Baumeister, Heatherton and Tice, 1993). It can be defined as the image or impression that we intend to present to others. The present formulation differs from that proposed by Baumeister, who proposes a full self-regulation component, which is to a large extent confounded with self-efficacy control. Self-presentation as presented in the framework is based on perception of expected standards for action and behaviour, self-monitoring (based here on Snyder's concept – e.g. Snyder, 1974') of actions and behaviour, and receptivity to discrepancy between standards and performance.

One way to view self-presentation is to see it as the social analogue of self-efficacy. In this way self-efficacy is related to control of task performance while self-presentation is related to control of social interaction. Together these constructs could be aggregated into a self-competence system (that is, the belief about the extent that one has control over their physical and social interactions).

Differences in self-presentation style might be influenced by a number of occupational and organisational situations. For example, Snyder and Campbell (1982) discuss the differences between individuals who are high versus low self-monitors. High self-monitors adopt a pragmatic attitude to social interaction that is reflected in their behaviours. Low self-monitors have a more principled approach to presenting themselves and this is reflected in their behaviours and social interactions. From Snyder's view of high self-monitors, it seems less likely that they would commit to occupations that

did not provide a range of roles. More likely is the stress that low self-monitors might experience in a rigid role requirement that was at odds with their principled self.

Self-Protection

The construct of self-protection is accepted widely (mainly through the influence of psychodynamic approaches to self-defence) but has not previously been included as a separate sub-component in self systems. However, its effects always have been discussed as part of the available constructs. For example, Williams and Lillibridge (1992) argue that individual causal theories are related to self-efficacy. For instance, a self-efficacious individual is more likely to attribute causation to factors internal to themselves rather than to external factors beyond their control. Similarly coping strategies (emotional or problem based) are reflected as self-efficacy differences. Baumeister, Heatherton and Tice (1994) also address the issue of self-protection in relation to self-control and regulation.

However, extensive evidence from studies in areas ranging from psychodynamic approaches of the individual, to studies in social psychology of group interaction, to cognitive studies about attributions, all suggest that self-protection is an important enough construct to warrant an independent role. In terms of research into the global concept of self-esteem the notion of threats to self-esteem invoking an implicit or explicit self-protection mechanism have been universal.

The self-protection construct as proposed in the present framework can be summarised as including attributional style, coping style, and availability and automaticity of defence mechanisms.

The framework for the self-constructs in Figure 2 indicates that self-protection is just one component in the self-system, along with self-efficacy and self-presentation. While in one sense this may be an adequate conceptualisation, most available evidence would indicate that self-protection plays a front-line (gatekeeper) role in response to threats to self-efficacy and self-presentation. However, these dynamics are not taken up in this discussion.

The complexity of the self-protection construct will be considered only by one example: the distinction between problem-based and emotional based coping (e.g. Folkman and Lazarus, 1980; Latack, 1986). Problem-based coping is characterised by direct attempts to solve problems and coordinate activities. In terms of the present self scheme, problem-based coping would rely on adequate self-efficacy and self-presentation components. Emotion based coping is characterised by a greater concern with controlling feelings and self-projections. Parkes, (1990) found that problem-based coping is a more effective strategy than emotion-based coping in dealing with a variety of high work demands. While emotional-based coping will have a role in dealing with stressful environments it will also typically fail to alleviate the stress because it may not adequately focus on its cause.

Fitting the Proposed Self-Scheme into a Work/Organisational Analysis

Figure 3 suggests how the operation of the self-system might be used to analyse work situations. While the self-system operates via its identity negotiation in the work environment (that is, it has to take into account general organisational norms and specific role requirements in its attempts to express itself), this interaction has been omitted from the figure for the sake of simplicity.

Figure 3 schematises the types of factors that may lead to operation of self responses. Individuals respond to their roles through a variety of information sources that make up their perception of organisational characteristics. These examples are meant to imply both micro and macro level influences on determining the perceived role. Other aspects of the individual's role would be determined by their perception of their place in the work environment (their own expectations and their evaluation of the equity of response to them). These role influences interact with self requirements (see Figure 1) invoking aspects of efficacy, presentation or protection. The interaction of role and self requirements lead to behaviours to negotiate the identity of the person in the work environment in ways that can be measured by variables such as attitude to work and job satisfaction.

The range of available evidence concerning occupational variables indicates that, the extent to which they evolve positively (by the acceptable negotiation of identity from role and self constraints) they will lead to positive contributions to social capital, intellectual capital, and output productivity at work.

A Perspective About the Aggregated Self-System at Work

Discussions of perceived control (e.g., Skinner, 1995) share some similarities with the present self scheme. In particular, Skinner attempts to integrate issues about control into a unified theory. Individuals who experience a lack of control adopt a different world view about the role of luck and powerful others, to those with higher perceived control. They also differ in their attributions about causes of situational outcomes. However, these remain relatively superficial explanations of differences between people who differ in their perceived control of events and situations. Skinner attempts to integrate a self-focus by inclusion of a self-efficacy component into perceived control variables. Burger (1987) has discussed the potential relationship of control issues to self-presentation variables.

By postulating self motives to individuals the present framework suggests that individuals might invoke self-protective mechanisms because of differences in their self-efficacy and self-presentation capacities and opportunities. For instance, inadequacies in these competencies would lead to a perceived lack of control, which would invoke the type of responses so well documented by Skinner (including some of the self-protection mechanisms discussed here).

The attempt to aggregate the self-system components into

a higher-level factor of control can in turn permit the use of studies about perceived control of situations at work to demonstrate how the self-system components might be operating. Perceived control is itself a large literature (including attribution theory, learned helplessness, locus of control beliefs) so we can only hint at the potential value of the self-system framework to the analysis of perceived control variables.

The Self System Via Perceived Control

In support of the framework we have proposed in this discussion we provide a speculative suggestion about the application of the present framework to a well-established finding in the perceived control literature and a brief qualitative description of a case study that is reasonably representative of persons with sudden acquired hearing loss.

At a macro level of analysis, the outcomes of lack of self-efficacy and presentation within the workplace might be deduced from a series of investigations often referred to as the Whitehall studies. Marmot and his colleagues (e.g., Marmot et al., 1997) found an interesting stepped gradient between those at the top level and the next level down in the British Public Service. The Step 2 public servants (including university educated professionals and executives) had rates of coronary heart disease twice those of individuals in the top level of the Public Service. After partialling out the effects of the most likely contributing factors, the variable that explained the majority of the variance was what might be termed "demand latitude" – the degree of control for job completion. The nature of positions at Step 2 in the Whitehall studies, permit little latitude in identity negotiation. Traditionally, the work is prescribed and working conditions are highly formal. In this sense, there are frequent opportunities for a dissociation between the self and role. In terms of the present analysis it could be argued that those who are unable to match their self requirements for efficacy and presentation perceive less control leading to less effective coping strategies and potential stress. It remains to be determined whether the control factor problems noted in the Whitehall and other studies in high demand work environments can be tracked back to the underlying self variables discussed in this paper. However, the evidence described here suggests that both self-efficacy and self-presentation differences, in turn producing maladaptive but characteristic self-protection responses, are potential candidates for investigation.

The following brief case study of an adult male worker with sudden acquired hearing loss is an example of a micro-level analysis using the proposed framework. This individual had a progressive hearing loss over a number of years with its onset at age 20. He worked successfully as courier as his hearing loss did not prevent him from being able to pick up messages over a radio phone. At age 45 he experienced a sudden deterioration in his hearing. The complete loss of hearing of one ear and the profound loss in his other ear made his job impossible to perform, invoking a number of self protection mechanisms. He withdrew from the workforce

and relied on his wife for all outside communication. This is a typical pattern seen by adults in this situation. A successful fitting of a cochlear implant still left this person in a state of low self-efficacy for communication and reluctance for self-presentation attempts. We will not discuss the issues here related to the need for accurate assessment to determine the real levels of actual competence that are needed to target realistic expectations nor the details of the therapeutic approach used to reconfigure self motives to deal with the impairment. However, by working with improvements in self-efficacy and self-presentation components with this client we have been able to show a gradual weakening of the self-protection components in his responses and behaviour. As a result of this therapeutic intervention, he is now being considered for a position as courier with situational demands that are matched to his actual communication competences.

In general we have found the described framework useful for analysing a number of work and organisational data and we are currently employing the framework as a tool for use in prospective studies of work performance and organisational analysis.

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Figure 1: The relationship of Self, Identity and Role

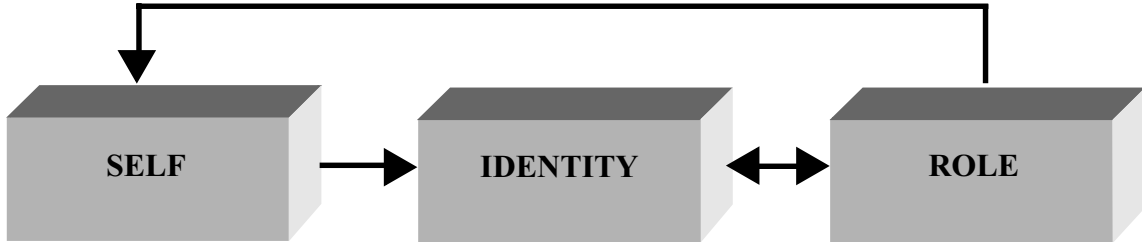


Figure 2: Components of the Self-Organising System at Work

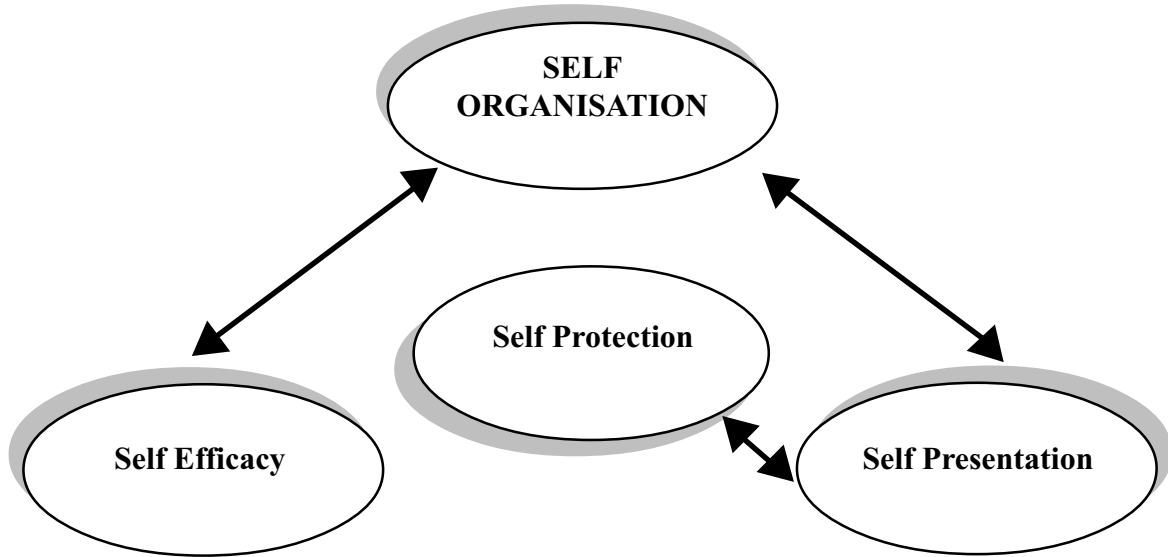
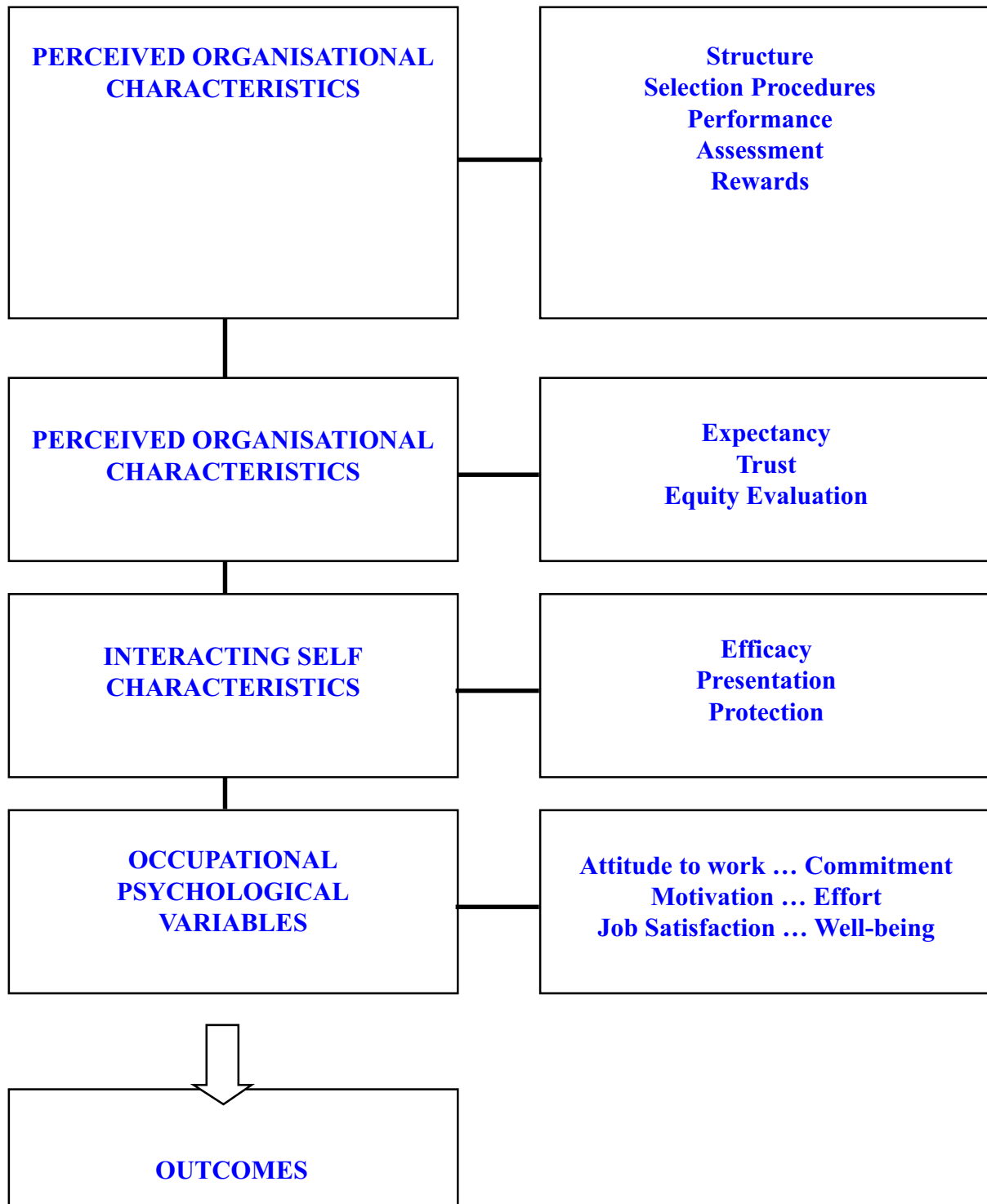


Figure 3: Framework for Research into the Relationship between Self and Work Variables.



Culture and Self: A Reconsideration of the Role of Individualism and Collectivism

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Individualism and collectivism are emphasized in cultural differences of “self”. Few differences in individualism/collectivism (I/C) have been found in recent research comparing U.S. and Japanese respondents. Perhaps this is a reflection of the dynamic nature of cultures or inadequate measures for assessing “self”. I surveyed three samples (Japanese students in Tokyo, Japanese exchange students in the U.S. for 1 month and U.S. students) on I/C dimensions of self-esteem, self-construal, and achievement motivation. U.S. and Japanese students in Tokyo did not differ on any measures, however Japanese exchange students scored higher on collectivistic components of each measure than the other two groups. Short-term cultural transitions may serve to elevate traditional cultural values. However, cultural stability for today’s youth may provide a basis from which to explore other orientations available through modern technology. Caution should be exercised in research based on knowledge of country of origin only or the instruments used.

Researchers in cultural and cross-cultural psychology characterize Americans as highly individualistic (e.g., Hofstede, 1980; Triandis, 1995). That is, Americans tend to think about themselves as independent, emphasize their individual uniqueness, and follow their personal preferences rather than those of the group (e.g., Bellah, Madsen, Sullivan, Swindler, & Tipton, 1985; Kashima *et al.*, 1995; Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997; Markus & Kitayama, 1991). In fact, these individualistic values are reinforced by the United States government as indicated in the United States Constitution as well as in social and cultural practices (Bellah *et al.*, 1985; Markus, Kitayama, & Heiman, 1996). Triandis, Bontempo, Villareal, Asai, and Lucca (1988) noted that Americans maintain distance from ingroup members and Fiske, Kitayama, Markus, and Nesbett (1998) noted that Americans also view most interpersonal relationships as temporary and non-obligatory. Since Americans do not emphasize a sense of connectedness to ingroup members (Markus & Kitayama, 1991; Oyserman, Sakamoto, & Lauffer, 1998), they are often compared to people from non-Western cultures, especially Japanese culture, who are characterized as collectivists.

Collectivistic orientations from Japan, China, Korea, Southeast Asia, South American, and Africa have been contrasted with the Western view of independence (Markus & Kitayama, 1994). From this perspective, people from countries with a collectivistic orientation have been characterized as having interdependent self-construals that feature the person as “more connected and less differentiated from others. People are motivated to find a way to fit in with relevant others, to fulfill and create obligation, and in general become part of various interpersonal relationships” (Markus & Kitayama, 1991, p. 227). In fact, Markus and Kitayama (1991) posited that differences in self could be applied a wide range of measures including perceptions of self-other similarity, the nature of person knowledge, causal attributions, linguistic relativity, emotional experience and expression, achievement motivation, self-esteem, self-construal, and motivation for self cognitive consistency.

Although the common belief that individuals from countries such as Japan, China, Korea, Southeast Asia, South American, and Africa are more collectivistic than individuals from Western countries has been held for a number of years, this conception has been challenged in recent reviews of the literature (see

Matsumoto, 1999; Oyserman, Coon, & Kemmelmeier, 2000; Takano & Osaka, 1999, Watkins, Mortazavi, & Trofimova, 2000). These reviewers have consistently pointed out that in a majority of current research findings there are very few differences in measures of various components of self based on individualism/collectivism dimensions (I/C). In some cases, differences have occurred in the opposite directions from what would be predicted from theory (Markus & Kitayama, 1991; Triandis, 1989). For example Kleinknecht, Dinnel, Kleinknecht, Hiruma, and Harada (1997) found that Americans had higher interdependent self-construals than Japanese did, whereas there were no differences in independent self-construals. Carter and Dinnel (1997) found that Japanese scored higher on measures of independent self-construal than Americans. Gudykunst, Matsumoto, Ting-Toomey, and Nishida (1996) found no differences between Americans and Japanese on independent and interdependent self-construal as well as IC values. Furthermore, Carter and Dinnel (1997) found that Americans not only scored higher than Japanese did on individualistic measures of self-esteem and achievement motivation but also on collectivistic measures of self-esteem and achievement motivation. In addition, Watkins *et al.* (2000) found that both college and adult samples in Hong Kong, Iran, Russia, and the United States rated the Interdependent self as more important and a greater source of satisfaction than the Independent self.

Perhaps the differences with respect to I/C might be attributed to researchers who used international exchange students as representatives of collectivistic cultures who tend to score higher on individualistic measures (Cross, 1995). Cross compared American students with international students from Taiwan, Korea, and Japan. She found that while the international students did not differ from American students on measures of independent self-construal, they did differ from American students on measures of interdependent self-construal, scoring much higher than their American counterparts. Cross found that as the level of stress that international students experienced increased the level of interdependent self-construal also increased. Perhaps, international students rely on their relationships with others to help cope with the pressures of adapting to a new culture.

The purpose of the present study was to examine differences in dimensions of I/C among three groups: American students, Japanese exchange students to the United States, and Japanese

students in Tokyo. In particular, these three groups of students completed measures of independent and interdependent self-construal, individualistic and collectivistic self-esteem, and individually-orientated and socially-oriented achievement motivation. Based on the reviews of Matsumoto (1999), Oyserman *et al.* (2000), and Takano and Osaka (1999), I predicted that the three groups of students would not differ on measures of independent self-construal, individualistic self-esteem, and individually-oriented achievement motivation. However, based on Cross's (1995) findings, I predicted that Japanese international students would score higher than American students and Japanese students in Tokyo on measures of interdependent self-construal, collectivistic self-esteem, and socially-oriented achievement motivation, but American students and Japanese students in Tokyo would not differ on these measures.

Methods

Participants

Participants included 105 U. S. students (53 men, 52 women) enrolled in introductory psychology courses at Western Washington University in Bellingham, Washington, 99 Japanese students (49 men, 50 women) enrolled in classes at Western Washington University as a part of an exchange program with Asia University, and 94 Japanese students (46 men, 48 women) studying at Tokyo Women's Christian University, the University of Tokyo, Komazawa University, Teikyo University, Asia University, Takushoku University, and Sophia University all in Tokyo, Japan. Participants in the United States were paid \$5 to complete the survey while participants in Japan were paid 500 yen. Furthermore, a majority of the participants in this study had been raised in a metropolitan area. Ninety percent of the participants from Japan were raised in the greater Tokyo area whereas 82% of the participants from the United States were raised in the greater Seattle area. The Japanese exchange students had been in the United States for approximately 4 weeks at the time the questionnaire was administered and were all members of a cohort who were invited to participate in a 5-month exchange program at Western Washington University. The ages of the U. S. participants ranged from 17 to 23 ($M = 19.29$, $SD = 1.38$), whereas the ages of the Japanese exchange students ranged from 19 to 21 ($M = 19.35$, $SD = 0.58$) and ages of the Japanese students in Japan ranged from 18 to 24 ($M = 19.55$, $SD = 1.16$). U. S. participants self-identified their ethnicity as Caucasian ($N = 81$), Asian American ($N = 8$), mixed or multicultural ($N = 5$), Hispanic or Latino ($N = 3$), African American ($N = 2$), or Pacific Islander ($N = 2$), whereas all of the Japanese respondents self-identified their ethnicity as Japanese.

Materials

Self-Construal Scale (SCS) (Singelis, 1994).

The SCS contains 24 items, 12 of which measure degree of independent self-construal (e.g., "I prefer to be direct and forthright when dealing with people I've just met"), and 12 of which measure degree of interdependent self-construal (e.g., "Even when I

strongly disagree with group members, I avoid an argument"). According to Singelis, these are two distinct dimensions, rather than opposite poles of a single dimension. At the individual level, people may have independent and interdependent self-construals of varying strengths, and the degree of both dimensions can vary both within and across cultural groups. But a given culture encourages the development of one of these dimensions, and it thus becomes the salient self-construal for the majority of the people within that culture.

Participants are instructed to indicate agreement or disagreement with each of the 24 items, on a scale from 1 (strongly disagree) to 7 (strongly agree). Each participant receives two scores. The first reflects the strength of the independent aspect of self, and is the mean of the responses on the independent subscale. The second score represents the strength of the interdependent aspect of self, and is the mean of the responses on the interdependent subscale.

The subscales form two distinct, uncorrelated ($r = -.04$) factors (Singelis, 1994), supporting Singelis' notion that these are in fact two separate aspects of self that may coexist within one individual. Internal reliability for both subscales is good, with Cronbach alphas ranging from .69 to .74. The SCS possesses adequate construct validity. Singelis (1994) found that Asian Americans scored higher than Caucasian Americans on the interdependent dimension ($p < .01$), and lower than Caucasian Americans on the independent dimension ($p < .05$). This scale also possesses predictive validity in that participants' scores are predictive of the types of attributions they will make. Specifically, Singelis (1994) found that Asian Americans and individuals with higher interdependence scores were more likely to make situational attributions than were Caucasian Americans and individuals with lower interdependence scores.

Achievement Motivation Scales (Yu & Yang, 1994)

Yu and Yang constructed these scales to assess the varying degrees of individually-oriented achievement motivation (IOAM) and socially-oriented achievement motivation (SOAM) that are present in all individuals. Each scale comprises 30 items. IOAM items include "I evaluate my performance with regard to my own expectations and standards" and "I work diligently for my personal success." SOAM items include "I want to pursue goals that people in general consider valuable" and "I am concerned my school performance meets my parents' expectations." Participants are instructed to utilize a 6-point Likert-type scale to indicate their degree of agreement or disagreement with each of the statements. Scores range from 30 to 180, where a higher score indicates a greater degree of IOAM or SOAM.

The results of a principal component factor analysis indicated that IOAM and SOAM are independent psychological constructs (Yu & Yang, 1994). All items of the SOAM scale loaded on the first factor, and all items of the IOAM loaded on the second factor. In addition, the correlation between the scales was .02. Both scales demonstrate good internal consistency and test-retest reliability. Cronbach alphas range from .87 to .91 for the IOAM scale, and from .89 to .91 for the SOAM scale. Test-retest reliabilities over a three-week interval for the scales range from .68 to .86.

Rosenberg Self-Esteem Scale (RSES and RSESE) (Rosenberg, 1965).

Rosenberg developed this scale to assess global feelings of self-worth or self-acceptance. It is used widely by psychologists and researchers, and is the standard against which new measures are evaluated. When the RSES is used in the traditional manner, participants are instructed to indicate the degree to which they agree or disagree with each of the statements. Five items are worded positively (e.g., "I feel that I have a number of good qualities"), and five are worded negatively (e.g., "I certainly feel useless at times"). Responses range from one (strongly agree) to seven (strongly disagree). Total scores range from 10 to 70, where higher scores represent higher levels of self-esteem.

The RSES demonstrates good internal consistency, with Cronbach alphas ranging from .77 to .88. Test-retest reliabilities are also high, with r 's of .82 and .85 over one-week and two-week intervals, respectively. The scale converges with related constructs such as the Lerner Self-Esteem Scale ($r = .72$), anxiety ($r = -.64$), depression ($r = -.54$), and general self-regard ($r = .78$). Discriminant validity is evidenced in the scale's nonsignificant correlations with grade point average ($r = .01$), marital status ($r = .17$), and birth order ($r = .02$).

Collective Self-Esteem Scale (CSES and CSESE) (Luhtanen & Crocker, 1992)

The CSES is based on Tajfel's social identity theory (e.g., Tajfel, 1981) that purports the existence of an individual identity and a social identity. This 16-item scale attempts to measure the self-esteem that is derived from one's social identity, rather than that which is derived from one's personal identity. Tajfel (1981) defines social identity as "that aspect of the individual's self-concept which derives from their knowledge of their membership in a social group (or groups) together with the value and emotional significance attached to that membership" (p. 255). Luhtanen and Crocker define collective self-esteem as "the generalized tendency to evaluate one's social identity positively" (p. 316).

Participants are asked to think of a variety of social group memberships such as gender, race, or ethnicity, and to respond to the items on the CSES based on how they feel about those groups and their memberships in them. Responses for each item range from one (strongly agree) to seven (strongly disagree), and total scores range from 16 to 112. The CSES demonstrates good reliability. Internal consistency coefficients range from .63 to .85, and item-total correlations range from .45 to .66 (Crocker *et al.*, 1994; Luhtanen & Crocker, 1992). Test-retest reliability for the total scale over a six-week interval is satisfactory ($r = .68$) (Crocker & Luhtanen, 1990). Validity estimates for the CSES are adequate. The scale is moderately correlated with the Rosenberg Self-Esteem Scale ($r = .34$), and is uncorrelated with the Marlowe-Crowne Social Desirability Scale (Crocker & Luhtanen, 1990). In addition, it is negatively correlated ($r = -.15$) with the Belief in Discrimination scale, and positively correlated with collectivism, as assessed by the INDCOL (Individualism/Collectivism scale) ($r = .34$, $p < .001$) (Luhtanen & Crocker, 1992).

Procedure

All instruments in the packet of questionnaires that participants received have been translated and back-translated (see Brislin, 1980) to ensure conceptual equivalence. Furthermore, in an attempt to preclude potential carry-over effects, the measures were counterbalanced within each packet. The data analysis revealed no order effects.

Participants were addressed in a classroom setting by a researcher. They were informed that the intent of the study was to compare students' values across cultures. They were asked to respond to all items of the questionnaires as honestly as possible, and were assured of the complete confidentiality of their answers. All participants received the packet of questionnaires, complete with an instruction sheet and informed consent form at the time of this introduction to the study. They were asked to return the packet within a one-week period.

Results

Metric Equivalence

When analyzing cross-cultural data, a first step is to examine the psychometric properties of the instruments in the cultures surveyed (Bond, 1988; Leung & Bond, 1989; van de Vijver & Leung, 1997). In the present study, we employed four tests of cultural equivalence: a comparison of instrument-level correlations, a reliability analysis, an analysis of the item-total correlations, and a decultured, pancultural factor analysis.

Correlations Among Variables

Using Fisher's Z transformation, tests of significance revealed that all correlations were similar for the American and Japanese groups, except the correlation between Collective Self-Esteem and the evaluation of its concepts. The correlations between these two variables were significantly different across the two cultural groups such that this relationship was significantly stronger among American participants. The stability of the remaining correlations across the groups indicates that the psychological constructs being measured are related in similar ways among American and Japanese individual, and provides evidence for the metric equivalence of the measures.

Reliability Analysis

A reliability analysis was performed in order to determine the reliabilities of the measures and the appropriateness of each measure for the members of each culture. Cronbach alphas were computed for each cultural group on each of the scales utilized in this study. Reliability coefficients for the scales were generally good (a range of .71-.92 for Americans, .73-.94 for Japanese exchange students, and .75 - .92 for the Japanese students). In addition, the reliabilities were relatively stable across the three groups. There were no significant differences in Cronbach alphas across the three groups when Fisher's Z transformation was used. These findings indicate that the measures were equally appropriate for use with the three groups.

Item-total Correlations

A comparison of the item-total correlations across cultures can provide important information regarding construct equivalence across cultures (van de Vijver & Leung, 1997). Thus, within-group item-total correlations were computed for all items on all measures. Using Fisher's Z transformation, tests of significance for these item-total correlations indicated that these item-total correlations were consistent across the three groups.

Decultured, Pancultural Factor Analyses

The decultured, pancultural factor analysis was conducted to determine the culture-free factors represented across the two groups as outlined by van de Vijver and Leung (1997). The procedure involves (1) standardizing item scores for each respondent to remove response biases, (2) standardizing item scores within each culture to center the scores within each culture, (3) subjecting these doubly standardized scores to a factor analysis with an oblique rotation, and (4) determining the factor structure based on the scree plots and factor interpretability.

A factor analysis of the 24 item Self-Construal Scale, the scree test indicated that a two-factor solution was the most parsimonious solution, accounting for 21.51% of the variance. The two factors were generally aligned with the items measure Independent Self-Construal and Interdependent Self-Construal. The scree test of the 40 item Achievement Motivation Scales revealed that a two-factor structure was the best solution. These two factors accounted for 30.49% of the variance with one factor aligning with the measure of Individually-Oriented Achievement Motivation (all 20 items loaded at .3 or higher) and the other factor aligning with the measure of Socially-Oriented Achievement Motivation (all 20 items loaded at .35 or higher). The 26 items that comprised the Rosenberg Self-Esteem Scale and the Collective Self-Esteem Scale were also submitted to factor analysis to determine if they formed discriminable scales. The scree test indicated that the most parsimonious solution was two factors, accounting for 39.29% of the variance. In general, these factors corresponded to the two scales with all items on the Collectivism Scale loading on one factor at .3 or higher and all items on the Rosenberg Self-Esteem Scale loading on the other factor at .3 or higher. However, 4 of the 16 items from the Collective Self-Esteem Scale and 3 of the 10 items on the Rosenberg Self-Esteem Scale loaded at .3 or higher on both factors, perhaps indicating a global self-esteem measure for those items. Due to sample size constraints factor analyses on each sample were not conducted.

Analysis of Variance for the Measures of Individualism/Collectivism

Achievement Motivation

Oneway ANOVAs were conducted for the three student groups for both individually-oriented achievement motivation (IOAM) and socially-oriented achievement motivation (SOAM). There was no significant difference on IOAM scores

between the three student groups, $F(2, 295) = 2.08$, $p > .05$, $MSE = 310.30$, $\eta^2 = .01$ (see Table 1). However, there was a significant difference on SOAM scores between the three student groups, $F(2, 295) = 13.71$, $p < .05$, $MSE = 497.84$, $\eta^2 = .09$. Japanese exchange students scored higher than U.S. students and Japanese students on SOAM, but U.S. students and Japanese students did not score differently on SOAM (see Table 1).

Self-Construal

Oneway ANOVAs were conducted for the three student groups for both independent self-construal (INDSC) and interdependent self-construal (INTSC). There was no significant difference on INDSC scores between the three student groups, $F(2, 295) = 1.93$, $p > .05$, $MSE = 0.37$, $\eta^2 = .01$ (see Table 1). However, there was a significant difference on INTSC scores between the three student groups, $F(2, 295) = 9.77$, $p < .05$, $MSE = 0.31$, $\eta^2 = .06$. Japanese exchange students scored higher than U.S. students and Japanese students on INTSC, but U.S. students and Japanese students did not score differently on INTSC (see Table 1).

Self-Esteem

Oneway ANOVAs were conducted for the three student groups for both an individually-oriented measure of self-esteem (RSES) and a collectivistic self-esteem scale (CSES). There was no significant difference on RSES scores between the three student groups, $F(2, 295) = 2.37$, $p > .05$, $MSE = 99.17$, $\eta^2 < .01$ (see Table 1). However, there was a significant difference on CSES scores between the three student groups, $F(2, 295) = 19.28$, $p < .05$, $MSE = 162.88$, $\eta^2 = .11$. Japanese exchange students scored higher than U.S. and Japanese students on CSES, but U.S. students and Japanese students did not score differently on CSES (see Table 1).

Discussion

As predicted the three groups of students did not differ on measures of independent self-construal, individualistic self-esteem, and individually-oriented achievement motivation. These findings are consistent with many of the findings reviewed by Matsumoto (1999), Oyserman *et al.* (2000), and Takano and Osaka (1999). Furthermore, as predicted, Japanese exchange students scored higher than American students and Japanese students in Tokyo on measures of interdependent self-construal, collectivistic self-esteem, and socially-oriented achievement motivation, but American students and Japanese students in Tokyo would not differ on these measures. Differences in collectivistic measures between international students from East Asia and American students are consistent with the findings of Cross (1995). Lack of differences between American students and Japanese students in Tokyo is consistent with the findings of Gudykunst *et al.* (1996) who found no differences between Americans and Japanese on independent and interdependent self-construal as well as IC values.

Table 1:
Means and Standard Deviations for Each Sample on Each Measure of Self

Measure of Self	<u>M</u>	<u>SD</u>
Individually-Oriented Achievement Motivation		
United States Students	130.35	19.06
Japanese Exchange Students	127.51	17.04
Japanese Students	123.28	16.50
Socially-Oriented Achievement Motivation		
United States Students	79.57	22.04
Japanese Exchange Students	95.72	21.94
Japanese Students	85.05	22.99
Independent Self-Construal		
United States Students	4.49	0.62
Japanese Exchange Students	4.33	0.61
Japanese Students	4.38	0.58
Interdependent Self-Construal		
United States Students	4.92	0.62
Japanese Exchange Students	5.25	0.49
Japanese Students	4.99	0.55
Individually-Oriented Self-Esteem		
United States Students	45.83	10.62
Japanese Exchange Students	45.29	9.69
Japanese Students	43.27	9.46
Collectivistic Self-Esteem		
United States Students	74.98	13.79
Japanese Exchange Students	85.04	11.04
Japanese Students	75.83	13.24

The results of the present study combined with the positions asserted by Matsumoto (1999) and Takano and Osaka (1999) seem call into question the conceptualization of cultural differences on the basis of individualism/collectivism as advanced by Markus and Kitayama (1991) and the classification by Hofstede (1980). It might well be the case that these I/C conceptualizations once characterized the differences between American culture and Japanese culture, but Takano and Osaka (1999) have even questioned the basis for this common view. From the results of the present study, there is cause to question whether we can so summarily classify Japanese society as collectivistic and American society as individualistic without further bases for doing so. It is possible that the current generation of young adults represent a changing cultural emphasis along the I/C dimensions such that they are indistinguishable. These findings reflect the dynamic, rather than static, nature of culture. Increased exposure to different cultural ideas via exchange programs, television, movies, books, and, more recently, the internet have been present for several years. Perhaps the results of the present study are merely a reflection of the accumulation

of these influences on today's young adults in the United States and Japan. Thus, it is important that we move beyond conceptualizations of culture that involve dualistic thinking and embrace models of culture that encompass relative flexibility such as considering collectivism and individualism as parallel or independent constructs rather than endpoints of a continuum. In creating such a view, we may more accurately capture the essence of the similarities between and differences among cultures.

It is possible that the data may reflect regional and generation biases. If data were collected from an elderly sample or from a more rural sample in Japan and the United States, the results may have supported the Markus and Kitayama (1991) perspective. Thus, the results of the present study may be a reflection of a similarity in perspective between young adults in Japan and the United States and more specifically between young adults from metropolitan areas on the variables measured. Furthermore, it is also possible that the scales that were used did not successfully capture the essence of any true cultural differences that might exist. Although great care was taken in

translating and back translating the scales and demonstrating some level of equivalence, there is no assurance that conceptual equivalence was attained. In addition, capturing differences between cultures on scales that with 10-30 items may be a difficult task. Despite the best attempts to demonstrate construct validity, it is difficult to ascertain if the scales captured the abstract and subtle, but important, cultural factors. We should continually question whether scales have successfully captured the essence of cultural differences if we are able, in fact, to identify what those differences are. We must constantly strive to improve the scales that we use to measure cultural differences and question the methods we use to validate such scales (van de Vijver & Leung, 1997).

There were, however, some differences that should be noted. Japanese students who participated in an exchange program to the United States scored higher on measures of collectivism but not on measures of individualism than students in the United States and students in Japan. According to Cross (1995), international students who are experiencing stressful transitions might revert to more traditional orientations in response to the stress. Since the exchange students in the present study formed a cohort, it may have been easier for them to revert to a group orientation since a natural ingroup existed. Furthermore, the data were collected within 4 weeks of arrival in the United States. Thus, the exchange students may have been experiencing heightened stress due to the transition, yielding more collectivistic or traditional orientations (Cross, 1995). Finally, the exchange students were scheduled to be in the United States for only 5 months and may not have felt the need to acculturate to the American culture. Thus, they may differ from most international students who do not have the advantage of studying in another country with a cohort from their native country nor are they attending classes on such a limited time frame. Despite these differences, the Japanese exchange students expressed higher levels of collectivism than American students did, which is consistent with the theory proposed by Markus and Kitayama (1991). However, caution should be exercised in interpreting these findings since the effect sizes were small ($.08 < h^2 < .11$).

In summary, from the results of the present study, I/C differentiation between young adults in the United States and Japan may need to be reconsidered. Researchers in this area may need to carefully reassess theories that hypothesize differences based on traditional cultural values since cultures are dynamic rather than static. In addition, researchers need to be constantly vigilant with respect to what scales are really measuring. They need to question whether the aspects of culture can be captured in a few simple items. Given the results of the present study, researchers need to exercise caution in merely using membership in a particular group as a basis for assuming I/C differences. It is necessary to constantly check for these differences in every study recognizing that culture is dynamic.

About the Author

Dr. Dale Dinnel, Associate Professor of psychology at Western Washington University, has published cross-cultural research on conceptualization of the self, social phobia, and eating disordered thoughts and behaviors. In addition, he has conducted

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A Validation and Reliability Study of the Self-Worth Protection Scale

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Self-worth achievement motivation theories posit that students may gain by deliberately withdrawing effort. When failure occurs while expending effort, students' defenses are weak against the conclusion that failure resulted from lack of ability. Attributions of inability result in diminished self-evaluation. Withdrawal of effort offers a defense against attributions of low ability, protecting self-worth. We conducted a psychometric study of the Self-Worth Protection Scale (SWPS); a scale we constructed. The SWPS demonstrated strong test/retest reliability and internal consistency. The SWPS was moderately, positively correlated with Fear of Negative Evaluation, Attitude Toward Self, Self-Handicapping, Academic Self-Handicapping, and Causal Uncertainty and moderately, negatively correlated with Academic Self-Esteem, Global Self-Esteem, and university grade point average, demonstrating construct validity. Factor analysis indicated a three-factor solution accounting for 45% of the variability. Item analysis indicated that 36 of 44 items had acceptable levels of corrected item/item-total correlations. The SWPS appears to be a psychometrically strong scale.

Self-worth achievement motivation theories posit that students may gain by deliberately withdrawing effort. When failure occurs while expending effort, students' defenses are weak against the conclusion that failure resulted from lack of ability that result in diminished self-evaluation. Withdrawal of effort offers a defense against attributions of low ability, protecting self-worth. We conducted a psychometric study of the Self-Worth Protection Scale (SWPS); a scale we constructed. Factor analysis indicated a three-factor solution accounting for 41% of the variability. Thus, subscales that reflected lack of confidence in ability, ability doubts, and threat of evaluation were established utilizing 39 or the original 44 items. The subscales of the SWPS demonstrated strong test/retest reliability and internal consistency. Consistent with theory, the subscales of the SWPS were positively correlated with Fear of Negative Evaluation, Attitude Toward Self, Self-Handicapping, Impostor Phenomenon, Causal Uncertainty, and Academic Self-Handicapping, and negatively correlated with Academic Self-Esteem, Global Self-Esteem, and university grade point average, demonstrating construct validity. Item analysis indicated that nearly all items on each subscale had acceptable levels of corrected item/item-total correlations. The SWPS appears to be a fairly psychometrically sound scale to assist in screening individuals who use self-worth protection strategies in achievement situations.

Almost everyone loves to succeed on academic tasks. None the less, almost everyone has experienced failure at some time. Despite social conventions that encourage us to learn from our failures, other social conventions lead us to feel anxious about failing in situations that are of importance. Failure for some people is more distressing than for others, so much so that they do everything in their power to avoid it. Some of these avoidant behaviors are adaptive, such as improved studying and careful planning, while others are maladaptive, such as procrastination or withdrawing from classes. On the other hand, some students purposefully sabotage their efforts in order to have an excuse for failure that cannot be linked solely to ability. According to Thompson (1999), these individuals are engaging in self-worth protection strategies. Thompson (1993) estimated that approximately 10-15% of students at all educational levels underachieve as a consequence of low effort. To our knowledge, no one has constructed a scale to help identify students who

engage in self-worth protection strategies. If such a scale were created, it could be utilized to work with these students to find more adaptive approaches to academic challenges.

Students who are motivated to protect their self-worth in achievement situations seem to do so in response to fear of failure (Beery, 1975; Birney, Burdick, & Teevan, 1969; Covington & Beery, 1976). Baumgardner and Levy (1988) found that irrespective of the basis for fear of failure individuals who are either low in self-esteem or uncertain about their evaluations in the eyes of others are most likely to strategically withdraw effort. Where it is possible to point to some mitigating circumstance that might explain poor performance, the relationship between poor performance and low ability is blurred. Thus, to strategically withdraw effort leads to two possible explanations for failure—low effort or low ability. Since it is not clear which explanation is valid, withdrawing effort serves as a buffer against claims of low ability. Hence, a person's self-worth is protected.

Self-worth depends largely on one's ability to achieve in competitive situations (e.g., Covington, 1984a, 1984b; Covington & Beery, 1976). This perspective can result in problems since many societies have a tendency to equate ability to achieve in competitive situations with human value (Gardner, 1961). Thus, if we want to maintain our value in the eyes of others perceptions of inability are to be avoided (Covington, Spratt, & Omelich, 1980). Beery (1975) found that students who are motivated to protect their self-worth place particular emphasis on achievement as a criterion of self-worth. Thus, any situation of failure may result in a conclusion of low ability and is likely to give rise to shame and diminished self-evaluations.

However, withdrawing effort, in addition to other failure avoidant strategies, only occurs in situations that involve threat to self-worth. Thompson and his colleagues (Thompson, 1993; Thompson, Davidson, & Barber, 1995) found that self-worth protective students perform differently in situations where poor performance is likely to be attributed to low ability versus those situations in which poor performance can be attributed to some factor that is unrelated to ability. When performance is likely to reflect low ability, a high evaluative threat exists where these students perform poorly. Conversely, when mitigating circumstances allow poor performance to be attributed to a factor other than ability, a situation of low evaluative threat exists and

these same students perform well. Students who show this differential pattern are known as *self-worth protective* (Thompson *et al.*, 1995) or *failure-avoiding students* (Covington & Omelich, 1991).

Self-worth protective or failure-avoiding students form just one category of a number of achievement orientations that focus on the achievement behaviors of students. Covington and Omelich (1991) have developed a model of achievement motivation that describes some additional achievement orientations that are adopted by students. They describe four distinctively different behavioral groups based on students' relative orientations along two orthogonal dimensions: *approach* (success orientation) and *avoidance* (fear of failure). These two orthogonal dimensions yield four possible achievement orientations: success-oriented, over-strivers, failure-accepters, and failure-avoiders. Covington and Omelich (1991) found that these groups differed in a number of ways. Failure-avoidant students differed from all other groups in their lower task-specific estimates of ability on tasks. They were more uncertain of their ability, had higher trait anxiety, and engaged in wishful thinking more than students from the other groups. In addition, failure-avoiding students tended to externalize blame for poor performance, expressed more concerns that the quantity and quality of their effort would not be sufficient for success, and expressed higher levels of fear that their subjective evaluations of the likelihood of failure would disrupt their educational and career plans.

A variety of low effort strategies are employed by students who strive to protect their self-worth in achievement situations (Beery, 1975; Covington, 1984a; Covington & Beery, 1976; Thompson, 1993, 1994). These include procrastination, last-minute study, selecting low, easily achievable goals (thereby minimizing self-worth threat by low risk-taking), or selecting goals that are extremely difficult to attain. The latter strategy provides a readily available excuse in the event of failure since a person cannot be blamed for not achieving such a high goal. In fact, the person's attempts may be viewed as laudable. An additional strategy is to withdraw from a class or a project when failure seems imminent.

In addition to using self-worth protective strategies in achievement situations, students may use other related strategies in failure avoidant situations such as defensive pessimism (Norem & Illingworth, 1993), employing the impostor phenomenon (Clance, 1985), or self-handicapping behavior (Rhodewalt, Saltzman, & Wittmer, 1984). Defensive pessimists experience considerable anxiety in achievement situations that involve evaluative threat. While self-worth protective students strive to reduce threat by withdrawing effort, defensive pessimists deliberately set low expectations for their performance and ruminate about worst-case scenarios (Spencer & Norem, 1996). Individuals who utilize the impostor phenomenon may utilize avoidant strategies due to anxiety similar to defensive pessimists and self-worth protective students. However, in the impostor phenomenon anxiety is the results of an intense feeling of intellectual phoniness that is experienced by high-achieving individuals (Clance, 1985). These people tend to harbor beliefs that their abilities are inferior despite their tendency to perform at high levels. They fear that

their abilities are over-estimated by others who will eventually discover that they are not truly intelligent. Thus, "impostors" are likely to engage in one of two strategies, over-preparation (overstrivers) or procrastination (failure-avoiders). Self-handicapping is a similar, yet different, strategy than self-worth protection. Similar to self-worth protective students, self-handicapping students fear that lack of ability will be invoked as an explanation for behavior. To deflect these attributions, self-handicapping students explain poor behavior as a result of some handicap such as emotional upset, illness, or injury instead of withdrawing effort in future achievement situations as would self-worth protective students would do.

While the strategies of self-worth protective students may result in short term benefits in terms of deflecting judgments of ability, several long-term consequences seem to prevail in the absence of interventions. According to Thompson (1999), utilizing self-worth protective strategies results in internalization of failure, diminished expectations for success in the future, and low academic achievement. Thus, defensively externalizing blame eventually leads to passivity and helplessness. Individuals increasingly see ability or intelligence as an unchangeable entity and have no confidence that anything they do can alter their ability or intelligence and thus their performance. Baumgardner and Levy (1988) suggested that individuals who engage in self-protective strategies might attract individuals with low self-esteem. Thus, despite the belief that withdrawal of effort is an effective self-presentational strategy insofar as it mitigates perceptions of low ability in the face of failure, the self-perceptions may not change. As a result, self-protective students will maintain their low self-esteem at both the academic and the global level and their attitudes toward themselves will remain highly, negatively critical.

The purpose of the present study was to test the reliability and validity of the Self-Worth Protection (SWP) Scale. In this regard, we constructed items that reflected avoidance orientations, evaluative threat, fear of failure, an ability view of self-worth, confidence in ability, fears that effort will not lead to high levels of performance, and externalization of success. We compared the SWP scale to measures of self-handicapping (academic and general), self-esteem (academic and global), causal uncertainty, critical negative attitudes toward self, fear of negative evaluation, views of ability as an entity, impostor phenomenon, and college grade point average. We predicted that the SWP Scale would be a reliable instrument with a multiple factor solution as the best explanation of the data. Furthermore, to demonstrate construct validity, we predicted that the SWP subscale scores would be positively correlated with academic and general self-handicapping, causal uncertainty, negative attitudes toward self, fear of negative evaluation, views of ability as an entity, and the impostor phenomenon. In addition, we predicted that the SWP subscale scores would be negatively related to academic and global self-esteem and academic performance as measured by cumulative grade point average.

Methods

Participants

Participants included 299 (156 females, 143 males) enrolled in undergraduate psychology courses at Western Washington University in the United States of America. They received course credit for participating. Since there was only complete data on the scales for 271 participants (139 females, 131 males), they comprised the final data set. The ages of these participants ranged from 18-28 with a mean age of 19.79 ($SD = 1.76$). Furthermore the ethnic group with which participants indicated they most identified African American (5), American Indian (6), Asian American (18), European American (2194), Latino (8), Pacific Islander (2), and mixed ethnicity (11).

Materials

Participants completed a questionnaire packet that contained the Self-Worth Protection Scale, the Academic Self-Handicapping Scale, the Self-Handicapping Scale, the Confidence in Ability Scale—Entity, the Impostor Phenomenon Scale, the Causal Uncertainty Scale, the Attitude Toward Self Scale, the Fear of Negative Evaluation Scale, the Academic Self-Esteem Scale, the Global Self-Esteem Certainty Scale, and a demographic questionnaire. The scales were placed in a packet in counterbalanced order across the set of packets with the demographic questionnaire always the final item in the packet. Since there were a large number of scales, not all of the possible orderings of scales were used. For those counterbalanced orders that were used, there was no difference in the scores of any of the measures. Thus, we analyzed the data combined across order.

Self-Worth Protection Scale (Thompson & Dinnel, 2000)

The Self-Worth Protection Scale (SWPS) is a 44-item scale that measures students' tendencies to intentionally withdraw effort so that they are able to avoid the negative effects of poor performance in terms of damage to self-worth. An example of an item is "I underachieve relative to my level of ability, choosing easy goals in order to ensure success." Respondents are asked to rate each item on a 7-point scale as it applies to them (1 = "Not very true of me"; 7 = "Very true of me"). The psychometric properties of this scale are discussed below.

Academic Self-Handicapping Scale (Cromer, 1999)

The Academic Self-Handicapping Scale (ASH) is a 24-item scale that measures respondents' attitudes toward or behaviors that lead to them to voluntarily adopt or claim a handicap (e.g., emotional distress or illness) when future outcomes are uncertain and when no external account for poor academic performance is available. An example of an item from the ASH is "My emotions often get in the way of my getting anything done." Respondents rate each item on a 6-point scale (1 = "Strongly Disagree; 6 = "Strongly Agree"). The ASHS has strong reliability; .88 test/retest reliability for a two week delay and .84 internal consistency. Furthermore, construct validity was

demonstrated by significant correlations with general self-handicapping ($r = .66$), the impostor phenomenon ($r = .58$), causal uncertainty ($r = .51$), academic self-esteem ($r = -.74$) and grade point average ($r = -.42$).

Self-Handicapping Scale (Jones & Rhodewalt, 1982)

The Self-Handicapping Scale (SHS) is a 14-item scale that measures respondents' tendencies to voluntarily adopt or claim a handicap to account for performance that was poor. An item from this scale is "When I do something wrong, my first impulse is to blame the circumstances." Respondents rate each item on a 6-point scale (1 = "Strongly Disagree; 6 = "Strongly Agree").

Confidence in Ability—Entity (Linehan, 1999)

The Confidence in Ability—Entity Scale (CIA-E) is a 3-item scale in which respondents are asked to rate their confidence in their abilities when abilities are represented as stable constructs. A sample item from this scale is "You have a certain amount of intelligence and you just can't change it." Respondents are asked to rate their agreement with each item on a 6-point scale (1 = "Disagree very much"; 6 = "Agree very much").

Clance Impostor Phenomenon Scale (Clance & Imes, 1978)

The Clance Impostor Phenomenon Scale (CIP) is a 20-item measure designed to assess the degree to which individuals are anxious that others will discover that they are not truly intelligent and that they will be eventually exposed for the impostors that they are. An example of an item is "When people praise me for something I've accomplished, I'm afraid that I won't be able to live up to their expectations of me in the future. Cozzarelli and Major (1990) found the IPS to have an internal consistency of .85. They also found that the CIP demonstrated construct validity by significant correlations with defensive pessimism ($r = .52$) and self-esteem ($r = -.51$). Chrisman, Pieper, Clance, Holland, and Glickauf-Hughes (1995) found that the CIP had an internal consistency of .92. Furthermore, Chrisman *et al.* demonstrated construct validity for the IPS by significant correlations with self-esteem ($r = -.54$), fear of negative evaluation ($r = .54$), social recognition ($r = .27$), and dominance ($r = -.33$).

Causal Uncertainty Scale (Edwards, Weary, & Reich, 1998)

The Causal Uncertainty Scale (CUS) is a 14-item scale that measures the degree to which individuals are uncertain of the causes of events in their lives. An item from the CUS is "When I receive poor grades, I usually don't understand why I did so poorly." Respondents are asked to rate each item on a 6-point scale (1 = "strongly disagree"; 6 = strongly agree"). The internal consistency for the CUS is .86 (Edwards *et al.*, 1988). Edwards *et al.* also found that CUS was significantly correlated with depression ($r = .37$), perceived lack of control ($r = .51$), anxiety ($r = .41$), intolerance for ambiguity ($r = .26$), self-esteem ($r = -.40$), neuroticism ($r = .32$), decisiveness ($r = -.28$) and need for cognition ($r = -.42$), demonstrating construct validity.

Attitude Toward Self Scale (Carver & Ganellen, 1983)

The Attitude Toward Self Scale (ATS) is an 18-item scale that measures individuals' tendencies to be self-punitive. An item from the ATS is "When I don't do as well as I hoped to, I often get upset at myself." Respondents are asked to rate the degree to which each item is true of themselves on a 6-point scale (1 = "extremely untrue"; 6 = "extremely true").

Fear of Negative Evaluation (Watson & Friend, 1969)

The Fear of Negative Evaluation Scale (FNE) is a 14-item scale that measures anxiety associated with evaluation situations. An item from the FNE is "I am afraid that others will not approve of me." Respondents are asked to rate the degree to which each item is characteristic of them on a 5-point scale (1 = "not at all characteristic of me"; 3 = "moderately characteristic of me"; 5 = "extremely characteristic of me").

Self-Descriptive Questionnaire—III Scales (Marsh, 1990)

The level of academic self-esteem and certainty of global self-esteem were assessed with the Academic and Global subscales of the Marsh (1990) Self-Descriptive Questionnaire—III. The Academic Self-Esteem Scale (AES) measures individuals' self-esteem in academic situations using 30 items such as "I learn quickly in most academic subjects." Respondents are asked to indicate their disagreement/agreement to each item on a 9-point scale (1 = "strongly disagree; 9 = "strongly agree"). The Global Self-Esteem Certainty Scale (GSECS) is a 12-item scale that measures individuals' certainty about how they feel about themselves in general. An item from the GSECS is "Overall, I have pretty positive feelings about myself." Respondents first indicate if the item is "unlike me" or "like me" and then indicate how certain they are of their response on a 5-point scale (1 = "not at all certain"; 5 = "very certain"). Format changes involved with the GSECS are consistent with the changes in Thompson (1993).

Procedure

Participants were tested in two groups of approximately 60 each in a large lecture hall designed for 500 students. They were encouraged to distribute themselves throughout the lecture hall to insure confidentiality of responses. Participants were instructed that they would be given a packet of questionnaires. They were told that the purpose of completing the packet was to test the properties of one of the questionnaires. They were also informed that there were no correct answers to items only the way they felt about them. Furthermore, participants were informed that some items might appear to be repeated and not to try to remember their response to those items but to record their response to each item as they would answer it at that moment. Although participants were not given a time limit, all participants completed the packet within an hour. Participants were requested to return two weeks later to complete one of the scales only.

Results

Item Analysis

The items on the SWP scale were analyzed in two ways: a factor analysis and a corrected item/item total correlational analysis (a correlation of an item with the sum of the remaining items that comprise the scale).

Factor Analysis

In order to assess the degree to which the SWP scale measured a multidimensional construct, we submitted the data to a principal axis extraction with an oblique rotation. The scree test indicated that three factors best described the data. These three factors accounted for 38.4% of the variance. The first factor accounted for 24.7% of the variance and seems to focus primarily on lack of confidence issues. The second factor accounts for 8.2% of the variance that seems most related to avoidance orientations related to ability doubts. The third factor accounts for 5.5% of the variance and is most related to avoidance orientations related to the threat of evaluation. Seventeen items (4, 5, 7, 12, 13, 18, 19, 23, 30, 33, 35, 37, 38, 40, 42, 43, 44) loaded solely on the first factor, 8 items (8, 11, 16, 20, 22, 24, 28, 31) on the second factor (a ninth item (6) was negatively loaded on the second factor and was thus eliminated), and 13 items (1, 2, 3, 9, 14, 15, 21, 25, 26, 27, 29, 39, 41) on the third factor when a factor loading cutoff of .40 or higher was used. Four items (10, 17, 32, and 36) did not load on any of the factors at criterion level (see Table 1).

Corrected Item/Item Total Correlations

To determine if items were problematic, correlations between the response to a particular item and the sum of the responses to all other items were also obtained for each of the three subscales. Items were considered potentially problematic if their corrected item/item total correlations did not exceed .35. Only Item 4 ($r = .27$) from the Lack of Confidence subscale and Item 25 ($r = .16$) from the Threat of Evaluation subscale failed to achieve criterion. These items may need to be revised or eliminated.

Revised Self-Worth Protection Scale Item Analysis

Items 4, 6, 10, 17, 25, 32, and 36 were eliminated from a subsequent factor analysis. This resulted in a revision to two of the three subscales, Lack of Confidence and Threat of Evaluation. Three factors remained the best interpretation of the data and accounted for 41.4% of the variability with factors of confidence (28.3% of the variance), ability doubts (8.4% of the variance), and threat of evaluation (4.7% of the variance). Using a factor loading criterion of .40, 16 items (5, 7, 12, 13, 18, 19, 23, 30, 33, 35, 37, 38, 40, 42, 43, 44) loaded solely on the first factor, 8 items (8, 11, 16, 20, 22, 24, 28, 31) loaded solely on the second factor, and 12 items (1, 2, 3, 9, 14, 15, 21, 26, 27, 29, 39, 41) loaded solely on the third factor. For this revised scale, all subscale items yielded corrected item/item total correlations that exceeded the criterion of .35.

Reliability Analysis

Participants were asked to complete the SWP Scale on two separate occasions, two-weeks apart. A test/retest reliability of .89 was established for the Lack of Confidence subscale (.90 for the Revised Confidence subscale), .82 for the Ability Doubts subscale, and .79 for the Threat of Evaluation subscale as well of the Revised Threat of Evaluation subscale.

A measure of internal consistency was computed for the subscales of the SWP Scale. The internal consistency using Cronbach's alpha was .88 for the Lack of Confidence subscale (.88 for the Revised Lack of Confidence subscale), .77 for the Ability Doubts subscale, and .85 for the Threat of Evaluation subscale (.86 for the Revised Threat of Evaluation subscale). It should be noted that the correlation between the Lack of Confidence subscale and the Revised Lack of Confidence subscale was $r = .98$, $p < .001$ and the Threat of Evaluation subscale and the Revised Threat of Evaluation subscale was $r = .99$, $p < .001$. Thus, the Revised Lack of Confidence and Threat of Evaluation subscales will be used throughout the rest of this paper and we will drop the qualifier "Revised." See Table 2 for the internal consistencies of all scales used in the present study.

Construct Validity

Zero-order correlations were conducted to establish the validity of the subscales of the SWP Scale. The Lack of Confidence, Ability Doubts, and Threat of Evaluation were significantly and positively correlated with academic self-handicapping, self-handicapping, the impostor phenomenon, attitude toward self, fear of negative evaluation, and causal uncertainty. With the exception of the impostor phenomenon, the correlations for Lack of Confidence and Threat of Evaluation were at a moderate level indicating some overlap as would be dictated by theoretical explanations. However, the overlap between the impostor phenomenon and the Lack of Confidence subscale is somewhat large and may be a cause for concern about the distinctiveness of the Lack of Confidence subscale and the CIP Scale. Furthermore, the correlations with the Ability Doubts subscale were somewhat low indicating that this scale made need to revision to improve the construct validity. Lack of Confidence and Threat of Evaluation were also significantly and positively correlated with confidence in ability when ability is viewed as an entity, but these correlations tended to be low. Consistent with theory, the Lack of Confidence, Ability Doubts, and Threat of Evaluation were negatively and significantly correlated with academic self-esteem, global self-esteem certainty, and grade point average (see Table 2). Once again the correlations with Ability Doubts tended to be somewhat low reinforcing a need for strengthening this subscale.

In addition, consistent with theoretical considerations, there was no gender difference on the Lack of Confidence subscale scores, $t(269) = 0.76$, $p = .29$. Females had a mean of 63.92 ($SD = 15.21$), whereas males had a mean of 62.36 ($SD = 15.15$). Gender similarity was also maintained for the Ability Doubt subscale, $t(269) = 1.80$, $p = .07$. Females had a mean of 37.25 ($SD = 7.21$), whereas males had a mean of 35.44 ($SD = 8.75$). Finally, no gender differences were found on the Threat of

Evaluation subscale, $t(269) = 1.10$, $p = .16$. Females had a mean of 51.31 ($SD = 11.71$), whereas males had a mean of 49.63 ($SD = 11.72$).

Discussion

The results of the present study indicate that the Self-Worth Protection Scale seems to be a fairly reliable and valid instrument for screening for students who engage in self-worth protective behaviors. The factor analysis yielded a three-factor solution for the SWP with factors of lack of confidence, avoidance orientations related to ability doubts, and avoidance orientations due to the threat of evaluation. These results are similar to those of Chrisman *et al.* (1995) who found three factors for the Clance Impostor Phenomenon Scale (CIP); Fake, Luck, and Discount. The Fake factor was related to self-doubt and concerns about intelligence that is similar to the doubts about ability factor of the SWP. The Luck factor was related to thoughts of accomplishing things by chance or error rather than through ability. This is similar to the lack of confidence factor of the SWP Scale in that the individual is not confident that ability accounts for success. Finally, the Discount factor was associated with the inability to acknowledge praise and good performance on the CIP, whereas the third factor on the SWP was associated with the threat that an evaluation situation poses to a person's self-worth. These may represent dimensions along which these two failure avoidant strategies differ. The three component structure to the SWP Scale is also consistent with the findings of Covington and Omelich (1991) who found that failure-avoiding students differed from students in other orientations on the degree to which they externalized blame (externalization of blame), concerns that the quantity and quality of their efforts would not lead to success (effort fears), and that failure would disrupt their educational and career goals (outcome fears). These components are related to some degree to the factors on the SWP Scale.

The reliability of the subscales of the SWP Scale was demonstrated at a high level through both test/retest reliability and internal consistency as measured by Cronbach's alpha. Thus, not only is there a consistency of responses among the items that form each subscale of the SWP Scale, but there is also consistency of responding over a two-week delay. This indicates the if the SWP Scale does in fact measure self-worth protective attitudes and behaviors that they are somewhat stable in composition over limited time frames.

Two of the subscales SWP Scale also appeared to have acceptable levels of construct validity. It was moderately correlated to related failure-avoidant strategies such as academic self-handicapping, general self-handicapping, and the impostor phenomenon that is consistent with Covington and Omelich's (1991) quadripart model of achievement motivation. However, of some concern is the fairly high correlation ($r = .71$) of the Lack of Confidence subscale of the SWP and the CIP. A correlation of this magnitude is problematic for distinguishing between the constructs of self-worth protection and the impostor phenomenon. In future revisions of the SWP, we need to construct items that will differentiate these two failure-avoidant strategies. In addition, many of the correlations of the Ability

Doubts subscale with the measures of related failure-avoidant strategies were somewhat small. Revisions to the Ability Doubts subscale should include attempts to strengthen the validity. Inconsistent with Thompson's (1999) perspective, the subscales of the SWP were poorly correlated with views of intelligence or ability as an entity. This is problematic since Thompson (1999) suggested that individuals who see ability as unchanging believe that poor performance will be viewed as an indication of low ability, which is stable. Thus, to deflect these attributions, self-worth protective students put forth a low effort so ability attributions become less salient explanations of poor performance. Similarly, the Lack of Confidence and Threat of Evaluation subscales of the SWP Scale were moderately and positively correlated with causal uncertainty. According to Covington and Omelich (1991) and Thompson (1993, 1994, 1999) self-worth protective students seem to lack confidence in their abilities leading them to be uncertain of what to attribute successes and failures to. Self-worth protective students fear negative evaluations (Thompson, 1999) since they may be interpreted as lack of ability in academic situations. However, since only academic situations in which there is a potential threat of failure result in self-worth protective strategies and since not every evaluative situation is linked to academic performance, it is reasonable that the correlation between the subscales of the SWP Scale and fear of failure was moderate, yet positive. Since self-worth protective students are at times critical of their abilities, especially in times of evaluative threat (Thompson, 1999), a moderate and positive correlation between the subscales of the SWP Scale and critical attitude toward self is consistent. Finally, the students who utilizing self-worth protective strategies also tend to have lower academic and global self-esteem and poorer academic performance (Thompson, 1999) as was demonstrated in the present study.

Since the SWP Scale was validated on college students caution should be utilized in applying this scale to a non-college population. The scale should be cross-validated with high school and middle school populations. Perhaps different strategies or concerns will emerge with respect to self-worth protection when the population of students is more academically diverse.

This initial attempt at developing a scale to measure the degree to which students endorse self-worth protection strategies has yielded a scale that is fairly reliable and valid. In particular, the Lack of Confidence and the Threat of Evaluation subscales seem to be fairly psychometrically strong while the Ability Doubts may need some further revision. With the necessary revisions, the SWP Scale may prove to be an effective screening device for identifying students who use self-worth protection strategies. In particular, the SWP Scale may help identify what type of self-worth protection strategies students are using so a more effective intervention can be developed.

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Table 2:
Zero Order Correlations of the Scale Scores with Measures of Internal Consistency (Cronbach's Alpha) in Parentheses

	1	2	3	4	5	6	7	8	9	10	11	12
1. LC (.88)	—											
2. AD (.77)	.29**	—										
3. TE (.86)	.48**	.26**	—									
4. ASH (.83)	.52**	.32**	.45**	—								
5. SH (.77)	.42**	.28**	.37**	.65**	—							
6. IP (.91)	.71**	.33**	.47**	.42**	.42**	—						
7. ATS (.91)	.49**	.50**	.39**	.13*	.27**	.61**	—					
8. FNE (.90)	.43**	.26**	.41**	.27**	.38**	.38**	.48**	—				
9. CU (.85)	.46**	.13*	.37**	.44**	.45**	.42**	.27**	.18**	—			
10. ECA (.93)	.16**	.07	.11*	.18**	.22**	.15**	.06	.13*	.18**	—		
11. ASE (.89)	-.54**	-.25**	-.48**	-.60**	-.35**	-.33**	.00	-.08	-.36**	-.14*	—	
12. GSE (.90)	-.50**	-.27**	-.36**	-.35**	-.28**	-.46**	-.48**	-.47**	-.39**	-.13*	.28**	—
13. GPA	-.19**	-.13*	-.26**	-.32**	-.22**	-.10	.05	.04	-.16**	.00	.37**	.06

LC = Lack of Confidence; AD = Ability Doubts; TE = Threat of Evaluation; ASH = Academic Self-Handicapping; SH = Self-Handicapping; IP = Impostor Phenomenon; ATS = Attitude Toward Self; FNE = Fear of Negative Evaluation; CU = Causal Uncertainty; ECA = Entity Confidence in Ability; ASE = Academic Self-Esteem; GSE = Global Self-Esteem; GPA = College Grade Point Average

** $p < .01$; * $p < .05$

The Self-Concept of Preschool Children: Measurement and Multidimensional Structure

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A new 38-item Self Description Questionnaire for preschool children (SDQP) measures six self-concept factors (Physical, Appearance, Peers, Parents, Verbal, Math). Using an individual-interview procedure and a double-binary response format, young children ($N = 100$, aged 4.0 to 5.6 years) completed the SDQP and achievement tests. The psychometric properties were good; the self-concept specific scales were reliable ($.75 - .89$; $Md = .83$), first and higher-order confirmatory factor models fit the data well, and correlations among the scales were moderate ($-.03 - .73$; $Md = .29$). Achievement test scores correlated modestly with academic self-concept factors ($r_s .15$ to $.40$), but were nonsignificantly or significantly negatively related to nonacademic self-concept scales. Verbal and Math self-concepts, however, were much more highly correlated ($.73$) than found in previous research with older students. Gender and age differences, although mostly small, were suggestive of developmental trends that are consistent with results based on responses with older children. The results show that very young children do distinguish between multiple dimensions of self-concept at an even younger age than suggested by previous research.

There is general consensus that a positive self-concept is desirable in a wide variety of psychological and educational situations (e.g., Byrne, 1996; Marsh & Craven, 1997). Many educational and psychological researchers, for example, perceive self-concept as “the cornerstone of both social and emotional development” (Kagen, Moore and Bredekamp, 1995, p. 18) and hence, this construct is emphasized in many early childhood programs (e.g., Head Start). Despite the emphasis placed on the importance of self-concept, as well as substantial gains in self-concept theory, research and practice with older children, surprisingly little research has been conducted with young children. This is unfortunate, as this early stage in a child’s life might be the most crucial period in the formation of a positive self-concept. Indeed, many authors have argued that self-concept is developed very early in childhood and that, once established, is enduring (e.g., Entwisle, Alexander, Pallas, & Cadigan, 1987; Johnston, 1996). In the present study, we extend research based on students in their early school years (Marsh, Craven and Debus, 1991, 1998) to assess multiple dimensions of self-concept of even younger children, preschool children aged between four and five years old. The purposes of the study are to: a) assess the ability of very young children to differentiate between multiple domains of self-concept; b) evaluate the first- and higher-order factor structure of their self-concept responses; c) test the construct validity of academic and nonacademic self-concepts in relation to academic achievement; and d) relate gender and age effects in self-concept responses by these very young children to those found in previous research with older children.

Measurement of Self-Concept in Young Children

In the last decade there have been two major reviews of self-concept measures (Wylie, 1989; Byrne, 1996) for different age groups. Both reviewers noted many instruments available for very young children, but concluded that no existing measures were adequate and that only two were sufficiently developed even to warrant consideration. For both instruments there was a paucity of psychometric evidence (reliability, stability, factor structure) and the evidence that was available was not particularly encouraging. Byrne, although less negative

in her subsequent review of these instruments than Wylie (1989), noted largely the same concerns. Although the review of Byrne was conducted seven years after Wylie’s, there was virtually no further research or development of either instrument and almost no information to evaluate their construct validity.

For older children, there have been considerable advances in the quality of self-concept research due to stronger theoretical models (e.g. Marsh, Byrne & Shavelson, 1988; Shavelson, Hubner & Stanton, 1976) and sound multidimensional measurement instruments (see Byrne, 1984; 1996; Marsh, 1993; Marsh & Craven, 1997; Marsh, Craven & Debus, 1991, 1998; Marsh & Hattie, 1996). However, these advances in theory, measurement, research and practice for older students are not evident in self-concept research with preschool children. In particular, psychometrically strong instruments have not been developed for young children and the factorial structure (or dimensionality) of self-concept is not well understood for this age group. This inability to assess self-concept for very young children impedes understanding of the self-concepts of very young children and how their self-concepts are associated with background characteristics, desirable outcomes such as academic achievement, and interventions designed to enhance self-concept. As a result, researchers (Byrne, 1996; Fantuzzo, et al., 1996; Harter, 1983, Harter & Pike, 1984; Marsh and Craven, 1997; Marsh et al., 1991, Stipek & MacIver, 1989; Stipek, Recchia, & McClintic, 1992; Wylie, 1989) have recommended research on potentially more appropriate assessment procedures (e.g., simplified item contents or pictorial representations, simplified response formats, and individually based interviews instead of conventional paper-and-pencil tests that are group administered). For example, Fantuzzo et al. reported that young children, particularly those from low-SES backgrounds, typically do not understand Likert-type scales used on many self-report inventories, even when presented in a pictorial form. Perhaps, as appears to have been the case for research with older children, progress in theory, research, and practice for preschool children will be stimulated by the development of better multidimensional measurement instruments.

The absence of a universally accepted definition of self-

concept, as well as issues related to the developmental/cognitive ability of young children, have presented researchers with a plethora of measurement problems. Children in preschool and early elementary school years are seen to have relatively undifferentiated and exaggerated appraisals of their abilities (Harter & Pike, 1984; Nicholls, 1979; Stipek, 1981). This view is founded on the belief children under eight years of age have not reached the appropriate cognitive/developmental level that is needed to evaluate their own competence (Stipek & Mac Iver, 1989). Apparently reflecting these beliefs, most existing self-concept measures for young children are based on a unidimensional notion of self-concept that has been largely discredited in research with older children (Byrne, 1996). As a result, numerous instruments were designed to produce only a single, global self-concept score [e.g., Joseph Pre-School and Primary Self-Concept Screening Test (Joseph, 1979) and Preschool Self-concept Picture Test (Woolner, 1966)]. Such global self-concept scores hide nuances of change within self-concept subscales and can rarely be meaningfully compared with those gathered from another measure (White, 1999).

Harter and Pike (1984) attempted to measure multiple dimensions of self-concept for young children aged 4 to 7. Although their instrument was designed to measure four domains of self-concept, they were able to identify only two factors: Competence (incorporating the physical and cognitive scales) and Social Acceptance (incorporating the peer and maternal scales). Similarly, Silon and Harter (1985) observed that, while their self-concept instrument yielded a four-factor solution with normal-IQ children, a two-factor solution was obtained for educable retarded children whose mental ages ranged from approximately five to eight. These results indicated that retarded children were unable to structure their self-perceptions with the same degree of cognitive complexity as do normal-IQ children. There is also evidence to suggest that the self-concept of children becomes more accurate (in relation to external criteria) with age and the child increases in cognitive functioning. For example, Bouffard, Markovits, Vezeau, Boisvert, and Dumas (1998) reported that children at higher levels of cognitive functioning attain self-perceptions that more accurately reflect their performance than children at lower cognitive levels. These results suggest that a certain level of cognitive development is necessary in order to be able to generate self-perceptions of competence that are meaningfully related to performance.

The results from the aforementioned studies suggest that young children might lack the verbal, cognitive and symbolic thought skills necessary for the satisfactory comprehension and translation of their inner states into external responses on psychological instruments. Research has shown, however, that young children do possess both the language and cognitive ability to discuss the self by the time they are in preschool (Bates, 1990; Damon & Hart, 1988; Fantuzzo et al., 1996; Lewis & Brooks-Gunn, 1979). Moreover, researchers have found that self-concepts are better differentiated by young children than previously thought (Chapman & Turner, 1995; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Marsh, Craven,

& Debus, 1991, 1998; Wigfield, Eccles, et al., 1997). Contrary to the notion that young children have only a global self-concept, these studies indicate that differentiation in self-concept domains “occurs quite early, even before children have had a lot of experience with the different activities in or out of school” (Eccles et al. 1993, p. 838). The purpose of the present investigation is to extend this research to include even younger children.

A New Adaptive Interview Procedure (Marsh, Craven & Debus, 1991, 1998)

Marsh, et al. (1991, 1998) described a new, adaptive procedure for assessing multiple dimensions of self-concept for children aged 5-8 using the SDQI. Because this procedure is so central to the present investigation, we describe it in some detail. They explored the use of pictorial self-concept instruments (e.g., Harter & Pike, 1984), but found that the juxtaposition of the pictures and verbal explanations to be more confusing to young students than the verbal presentations alone. In an individual interview format, the 64 positively worded items from the SDQI were administered to large samples of kindergarten, 1st and 2nd grade students. In a double binary response strategy adapted, in part, from Harter and Pike (1984), the interviewer initially asked the child to respond ‘yes’ or ‘no’ to the sentence to indicate whether the sentence was a true or false description of the child. If the child initially responded ‘yes’, the interviewer then asked the whether child meant ‘yes always’ or ‘yes sometimes’. If the child initially responded ‘no’, the interviewer then asked the whether the child meant ‘no always’ or ‘no sometimes’. The second response probe was stated for every response, even when it was answered in the initial response (e.g. the child said ‘yes always’ instead of ‘yes’), in order to provide a check on the accuracy of the child’s initial response. Children were encouraged to seek clarification of any item they did not understand in which case the interviewer explained the meaning of the item further.

Confirmatory factor analyses (Marsh et al., 1991;1998) clearly identified all the 8 SDQI scales. However, with increasing age the differentiation among the 8 factors improved as inferred from the decreasing size of factor correlations. As part of this research, Marsh et al. (1991) compared the new assessment procedure with the standard group administration procedure in which the same SDQI items were read aloud to students. Kindergarten children were not able to complete this group-administered task. Furthermore, the psychometric properties of group administration responses were substantially poorer than those based on the individual interview responses for students in Years 1 and 2. Marsh et al. (1991, 1998) also evaluated an initial concern that the 64-item SDQI instrument would be too long for these very young children. Interestingly, items near the end were more effective than earlier items (in contrast to anticipated fatigue effects). Apparently children learned to respond appropriately so that responses at the end of the instrument had much stronger psychometric properties than items at the beginning of the instrument. This observation has important implications for the typically short instruments

used with young children.

Although Byrne (1996) did not consider the Marsh et al. (1991) study in her chapter on measures for very young children, she did review the SDQI very positively in another chapter devoted to measures for somewhat older, pre-adolescent children. As part of this review, Byrne specifically noted the effectiveness of the Marsh et al. (1991) study in adapting the SDQI for use with very young children. She emphasised that the psychometric properties based on this single study were stronger than those provided by any other instruments specifically designed for very young children, clearly demonstrating the need for further research on this promising adaptation of a well-established instrument. Marsh et al. (1998) pursued some of this further research with school-aged children in grades K-2. The purpose of the present investigation is to extend this research to even younger preschool children who have not yet begun formal schooling.

Age and Gender Differences in Responses By Very Young Children

Age differences in overall or total self-concept reported in early research (see review by Wylie, 1979) were small and inconsistent. However, more recent research (Chapman & Tumer, 1995; Crain, 1996; Marsh, 1989; Marsh, Craven & Debus, 1991, 1998; Wigfield, et al. (1997) suggests a reasonably consistent pattern of self-concepts declining from a young age through at least adolescence, levelling out, and then increasing at least through early adulthood. Consistent with this trend, Marsh (1990; Marsh, Craven & Debus, 1991; 1998; Stipek & MacIver, 1989) argued that, whereas young children have extremely high self-concepts, they develop more realistic appraisals of their relative strengths and weaknesses with age and this added experience is apparently incorporated into their self-concepts. Hence, with increasing life experience, self-concept in specific domains should become increasingly differentiated, more accurately reflecting the child's relative strengths and weaknesses, and more closely related to external criteria (e.g., accomplishments in different areas and self-concepts inferred by significant other).

Historically, studies of gender differences in self-concept have also focused primarily on global or total scores. Early reviews (e.g., Wylie, 1979; Maccoby & Jacklin, 1974) reported little or no gender differences, but Feingold (1994) compared results from three meta-analyses of gender differences in personality variables that each demonstrated small differences in self-esteem favoring males (effect sizes of .10 to .16). However, consistent with Wylie's (1979) suggestion, Marsh (1989; Marsh & Craven, 1997) reported that these small differences in total or global scores reflect larger, counterbalancing gender differences in specific components of self-concept for responses by older children and adolescents. The gender differences in specific scales tended to be consistent with traditional gender stereotypes: (a) boys had higher self-concepts for Physical Ability, Appearance, Math, Emotional Stability, Problem Solving, and Esteem; (b) girls tended to have higher self-concepts for Verbal, School, Honesty, and Spiritual self-concepts. Gender differences in the social scales,

however, were not fully consistent with traditional gender stereotypes favoring girls. Marsh (1989) also found that age x gender interactions were typically small, except for Appearance (very young girls had higher Appearance self-concepts than boys, but older girls had much lower Appearance self-concepts). Subsequent research with even younger children (Eccles et al., 1993; Marsh, Craven & Debus, 1991; Wigfield, et al., 1997) further supports the suggestion that gender stereotypes affect self-concepts of children at very young ages. Marsh et al. (1998), in their study of responses by young (5 to 8 years old) children, found some evidence that gender differences vary with age. In particular, they also reported that very young girls had higher Appearance self-concepts (whereas research with older children shows that girls have much lower self-concepts in this area) and an age x gender interaction with Physical self-concept such that differences favoring boys grew larger with age. Nevertheless, although theory and commonsense suggest that gender differences evolve with age, there has been surprising little empirical for this hypothesis. Instead, researchers have found a gender stereotypic pattern of gender differences that is reasonably consistent over a wide range of ages.

The Present Investigation

Marsh et al. (1991, 1998) provided promising results for children aged between five and eight years who were in grades K-2 in school. This indicates that young children are much better able to differentiate among multiple dimensions of self-concept than previously assumed. In the present investigation, we sought to extend this work to even younger children aged 4 and 5 who were in preschool and had not yet begun kindergarten. Our major focus is to evaluate the appropriateness of items from the SDQI for use with these young children using the interview style of administration (Marsh, et al., 1991, 1998) and, if necessary, the development of new items that are more age appropriate. In evaluating responses, our initial focus is on traditional psychometric criteria of reliability and factor structure, age and gender differences, and relations with standardized measures of intellectual functioning. Because this research evaluates multiple dimensions of self-concept for children who are younger than other research considered here, it also provides a valuable opportunity to test the generalizability of gender and age differences based on research with older children. Whereas the age range considered here is narrow, we expect that self-concepts should decline with age and, perhaps, that there might be some gender differences that interact with age.

Method

Sample

The sample consisted of 100 preschool children (55% boys) who were 4 and 5 years of age (min = 4.0, max = 5.6, mean = 4.57, SD = 0.50). These children were drawn from 9 preschools in suburban metropolitan Sydney, Australia, coming from largely working and middle-class neighborhoods.

Measures

Self-Concept

A new measure, the Self Description Questionnaire for Preschoolers (SDQP), was designed to measure multiple domains of self-concept for preschool children. This measure is a downward extension of the SDQI (Marsh, Craven & Debus, 1991), which has been evaluated as one of the best self-concept instruments in terms of psychometric properties and construct validation (Byrne, 1996; Hattie, 1992; Wylie, 1989). As with the SDQI, the SDQP was based on the Shavelson et al. (1976) model. The SDQP was developed to assess two areas of academic self-concept (Verbal and Math) and four areas of nonacademic self-concept (Physical, Appearance, Peers, and Parents). Three total scores can also be measured on the basis of these scales: Academic self-concept (the average of the Verbal and Math scales), Nonacademic self-concept (the average of the Physical Ability, Appearance, Peer, Parent scales), and Total self-concept (the average of the Academic and Nonacademic scales).

Item selection and administration procedures were based on consultation with early childhood professionals and extensive piloting with small samples of preschool children. Various researchers promote the use of non-verbal methods (e.g., puppets, pictures) for assessing young children's self-concept (Eder, 1990; Harter & Pike, 1984; but also see Fantuzzo et al., 1996). However, other researchers have found that asking children simple and direct questions is the best way to obtain reliable information. For example, Marsh et al. (1991) explored the results from both the individually administered SDQI and the pictorial measure developed by Harter and Pike (1984). The results suggested that the juxtaposition of the pictures and verbal explanations might be more confusing to young students than the verbal presentations alone. As a result, we decided to follow the basic methodology of the SDQI, and use only verbal presentations.

Pilot work was done by administering the SDQI items to small numbers of young children aged 4 and 5, using the individual interview style developed by Marsh, Craven & Debus (1991, 1998). Children were encouraged to discuss their understanding of the items and their answers. This pilot work suggested that the individual interview style seemed to work. Based on this pilot work, items were worded in question format (e.g., 'Can you run fast?') rather than the declarative format (e.g., 'I can run fast') used on the SDQI and by Marsh, et al. (1991, 1998). This format was chosen in order to reduce the linguistic complexity that young children face when they are required to verify declarative statements (Chapman & Turner, 1995). Furthermore, in recognition of previous research indicating that children have difficulty responding appropriately to negatively worded items (Marsh, 1986), all of the SDQP items were worded positively. Although Marsh et al. (1991) found that the general self-concept scale was well-defined and reasonably reliable for early elementary school children, extensive piloting suggested that preschool children could not clearly understand the general self-concept items (also see Harter, 1983; Harter & Pike, 1984). Hence, this scale

was excluded from the SDQP.

The academic self-concept items from the SDQI were not particularly effective as these very young children did not seem to understand the items or, in some cases, saw them as inappropriate (e.g., preschool children are not given grades in mathematics or English and the term "mathematics" was unfamiliar to many of these young children). For these reasons, we choose to develop new items that were more closely related to concrete math and verbal skills appropriate for these children (e.g., Do you know lots of letters of the alphabet? Do you know lots of different words? Do you know lots of different shapes? Do you like playing number games?). Based on this work, 38 items were developed to represent six self-concept scales on the SDQP (the 38 items and a classification of each item as coming from the SDQI in original or slightly modified form or as being a new item is presented in the Appendix).

Achievement Measures

Measures of achievement need to be based on developmentally appropriate activities for young children. For this reason and after pilot testing, we chose the widely used Wide Range Achievement Test (WRAT) and the expanded version developed specifically for preschool children (Wilkinson, 1993). Reading achievement was assessed by the WRAT Reading subtest and Matching subtest (Form I, Expanded Edition). Mathematics achievement was assessed by the WRAT Mathematics subtest and the Beginning Mathematics subtest (Part A, Form I, Expanded Edition).

Procedure

For each child, all of the measures were administered individually during several sessions on the same day by one of the authors of the study or a research assistant. Each testing session began with a brief set of instructions assuring participants of the confidentiality of their responses. The SDQP was administered first, followed by the achievement tests. The individual-interview style of administration for the SDQP followed closely that described by Marsh et al. (1991, 1998). The individualized administration began with instructions and several practice items to ascertain that the child understood what was expected. Using a double binary response format, children were initially asked to respond "yes" or "no" to each question (the first binary response). This first response was followed by a second binary response. For example, if the child said "yes" on the initial binary response, the administrator then asked whether the child meant 'yes always' or 'yes sometimes'. Alternatively, if the child initially responded 'no', the administrator asked whether the child meant 'no always' or 'no sometimes'. If a child indicated an understanding of the question but still could not decide whether to answer 'yes' or 'no', a '3' was recorded as it is midway between the responses of 'no sometimes' (2) and 'yes sometimes' (4). This response option was rarely used. At all times, the child was encouraged to seek clarification of any item that was not understood. In consideration of the short attention spans of young children, each child was given a short break halfway

through the SDQP items. During this time, the child was asked to do some physical activities, such as skipping and hopping. Total response time for the SDQP – including the short break — was no more than 20 minutes. The WRAT was administered in two subsequent sessions that occurred on the same day according to instructions in the Test Administration Manual (Wilkinson, 1993). Instructions for the children from the manual were read at a moderate pace in a normal speaking voice. The directions were repeated once if needed, but no additional explanations or directions were given. Children were not told whether or not their responses were correct.

Statistical Analysis

Confirmatory factor analysis models (CFAs) were conducted with LISREL 8 (Joreskog & Sorbom, 1993) using maximum likelihood estimation. A detailed presentation of the conduct of CFA is beyond the scope of the present investigation and is available elsewhere (e.g., Bollen, 1989; Byrne, 1998; Joreskog & Sorbom, 1993; Maruyama, 1998; Schumacker & Lomax, 1996). Following Marsh, Balla, and Hau (1996), and Marsh, Balla, and McDonald (1988) we emphasize the Tucker-Lewis index (TLI), the relative noncentrality index (RNI), and root mean square error of approximation (RMSEA) to evaluate goodness of fit, but also present the χ^2 test statistic and an evaluation of parameter estimates. The TLI and RNI vary along a 0-to-1 continuum in which values greater than .90 and .95 are typically taken to reflect acceptable and excellent fits to the data. For RMSEAs, values of less than .05 and .08 are taken to reflect provide a close fit and a reasonable fit, respectively (see Joreskog & Sorbom, 1993; Marsh et al., 1996; Schumacker & Lomax, 1996). The RNI contains no penalty for a lack of parsimony so that the addition of new parameters leads to an improved fit that may reflect capitalization on chance, whereas the TLI and RMSEA contain a penalty for a lack of parsimony. Preliminary analyses were conducted on items from each scale. One factor congeneric models were fit to responses to items from each scale to evaluate unidimensionality and to estimate the reliability of the resulting self-concept factor.

As in other SDQ research and recommended in the test manual (e.g., Marsh, 1988; 1990; Marsh & Hocevar, 1985), factor analyses were conducted on 19 item-pair scores (or parcels) in which the first two items in each scale (see Appendix) are averaged to form the first item pair, the next two items are used to form the second pair, and so forth. Thus, the 6 or 8 items in each of the 6 self-concept scales were used to form 3 or 4 indicators per scale that were the basis of subsequent analyses. The achievement tests were also divided into parcels. The 24 items from the WRAT3 reading were used to construct 3 parcels by assigning every third item to a new parcel (i.e., parcel 1 was defined by items 1, 4, 7, etc., parcel 2 by 2, 5, 8, etc. and parcel 3 by 3, 6, 9 etc.). The 15 items from the WRAT3 math test were used to construct 2 parcels by assigning odd and even numbered items to different parcels. The 30 items from the expanded WRAT math test were also used to construct 2 parcels by assigning odd and even numbered items to different parcels. Analysis of parcels is

desirable (see Marsh & O'Neill, 1984) because the responses to parcels tend to be more reliable, to be more normally distributed, to have less idiosyncratic variance than do individual items, and require many fewer measured variables, particularly when the sample size is small as in the present investigation ($N = 100$, number of parcels = 29, number of items = 110).

Age, gender, and the age-by-gender interaction are all presented as single-item constructs assumed to be measures without error. For present purposes, each of the multiple indicators of achievement was normed in relation to age by partialling out the effect of age prior to conducting CFAs. Similarly, the main effects of gender and age were partialled out of the variable representing the age-by-gender interaction so that the interaction term reflected variance that could not be explained in terms of the main effects.

Results

Reliability Estimates

Estimates of reliability were computed for each of the SDQP scales (Physical, .89; Appearance, .89, Peers, .84; Parents, .84, Verbal, .83; Maths, .75, also see Appendix). The reliabilities of the three total scores .82 (Academic), .87 (Nonacademic), and .88 (Total Self) tended to be somewhat higher because they were based on more items than the specific scales.

First-Order Factor Structure.

For the CFAs (Table 1), each measured variable was allowed to load on only the factor that it was designed to measure and all other factor loadings were constrained to be zero. This restrictive, a priori factor structure provided a good fit to the data ($TLI = .938$), and all factor loadings were statistically significant. Correlations among the factors tended to vary from close to zero to moderately positive; only the correlation between Maths and Reading factors ($r = .73$, Table 1) is greater than .5. This high correlation between Math and Verbal self-concepts suggests that these very young children do not differentiate between these different academic self-concepts. The results do indicate, however, that academic self-concept is reasonably distinct from the nonacademic components of self-concept. Three of the four nonacademic factors (Appearance, Peers, and Parents) are consistently more highly correlated with each other than with the two academic scales. Physical self-concept, however, is more highly correlated with the two academic scales than the other nonacademic scales. This is consistent, perhaps, with earlier research by Harter (Harter & Pike, 1984; Silon and Harter, 1985) where she reported only two factors based on responses by very young children: Competence (incorporating the physical and cognitive scales) and Social Acceptance (incorporating the peer and maternal scales). With the exception of the substantial correlation between the two academic self-concept scales, the modest size of correlations demonstrates that young children are able to distinguish

between the different self-concept factors measured by this instrument.

Higher-Order Factor Structure.

In the first higher-order factor model, we posited only one higher-order factor to explain correlations among the six first-order factors. Although the fit of this model was reasonable (TLI = .909, RMSEA = .057), it was significantly poorer than the fit of the corresponding first-order model under which it was nested. Next we fit a model with two higher-order factors consisting of Global Academic (Math and Verbal) and Global Nonacademic (Physical, Appearance, Peers, Parents). Although the fit of the model was good, there was a significant modification index suggesting the substantial correlations between Physical and the two academic self-concept scales could not be explained in terms of the two higher-order factors. This finding is consistent with the finding that in the first-order model Physical self-concept is more highly correlated with academic factors than the nonacademic factors. Hence, in the final higher-order model, we added a higher-order Physical factor that was defined only in terms of the first-order Physical factor (Table 2). Inspection of the factor loadings indicates that Global Academic factor is strongly related to the Verbal (.96) and Math (.76) factors; the Global Nonacademic factor is strongly related to the Parents (.86) factor, followed by Peers (.59) and Appearance (.46); the Global Physical factor is necessarily perfectly related to the first-order Physical factor (i.e., the higher-order Physical factor is only defined by the corresponding first-order Physical factor so that the two are necessarily the same). More interesting, perhaps, are the correlations among the three higher-order factors. Although all three correlations are statistically significant, the largest correlation (.53) is between the Global Academic and Physical scales, whereas the Global Nonacademic scale is less correlated with the Global Physical (.33) and Global Academic (.44) factors.

In evaluating the practical implications of the higher-order factor solution, it is important to evaluate the residual variance components for each of the first-order factors. These represent reliable variance in each of the first-order factors that cannot be explained in terms of the higher-order factors. Inspection of Table 2 demonstrates that there is relatively little unexplained variance in the Verbal (7%) and, to a lesser extent, Parents (25%) factors (because the higher-order Physical self-concept is only defined by a single first-order factor, there is automatically no residual unexplained variance). There are, however, substantial amounts of unexplained variance in each of the other first-order factors (Math, 42%; Peer, 56%; Appearance, 79). Hence, a lot of the variance in the first-order factors cannot be explained in terms of the higher-order factors. This suggests that the higher-order factors should not be used instead of the more specific first-order factors.

Relations with Academic Achievement

In order to evaluate relations between self-concept responses and other variables, the CFA model was expanded

to include academic achievement indicators, gender, and age (Table 3). Mathematics achievement is significantly and positively correlated with Math self-concept (.40) and Verbal self-concept (.31). Verbal achievement is also positively correlated with Math self-concept (.20) and Verbal self-concept (.15), but these correlations are not statistically significant. In contrast to these correlations between achievement and academic self-concept factors, correlations between achievement and nonacademic self-concept factors are all consistently smaller, either close to zero and not statistically significant or significantly negative. This provides support for the construct validity of academic self-concept in relation to academic achievement and further support for the separation of academic and nonacademic components of self-concept.

Effects of Age and Gender

Gender and age differences in the self-concept responses are presented in Table 3. There is one statistically significant gender difference, girls have significantly higher Appearance self-concepts than do boys. For the very young children in the present investigation, there are no statistically significant relations between self-concept and age. In evaluating this finding, however, it is important to emphasize that the range of ages (18 months) considered here was very narrow so that it might be unrealistic to expect age differences. There is, however, a marginally significant age-by-gender interaction for Physical self-concept such that Physical self-concepts increase with age for boys but not for girls.

Discussion

The most important finding of the present investigation is the existence of a clearly defined, multidimensional structure of self-concept based on self-report responses by very young children who are only 4 and 5 years of age. This implies that very young children are able to distinguish between multiple dimensions of self-concept at an even younger age than implied by previous research.

Compared with responses by older children on the SDQI instrument (e.g., Marsh, 1990, 1993; Marsh & Craven, 1997), there are several distinctive features of these results. Of particular importance, the correlation between Verbal and Math self-concepts (.73) is much larger than the near-zero correlations found with children who are more than 10 years old and larger even than those reported for children aged 5-8 using the interview style of administration for the SDQI (Marsh, Craven & Debus, 1998). Across the different studies, the results represent a logical developmental pattern of dramatically increasing differentiation with age for these two academic self-concept factors that have been the focus of much previous research. Although logical, support for this developmental pattern based on the present investigation should be interpreted cautiously as the actual items used on the SDQP (Appendix) are different from those used on the SDQI.

The first-order factor structure based on SDQP responses was well defined. There were, however, some surprising results

in relation to correlations among the first-order factors that were also represented in the higher-order factor model. In particular, the supposedly nonacademic Physical self-concept scale was more highly correlated with the two academic first-order scales than with the other three nonacademic scales (Table 1). Similarly, in the higher-order factor solution the higher-order Physical factor did not fit well with the nonacademic factor and was more highly related to the higher-order Academic scale than the higher-order Nonacademic scale (Table 2). Although unexpected, these results are consistent with earlier results by Harter (Harter & Pike, 1984; Harter & Silon, 1985). In particular, they conducted exploratory factor analyses on responses by very young children to an instrument designed to measure four factors (academic, physical, peer, maternal self-concepts), but were only able to identify two factors that they labeled Competence (incorporating the physical and cognitive scales) and Social Acceptance (incorporating the peer and maternal scales). Although this pattern of results warrants further research, our research does not support combining the Physical and Academic components into a single scale.

Previous research has shown a consistent decline in self-concept during preadolescent ages. Although the age range in our study was very narrow (18 months), we expected to see some decline in self-concept within this age range. There were, however, no significant age effects. Furthermore, the largest nonsignificant effects (for Physical, Parents, and Appearance) tended to be in the opposite direction. This could reflect a confounding of several features of the study. For example, self-concepts for young children are mostly very positive. If relatively older children (i.e., 5 instead of 4 years of age) are better able to satisfy the cognitive demands of this task, then they may be better able to more accurately reflect their high self-concepts. Because of the relatively small sample size of our study, we were not able to pursue tests of this speculation, but the issue does warrant further research. An alternative explanation for these results may be the frame of reference that very young children use in the formation of the self-concepts in different areas. We assume that these very young children, like older children, use social comparisons between themselves and their schoolmates as one source of information in forming their self-concepts. In a preschool setting, however, there is likely to be more interaction with children of different ages than in other school settings where students are more likely to be grouped according to age. Hence, younger preschool children may use a frame of reference that includes older preschool children who have better (in an absolute sense) academic, physical, and other nonacademic skills. Again, we offer this explanation for the lack of age effects as a heuristic speculation to pursue in further research.

The results of the present investigation allow us to examine gender differences in multiple dimensions of self-concept for children who are younger than any other research of which we are aware. This is important in that previous research with somewhat older children (e.g., Crain, 1996; Eccles, et al., 1993; Marsh, 1989; Marsh & Craven, 1997; Marsh, Craven & Debus, 1998; Wigfield, et al., 1997) has reported that stereotypical gender differences in different self-concept factors are

reasonably consistent over age. However, one exception to this pattern of results has been noted. Girls tend to have substantially lower Appearance self-concepts than do boys from the age of about 10 through at least early adulthood, whereas girls aged 5 to 8 years of age tend to have Appearance self-concepts that are as high or higher than those of boys (e.g., Marsh, 1989; Marsh et al., 1998). Consistent with these previous findings, the only statistically significant gender difference that we found in the present investigation was the substantially higher Appearance self-concept for very young girls than for very young boys. It is, however, relevant to note that the directions of the other nonsignificant gender differences (favoring girls for Peer, Parents, and Verbal self-concepts, favoring boys for Physical and Math self-concepts) are consistent with gender stereotypes and differences found with older children. It is also worth noting that there are two marginal sex-age interactions (Physical significant, Peers nonsignificant) suggesting that the "expected" gender differences are emerging with age (boys higher Physical, girls higher Peers) even within the very narrow age range considered in the present investigation. In summary, a cautious interpretation of these results suggests, perhaps, that gender-stereotypic differences in multiple dimensions of self-concept that are consistent with responses by older children are just starting to emerge in responses by the very young children in our study.

The present investigation may also be unique in attempting to distinguish between Math and Verbal self-concepts in relation to differences in math and verbal achievement measures for such young children. Although our success in this ambitious goal was clearly mixed, there were some encouraging findings. In particular, academic achievement was significantly and positively correlated with academic self-concept, whereas correlations between achievement and nonacademic scales were either nonsignificant or significantly negative. In this respect, there is support for the linkage of academic achievement to academic self-concept and for the separation of academic and nonacademic self-concept. Support for the separation of Math and Verbal self-concepts in relation to math and verbal achievements, however, was not so clear. Consistent with expectations, math achievement was significantly related to Math and Verbal self-concepts and somewhat more highly correlated than with Math than Verbal self-concept (.40 vs. .31). In contrast, verbal achievement was not significantly related to either Verbal (.15) or Math (.20) self-concepts. In retrospect, it was probably unrealistic to hope for a clear pattern of results when the correlations are so high between the two academic self-concept factors and between the two achievement factors. These results suggest, perhaps, that the preschool children in our study cannot make meaningful distinctions between Math and Verbal self-concepts. Because they apparently do not make such clear distinctions between these two academic components, it also follows that they do not use their self-perceived accomplishments in one academic area as one basis for forming their self-concepts in another academic area as appears to be the case with older children (see discussion on the internal/external frame of reference model by Marsh & Craven, 1997).

Our experience in the construction of self-report instruments for very young children may also be useful for researchers in other areas. It is important to develop items that are tangible and relevant in relation to children's everyday experience. Thus, for example, the Math and Verbal items from the SDQI worked well for young children who have already begun school, but were not appropriate for the preschoolers in the present investigation. Although it is important for young children to maintain a focus on the task, it is counterproductive to use very short instruments that are unlikely to have satisfactory psychometric properties. These results have important implications for early childhood researchers in that the prevailing use of very short instruments may account for some of the difficulties researchers have in obtaining responses from very young children that yield good psychometric properties. In our research, we found that introducing a short break with some physical activity in the middle of the test administration was useful. At least for these very young children, we found that phrasing items as questions rather than first-person declarative sentences was more natural for the respondents. As is the case with even older children, we only used positively worded items. Contrary to some suggestions (but consistent with our previous experience), we found the use of pictorial representations of a response continuum (e.g., faces varying in the degree of smiles, different sized circles, etc.) were counterproductive within the individual interview format that we used. Because we only asked children to make a series of binary choices, they were not explicitly asked to make judgments along a continuum (even though we combined their binary choices for form a continuum). Most importantly, perhaps, was the individual interview format of test administration that we used. This procedure allowed the test administrator to establish rapport with the child, ascertain that the child was able to understand the task based on responses to sample items, to clarify the meaning of words or expressions that were unfamiliar to the child, and – through the double-binary choice format – to provide a double check on the appropriateness of each response. This administration procedure also has some obvious limitations including the need to use testers with appropriate training and a background working with young children, the substantially longer amount of time required to collect responses from sufficiently large sample sizes, and the potential biases introduced into children's responses by the testers.

In summary, the results are very encouraging and heuristic – particularly in relation to the mostly weak and inconsistent results reported in previous self-concept research with preschool children. Most importantly, perhaps, is the finding of a well-defined, multidimensional factor structure based on responses by such young children. Importantly, the factors were well-defined and reasonably reliable. Furthermore, except for the Math and Verbal factors, the correlations among the factors were surprisingly modest. Consistent with a trend emerging from recent research, the results suggest that children do distinguish between multiple dimensions of self-concept at an even younger age than previously thought possible and, perhaps, foreshadows some developmental trends in the formation of self-concept. Relations with academic

achievement supported the construct validity of academic self-concept and its separation from nonacademic components of self-concept. Gender and age differences, although mostly nonsignificant, were suggestive of developmental trends that are consistent with results based on responses with older children. The actual instrument that we developed probably needs more research to ascertain the replicability of our findings and, perhaps, to explore the appropriateness of including multiple dimensions of academic self-concept. Although probably not sufficiently reliable to use as a basis for making judgments about individual children, the instrument should be useful for comparing groups of children and for other research purposes. Our results clearly argue against reliance on the use of a single score to represent all facets of self-concept, which seems to be implicit in most instruments that are typically used to assess self-concepts of very young children. As has clearly been demonstrated in research with older children, it is hoped that the development of psychometrically sound, multidimensional measures that are based on strong theoretical models will lead to advances in self-concept theory, research and practice with preschool children.

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Table 1:
Factor Structure for Self-concept Ratings

Self-concept Factor Loadings							
Variables	Phys	Appr	Peer	Prnt	Read	Math	Uniq
Physp1	.66	0	0	0	0	0	.57
Physp2	.76	0	0	0	0	0	.43
Physp3	.79	0	0	0	0	0	.38
Apprp1	0	.91	0	0	0	0	.18
Apprp2	0	.68	0	0	0	0	.53
Apprp3	0	.73	0	0	0	0	.47
Peerp1	0	0	.74	0	0	0	.45
Peerp2	0	0	.85	0	0	0	.28
Peerp3	0	0	.82	0	0	0	.32
Prntp1	0	0	0	.66	0	0	.56
Prntp2	0	0	0	.76	0	0	.42
Prntp3	0	0	0	.57	0	0	.68
Prntp4	0	0	0	.63	0	0	.60
Readp1	0	0	0	0	.51	0	.74
Readp2	0	0	0	0	.82	0	.33
Readp3	0	0	0	0	.60	0	.64
Mathp1	0	0	0	0	0	.40	.84
Mathp2	0	0	0	0	0	.85	.28
Mathp3	0	0	0	0	0	.63	.60

Factor Correlations							
Phys	1						
Appr	.14	1					
Peer	.25	.26	1				
Prnt	.27	.42	.50	1			
Read	.50	.22	.29	.36	1		
Math	.42	-.03	.18	.32	.73	1	

Note: Self-concept Factors are: Phys = Physical, Appr = Appearance, Peer = Peer, Prnt = Parents, Read = Read, Math = Math. Uniq = uniqueness. All coefficients are presented in completely standardized format. For factors having multiple indicators, the indicators are labelled 1, 2, etc (e.g., Phys1, Phys2, Phys3). All factor correlations greater than .21 are statistically significant ($p < .05$) and all other estimated parameters are statistically significant. Goodness of fit was very good [χ^2 (df=137, n=100)= 167.11, Residual Non-centrality Index (RNI) = .949, Tucker-Lewis Index (TLI) = .938, residual mean square error of approximation (RMSEA) = .047].

Table 2:
Higher-order Factor Structure For Self-concept Ratings

	First-order Factors						Higher-order Factors			
	Variables	Phys	Appr	Peer	Prnt	Read	Math	HPhys	HNACD	HACD
Second-order factor loadings										
PHYS	.00	.00	.00	.00	.00	.00	.00	1.00	.12	.48
APPR	.00	.00	.00	.00	.00	.00	.00	.00	.46	.00
PEER	.00	.00	.00	.00	.00	.00	.00	.00	.59	.00
PRNT	.00	.00	.00	.00	.00	.00	.00	.00	.86	.00
READ	.00	.00	.00	.00	.00	.00	.00	.00	.00	.96
MATH	.00	.00	.00	.00	.00	.00	.00	.00	.00	.76
HNACD	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
HACD	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Factor Residual Variance/covariance										
PHYS	.00									
APPR	.00	.79								
PEER	.00	.00	.65							
PRNT	.00	.00	.00	.25						
READ	.00	.00	.00	.00	.07					
MATH	.00	.00	.00	.00	.00	.42				
HPhys	.00	.00	.00	.00	.00	.00	1.00			
HNACD	.00	.00	.00	.00	.00	.00	.33	1.00		
HACD	.00	.00	.00	.00	.00	.00	.53	.44	1.00	

Note. Self-concept Factors are: Phys = Physical, Appr = Appearance, Peer = Peer, Prnt = Parents, Read = Read, Math = Math, Hphys = higher-order physical, HNACd = higher-order nonacademic, HAcD = higher-order academic. All coefficients are presented in completely standardized format. For factors having multiple indicators, the indicators are labelled 1, 2, etc (e.g., Phys1, Phys2, Phys3). All factor correlations greater than .21 are statistically significant ($p < .05$) and all other estimated parameters are statistically significant. Goodness of fit was very good [χ^2 (df=144, n=100)= 172.59, Residual Non-centrality Index (RNI)= .952, Tucker-Lewis Index (TLI)= .943, residual mean square error of approximation (RMSEA) = .045].

Table 3:
Factor Correlations Among Self-concepts, Achievement, Gender and Age

Factors	Phys	Appr	Peer	Prnt	Read	Math	Rach	Mach	Sex	Age	SxA
Phys	1.00										
Appr	.16	1.00									
Peer	.25*	.27*	1.00								
Prnt	.28*	.44*	.51*	1.00							
Read	.51*	.23*	.28*	.34*	1.00						
Math	.43*	-.02	.17	.32*	.71*	1.00					
RAch	-.09	.05	-.28*	-.15	.15	.20	1.00				
MAch	.12	-.03	-.21	-.02	.31*	.40*	.64*	1.00			
Sex	-.03	.36*	.09	.09	.11	-.07	.03	-.23*	1.00		
Age	.21	.13	.03	.14	-.02	-.04	.00	.00	-.14	1.00	
Isexage	-.22*	-.06	.19	-.05	.10	-.08	-.12	-.08	.00	.00	1.00

Note. Self-concept Factors are: Phys = Physical, Appr = Appearance, Peer = Peer, Prnt = Parents, Read = Read, Math = Math. Achievement Factors are: Rach = Reading Achievement, Mach = Math Achievement. Demographic Variables are: Sex, Age, SxA = Sex x Age interaction. Goodness of fit for the a priori model was very good [χ^2 (df=325, n=100)= 392.61, Residual Non-centrality Index (RNI) = .946, Tucker-Lewis Index (TLI) = .933, residual mean square error of approximation (RMSEA) = .046].

* $p < .05$

Appendix:

Items and Reliability Estimates for Each of the Six Self-concept Factors

Physical Ability Self-concept (reliability = .89)

- Can you run fast? (O)
- Do you like to run and play hard? (O)
- Do you enjoy sports and games? (O)
- Can you run a long way without stopping? (O)
- Are you a good sports person? (M)
- Do you like playing outdoor games? (N)

Appearance Self-concept (reliability = .88).

- Are you good looking? (original)
- Do you like the way you look? (original)
- Do you have a nice looking face? (modified)
- Are you better looking than most of your friends? (original)
- Do you like the size and shape of your body? (new)
- Are you happy with the way you look? (new)

Peer Relations Self-concept (reliability = .84).

- Do you have lots of friends? (original)
- Do other kids ask you to play with them? (modified)
- Do you have more friends than other kids? (modified)
- Do most of the kids at pre-school like you? (original)
- Do the other kids want you to be their friend? (original)
- Do you play with lots of kids at preschool? (new)

Parent Relations Self-concept (reliability = .78).

- Do you like your parents? (original)
- Do your parents like you? (modified)
- Do you have lots of fun with your parents? (original)
- Do your parents play with you a lot? (new)
- Do you enjoy doing things with your parents? (new)
- Do your parents always listen to you? (new)
- Do you like talking to your parents? (new)
- Do your parents smile at you a lot? (new)

Verbal (reliability = .83).

- Do you enjoy listening to stories? (new)
- Are you good at reading? (original)
- Do you enjoy looking at books? (new)
- Do you know lots of letters of the alphabet? (new)
- Do you like it when people read you stories? (new)
- Do you know lots of different words? (new)

Maths Self-concept (reliability = .75).

- Are you good at telling the time? (new)
- Do you know lots of different shapes? (new)
- Do you like playing number games? (new)
- Are you good at counting? (new)
- Do you like saying numbers? (new)
- Do you know lots of numbers? (new)

Note. Items were drawn from the SDQI instrument (original), sometimes with slight modifications (modified), or were new items (new). Reliability estimates are coefficients omegas based on one-factor congeneric models conducted separately for items in each scale. Reliability estimates for the total scores were .821 (Academic), .871 (Nonacademic), and .879 (Total Self).

A Polytomous Item Response Analysis of the Physical Self-Description Questionnaire

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This study demonstrates the advantages of using polytomous item response theory (IRT) rather than classical test theory (CTT) to analyze Likert type questionnaires. The study analyzed the 70-items from the Physical Self-Description Questionnaire (PSDQ) (Marsh, Richards, Johnson, Roche & Tremayne, 1994), which was administered to 868 adolescents from a large Australian metropolitan sports high school. A graded response model (Samejima, 1969) was fitted to the data. The graded response IRT model allowed for the identification of items that provided high measurement precision, items with low measurement precision, items with redundant response options, items that needed rewording, and items that are redundant in that they add little information. This study also highlighted the importance of choosing the best set of adjective anchors for Likert items, and demonstrated that PSDQ was most discriminating among participants with lower estimates physical self-concept. The use of the model demonstrated procedures for selecting optimal items, which are not necessarily related to the CTT estimates of reliability. The advantages of IRT models are that they provide item/sample free calibration, local standard errors, thus giving much more information at the item level than does the CTT. The increased information at each Likert scale point, and the added information from the polytomous IRT model must make this method of choice when developing and analyzing polytomous items.

Review of Literature

Shavelson, Hubner and Stanton (1976) provided a theoretical model of self-concept from which many measurement instruments have been developed. For example, measures have been developed relating to global (Rosenberg, 1965), academic (Marsh, 1990), social (Byrne & Shavelson, 1996), arts (Vispoel, 1993) and physical self-concept (Fox & Corbin, 1989; Marsh, Richards, Johnson, Roche, & Tremayne, 1994). The underlying measurement model for these self-concept measures is based on classical test theory (CTT) test construction methods, and the limitations of this model are well documented (Hambleton, 1989; Hambleton & Jones, 1996). The major limitation of CTT is that it provides sample dependent statistics, in that the value of the item depends on the characteristics of the subjects and therefore scores can be interpreted only relative to the performance of other subjects scores. An alternative approach to test development is to use item response theory (IRT) which leads to item statistics that can be independent of the sample who completed the inventory and which provides participants with ability/trait estimates that are independent of the items they answer. IRT operates at the item level to provide a more flexible approach to test development and test score interpretation which ultimately leads to more dependable estimates of the trait. The major advantages of IRT are that the estimates for the people and the items can be placed on the same scale, and that after equating the item and people statistics are invariant across samples providing greater utility and generalizability. Both dichotomous and polytomous item response formats can be accommodated in the IRT framework with models specific to each.

Self-concept is not an all or nothing trait (i.e., not dichotomous) but one of varying degrees and therefore models that accommodate gradations in subject responses are required. Thus, a more reasonable approach to assessing self-concept item responses is to use a polytomous IRT model. Three commonly used polytomous IRT models are: (a) partial credit, (b) graded response, and (c) rating scale (for more detailed discussion of the differences between these polytomous IRT models see DeAyala 1993 and van der Linden & Hambleton, 1997). The graded response (GR) model (Samejima, 1969) is used in this

paper. Each equation (or mathematical function) in the GR model is a function of the underlying construct and utilizes thresholds which represent varying degrees of the ability/trait. The GR model is defined as the probability of an individual responding in category k or higher versus responding in lower categories. Two parameters are used to describe each equation. The a parameter represents the strength of the relationship between an item and the trait (that is, discrimination), and varies between items but it is constant across each items= response categories. The b parameters are the response option endorsement thresholds (akin to difficulty), that is the point that an individual is likely to be in that or a higher category as opposed to lower categories. These b parameters are ordered so that the $b_k > b_{k-1}$, and represents having more of the ability/trait (i.e. ANot like me@ through Alike me@).

Each endorsement option yields trace lines about the individuals= trait/ability (see Figures 1, 2 and 3) these can then be summed and the result is the item information function. Information across the trait continuum is defined by the category boundary parameters and generally items with high a parameters and a narrow range of b parameters provide greater amounts of information.

The PSDQ (Marsh *et al.*, 1994) has been shown to have good measurement properties when compared with other instruments purporting to assess physical self-concept (Marsh *et al.*, 1994). A review of the SDQ I (Marsh, 1992a), SDQ II (Marsh, 1992b), and SDQ III (Marsh, 1992c) by Gable (1998) noted that the empirical validity evidence for the SDQ measures is primarily derived from confirmatory factor analytic and correlational methods. Gable (1998) suggested a complimentary line of research using IRT to enhance the available validity evidence. Specifically, Gable (1998, p. 890) suggested that Aitem and person model fit statistics would contribute much to the understanding how the statements and respondents fit the proposed statistical models. Such research would be of value to examine empirically the accuracy of the multi-steps employed in the various response format options used in the SDQ forms.

The aim of this study is to fit a graded item response model to the PSDQ to provide a more robust psychometric analysis of this commonly used context specific personality measure.

Through the examination of item parameters and information functions this study will not only identify items with high measurement precision but will also determine where the items provide information along the trait continuum. Items with low measurement precision will also be identified and suggestions for modifying items to improve their measurement qualities will be suggested.

Method

The item bank of responses used in this study were kindly provided by H. W. Marsh of the University of Western Sydney, using a sample of students (N=868), aged 13-17 years of age from a large Australian metropolitan sports high school. The PSDQ was administered to intact classes of no more than 30 students by a trained school counselor using instructions similar to those in the SDQ II (Marsh, 1992b).

The PSDQ (Marsh *et al.*, 1994) is a 70-item questionnaire designed for adolescents 12 years of age and older, focusing on the physical component of the Shavelson, *et al.* (1976) model of self-concept (see Table 1). Students responded on a 6-point Likert scale (Afalse@, Amostly false@, Amore false than true@, Amore true than false@, Amostly true@, and Atrue@), and higher scores indicate higher physical self-concept. Items are worded using positively and negatively worded statements, with all negatively worded items reversed scored. The PSDQ has 11 scales: strength (6 items); body fat (6 items); activity (6 items); endurance/fitness (6 items); sports competence (6 items); coordination (6 items); health (8 items); appearance (6 items); flexibility (6 items); general physical self-concept (6 items); and self-esteem (8 items). Estimates of reliability (Cronbach's alpha) were reported by Marsh *et al.* (1994) across two samples of adolescents for the 11 scales and ranged from .82 through .94. Construct validity evidence regarding the factor structure of the PSDQ is available and suggests the 11 factors are well represented (Marsh, 1996a; Marsh 1996b; Marsh *et al.*, 1994).

Polytomous IRT Parameter Estimation

A graded response model (Samejima, 1969), using MULTILOG 6.0 (Thissen, 1990), was used to estimate the 70 items discrimination (a) and item location (b) parameters (see Table 2). A single a parameter and five b parameters were generated for each item. The a parameter reflects the steepness of the curve and is constant across the option endorsement categories. The b parameters vary and represent the thresholds between adjacent category endorsement options. Thus when there are 6 response categories, five b parameters are generated, hence b_1 represents the threshold between the Afalse@ and Amostly false@ endorsement options; b_2 is the threshold between Amostly false@ and Amore false than true@; b_3 is the threshold between Amore false than true@ and Amore true than false@; b_4 is the threshold between Amore true than false@ and Amostly true@; and b_5 is the threshold between Amostly true@ and Atrue@.

The equations specified by Dodd, Koch, and De Ayala, (1989) were used to generate the category characteristic curves, operating characteristic functions, item information function curves.

Measurement precision was evaluated using the methods suggested by Hambleton, Swaminathan, and Rogers (1991) and those applied by Gray-Little, Williams & Hancock, (1997). The methods included examining the a and b parameters to identify items with low a parameters (<1.00) and extreme ranges in the b parameters as well as the associated standard errors. Category information functions curves were examined to evaluate the measurement precision of the graded response model. Test information functions for the various scales were also calculated to assess the amount of information in each scale and how much each contributed to the overall test information function curve.

Results

Table 2 presents the item statistics for the 70 PSDQ items presented in their 11 respective scales. Estimates of reliability for the 70 items (alpha) was .97 and for the subscales were: health .81 coordination .83, physical activity .84, body fat .93, sports competence .92, global physical .92, appearance .89, strength .88, flexibility .85, and endurance .91 and esteem 85.

The solution for the model converged, the parameter estimates were reasonable, and the associated SEs small (see Table 2). In general, the a parameters were acceptable and had low SEs as were the b parameters which were spread across physical self-concept trait continuum.

Item measurement precision was assessed by examining high (>1.00) or low a parameters (<1.0) extreme b parameters their associated standard errors, and their operating characteristic functions (OCF). A total of 18 items had a parameters < 1.0 and these generally had lower item information (see figure 1 for an example of an item with low information across the response options). The remaining items had a parameters >1.00 with narrow ranges for the b parameters. Items from the health scale had low measurement precision as all had low a parameters <1.00 and had extreme b parameters (in some cases $b > -15$) as well as high SEs.

Examination of the OCFs revealed 11 items had low information across the response options. There were 24 items identified where $b_k > b_{k+1}$ was false in that the trace lines showed that these items were reduced to three or four response options (see figure 2 for an item reduced to three response options). A total of 35 items had high measurement precision across the response options (see figure 3 for an example of such an item).

Figure 4 shows the item information function curves for the items in the sports competence scale. Closer inspection of items 4 and 6 shows that these items have similar wording and meaning and therefore it is not surprising that they provide the same information.

Maximum information for each of the scales were: health 1.30; coordination 8.29; physical activity 8.55; body fat 6.83; sports competence 17.62; global physical 13.44; appearance 6.75; strength 5.74; flexibility 6.47; endurance 10.04 and esteem 12.30.(see Figure 5).

Figure 6 is the total test information function and shows that information is greatest around the -1.8 level of physical self-concept and peaked at 94.51. This suggests that the PSDQ is more discriminating at the lower end of the physical self-concept continuum.

Discussion

The application of a graded response model (Samejima, 1969) was a central feature of this study using a recently developed measure in sport and exercise psychology. Not surprising, the item and test statistics for the 70 PSDQ items were similar to those reported by Marsh *et al.* (1994).

This study established that the unidimensional graded response model (Samejima, 1969) can describe the data reasonably well. The a and b parameters typically were within reasonable ranges and the standard errors of measurement for individual items were generally low. Some items were identified as having low measurement precision, as their a parameters tended to be lower (usually below 1.00) and had extreme ranges for the b parameters. Item were identified where $b_k > b_{k+1}$ was false. In thus case items were reduced to three or four options out of the original six. Within these items some of the response options were, in effect, redundant. It thus can be demonstrated that there are major benefits for analyzing items using the graded response model, as it allows identification of response options that are not providing any information, and identifies those providing the most information.

The standard errors (SE) for the b_1 parameters were higher than the other threshold parameters. This finding was also noted by Gray-Little *et al.* (1997). The reason for the higher SE for b_1 parameters was the lack of endorsement for this category, namely the Afalse@ option. The high SE for the b_1 parameter is, therefore, a function of the item responses being negatively skewed. This finding leads to a questioning of how many response options used in the PSDQ and whether one could reduce these to eliminate the skewness in most of the items.

Analysis of the test information showed that the test provided maximum discrimination at the -1.8 trait level with information peaking at about 82. Thus it appears that the test is more discriminating at this level. For those with low perception of physical self-concept the PSDQ provides maximum information at the -1.8 level and therefore measurement precision is greatest at this point.

Interestingly, when compared to the positively worded items those negatively worded tended to have low a parameters and the location parameters (b) were often spread over a greater trait range at the lower end of the self-concept continuum. The negative items were further characterized by low item information. Negatively worded items appear not to provide a great deal of information to the overall test in comparison to the positively worded items.

Analysis of each items= contribution to the scale information function shows that for items with similar wording the information they contribute is similar. For example, items 4 (I have good sports skills) and 6 (I play sports well) from the sports competence scale essentially ask the same question and it is not surprising that they equally contribute to the scale information function (see Figure 5 and Table 2). Throughout the test there are many such examples of item redundancy and it would thus be relatively easy to shorten the PSDQ without any great loss in measurement precision and test information.

This study has demonstrated the usefulness of a fitting polytomous IRT model to a personality measure. This physical self-concept set of items also showed a lack of discrimination at the upper end of the self-concept continuum. It thus appears that

it is far more difficult to discriminate between those Ahigh@ or positive in their self-concept. This does raise the question of how many positive to negative response options are optimal to accurately assess self-concept. As has been noted elsewhere choosing more appropriate Likert anchors may increase the information in these scales (Steinberg & Thissen, 1995). One option may to reduce the number of response categories with the aim of providing a more even distribution across the response options and reduce the skewness of the scale. Another option may be to omit items where it appears too easy to agree with it and, therefore, these items do not discriminate well among subjects.

Recommendations

The findings from this study suggest that overall there are a number of items, 29 in total, (see Table 1) with higher measurement precision and that these items could serve as the core for future PSDQ refinement. There were also 18 items that need to be reworded (see Table 1) and retested to improve their measurement precision to warrant their inclusion into the PSDQ. The were 23 items that were identified as being seriously deficient in their measurement precision and their inclusion in the PSDQ needs to be reassessed.

The results further show that the SDQ discriminates best at the lower levels of self-concept, with very few items providing information at the upper levels. Thus, more items need to be written that discriminate among those with higher levels of self concept. Of more concern are the health scale items which have virtually no information and therefore their inclusion into the PSDQ needs to be thoroughly reviewed. Indeed, one might question if the health items should be included into the PSDQ or whether they should form a separate self-concept dimension, given their poor performance in these analyses.

Also of concern was the low information provided by negatively worded items. Of the 70 items, 21 (30%) were negatively worded and these were characterized by low information. Furthermore, some scales had no negatively worded items (coordination, physical activity, sports competence, global physical and endurance), others had some (health, appearance, strength, flexibility, and esteem) and one scale was solely composed of negatively worded items (body-fat). Clearly a problem exists with the negatively worded items and this needs to be addressed either by evenly spacing such items across the PSDQ or removing them from the scale. The later option may be more profitable given the lack of information in these items.

Conclusion

This study demonstrates the power of IRT models to refine and develop test items in that they provide much more information at the item level, than does the CTT models, and that this information can be used to make adjustments to items with low measurement precision. If the data fit the model, each item statistic is considered invariant (and there are statistical procedures to check this assumption), the performance of the item does not vary as a function of the features of other items. Similarly, a person=s score is not dependent on the performance of other students, which is the case for many interpretations

based on CTT. The score precision one gets from IRT models, the details of the items at each Likert scale point, and the added information from polytomous IRT models, must make this method the model of choice. The present study has aimed at demonstrating these advantages.

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Table 1:
The 70 PSDQ Items

Health

1. When I get sick I feel so bad that I cannot even get out of bed.* #
2. I usually catch whatever illness (flu, virus, cold, etc) is going around.* #
3. I am sick so often that I cannot do all the things I want to do.* #
4. I hardly ever get sick or ill. #
5. I get sick a lot.* #
6. When I get sick it takes me a long time to get better.* #
7. I have to go to the doctor because of illness more than most people my age.* #
8. I usually stay healthy even when my friends get sick.#

Coordination

1. I feel confident when doing coordinated movements. §
2. Controlling movements of my body is easy for me. §
3. I am good at coordinated movements. ∞
4. I can perform movements smoothly in most physical activities. ∞
5. I find my body handles coordinated movements with ease. ∞
6. I am graceful and coordinated when I do sport and activities. ∞

Physical Activity

1. Several times a week I exercise and play hard enough to breathe hard (to huff and puff). +
2. I often do exercise activities that make me breathe hard. +
3. I get exercise of activity three or four times a week that makes me huff and puff and lasts at least 30 minutes. #
4. I do physically active things like jogging, dancing, bicycling, aerobics, gym, or swimming at least three times a week. +
5. I do lots of sports, dance, gym and other activities. +
6. I do sports, exercise, dance, or other physical activities almost everyday. #

Body Fat

1. I am fat.* #
2. My waist is too large.* #
3. I have too much fat on my body.* +
4. I am overweight.* #
5. My stomach is too big.* #
6. Other people think that I am fat.* #

Sports Competence

1. Other people think that I am good at sports. #
2. I am good at most sports. §
3. Most sports are easy for me.
4. I have good sports skills. ∞
5. I am better at sports than most of my friends. ∞
6. I play sports well. §

Global Physical

1. I am satisfied with the person I am physically. +
2. Physically, I am happy with myself. +
3. I feel good about the way I look, and what I can do physically. ∞
4. Physically I feel good about myself. ∞
5. I feel good about who I am and what I can do physically. ∞
6. I feel good about who I am physically. ∞

Appearance

1. I am attractive for my age. §
2. I have a nice looking face. ∞
3. I'm better looking than most of my friends.
4. I am ugly.* #
5. I am good looking. +
6. Nobody thinks I'm good looking.* +

Strength

1. I am a physically strong person. +
2. I have lots of power in my body. §
3. I am stronger than most people my age. ∞
4. I am weak and have no muscles.* #
5. I would do well in a test of strength. ∞
6. I am good at lifting heavy objects. §

Flexibility

1. I am quite good at bending, twisting, and turning my body. §
2. My body is flexible. ∞
3. My body is stiff and inflexible.* #
4. My body parts bend and move in most directions well. +
5. I think I am flexible for most sports. ∞
6. I think I would do well on a test measuring flexibility. “

Endurance

1. I can run a long way without stopping. +
2. I would do well in a test of physical endurance and stamina. §
3. I could jog 5 kilometers without stopping. #
4. I think I could run a long way without getting tired. +
5. I can be physically active for a long period of time without stopping. ∞
6. I am good at endurance activities like distance running, aerobics, bicycling, swimming and cross-country skiing. +

Esteem

1. Overall, most things I do turn out well. +
2. I don't have much to be proud of.* +
3. I feel that my life is not very useful.* #
4. Overall, I am no good.* #
5. Most things I do, I do well. +
6. Overall, I have a lot to be proud of. ∞
7. Overall, I am a failure.* #
8. Nothing I ever do seems to turn out right.* +

Note: * = negatively worded items
= low measurement precision items
+ = items that need rewording/revising
§ = high measurement precision items.

Table 2: CTT and IRT Item Statistics for the 70 PSDQ Items

Scale	Item #	Item Mean	Item <i>r</i>	<i>a</i> (SE)	<i>b</i> ₁ (SE)	<i>b</i> ₂ (SE)	<i>b</i> ₃ (SE)	<i>b</i> ₄ (SE)	<i>b</i> ₅ (SE)	Max Item Info
Health	1	4.29	.1180	0.19 (0.08)	-16.6 (5.03)	-8.92 (2.62)	-5.21 (2.06)	0.11 (0.74)	4.80 (1.39)	0.03
	2	4.42	.1333	0.17 (0.52)	-15.7 (5.95)	-10.8 (3.98)	-6.69 (2.46)	-1.20 (0.81)	4.36 (1.62)	0.02
	3	5.33	.1863	0.38 (0.10)	-9.06 (2.43)	-7.41 (1.90)	-5.85 (1.51)	-4.48 (1.13)	-2.24 (0.58)	0.12
	4	4.06	.2520	0.40 (0.07)	-5.49 (1.03)	-3.20 (0.62)	-1.26 (0.33)	0.20 (0.25)	2.21 (0.46)	0.17
	5	5.20	.2980	0.49 (0.09)	-7.38 (0.40)	-6.11 (1.14)	-4.70 (0.86)	-2.86 (0.53)	-0.91 (0.24)	0.21
	6	5.03	.2480	0.39 (0.08)	-8.65 (1.97)	-6.72 (1.48)	-5.17 (1.11)	-3.06 (0.66)	-0.02 (0.25)	0.12
	7	5.25	.2276	0.41 (0.10)	-8.70 (2.19)	-6.93 (1.71)	-5.23 (1.27)	-3.52 (0.82)	-1.80 (0.44)	0.16
	8	4.57	.3363	0.67 (0.08)	-4.30 (0.57)	-3.07 (0.40)	-1.89 (0.26)	-0.91 (0.18)	0.84 (0.19)	0.47
Coordination	1	4.54	.4371	0.93 (0.08)	-4.15 (0.64)	-2.95 (0.30)	-1.70 (0.19)	-0.59 (0.12)	1.14 (0.15)	0.64
	2	4.83	.4749	1.07 (0.08)	-4.01 (0.40)	-3.04 (0.28)	-2.09 (0.19)	-0.86 (0.11)	0.60 (0.11)	0.91
	3	4.49	.6056	1.49 (0.10)	-2.80 (0.21)	-2.08 (0.15)	-1.33 (0.10)	-0.31 (0.08)	1.03 (0.10)	1.66
	4	4.54	.6551	1.72 (0.11)	-2.99 (0.23)	-2.06 (0.13)	-1.27 (0.09)	-0.27 (0.07)	0.85 (0.08)	1.79
	5	4.47	.5552	1.35 (0.09)	-3.00 (0.25)	-2.17 (0.17)	-1.37 (0.11)	-0.28 (0.09)	1.03 (0.11)	1.36
	6	4.47	.6755	1.85 (0.11)	-2.63 (0.17)	-1.92 (0.12)	-1.10 (0.08)	-0.19 (0.07)	0.91 (0.08)	2.10
Physical Activity	1	4.65	.4649	0.97 (0.09)	-3.40 (0.35)	-2.62 (0.26)	-1.59 (0.17)	-0.70 (0.12)	0.38 (0.12)	0.87
	2	4.66	.4478	1.01 (0.09)	-3.19 (0.31)	-2.06 (0.23)	-1.52 (0.16)	-0.57 (0.11)	0.49 (0.12)	1.05
	3	3.95	.3679	0.79 (0.08)	-2.31 (0.28)	-1.55 (0.20)	-0.67 (0.14)	0.11 (0.13)	1.07 (0.17)	0.75
	4	4.60	.5085	1.18 (0.09)	-2.54 (0.22)	-1.81 (0.16)	-1.16 (0.12)	-0.57 (0.10)	0.09 (0.09)	1.51
	5	4.71	.6309	1.65 (0.11)	-2.27 (0.16)	-1.82 (0.12)	-1.17 (0.09)	-0.62 (0.08)	0.10 (0.07)	2.46
	6	4.22	.6055	1.50 (0.10)	-1.84 (0.14)	-1.34 (0.11)	-0.66 (0.08)	-0.16 (0.07)	0.61 (0.09)	2.10
Body Fat	1	4.84	.5048	1.05 (0.10)	-3.34 (0.32)	-2.58 (0.24)	-1.51 (0.15)	-0.80 (0.11)	-0.19 (0.10)	1.10
	2	4.71	.4761	0.97 (0.09)	-3.08 (0.30)	-2.34 (0.23)	-1.45 (0.15)	-0.57 (0.12)	-0.01 (0.11)	0.96
	3	4.61	.5213	1.06 (0.09)	-2.92 (0.28)	-2.12 (0.20)	-1.28 (0.13)	-0.60 (0.10)	0.14 (0.10)	1.14
	4	4.96	.5051	1.14 (0.11)	-2.82 (0.27)	-2.29 (0.21)	-1.67 (0.15)	-1.09 (0.11)	-0.52 (0.10)	1.56
	5	4.71	.5335	1.12 (0.11)	-2.93 (0.27)	-2.20 (0.20)	-1.32 (0.13)	-0.66 (0.10)	-0.05 (0.10)	1.27
	6	4.95	.4127	0.91 (0.10)	-3.42 (0.39)	-2.71 (0.30)	-1.96 (0.22)	-1.19 (0.15)	-0.57 (0.12)	0.99
Sport Competence	1	4.12	.6589	1.63 (0.11)	-1.92 (0.13)	-1.43 (0.10)	-0.74 (0.10)	0.04 (0.08)	1.15 (0.07)	2.67
	2	4.67	.6842	2.01 (0.13)	-2.47 (0.16)	-1.87 (0.10)	-1.16 (0.08)	-0.43 (0.06)	0.43 (0.07)	2.65
	3	4.59	.6198	1.64 (0.11)	-2.78 (0.19)	-2.08 (0.13)	-1.22 (0.09)	-0.34 (0.07)	0.66 (0.08)	1.82
	4	4.69	.7273	2.47 (0.14)	-2.15 (0.12)	-1.66 (0.08)	-1.18 (0.07)	-0.45 (0.06)	0.36 (0.06)	4.21
	5	3.97	.6573	1.74 (0.11)	-1.91 (0.13)	-1.33 (0.09)	-0.58 (0.08)	0.35 (0.07)	1.33 (0.09)	2.24
	6	4.80	.7444	2.60 (0.16)	-2.27 (0.11)	-1.82 (0.09)	-1.33 (0.07)	-0.57 (0.06)	0.27 (0.05)	4.60
Global Physical	1	4.66	.5716	1.28 (0.10)	-3.15 (0.26)	-2.41 (0.19)	-1.45 (0.12)	-0.60 (0.09)	0.59 (0.10)	1.40
	2	4.81	.6045	1.48 (0.10)	-2.77 (0.21)	-2.31 (0.16)	-1.53 (0.11)	-0.67 (0.09)	0.30 (0.08)	1.93
	3	4.41	.7355	2.06 (0.13)	-2.38 (0.15)	-1.80 (0.10)	-0.96 (0.07)	-0.10 (0.06)	0.83 (0.07)	2.72
	4	4.62	.6867	1.99 (0.11)	-2.43 (0.16)	-1.83 (0.11)	-1.09 (0.08)	-0.34 (0.06)	0.46 (0.07)	2.60
	5	4.81	.6759	1.92 (0.12)	-2.69 (0.18)	-2.12 (0.13)	-1.39 (0.09)	-0.53 (0.07)	0.32 (0.07)	2.57
	6	4.75	.6776	1.92 (0.11)	-2.54 (0.17)	-2.05 (0.12)	-1.36 (0.09)	-0.48 (0.06)	0.39 (0.07)	2.80

Note: SE is in brackets

Scale	Item #	Item Mean	Item <i>r</i>	<i>a</i> (SE)	<i>b_i</i> (SE)	<i>b₂</i> (SE)	<i>b₃</i> (SE)	<i>b₄</i> (SE)	<i>b₅</i> (SE)	Max Item info
Appearance	1	3.50	.5929	1.33 (0.09)	-1.76 (0.15)	-1.19 (0.11)	-0.12 (0.08)	1.09 (0.11)	2.11 (0.16)	1.38
	2	3.64	.5684	1.28 (0.09)	-2.20 (0.18)	-1.47 (0.13)	-0.35 (0.09)	0.95 (0.11)	2.34 (0.19)	1.23
	3	3.28	.5530	1.20 (0.09)	-1.69 (0.15)	-0.93 (0.11)	0.25 (0.09)	1.33 (0.13)	2.14 (0.20)	1.10
	4	4.51	.5115	1.04 (0.09)	-2.92 (0.27)	-2.37 (0.22)	-1.48 (0.15)	-0.26 (0.10)	0.59 (0.12)	1.07
Strength	5	3.73	.6092	1.39 (0.10)	-1.97 (0.16)	-1.45 (0.12)	-0.45 (0.09)	0.75 (0.09)	1.88 (0.15)	1.60
	6	4.28	.4695	0.96 (0.08)	-3.16 (0.31)	-2.30 (0.23)	-1.22 (0.14)	0.06 (0.11)	1.01 (0.14)	0.81
	1	4.34	.5384	1.17 (0.09)	-3.16 (0.28)	-2.47 (0.21)	-1.29 (0.13)	-0.03 (0.09)	1.43 (0.14)	1.09
	2	4.47	.5944	1.46 (0.10)	-3.16 (0.25)	-2.19 (0.15)	-1.15 (0.10)	-0.20 (0.08)	1.05 (0.10)	1.27
	3	3.72	.4748	1.02 (0.08)	-2.49 (0.23)	-1.59 (0.16)	-0.42 (0.11)	0.88 (0.12)	2.13 (0.20)	0.82
	4	5.10	.4185	0.92 (0.10)	-4.51 (0.55)	-3.65 (0.41)	-2.49 (0.26)	-1.31 (0.15)	-0.43 (0.11)	0.74
Flexibility	5	4.15	.6177	1.48 (0.09)	-2.61 (0.19)	-1.76 (0.13)	-0.77 (0.09)	0.19 (0.08)	1.34 (0.11)	1.39
	6	4.21	.3985	0.86 (0.08)	-3.46 (0.36)	-2.47 (0.25)	-1.33 (0.16)	0.19 (0.12)	1.70 (0.20)	0.64
	1	4.28	.5144	1.01 (0.09)	-3.00 (0.28)	-2.14 (0.20)	-1.08 (0.13)	-0.10 (0.10)	1.14 (0.14)	0.87
	2	3.80	.5700	1.18 (0.09)	-2.24 (0.18)	-1.48 (0.13)	-0.40 (0.09)	0.62 (0.10)	1.72 (0.15)	1.10
	3	4.81	.2809	0.56 (0.08)	-6.03 (0.96)	-4.54 (0.70)	-2.91 (0.45)	-1.31 (0.25)	0.21 (0.18)	0.29
	4	4.65	.4650	1.03 (0.09)	-3.58 (0.34)	-2.71 (0.24)	-1.66 (0.16)	-0.68 (0.11)	0.72 (0.12)	0.89
Endurance	5	4.63	.6703	1.84 (0.11)	-2.70 (0.18)	-1.96 (0.12)	-1.26 (0.09)	-0.36 (0.07)	0.57 (0.07)	2.17
	6	3.92	.6012	1.32 (0.09)	-2.39 (0.18)	-1.55 (0.13)	-0.57 (0.09)	0.48 (0.09)	1.59 (0.13)	1.23
	1	4.05	.6439	1.51 (0.11)	-1.93 (0.14)	-1.41 (0.11)	-0.56 (0.08)	0.09 (0.08)	1.02 (0.10)	1.91
	2	3.99	.6838	1.67 (0.11)	-2.17 (0.14)	-1.52 (0.10)	-0.61 (0.08)	0.29 (0.07)	1.28 (0.10)	1.92
	3	3.21	.5908	1.24 (0.10)	-0.85 (0.11)	-0.35 (0.09)	0.27 (0.09)	0.75 (0.10)	1.38 (0.13)	1.79
	4	3.73	.6397	1.44 (0.11)	-1.55 (0.12)	-1.03 (0.10)	-0.28 (0.08)	0.42 (0.08)	1.29 (0.11)	1.86
Esteem	5	4.26	.6905	1.81 (0.11)	-2.10 (0.13)	-1.57 (0.10)	-0.82 (0.08)	-0.01 (0.07)	0.96 (0.08)	2.47
	6	4.14	.6026	1.38 (0.10)	-2.07 (0.16)	-1.55 (0.13)	-0.74 (0.09)	0.10 (0.08)	0.97 (0.10)	1.69
	1	4.53	.4668	0.99 (0.09)	-4.36 (0.45)	-3.22 (0.30)	-2.11 (0.20)	-0.31 (0.11)	1.74 (0.18)	0.71
	2	4.73	.4990	1.03 (0.09)	-3.25 (0.32)	-2.57 (0.24)	-1.72 (0.17)	-0.81 (0.12)	0.32 (0.11)	1.05
	3	4.98	.4466	0.96 (0.10)	-3.59 (0.41)	-2.76 (0.30)	-1.99 (0.21)	-1.34 (0.16)	-0.50 (0.12)	1.04
	4	5.28	.5486	1.48 (0.12)	-2.91 (0.25)	-2.53 (0.21)	-2.09 (0.16)	-1.44 (0.11)	-0.72 (0.08)	2.49
	5	4.79	.6341	1.71 (0.11)	-3.51 (0.30)	-2.39 (0.15)	-1.76 (0.11)	-0.55 (0.07)	0.71 (0.08)	1.44
	6	4.82	.6712	1.91 (0.12)	-2.68 (0.18)	-2.00 (0.13)	-1.37 (0.09)	-0.59 (0.07)	0.30 (0.07)	2.46
7	5.31	.5174	1.32 (0.12)	-3.32 (0.31)	-2.83 (0.26)	-2.31 (0.20)	-1.48 (0.13)	-0.86 (0.09)	1.87	
8	4.89	.5020	1.12 (0.10)	-3.31 (0.31)	-2.67 (0.25)	-1.90 (0.17)	-1.04 (0.12)	0.05 (0.10)	1.23	

Note: SE is in brackets

Figure 1: Trace Lines Indicating an Item with Low Measurement Precision

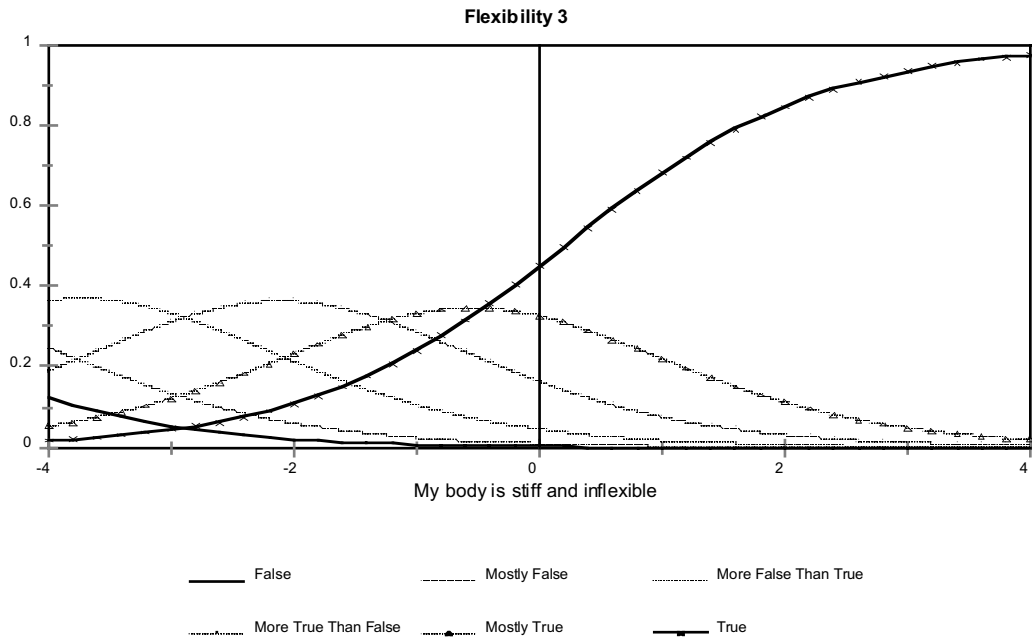


Figure 2: Trace Lines Indicating that Endorsement Options are Not All Used

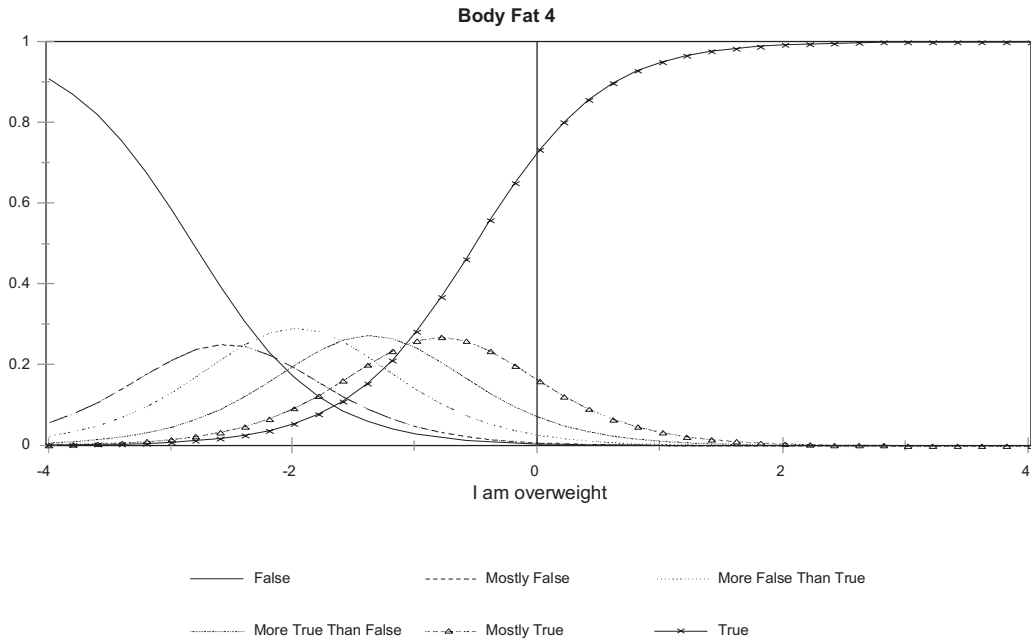


Figure 3: Trace Lines Indicating an Item with High Measurement Precision

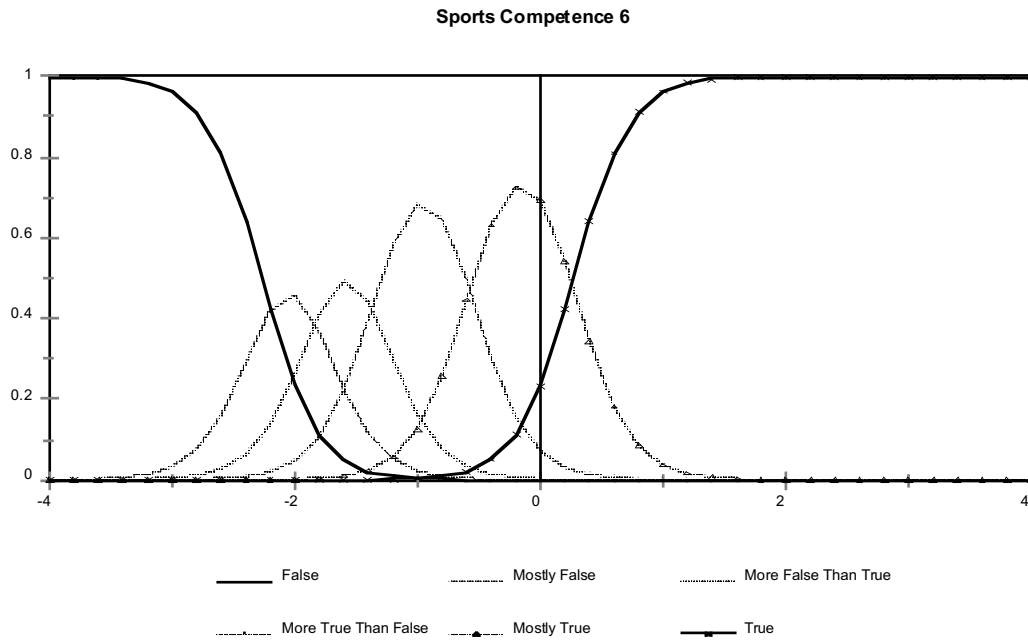


Figure 4: Item Information Function Curves for the 6 Sports Competence Items

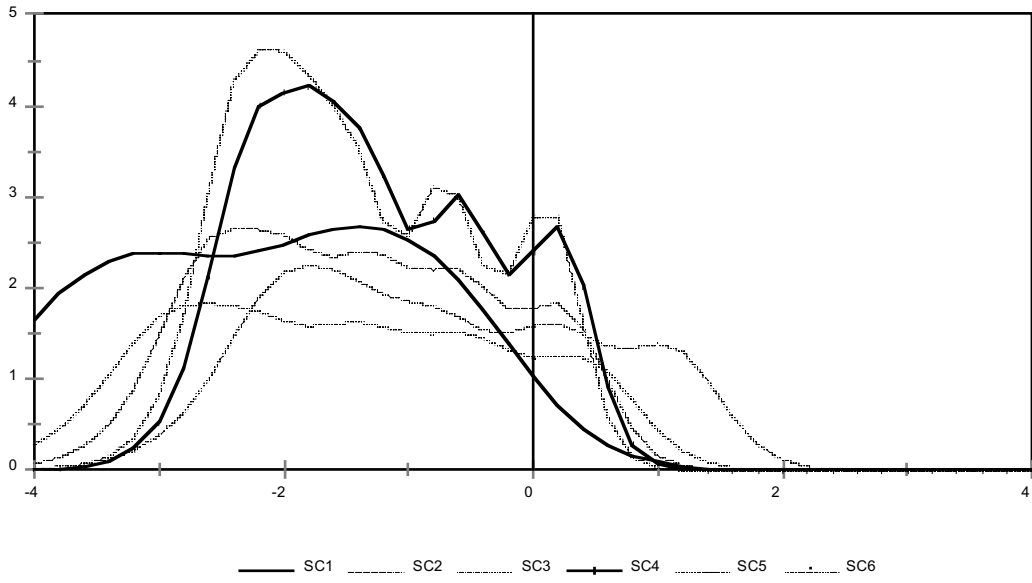


Figure 5: Information Function Curves for the 11 PSDQ Scales

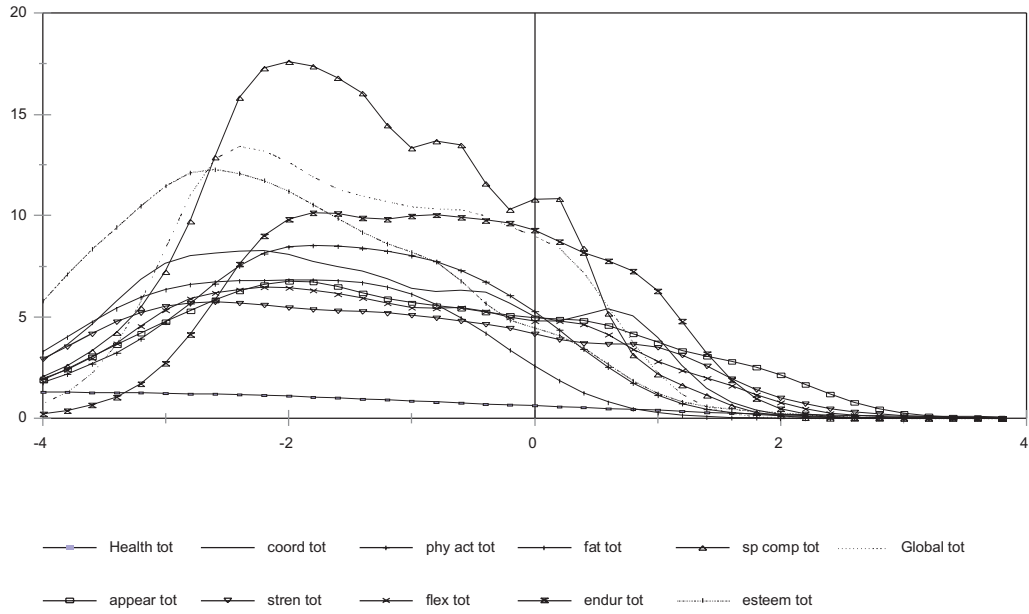
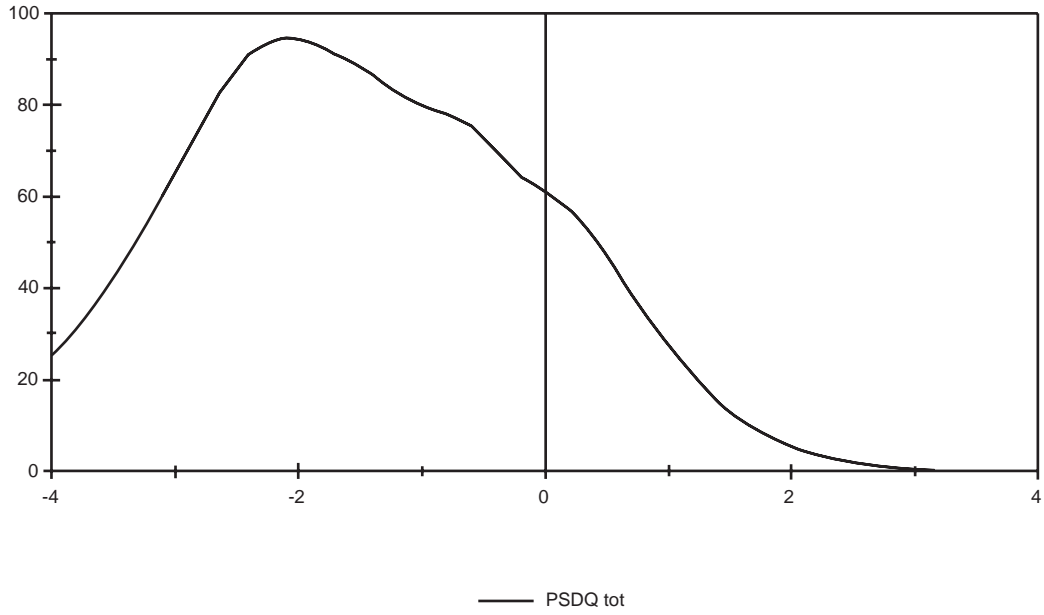


Figure 6: Test Information Function Curve for the 70 PSDQ Items



A Bilingual Approach to the Teaching of Statistics: Cognitive Development Through an Enhanced Academic Self Concept

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This paper reflects on a bilingual approach to teaching an MBA (Aviation Management) statistics course, focusing on the possible effects of enhanced academic self-concept on the student's cognitive development in statistics. The course consists of a two week intensive program in China, followed by revision and final assessment in Australia. Mathematics (a universal language in terms of the concepts and symbols) provided a bridge between the Chinese and English texts and it is suggested that this facilitated improved understanding of statistics. This paper also discusses developments into the online environment focusing on cultural factors, in areas such as relationships between student and teacher and conceptual understanding and how these would impact on online learning. The benefits of a bilingual online environment are also explored in terms of the need to cater for individual learning styles (for example surface/deep, visual /auditory kinesthetic) and having a more relaxed, confident, integrated and focused approach to study. Assessment will include a phenomenographic analysis of student learning.

Traditionally, most educational thinking has been focused on what the teacher does. It has overlooked what is done by learners (Biggs, 1999), how they feel about and respond to the instruction and their attitudes to themselves in relation to the subject at hand. This academic self-concept has not often been seen as very important. However, when encouraging students to take on new experiences and to move outside their comfort zone, there is today increasingly more evidence that we cannot afford to ignore the personal or affective domain (Glass, Maxwell, Owens, Newbegin, Munro and Sumner, 1999) in developing appropriate and successful educational programs.

This paper reports the possible effect on academic self-concept and ultimately academic performance of a bilingual approach to the teaching of statistics, with a group of Chinese speaking students enrolled in an MBA (Aviation Management) course. An extension of this approach to the online environment is under consideration and will also be discussed here. It is envisaged that a range of ethnic groups and other statistics and /or mathematically based subjects represent further developments.

Present Context

The statistics subject being offered, provides an introduction to some essential methods of data analysis and modelling. Students are required to analyse and interpret numerical data as well as learning how to use statistics to make informed judgements and decisions. Overall the focus is on understanding the meaning and significance of the statistical concepts. The subject has recently been taught in China by one of the authors, where Chinese texts were used in conjunction with English material. Many of the students also used an electronic dictionary to translate English words into Chinese. It is believed students benefited by the use of this bilingual approach both affectively and cognitively.

These students also come to Australia, where some final revision is provided and an examination held. A bilingual approach will be continued wherever appropriate and convenient.

As an aside, it is of interest to document that the present

lecturer also personally found the Chinese texts to be useful additional references for particular mathematical derivations (which are apparently universal in terms of the terminology), despite the fact that he could not read the Chinese explanations. On reflection then, it seems to the authors that mathematics seems to transcend different languages and creates unique opportunities for more effective cross cultural/ language dialogue, an important ingredient in the process of internationalizing the curriculum, which has recently become a major initiative in most educational institutions. Statistics courses, which use mathematics, may therefore be extremely important, even independently of any bilingual experience, for these programs.

The China Experience

At this stage, we will briefly describe the experience in China, with the intention of illustrating the importance of change in the self-concept of the students on their academic performance. The students were all mature age students, with considerable work experience, but they varied considerably in their prior knowledge of both statistics and English. For example, many had completed degrees containing a statistical component, such as Engineering and Meteorology and it was quite obvious they had a substantial understanding of many areas of statistics. However, there were other students who had virtually no knowledge of statistics and were quite anxious.

In terms of their general knowledge of English, most of the students were quite proficient in reading and writing, having studied it in school. But differences emerged when referring to technical material. A number of the students had previously completed English as a major and were already working as English language teachers and/or interpreters, with in many cases an excellent command of oral English. On the other hand, there were those who were 'relatively' weak in spoken English. Although the language skills were in some cases weak, overall it appeared they were quite good in comparison to the rest of the general Chinese community. One of the selection criteria is a TOEFL score of 5.80 or better.

In fact the students seemed to fall into the following four distinct groups:

Group	English language (mainly strength of oral language)	Statistical Knowledge
A	Relatively Weak	Strong
B	Relatively Weak	Weak
C	Relatively Strong	Strong
D	Relatively Strong	Weak

Based purely, at this stage, on observations of and casual conversations with the students, it seemed that each of these groups may have benefited in different ways from the bilingual approach;

Group A

These students may have studied statistics previously, but in their native language. What they needed was the ability to translate their concepts into English, to feel confident about using English instead of their native language.

Group B

For these students, who are weak in both areas to succeed, it is argued that their challenge was made much more manageable. Rather than being forced to learn new statistical concepts immediately only in English, the task was compartmentalized into the following steps.

Firstly, a working knowledge of some of the relevant English terminology was developed by using peer tutoring, where students were simply encouraged to focus on pronunciation, but not the meaning. The lecturer initially selected a sample of the most difficult words, in terms of pronunciation. In small groups, guided by one of the more fluent English speaking students who read out the words, the other students would then repeat each word. Interestingly, many of the students felt compelled to also use their electronic dictionaries, to attempt to make sense of the words. Even though the translation was often more the common meaning of the English terminology, rather than the specific meaning the word would have in the context of statistics, at least they felt that they had some idea in general, of the underlying meaning. This experience not only improved the English knowledge of the weaker students, but also made them feel more comfortable and in the process, they felt more empowered with an enhanced self-concept in relation to the use of the English language.

In addition, the peer tutors would have developed a better understanding of the English terminology by having to instruct the others, and would also have improved their own self-concept, by feeling that they have been able to contribute meaningfully to the overall program. For those peer tutors, who were weak in statistics, this would have been a particularly useful experience. At this point, the statistical concepts themselves are examined, but again from a bilingual perspective. The students heard the teacher describing the

material in English, and would either: read the Chinese and/or English text, depending on which, at that point, they felt most comfortable with, or have a group discussion frequently in Chinese.

It is the view of the authors that not only does this discussion help to improve their understanding of the statistical concepts, but it also enhances their academic self-concept. They would either then ask the lecturer a question or he would then continue with the next point. This opportunity to discuss the statistical concepts allows for the natural, culturally encouraged cooperative tendencies to be satisfied.

Watkins, Yau, Fleming, Davis, Tam, Juhasz and Walker (1997) have recently found evidence for such a cultural tendency. They reported that Hong Kong students perceive components of the interdependent self to be more important than aspects of the independent self. Although Watkins *et al.* (1997) were surprised to find that the Americans showed a similar pattern, they did have the highest global self-esteem.

Group C

For this group, learning in both English and Chinese would simply represent further practice.

Group D

This group would have the opportunity to learn concepts from two languages, with the additional use of Chinese presenting many opportunities for practice and repetition. According to Marton, F., Dall'Alba, G. and Kun, T. L. (1996) in 'The Chinese Learner', this repetition by Chinese learners is not simply a surface process (the typical myth), but is a method by which they move to deeper and deeper levels in each cycle (The Paradox of the Chinese learner). In terms of the work of Marton., Dall'Alba, and Kun (1996) using a bilingual program it seems would then lend itself perfectly to their natural learning process.

Of interest here is the work of Kirby, Woodhouse and Ma (1996), who have reported on research suggesting that the deep/surface behaviour of second language learners may vary depending on their proficiency with that language. In reference to bilingual learning Campbell (Kirby *et al.*, 1996) suggests that the students who are weaker in the second language may need to be encouraged to adopt deeper processing strategies through translating and processing material in their native language.

Program Development

In developing this program within an action research framework, the authors will be informed and guided both by previous experiences and the literature.

Bilingual Teaching Across the Curriculum

The literature on using a bilingual approach to teaching academic content is controversial (McInerney and McInerney, 1998) and arises mainly from the research on teaching programs in schools. Any transfer across to the tertiary domain should therefore be done with some reservations.

The literature suggests children from a non-English speaking background (NESB) experience a double problem. They are expected to master a new language (English) and also new cognitive skills in this new language (McInerney and McInerney, 1998). In terms of the most appropriate method of instruction for these students, the debate has been between using only English versus a bilingual approach. In these classes, however it must be emphasized that the focus was on the teaching of the new language, in this case English, rather than on the content which is encoded in English.

However, in the context of this paper, it is the statistical content that is of primary importance. It is unclear as to the implications of such a difference in focus on the choice of the most appropriate teaching strategies and whether they should be expected to be identical to those preferred in the earlier studies.

To provide some information on this matter, it is instructive to consider the Cahill (1984) report, which provides some insight into the effects of bilingual programs on learning across the wider curriculum. For example, he refers to the comprehensive evaluation of the Gupapunyu-English Bilingual program at Milingimbi. According to Gale *et al.* (Cahill, 1984, p.4):

Since the introduction of bilingual education at Milingimbi, the children are not only learning to read and write in their own language and furthering their knowledge and respect for their own culture, but they are also achieving better academic results in oral English, reading, English composition and mathematics than they were under the former English monolingual education system.

Importantly, McInerney and McInerney (1998) state that arguments in favour of bilingual programs reflect the view that “the linguistic and cultural differences of the students are seen as both individual and societal resources not to be wasted” (p.273). An interesting example of a learner’s use of a bilingual approach to learning was provided in McInerney and McInerney (1998, p.277). An ESL student was heard to say in response to a question about his approach to understanding what is said to him in English “ Well, first I translate what is said into my own language, then I think of the answer in my own language, think of the English words, put the words into the right order for the English way to say it, and then I say it.” A similar concern could be held for the prior statistical knowledge of the Chinese students.

There are also many arguments based on developmental processes related to learning and information processing in the young child and their influence on double language instructions. An example of this is proactive and retroactive inhibition from one language to another (Sprinthall and Sprinthall, 1987). It is interesting to speculate as to the

significance of this research in the context of the present course with adults. In this case, students are effectively faced with two sets of labels for new concepts, which may be a significant influence on learning the statistical ideas.

Bilingual Education and the Self-System (Self-Esteem, Self-Concept, Self-Efficacy)

Of particular relevance to this paper, is the impact of bilingual instruction on the student’s sense of self, which according to McInerney and McInerney (1998) is “inextricably interwoven with culturally mediated experiences” (p. 273). Language, being an integral component of any culture thus is considered an “essential element in the development of a sense of self” (p.273), a sentiment according to them also attributable to Vygotsky. It is argued here that even with adult learners, the process of a developing sense of self is still an issue for consideration.

In terms of the sense of personal identity, we need to consider the literature on the significant growth of bilingual/bicultural Aboriginal education throughout Australia, since 1973 when the Northern Territory began developing these programs (Allen 1986; Benton 1989; Gale *et al.*, 1987; Folds 1987, cited in McInerney and McInerney, 1998). According to McInerney and McInerney (1998): As an example of this development, Yipirinya School in Alice Springs uses Aboriginal culture, knowledge and language as the starting point for all learning. Aboriginal culture and language are never phased out to enable transfer to an English language and Western culturally dominated curriculum. Learning begins with the known and gradually introduces the unknown by relating Western concepts to Aboriginal concepts (p. 279).

Similar initiatives have been introduced into the Maori education system, the importance of these schools lying in their attempt to situate learning in the appropriate cultural context. As Corson (McInerney and McInerney, 1998, p.281) points out, the new schools try to restore “mana” (meaning status, prestige, power) to the Maori learner in a meaningful way by creating an environment where Maori culture is the taken-for-granted background against which everything else is set.”

A similar comment is made in Rado (1977, p.53) by one of the bilingual teachers, when referring to “the joy to the child, bombarded with English all day” who “gets something in her own language. It helps such children to feel we value their language and culture”. Another pertinent comment made in Rado (1977, p.65), referred to the use of English instruction with NESB students in relation to issues of self-esteem:

I had some big Turkish boys (11-12 year olds), who behaved at a four, five and six year old level, because that was the level of their language in English. Their self-esteem was low and it was reflected in their behaviour and the withdrawal situation, teaching them English in a formal setting, did nothing to enhance their self-esteem.

In terms of the proposed development of this subject, then, an acknowledgment of a student's self-concept and their sense of self would seem to provide a valuable contribution.

At this juncture, it is important to consider issues related to:

1. the dimensions of academic self-concept, e.g. How is self-concept related to perceived locus of control and self-efficacy and how are they measured?
2. underlying mechanisms proposed to explain any impact of academic self-concept on a student's academic achievement. Does academic self-concept act directly on achievement or indirectly via an effect on self-esteem?

Providing some answers to these questions, requires a literature search involving the various elements of the self-system (including the perceived locus of control) and achievement. Some of this information is provided below.

In the evaluation of the implementation in four Melbourne schools of a Greek-English Bilingual program, Cahill (1984) also reports that one of the good points about the program was felt to be the impact on the self-concept of the children, "Greek children learn self respect and dignity" (p. 98). Similarly, Christian (1996) in describing the experience of 169 schools using two way immersion education within the US, found that such a program promoted academic achievement and positive self-esteem. Of interest here is the further observation that the program also facilitated positive cross-cultural attitudes. Prewitt-Diaz (1983) working with 9th grade Puerto Ricans compared a group of recent arrivals on a bilingual program and a group who had spent their entire student lives on the Puerto Rican mainland and did not participate in the bilingual program. After one academic year, the students in the bilingual program scored higher on self-esteem.

A similar result has been found with American Indian children (Brassard and Szaraniec, 1983). Diaz and Golub (1980) also report on higher self-concepts in Hispanic students working on bilingual programs. In contrast, Alexander and Baker (1992) in a review of the literature found no difference in self-esteem between bilingual and monolingual programs. Curiel, Stenning and Cooper (1980) working with a group of Mexican American 7th grade students, have also found no difference in self-concept between bilingual and monolingual programs. The experimental students who had spent one or more years in a bilingual program had a significantly higher Grade Point Average (GPA) in Grades 1-6, but there was no significant difference between these students and the control group in the 7th Grade. These differences in the literature require further empirical study and it is the intention of the authors to contribute meaningfully to this debate.

Cultural Baggage and the Bilingual Environment

A recent theory is currently being put forward for the use of languages being associated with cultural/psychological

baggage (Pennycook, 1998). It is the author's contention that this situation may have a significant impact on the learner emotionally and ultimately even cognitively, by drawing attention to one particular dimension of that person's self-concept. However, the specific nature of this effect would then depend on the importance placed on this element of the self within that individual.

Pennycook (1998) specifically focuses on the English language in terms of its colonial implications, which makes his ideas extremely pertinent in the development of bilingual programs where the other language has had a colonial connection. This would definitely be the case for Cantonese as this has been one of the official language in Hong Kong (other than English) during its period as a British Colony. Although the British influence on mainland China has not been as prolonged, it is possible that Mandarin speakers (who represent the majority of mainland Chinese) may also be influenced by the colonial stigma). In terms of the written language, it seems that there is little difference between texts used by Cantonese and Mandarin speakers (personal communication) and therefore students reading technical material in Chinese script may, regardless of their oral language, be affected by similar feelings and associations.

Furthermore, it is suggested that these experiences may also be influenced by the area of China in which the learners have lived. For example, students from Shanghai (which has had a major British influence) may be more sensitive to these thoughts than students from areas not as heavily influenced by the British. In this way cultural identity and hence self-concept can have a significant impact on how students would respond to the use of English in a bilingual program.

At the same time, using their own language, in this case Chinese, carries its own cultural implications. For example, Chinese students are noted for having a great respect for the teacher, which can translate, for example, into withholding from asking questions in the classroom as a mark of respect. It is interesting to speculate on the influence of such a belief on the efficacy of a bilingual program, in which the student's contact with their own language would only reinforce or remind the student of their culturally specific behaviour patterns. This effect may also be subject to the degree to which the learner's culture impinges on their academic self-concept, or who they are in the classroom. It is intended to explore the views of the students in this program on these issues and to document any possible influences on their performance.

Proposed Development of an Online Bilingual Program for Teaching Statistics

Our longterm objective however, is to develop a bilingual online subject, where students will be able to have access to both English and Chinese material. However, it is not our belief that such a course should completely replace face to face teaching, but that it would be an excellent complement to traditional classroom instruction. As already discussed the bilingual element is being considered in order for students to be first more comfortable with the content and then to be

able to develop a greater understanding of the concepts involved.

It is planned that the online subject will be designed with weblinks, threaded discussions, use of multimedia and availability of most of the material online. In designing this course, many relevant pedagogical concerns will be addressed, for example, the relevance of constructivist theories and typical applications, such as Vygotsky and his zone of proximal development as manifested in the use of scaffolding (McInerney and McInerney, 1998). In connecting language and technology, it is pertinent to discuss the ideas of Warschauer (1999). He argues that contradictions of language, culture and class affect the impact of internet-based education and emphasises that his book is intended for, among others, those interested in bilingual education.

By going online, it is argued that students will have greater flexibility in their study of the subject in terms of times chosen and in the methods of learning that they will have access to. Therefore the online environment provides an opportunity for students to have control over their learning.

Information Technology and the Self System

It is relevant at this point to draw attention to the role of the self-system (self-concept, self-efficacy, self-esteem) in self-regulated learning, and McCombs (1986) provides theoretical and empirical support for a preliminary causal model, where he postulates that for self-regulated processes to be activated, students need not only generally positive self images, but also feelings of efficacy in and control over the learning processes. Using a path analysis however, Keith, Pottebaum and Eberhart (1986) report that there is no meaningful relationship between the self- concept and academic achievement. In contrast, the locus of control did have an impact, such that the greater the internal locus of control the higher the level of achievement. In other words, control seems to be the key issue, with the effect of self-concept a debatable issue.

One recent paper by Lawhorn, Ennis and Lawhorn (1996) does present some evidence for the influence of information technology on the affective domain. Working with senior adults, they found that online services promoted socialization and the computer training programs enabled the seniors to increase their self-esteem. These results could be explained either by a change in their self-concept and/or giving them a feeling of power and control. It is intended to use this information to provide an initial framework for developing a path analysis linking academic self-concept, possible intervening variables and academic achievement.

Bilingual Education, Online and the Self System

Recently, Price and Baker (1993), have reported on ‘The Welsh Experience’, a program combining bilingualism and information technology. They present a case for such a program, when they state that “the strength of the computer is in its ability to enrich learning by encouraging interactive and collaborative learning in a bilingual group” (p. 192). Price and Baker (1993, p. 192) continue:

In the early days, the technology was often criticized for hindering the development of language and communication in the classroom ...As the use of the new technology developed, it was realised that it could provide valuable opportunities for communication, for example, in the language of reasoning, argument, theorising, interpretation and presentation of work.

More specifically in terms of bilingual education, they argue that:

The computer can support, enhance and change what is happening in the bilinguality of the classroom. The classroom microcomputer affects almost all ages, children, all aspects of the curriculum and in turn all teachers. It is therefore possible for IT to present invaluable opportunities for bilingual language development at all levels (p. 192).

If a computer in the classroom has so much potential, then the authors would argue that the online experience would represent an even more significant development in the educational environment.

Moreover, it is our contention that the proposed bilingual online program in comparison with more traditional monolingual, non IT programs, will also more effectively address cultural and/or individual differences in learning styles such as the following:

a) Cultural Factors

Focusing on cultural factors, an interesting question would be how cultural differences in areas such as the relationships between student and teacher and the nature or meaning of conceptual understanding impact on the online teaching and learning process. In this context, the collaborative experience mentioned earlier, by Price and Baker (1993) would be an extremely valuable component of any program working with Asian students.

b) Individual Differences

The benefits of a bilingual online environment will also be explored in terms of the need to cater for individual learning styles, for example surface/deep (Biggs, 1999) and the predominantly visual/auditory/kinesthetic, such as onscreen material for the predominantly visual learner, while the predominantly auditory learner could access an audiotape of someone speaking either English and Chinese as they are describing some relevant statistical concept (Rose and Nicholl, 1997). Predominantly left or right brain learners are provided with the opportunity to use their logic or their intuition respectively, but are overall encouraged to have a more relaxed, confident, integrated and focused approach to study (Rose and Nicholl, 1997).

Implications of Previous Literature

Based on previous work, a bilingual online environment may improve academic performance. This could happen partially as a result of direct and/or indirect effects on the affective domain, specifically the self-system of which the academic self-concept is a key factor in this context. The intention in planning such a program is to thoroughly absorb the lessons of previous work in related fields.

Assessment and Analysis Procedures

To measure the improvement, questionnaires will be developed which will focus on a number of relevant affective variables, for example self-concept and self-efficacy, as well as providing feedback as to students' views of the subject and more specifically the approach used. Students will also be given an examination based on the material taught and the marks would then be compared to previous groups, with some attempt to control for possible group differences. Some of the proposed methods of statistically analysing this data could include factor analysis, multiple regression, analysis of covariance and path analysis (using direct and indirect influences of academic self-concept on achievement).

In addition, students will be asked to reflect on their experiences in a more qualitative fashion, possibly with the use of logs, journals or diaries and this information will be analysed using a phenomenographic approach, as described by Marton (Biggs, 1999) and programs such as NUD.IST.

Conclusion

Reflections on the recent teaching experience in China by one of the authors generated many ideas for improving the quality of the educational process for students. As a consequence, a more elaborate and sophisticated program has been envisaged and the author intends to implement it in the near future. It will be fully documented and this data will be made available for publication in the hope that it will encourage and inspire others to develop similar bilingual online courses in other areas of the curriculum. Such programs are, we believe, essential if we are to be genuine about internationalizing the curriculum and improving the self-concepts of our students and ultimately their academic achievement.

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Contingencies in Psychometric Assessments: Perceived Self-Competence as a Psychological Construct that is Independent of Personality and Self-Monitoring

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Research suggests self-competence perceptions are malleable, situationally specific and influenced by the mediating variables of persistence, goal difficulty, attributions, coping and performance strategies. Extending these findings, the Self-Evaluation Scale (SES) was developed and piloted with university students (N=65) together with a Personality assessment (NEO-FFI) and the Self-Monitoring Scale. The SES uses vignettes describing specific work scenarios anchored to two 7-point Likert scales to measure predicted future behaviour and judgements of ideal behaviour by eliciting comparison of self - perceptions of competence to behaviours described in the vignettes. Item reliabilities were high, ranging from .75 to .93 with an overall alpha of .65. The six mediating variables loaded onto five interpretable factors. Outcomes tentatively support the conclusion that perceived self-competence as measured in the SES is independent of personality and self-monitoring and now might be used to provide an additional perspective about behaviour outcomes in specific situations.

Organisational psychologists have become increasingly more interested in the importance of self-referent phenomena for understanding, controlling and predicting human work behaviour. The utility of research in this area has been its potential to account for the cognitive representations of self-knowledge, the evolution of the 'work' self and the role of the self in behavioural regulation at work. Most commonly, organisational psychologists have used skills, aptitude and personality measures as part of work performance reviews, for career guidance purposes or to determine potential job suitability. Personality tests in particular, have been used to measure the reasonably stable dispositions, personality traits (patterns of thoughts, feelings and behaviour across situations), that are thought to be characteristic of each individual (McCrae & Costa, 1991; 1995; McCrae & John, 1992). The assumption has been that personality tests provide valid and reliable insights into an individual's emotional, interpersonal, experiential and motivational styles. That is, personality traits have been relied upon as the psychological factors that direct how individuals use their skills and abilities, cope with occupational stressors and behave in interpersonal relationships due to their situational and temporal stability (McCrae & Costa, 1991). There is, however, a substantial literature that suggests individuals' beliefs in their situationally specific capabilities (self-competence perceptions) and behavioural management of the impressions they give others (self-monitoring), are two important factors that also influence human workplace behaviour (Williams & Lillibridge, 1992).

Self-Competence in the Existing Literature

The challenge confronting researchers interested in the contingencies between self-constructs and work performance outcomes has been to prove empirically that the variability in work performance may be attributed to the causal relationship between internal mental processes and external patterns of work behaviour (Agoustinis & Walker, 1995; Bandura & Adams, 1977; Gist, 1987; Hattie, 1992; Williams & Lillibridge, 1992). Despite the fact that self-referent

processes have been linked to or featured in several prominent cognitive theories of motivation and action, the disparate theories and incompatible operational definitions that have appeared in the literature have made it difficult to integrate research findings (Epstein, 1972; Hattie). The literature on perceived self-competence is no exception. For example, the construct has been treated as a close empirical relative of self-esteem (Brockner, 1979; Brockner, Derr & Laing, 1987; Korman, 1970; Pierce, Bardner, Cummings & Dunham, 1989; Sandelands, Brockner, & Glynn, 1988; Tharenou & Harker, 1991), as interchangeable with self-efficacy and as a dimension of composite self-concept (Hattie). This lack of consensus in the literature has made it virtually impossible to integrate the research findings on self-competence in a manner that may be optimally beneficial for organisational psychologists to predict and explain the variability in human work behaviour from the perspective of psychometric assessments.

The Dimensions of Perceived Self-Competence

Williams' and Lillibridge's (1992) have endeavoured to integrate the findings in relation to perceived self-competence that have appeared in the literature. Their model situates the construct within a global self-evaluative system that is also comprised of personal control and social acceptance. However, perceived self-competence is distinguished from perceived self-control and social acceptance on the basis that self-control perceptions are considered to refer to individuals' beliefs in their capabilities to vary events and change their environment significantly while social acceptance is operationalised as interpretations of appraisals of the self by significant others. Perceived self-competence then, is defined as "an individual's subjective evaluation of task-related ability, a self appraisal of what one can do in a specific situation" (p. 156) which is considered to be consonant with Bandura's (1986; 1997) operational definition of self-efficacy.

This conceptualisation of self-competence perceptions and perceived self-control suggests they influence each other

reciprocally. That is, an individual's perception of effective or ineffective performance implies perceived environmental control or lack thereof, which could influence that individual's sense of task related competence/incompetence. However, Williams and Lillibridge (1992) argue that it is debatable whether perceptions of personal control and perceived self-competence are, in fact, the same phenomenon. In this regard, perceived control is construed as an outcome expectancy, that is, the perceived likelihood that behaviour will produce desired outcomes whereas perceived self-competence is understood as a performance expectancy, that is, an individual's perceptions of capability in relation to the possibility of obtaining those outcomes. There is supporting evidence in the literature which suggests that perceived uncontrollability can negatively impact on performance motivation in individuals who are high in perceived self-competence (Bandura, 1986; Ford, 1985; Wood & Bandura, 1989). It may be concluded from this evidence that control beliefs influence performance motivation more than self-competence perceptions per se (Bandura & Wood, 1989; Barling & Abel, 1983; Carver & Scheier, 1981). There is also support from studies by Bandura and Adams (1977) and Kazdin (1979) that cognitive anticipation through visualisation of effective performance positively correlates with successful future performance outcomes. Therefore, another dimension of the construct is that perceived self-competence actually encompasses Bandura's (1986) construct of self-efficacy.

It follows that perceived self-competence is not necessarily equivalent to actual competent behaviour. Self-competence perceptions are considered to be a cognitively generated belief system while competent behaviour requires acts of effectively engaging with the environment (Novick, Cauce & Grove, 1996). On this basis, perceived self-competence is considered to be the psychological component of actual competence in a system where interpretations of past experiences function as indicators of capability that direct present and future activity choices (Williams & Lillibridge, 1992). In this way, not only are the dynamic elements of Bandura's (1997) self-efficacy theory, which proposes beliefs in capabilities are the product of the continual interaction of thoughts, feelings and behaviour, retained, but self-competence perceptions are afforded a flexible dimension which can account for the variability in human work behaviour.

On the basis of their review of the literature, Williams and Lillibridge (1992) proposed that perceived self-competence may be construed as a pliable system of beliefs that depend upon interpretation of experiences coupled to past, present and future performances. In this way self-competence perceptions become part of a self-reinforcing feedback loop that is mediated by five cognitive processes that act to effect work behaviour and performance outcomes. The five cognitive processes that are thought to mediate perceived self-competence and performance outcomes are task-related persistence and effort, attributions for success or failure, level of goal difficulty and performance and coping strategies (Williams & Lillibridge).

Experimental research findings indicate individuals high in perceived self-competence exert more effort and persist for longer with challenging tasks than individuals low in perceived self-competence (Bandura, 1986; Cervone, 1989; Peake & Cervone, 1989; Kazdin, 1979; Weinberg, Gould & Jackson, 1979). Additionally, the strength and resiliency of competence beliefs in individuals high in perceived self-competence has been found to be the result of vicarious learning experiences and enactive mastery where future behaviour is reinforced by the predictive value of antecedent stimuli (Bandura, 1997). To this end, it has been argued that it is the very belief that the same behaviour will continue to yield similar successes that will be more influential than any output effects of positive reinforcement emanating from repeated successful performances (Bandura & Adams, 1977; Bandura, Reese & Adams, 1982; Bandura & Cervone, 1986).

Although there is a paucity of studies that have directly investigated the role of attributions in mediating perceptions of self-competence and work performance, attributions are considered to mediate the effects of self-competence perceptions on work behaviour. To this end, it is considered to be possible that individuals high or low in perceived self-competence use a causal taxonomy to explain their successes and failure (Dweck & Leggett, 1988; Weiner, 1986). That is, the motivational sequence between an individual's ascription of the locus of control over behaviour, temporal fluctuation over the causes of behaviour and the perceived controllability of performance outcomes to ability, effort, task difficulty and luck, is thought to influence perceptions of competence/incompetence (Williams & Lillibridge, 1992). It is postulated that individuals are more inclined to seek a causal explanation of negative performance outcomes, particularly if they were unexpected, because of the cognitive uncertainty that is produced in relation to future successes (Weiner).

A wide literature exists to support the contention that a strong belief in capability perpetuates the setting of more difficult and specific goals, greater commitment to self-set and assigned goals and increased task performance (Bandura & Wood, 1989; Bandura & Cervone, 1983; Bandura & Jourden, 1991; Blustein, 1989; Button, Mathieu & Aiken, 1996; Cervone, Jiwani & Wood, 1991; Cervone & Peake, 1986; Locke, Lee, Frederick & Bobko, 1984; Locke, Shaw, Saari & Latham, 1981; Wood & Bandura, 1989a). Extending on these findings, it may be inferred that as self-set or assigned goals become more challenging, the degree of stress experienced by the individual increases. Researchers have examined responses to work stressors and have found that individuals high in perceived self-competence tend to adopt coping strategies that are different to individuals low in perceived self-competence (Latack, 1986; Parkes, 1990). In these studies individuals who perceived they were capable of attaining successful performance outcomes were more likely to engage in problem focused coping, which is task diagnostic and entails direct attempts to find a solution to a problem. Alternatively, individuals low in perceived self-competence were found to engage in maladaptive coping strategies such as emotion focused coping, which is self-diagnostic and characterised by focusing on internal deficits

and negative affective states (Kahn & Long, 1988). The importance of these observations for psychometric assessments is that robust empirical conclusions provide valuable insights for constructing psychometric instruments that, commensurate with their reliability and validity, could compliment existing measures used to predict human work behaviour either in work settings or as part of the selection process.

Purpose of the Present Study

The tendency for organisational psychologists to rely upon personality assessment tools to predict how individuals will use their skills and abilities, cope with occupational stressors and behave in interpersonal relationships is based on the assumption that personality traits are the most reliable predictors of these behaviours. From the perspective of psychometric assessments, the potential of perceived self-competence to predict the same behaviours has largely been ignored. The theoretical issue that needs to be addressed is whether or not perceived self-competence is a psychological construct that is independent of other constructs as may be inferred from the research findings, or is a component of, or subsumed by personality. One aspect of this research question stemmed from the controversy surrounding the independence of Snyder's (1974) self-monitoring construct. That is, personality factors have been postulated to be the causal mechanisms underlying self-monitoring which refers to individuals who adopt a pragmatic interpersonal orientation by regulating the selves they present to others (McCrae, & Costa 1992). Therefore, it was reasoned that if self-competence perceptions are reliable predictors of future work performance, as the literature suggests, then its status as a psychological construct from the perspective of psychometric assessments ought to be investigated.

Most research studies that have investigated the impact of self-competence perceptions on human work performance have used an experimental design, mostly in laboratory settings. The results of these studies suggest that the strength of the relationships between self-competence perceptions and its associated cognitive processes do not appear to be as ubiquitous in the field compared to the laboratory. One possible explanation for this observation may be that experimental designs measure performance relative to discrete tasks over a series of trials whereas performance in field settings is generally output that arises from complex and changing conditions that interact dynamically. It was reasoned therefore, that an alternative research approach would be to examine the construct from the perspective of psychometric assessments.

The purpose of this study, therefore, was to evaluate the potential of the self-competence construct to function as an independent predictor of work behaviour by examining how a new measure of the construct interrelated with existing measures of self-monitoring and personality. It was predicted that the mediators of perceived self-competence identified by Williams and Lillibridge (1992) would explain more of the variance in perceived self-competence than the Big Five

personality factors (Extraversion, Neuroticism, Agreeableness, Openness and Conscientiousness) or high or low self-monitoring of behaviour. Further, that the mediators of self-competence would not account for much of the variability in the Big Five personality factors or self-monitoring when considered independently.

Methodological Considerations in Psychometric Assessments

Generally, self-report measures use a traditional or behavioural format. Both formats require respondents to either circle a number on a 5, 7 10-point Likert scale or respond 'true' or 'false' to a list of single statements about particular situations to indicate the importance or relevance of each statement. Traditional formats, however, focus on the relatively enduring characteristics of the individual that lead to particular response patterns, whereas behavioural formats focus on situations that lead to particular response patterns (Kaplan & Saccuzzo, 1993). The traditional approach considers the characteristics an individual brings to the situation to be the primary determinants of response behaviours whilst the behavioural approach views situations as primarily determining response patterns.

The methodological difficulties associated with both approaches are widely reported. Firstly, there is the problem of distortion of construction, the tendency of single statements used in self-report measures to be abstract and vague in content, often resulting in a desire to answer 'it depends'. That is, it depends on a context. This means that the responses made are biased by individual differences in interpretation of the item through differences in the context with which the item has been associated.

There is also the familiar methodological problem of the influence of social desirability and response sets on test scores (Scandell & Wlazelek, 1999). Social desirability refers to the practice of responding to items in the direction perceived to be the most socially acceptable, regardless of whether the response is correct for the respondent. Response sets, on the other hand, may be understood as the tendency to consistently agree or disagree with sets of statements regardless of their content (Liebert & Liebert, 1995). Many researchers consider the effects of social desirability and response sets to invalidate test results because respondents are not considered to be responding to the specific content of the test items (de Vaus, 1995).

One way of controlling for response sets has been to vary the direction of the items so that items relating to the same attitude or trait require affirmative and negative replies and then reverse scoring independently selected items (Liebert & Liebert, 1995). A common method of controlling for social desirability has been to use forced-choice formats comprised of items that are different in content but measuring the same attitude or trait, and equal in terms of their independently determined social desirability. This forces respondents to choose between equally desirable and undesirable alternatives and thus respond to the content of the item (Liebert & Liebert).

Interestingly, McCrae and Costa (1992) have argued that social desirability does not necessarily invalidate test results on the basis that social desirability is a self-presentational style in itself hence is an aspect of personality. This suggests that social desirability may be an important indicator of individual differences in behaviour that should be measured rather than controlled (Scandell & Wlazelek, 1999). Even so, perhaps the most vigorous criticism of these types of self-report measures is that respondents are not capable of true objectivity in relation to themselves hence are not able to provide accurate and reliable self-assessments (Smith & Robertson, 1993). Therefore, it is argued, findings lack predictive validity.

The connotation of these issues for the present study was that alternative approaches for the design of a measure of self-competence perceptions needed to be further explored. It was decided that one alternative would be to use short vignettes. Vignettes have not been widely used in test construction because, like statement self-report measures, they too suffer from methodological weaknesses (de Vaus, 1995). Specifically, there is the possibility that there may be ambiguity within the vignettes leading to differential interpretation of the subtleties in content within the vignette. There is also the problem of distortion of omission, that is the possibility that words or entire sentences may be inadvertently overlooked when they are being read. Finally, there is the potential incompatibility between the vignette and respondents' reading levels (de Vaus).

However, these criticisms could equally apply to single statement instruments. It was reasoned that issues relating to ambiguity, distortion by omission and differential interpretation of the content in vignettes could be addressed by repeated test administrations across different populations, which would enable further refinement of the vignettes commensurate with the results of statistical analyses. Additionally, the problem of differences in reading levels could be addressed by adopting the same methods used in the construction of other self-report instruments, namely, tailoring the language within the vignettes to a minimum reading age level. The defining feature in support of measures using vignettes, is that unlike their single statement counterparts, they provide a standardised context which functions to minimise individual differences in interpretation by engendering the same set of behaviours among respondents (Aamodt, 1996; de Vaus).

Method

Aim

The purpose of the study was to examine contingencies in psychometric assessments by evaluating the relationships between perceived self-competence, personality and self-monitoring with a view to determining whether or not perceived self-competence is an independent psychological construct. Additionally, the aim was to evaluate the psychometric strengths and weaknesses of the measure that had been purposefully developed for this study in its pilot format.

The Structure of the Self-Evaluation Scale

The only measure of the competence construct that was potentially suitable for the present study was Wagner and Morse's (1975) Self-Competence Scale, a forced choice self-report measure of global self-competence that could not be adapted to assess the components in Williams and Lillibridge's (1992) model. Therefore, the Self-Evaluation Scale was developed to measure the components in Williams and Lillibridge's model. The Self-Evaluation Scale that was developed is comprised of 18 short vignettes that describe various situationally specific work scenarios and measures perceived self-competence along five dimensions comprising 6 subscales: persistence, goal difficulty, attributions, performance and coping (emotion and problem focused) strategies. Each vignette (example of behaviour) is anchored to two 7-point Likert scales and represents a modification of Smith and Kendall's (1963) procedure of anchoring examples of expected behaviour to evaluative rating scales. Smith and Kendall used examples of good, average and poor behaviour to define levels of the characteristic being measured and as operational definitions of the dimension being rated. These behavioural descriptions were anchored to independently determined positions on continuous rating scales placed vertically on the page. In the Self-Evaluation Scale, this method was modified by using the vignettes to define the levels of perceived self-competence identified by the mediating variables in the literature (rather than good, average and poor examples), and as operational definitions of the dimensions (mediators) of perceived self-competence being rated. Two or three vignettes were developed for each mediating variable.

Each of the dimensions of perceived self-competence were operationally defined as follows: Persistence: Persisting and increasing effort on difficult tasks or in difficult situations. Goal difficulty: Setting more difficult goals when easier goals could be set. Attributions: Attributing failure on a task to internal, stable and uncontrollable attributions of lack of ability or internal, unstable but controllable attributions of lack of effort. Attributing success on a task to internal, stable and controllable attributions of ability or external/unstable and uncontrollable attributions of luck. Coping strategies: Problem-focused: attempting to resolve difficulties through the use of problem solving strategies. Emotion focused: Becoming internally focused due to the negative effects of anxiety, negative affect, worry about ability associated with a demanding task or situation. Performance Strategies: Use of analytical thinking to solve problems.

The instrument is scored in the direction of high perceived self-competence and requires reverse scoring of responses for independently determined vignettes. The two scales to which each vignette is anchored are measures of perceived 'actual' and perceived 'ideal' self-competence. The 'actual' scale is designed to elicit responses through a comparative process whereby respondents compare the behaviour described in the vignette to how they predict they would behave if they were in the same situation: How would you

have behaved in this situation? Alternatively, the 'ideal' scale, which is more altruistic in nature, is designed to elicit respondents' judgements of the behaviour in the vignettes on the basis of what they perceive to be the optimum behaviour for that situation: In your opinion, how ideal is the behaviour described in the scenario? It is argued that the 'ideal' scale measures individuals' ideal aspirations. That is, how capable they would like to be. Reversing of vignette scores in addition to the direction of the 'actual' and 'ideal' scales enables response sets to be checked.

Procedure

Participants were required to complete three questionnaires, the Self-Evaluation Scale, the NEO-FFI (McCrae & Costa, 1992) and the Self-Monitoring Scale (Snyder, 1974). The NEO-FFI, a short 60-item version of the NEO-PI, was chosen because it is one of the most widely used and researched measures of the Big Five personality dimensions. The measure is widely used in selection, has been shown to have high internal consistency reliability, is easy to administer and takes only approximately 15 minutes to complete. Snyder's Self-Monitoring Scale, purposefully developed to measure that construct, was selected as a measure of self-presentation styles. It too has high internal consistency reliability and temporal reliability.

Posters were used to recruit voluntary participants from the University of Newcastle and a Hunter Institute of Mental Health counselling course. Each participant was required to sign a consent form, complete the three questionnaires and provide demographic information pertaining to their age, gender and work and/or study status. It was estimated participation in the study would take 45-60 minutes.

Two hundred and sixty one questionnaire packs were collected and 66 were returned with one being invalid. This represented a response rate of 25%. Participants in the study therefore consisted of 65 university and counseling students, 15 males and 50 females, representing 21.3% and 76.9% of the total sample respectively. Of these, 47.7% were studying only and 50.8% were working and studying. Their ages were distributed across five age categories: 18-25 (55.4%), 26-35 (10.8%), 36-45 (24.6%) and 46 and over (9.2%). Participants were selected on the basis of their willingness to participate with a requirement that they had attained 18 years of age. Q-Q plots, detrended Q-Q plots, histograms and box plots of age and gender indicated that the distribution of the population was relatively normal.

Analyses

High and low perceived self-competence was determined by correlating the actual scale scores with the ideal scales scores to investigate the nature of the relationships within the Self-Evaluation Scale. To determine high and low perceived self-competence, the mean of the 'actual' score for vignettes measuring the different intervening mechanisms, was compared with the mean of its 'ideal' score and an analysis of variance (ANOVA) was used to determine

whether any differences between the means existed. If a significant ANOVA result was obtained, then it was concluded that significant differences in the means between the two scales did exist. Congruence between the two scale scores (evidenced by no significant differences in the means) was considered to be indicative of individuals high in perceived self-competence whilst discordant actual and ideal scores (evidenced by significant differences in the means) was interpreted as low perceived self-competence. Those respondents whose perceptions of their situationally specific capability closely matched the capabilities they aspired to were considered more likely to be high performing individuals. Conversely, individuals whose beliefs in their capabilities did not equate to their aspirations of capability were likely to be low performing individuals. On this basis, it was reasoned that the instrument could potentially be used to predict future work performance along the five mediating mechanisms of perceived self-competence.

Preliminary reliability analysis was then conducted to determine the internal consistency of the scale. A principal components factor analysis with varimax rotation was conducted to determine whether the previously defined subscales emerged as separate factors and the extent to which the items (vignettes) tentatively assigned to each would load most highly on these factors. Alpha reliability coefficients and stepwise multiple linear regression analyses were then conducted to determine the patterns of relationships and shared variance between the three measures.

Results

Cronbach's alpha reliability coefficient for the total scale was .53 with item reliabilities being moderate to high and ranging from .87 attributions, .61 performance strategies, .63 emotion focused coping, .47 problem focused coping, .39 persistence and .37 goal difficulty. Examination of item-total correlations for each vignette across both scales indicated internal consistency would be improved through deletion of items less than or equal to .15. Internal consistency thus, improved with fine grained analysis and the removal of independently determined vignettes to an overall alpha reliability of .64 with scale variances ranging from 75 – 93%. These results suggested the Self-Evaluation Scale had good internal consistency.

An examination of the correlation matrix indicated there were sufficient correlations exceeding .3 to render the matrix suitable for factoring. Given that two scales were anchored to the same items (vignettes), each of the vignettes was used for each subscale. Each subscale therefore had two scores: Actual and Ideal. The Kaiser Meyer-Olkin Measure of Sampling Adequacy (KMO) reached .55 and the correlation matrix was considered suitable for factoring given that the failure to exceed .6 for the KMO test was attributed to the small sample size, N=65. The Bartlett Test of Sphericity was large and was highly significant, $p < .001$ indicating the matrix was suitable for factoring. A standard factor loading of .50 was set to determine which variables loaded onto the factors.

An exploratory principal components factor analysis with varimax rotation produced five factors that explained 72.8% of the total variance. Factor 1, which accounted for 22.3% of that variance, contained three variables whose rotated factor loadings were equal or exceeded .62. Two variables loaded on Factor 2, which accounted for 15.6% of the variance and whose rotated factor loadings were equal to or exceeded .89. Factor 3 accounted for 14.7% of the variance and had two variables whose rotated factor loadings were equal to or exceeding .81 while the fourth factor, which accounted for 11.3% of the variance, had two variables with rotated factor loadings equal to or exceeding .71. The final factor, Factor 5 explained 8.9% of the variance and had two factors who rotated factor loadings were equal to or exceeding .64. The rotated factor matrix is presented in Table 1. The factor loadings presented in Table One were derived using the Actual and Ideal scale scores. The anchoring of two Likert scales to the same vignette effectively means that the same item is being used twice to determine scores. Therefore, to confirm results of the previous factor analysis, a second principal components factor analysis was conducted on total scores for each scale which produced three factors that

accounted for 77.6% of the total variance. The communalities and unrotated and rotated factor loadings are presented in Table 2.

Prior to examining the relationships between the five subscales on the Self-Evaluation Scale, the Big Five personality factors and self-monitoring, the sample population was examined for high and low perceived self-competence. The determination of high and low perceived self-competence was obtained by comparing the means for each dimensions of self-competence. Results indicated that respondents in this study were low in perceived self-competence for attributions, Ideal (M = 13.68, SD = 2.82) and Actual (M=14.17, SD = 2.48), F (11, 53) = 10.75, MSE = 2.29, p < .001; goal difficulty: Ideal (M= 6.38, SD = 1.63) and Actual (M= 7.34, SD = 2.38), F (8, 56) = 4.93, MSE = 3.80, p < .001 and emotion-focused coping: Ideal (M = 11.28, Sd = 2.82) and Actual (M = 10.35, SD = 2.97), F (10, 54) = 2.99, MSE = 6.73, p < .01. The remaining comparison of means for problem solving, persistence and performance strategies revealed no significant differences between the means which indicated respondents were high in perceived self-competence for these intervening mechanisms.

Table 1:
Varimax Rotated Factor Loadings for Self Evaluation Scale as a Function of Total Scores for Each Scale

Variable and Scale	Communality	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Attributions – Ideal	.823		.903			
Attributions – Actual	.844		.894			
Goal Difficulty – Ideal	.570	.665				
Goal Difficulty – Actual	.719	.846				
Persistence – Ideal	.724			.813		
Persistence – Actual	.597	.620				
Performance Strategies – Ideal						
Performance Strategies – Actual	.684				.775	
Emotion coping – Ideal	.738			-.807		
Emotion coping – Actual	.673				-.714	
Problem coping – Ideal	.856					.880
Problem coping – Actual	.812					.640

Note: Factors shown are those loadings in excess of .5.

Table 2:
Unrotated and Rotated Factors Loadings: Total Scale Scores

Scale	Communality	Factor 1		Factor 2		Factor 3	
		Unrotated	Rotated	Unrotated	Rotated	Unrotated	Rotated
Attributions	.683			.642	.653		
Coping	.819					.765	.902
Goal difficulty	.827	.629	.876				
Persistence	.784	.848	.775				
Perf. Strategies	.766			.605	.854		

Table 3:
Intercorrelation Matrix of the Self-Evaluation Scale, NEO-FFI and Self-Monitoring Scale

	1	2	3	4	5	6	7	8	9	10	11
1	1.000										
2	-1.630	1.000									
3	-.0284	.2685*	1.000								
4	-.2990*	-.1150	.0930	1.000							
5	-.2125	.1094	-.0974	.2736*	1.000						
6	.0625	.3071**	.0112	-.2861*	-.1321	1.000					
7	.1525	-.1753	-.0029	-.1799	-.2811*	.2909**	1.000				
8	-.0649	-.0487	-.0826	-.0717	-.1261	-.1090	.2909**	1.000			
9	-.2284*	-.0720	.0284	.0620	.1032	.1167	.1375	.0767	1.000		
10	.1526	-.1753	-.0835	.0487	-.1516	.1167	.1650	-.1209	.2056	1.000	
11	-.3502**	-.0977	.3275**	.1126	.1532	-.1805	-.4563**	.0492	.0304	-.1945	1.000
12	.0151	-.0557	-.2896*	.0489	.0846	.0438	.1963	.1778	.1352	.1475	-.0973

- Signif. LE .05 ** - Signif. LE .01 * (1-tailed) 1= Neuroticism; 2 = Extraversion; 3=Openness; 4= Agreeableness; 5=Conscientious; 6=Self-monitoring; 7=Persistence; 8=Goal difficulty; 9= Attributions; 10=Performance strategies; 11=emotion focused coping; 12= problem focused coping.

Pearson’s product-moment correlation coefficients were then computed to determine the existence and direction of any relationships between perceived self-competence and the Big Five factors and self-monitoring. By referring to Table 3, it is evident significant relationships were observed across the three measures.

To investigate which variables were the most significant predictors in these relationships stepwise multiple regression analyses were conducted. Scatterplots of residuals against predicted values and the plots of regression standardised residuals for all dependent variables indicated a normal distribution. Mahalanobis distance values indicated no multivariate outliers among the independent variables that significantly negatively affected the normality of the distributions. Where possible, an alpha level of .01 was used to reduce the possibility of a Type 1 error.

Results indicated that emotion focused coping, Agreeableness and attributions explained 19.2% of the total variance in Neuroticism, $r^2 = 19.2$, which was highly significant, $F(2, 57) = 6.80, p < .01$. Emotion focused coping was a better predictor of Neuroticism than either Agreeableness or attributions, making a significant unique contribution of 12% to the variance in Neuroticism, $F(1, 58) = 8.24, p < .01$. When Agreeableness was entered into the equation, the total shared variance increased by 7.2% however, attributions was no longer a significant predictor. Examination of the R Square change statistic and Significant F changes values indicated that emotion focused coping made a significant unique contribution of 8.4% to the variance in Neuroticism and Agreeableness made less of a contribution, 5.4%. It was concluded that both emotion focused coping and Agreeableness both are significantly correlated in Neuroticism such that emotion focused coping makes slightly more of a unique contribution to the variance than Agreeableness but neither subsumes the other hence in combination their effect on Neuroticism is significant. Further analysis indicated that none of these variables explained any

of the variance in Attributions, $r^2 = .06, F(4, 55) = .888, MSE = 24.906, p > .05$ but that Neuroticism significantly predicted emotion focused coping, $r^2 = 12.4, F(1, 58) = 8.244, MSE = 21.691, p < .01$.

Emotion-focused and problem-focused coping accounted for 17% of the variance in Openness, but emotion-focused coping was the most significant predictor, $r^2 = 10.73$ with problem-focused coping adding to the predictive power in the equation, $r^2 = 6.53, F(2, 57) = 5.950, MSE = 28.503, p < .01$. Further examination of the relationships revealed only Openness significantly predicted either emotion or problem focused coping, $r^2 = 10.7, F(1, 58) = 6.97, MSE = 22.11675, p < .01$ and $r^2 = .08, F(1, 58) = 5.308, MSE = 18.7785, p < .01$ respectively.

The relationship between Conscientiousness and persistence was examined using a standard multiple regression and indicated that persistence accounted for only 8% of the variance in Conscientiousness, $r^2 = .08, F(1, 57) = 4.891, MSE = 49.435, p < .05$. The persistence scale was then divided into Actual scores and Ideal scores to determine which was the most significant predictor. Results indicated that the Actual scale, $r^2 = 10.72$ was the only significant predictor of Conscientiousness, $F(1, 58) = 6.964, MSE = 48.549, p < .01$ with non-significant T-values indicating the Ideal scale did not significantly add to the predictive power of the equation.

A standard multiple regression analysis revealed persistence, Extraversion and Agreeableness explained 25% of the variance in self-monitoring, $F(3, 55) = 5.961, p < .01$. Examination of the t-values indicated that persistence and Extraversion added to the predictive power of the equation but Agreeableness did not. Stepwise multiple regression showed Extraversion was the better predictor, accounting for 9% to the total variance in self-monitoring, $F(1, 57) = 5.945, MSE = .2288, p < .05$. However, when persistence was added into the equation, the predictive power of the two variables increased to almost 22%, $r^2 = 21.82, F(2, 56) =$

Discussion

7.810, MSE = .20116, $p < .01$. Given these findings a Kruskal-Wallis one-way ANOVA was conducted in order to determine the differences between high and low self-monitors and beliefs in their capability to persist on a task. Results indicated that there was a significant difference between the means for high and low self-monitors and that persistence did increase significantly for high self-monitors, $c^2 = 4.435$, $p < .05$.

To examine within-measure relationships across subscales based on previously determined significant correlations, a stepwise multiple regression analysis of persistence, goal difficulty and performance strategies was performed for the Self Evaluation Scale. Goal difficulty and performance strategies were found to account for 22% of the variance in persistence, $F(2,58) = 8.360$, $p < .001$. However, goal difficulty proved to be a better predictor of persistence making a unique significant contribution of 16.5% to the total variance in beliefs in capability to persist on a task, $F(1, 59) = 11.644$, $p < .01$. In order to examine whether these observed differences occurred as a function of age and gender, a 4 x 2 between-subjects ANOVA was used. Factor analysis of the effects of age and gender on persistence revealed no main effects or two way interactions for either independent variable on persistence (when goal difficulty was controlled for), $F(2,58) = .379$, $p > .05$ or goal difficulty when persistence was controlled for, $F(2, 58) = 1.123$, $p > .05$. This indicated age and gender did not significantly effect perceptions of self-competence along this dimension.

Results of a further 4 x 2 between-subjects ANOVA testing the effects of age and gender on Neuroticism and Agreeableness revealed no main effects or two way interactions for either independent variable on persistence (when goal difficulty was controlled for), $F(2,58) = .379$, $p > .05$. A similar result was obtained for goal difficulty when persistence was controlled for, $F(2, 58) = 1.123$, $p > .05$ thus indicating age and gender did not significantly effect perceptions of self-competence along these dimensions.

Additionally, given that persistence had also explained some of the variance in self-monitoring, a hierarchical multiple regression analysis was conducted examining which variable (Extraversion, Agreeableness or persistence) made the most significantly unique contribution. All three variables together were found to explain 25% of the variance in self-monitoring, $F(3,55) = 5.960$, $p < .01$. Examination of the T-values indicated that persistence and Extraversion added to the predictive power of the equation but Agreeableness did not. Further, that persistence made unique significant contributions of 6.11% and Extraversion 9.61% to the overall variance in self-monitoring.

Finally, a hierarchical multiple regression indicated that neither emotion-focused coping nor neuroticism significantly explained any of the variance in self-monitoring, $F(2,58) = .976$, $p > .05$. Further, that only emotion-focused coping made a unique significant contribution of 12% of the variance in Neuroticism, $F = 4.053$, $p < .05$ with self-monitoring failing to meet the selection criteria to be entered into the equation.

The purpose of the present study was to examine contingencies in psychometric assessments by examining the relationships between perceived self-competence and personality and self-monitoring with the aim of determining whether or not perceived self-competence is an independent psychological construct. It was necessary to develop the Self-Evaluation Scale in order to achieve this end as the only other known measure of self-competence (Wagner and Morse, 1975) did not cater for the five intervening mechanisms in perceived self-competence identified in a review by Williams and Lillibridge (1992).

Preliminary reliability and factor analysis of the Self-Evaluation Scale yielded better than expected results given the small sample size. With fine grained analysis and the removal of independently determined vignettes an overall alpha reliability of .65 was obtained with scale variances ranging between .75 - .93. It may be inferred on the basis of this preliminary analysis that the Self-Evaluation Scale has the potential for good internal consistency.

Factor analysis using the 'actual' and 'ideal' scales separately revealed each of the mediators of perceived self-competence postulated in Williams and Lillibridge's (1992) model loaded onto five factors. Goal difficulties and persistence loaded onto Factor One, attributions onto Factor Two, persistence (Ideal) and emotion-focused coping (inverse) Factor Three, performance strategies (Actual) and emotion-focused coping (Actual) Factor Four and problem-focused coping, Factor Five. The loading of goal difficulty and persistence onto the first factor may be explained in terms of the compatibility of the behaviours that are associated with these mechanisms. That is, if an individual who is high in perceived self-competence sets difficult or challenging goals, then attaining those goals is likely to require persistence and greater effort. The negative loading of emotion-focused coping with persistence and performance strategies indicates that individuals who engage in task related persistence and effort, analytical thinking and proactive problem solving strategies are unlikely to become self-diagnostic, anxious or worry in the face of any difficulties. It is suggested these findings are congruent with the behaviours that are characteristic of individuals high in perceived self-competence.

A slightly clearer picture emerged from a second factor analysis which combined the 'actual' and 'ideal' scores for each intervening mechanism to derive a total scale score. Three factors emerged: goal difficulty and persistence loaded onto the first factor, attributions and performance strategies loaded onto the second factor and coping strategies loaded onto the third factor. The loading of attributions and performance strategies on the same factor suggests individuals high in perceived self-competence make stable internal attributions of ability for successful performance and unstable, external attributions to lack of effort for unsuccessful performance in relation to tasks that require intensified effort and alternative performance strategies.

It was predicted that the intervening mechanisms

underlying self-competence perceptions would explain more of the variance in self-competence perceptions than personality or self-monitoring. Further, that independently the mediators of perceived self-competence would not account for much of the variance in the Big Five personality factors or self-monitoring indicating they are relatively independent of the Five Factor Model. It was reasoned that if the intervening mechanisms identified in Williams's and Lillibridge's (1992) model as mediators of perceived self-competence were correct, then these dimensions should account for significantly more variance on their own in perceived self-competence compared to personality or self-monitoring. Not only would support for this hypothesis provide empirical support for William and Lillibridge's model but it would also provide further theoretical insight into the nature of these psychological constructs.

Multiple regression analyses revealed the intervening mechanisms in Williams' and Lillibridge's (1992) model together explained 87% of the variance in perceived self-competence but did not significantly account for any of the variance in the Big Five personality factors or self-monitoring. Additionally, independently, each of the dimensions of perceived self-competence did not explain much of the variance in either personality or self-monitoring or vice versa. Only two significant relationships were observed. Neuroticism accounted for a significant, but small amount of variance in emotion-focused coping strategies and perceived self-competence exerted a small effect on high self-monitoring through the intervening variable, persistence. It is suggested that these findings are not only consistent with previous research but indicate that the Self-Evaluation Scale has potential as a measure of perceived self-competence which may be substantiated through additional research and further refinement.

Given the robustness of the Big Five personality factors in determining and regulating human behaviour cross-situationally, the emergence of perceived self-competence as independent of personality was a hypothesised, but surprising finding. From the perspective of psychometric assessments, it can be said that the functions of the two constructs are the same. Like personality, measures of perceived self-competence seek to assess patterns of thoughts, feelings and behaviour to further understand behavioural determination, regulation and performance. That the results in this study indicated that perceived self-competence and personality share no common variance raises the question as to what it is that renders them distinct. Part of the answer is thought to lie in their theoretical conceptualisation. Personality theorists agree in general, that the patterns of thoughts, feelings and behaviours that are consonant with personality factors will be displayed consistently and in diverse situations. Alternatively, perceived self-competence has been conceptualised in the literature as being situationally specific and malleable. Therefore, individuals' beliefs in their situation-specific capabilities are conceived of as being determined mostly through enactive mastery or vicarious learning (modeling) processes. The beliefs are considered to be pliable because situational outcomes vary, and are

dependent on past, present and future performances.

It is thus possible that self-competence may be the construct that underlies personality when psychosocial functioning is being considered from the perspective of work behaviour outcomes. In this regard, personality measures require respondents to make generalised judgements which obscures what it is that is being measured because respondents are forced to weigh and average self-referent information and limit the range of contexts and activities in order to make the judgements being asked of them. This renders the utility of this type of assessment questionable when the prediction of work performance outcomes in a particular domain is the point of interest. It is suggested therefore, that the Self-Evaluation Scale has the potential to provide an additional perspective about behaviour outcomes in specific situations.

An important limitation of this study was the small sample size. Even though indirect support for the Self-Evaluation scale was considered to be possible by 'anchoring' it to measures with established reliability and validity, the sample size was still not large enough for the results obtained through factor analysis to be stable. Additionally, it is possible only individuals who perceived they were capable of persisting on a task participated in this study due to the demands associated with reading the vignettes.

In conclusion, empirical evidence has established that self-competence perceptions influence work behaviour either directly or indirectly through the intervening variables of task persistence and effort, goal difficulty, attributions, coping and performance strategies, which are implicit in the behavioural descriptions within the vignettes of the Self-Evaluation Scale. The measurement of perceived self-competence using these intervening variables as predictors of potential high or low performing individuals would appear to be a meaningful extension of the existing literature that, as yet, has not been empirically determined. Traditionally, it has been personality factors that have played an integral role in the prediction of human work performance on the basis that personality traits are considered to be stable indicators of preferred work styles and social adjustment in the work place. It is suggested however, that the present study may have theoretical implications for the psychology of personality and the self through the elucidation of the interrelationships among these constructs. The practical implications for organisational psychology may be the increased likelihood of identifying high performing individuals through the conjoint use of personality, self-competence and self-monitoring measures as reliable and valid indices of future work performance outcomes.

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Investigating the Factors that Influence the Formation of Adolescents' Emotional Stability and General Self-Concept

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Based on a sample of 684, Grade 9 students (286 girls and 398 boys) in five coeducational high schools it was identified that peer and parent relationships influenced the formation of general self-concept and emotional stability. Physical appearance was highly regarded by the participants and associated with greater self-confidence. Opposite sex relationships significantly influenced the formation of girls' emotional stability but for boys it was same sex relationships, indicating that males, rather than females, are more influential in shaping emotional stability for adolescents. Parent relationships significantly influenced boys' emotional stability but not girls' suggesting the occurrence of different gender motivational goals. Achievement in sport, dance, and gym enhanced boys' general sense of self-worth, however, for girls such success enhanced their emotional stability. The overall findings are discussed in terms of implications for parents and teachers.

The focus of this paper is on factors that influence the formation of general self-concept and emotional stability for adolescent males and females. Self-concept is now conceived as a multidimensional construct that becomes increasingly differentiated as individuals progress from childhood to adulthood (Crain, 1996; Hattie & Marsh, 1996; Hay, Ashman, & van Kraayenoord, 1997).

Relevance of Self-Concept

Self-concept is considered to be an important construct within psychology because of its links to motivation (Bandura, 1997; Harter, 1996; Wigfield & Karpathian, 1991), social behaviour (Kaplan, 1980, 1996; Gottfredson & Hirschi, 1990; Wells & Rankin, 1983), and psychological well-being and mental health (Osborne, 1996; Swann, 1996). Within education, self-concept is an agent that influences achievement and a psychosocial measure of the effectiveness of schooling (Byrne, 1996a; Chapman & Tunmer, 1997; Hay, Ashman, van Kraayenoord, & Stewart, 1999). For example, Hay, Ashman, and van Kraayenoord (1994, 1998a) identified that students with low self-concept had less positive classroom characteristics in the domains of classroom behaviour, co-operation, persistence, leadership, anxiety, expectations for future schooling, and peer interactions when compared to peers with high self-concept. In addition, low self-concepts, low educational aspirations, external locus of control, and negative attitudes to school are interrelated (Fine, 1986; Hay, Byrne, & Butler, 2000; Hinshaw, 1992; Sedlak, Wheeler, Pulbin, & Cusick, 1986).

Relative Influence of Parents and Peers

There is general agreement that parents, peers, and teachers provide information and feedback that shape the formation of students' self-concept (Harter, 1996). What is not fully known is the relative influence of parents and peers on the formation of a positive self-concept. Certainly, parents and families are considered crucial to the development of self-concept during the early and middle childhood years (Feiring & Taska, 1998; Hay, Ashman, & van Kraayenoord,

1998a, 1998b). Furthermore, parent and peer relationships significantly predict and influence preadolescents' general self-concept (overall self-worth) beliefs and confidence in self (Hattie, 1992; Hay et al., 1998b).

There is uncertainty about the impact of parent and peer relationships on the formation of adolescents' general self-concept (Armsden & Greenberg, 1987; Cotterell, 1992; Fuligini & Eccles, 1993). One claim is that during adolescence, peers rather than parents become the dominant influence on self-concept development (Fuligini & Eccles, 1993; Kaplan, 1996). Others have argued that adolescents who have a strong attachment to their parents report higher self-concepts (Armsden & Greenberg, 1987; Blyth & Traegar, 1988; McCormick & Kennedy, 1994; O'Koon, 1997) such that positive adolescent/parent relationships can still exert a positive influence on adults' self-concept some 20 years later (Roberts & Bengston, 1996). Still others have suggested that adolescents who have higher incidences of behaviour problems, inattention, depression, or a history of negative life events report lower attachments to their parents (Raja, McGee, & Stanton, 1991; Parish & Parish, 1991). Adolescents with low self-concept are thought to be more influenced by and more attached to their peers, than to their parents (Armsden & Greenberg, 1987; Cotterell, 1992; Fuligini & Eccles, 1993). Fuligini and Eccles (1993) contended that those adolescents who felt strongly about perceived excessive parental control ignored parental rules, schoolwork, and even their own talents in order to be popular with peers.

There are two opinions about the role parents and peers play in adolescents' socialisation. One opinion emphasises the dominance of youth culture, with its own values, norms, and tastes that is distinct from, and at times in competition with the parent culture (Gecas & Seff, 1990). The second opinion holds that parents and peers can be partners in the adolescent socialisation process. From this latter perspective, adolescents increasingly transfer their emotional attachment from parents to peers in a process that Feiring and Taska (1996) called individuation. In this process adolescents remain emotionally connected to their parents but progressively use their peers to become more independent

and autonomous and engage in more adventurous behaviour away from their parents. During this individuation stage, parents remain a source of advice and economic and emotional support, where adolescents use parents as significant reference points to validate their behaviour and self-concept. Consequently, there appears to be some support for the view that parent relationships play a more important role than peer relationships in the development of adolescents' self-concept (Brown, Mounts, Lamborn & Steinberg, 1993; Dekovic & Meeus, 1997; Gecas & Schwalbe, 1986; Raja et al., 1991; Wilks, 1986).

Gender

Gender is a compounding variable in the research on the relative influence of parents and peers on the development of adolescents' psychological well-being and self-concept. The indication is that parents exert different influences on their son's self-concept formation than on their daughter's self-concept formation. Margolin, Blyth, and Carbone (1988) reported that boys' self-concepts were more affected by authoritarian parental control, while girls' self-concepts were more positively affected by intimacy with fathers. Similarly, adolescent boys' self-concepts have been shown to be more affected by the level of parental control and autonomy, whereas for adolescent girls their self-concepts were more related to parental support and co-operation (Dekovic & Meeus, 1997; Demo, Small, & Savin-Williams, 1987; Gecas & Self, 1990). One claim is that parents provide different feedback and messages to sons than to daughters, having higher expectations of their son's academic progress than their daughter's (Butler-Por, 1987; 1990). In particular, Butler-Por (1987; 1990) claimed that parents are generally satisfied with their daughter's achievements even when they believed that she could achieve more.

In terms of the impact of peer relationships on general self-concept and emotional stability, some authors have claimed that adolescent girls demonstrate higher levels of attachments to peers than do adolescent boys who generally are more attached to their parents (Claes, 1992; O'Koon, 1997; Walker & Green, 1986). An alternative claim is that the development of an adolescent boy's masculine self-image is defined through group activities with male peers, particularly for boys involved in antisocial behaviour (Cohen, 1955; Gottfredson & Hirschi, 1990; Kaplan, 1980; 1996). Based on his research with delinquent youths, Cohen (1955) argued that defying authority, acting-out, displaying verbal and physical aggression demonstrated an adolescent boy's prowess, which increased his status and self-concept within his subculture. Recent research with adolescents who display antisocial behaviour (Carroll, Houghton, Hattie, & Durkin, 1999; Hay, 2000) is supportive of Cohen's (1955) notion that peers are a significant influence in the development of self-concept.

Clarifying the Research Question

One of the difficulties in synthesising the previous research on the relative influence of peers and parents on adolescent general self-concept and emotional stability development is the lack of studies that have focussed on this set of variables, let alone differentiated same sex and opposite sex peers relationships. When, however, same sex and opposite sex peer attachments are investigated a revealing pattern of responses is produced. Moffitt and Harrington (1996) noted that girls primarily moved into antisocial activities because of their association with antisocial boys, and boys because of their male peers. Furthermore, Hay (2000) found that adolescent girls suspended from school had low self-concept ratings for general self, emotional stability, and parent relationships compared to the adolescent population used in the norming of Marsh's Self-Description Questionnaire (1990). In contrast, adolescent boys suspended from school had high Self-Description Questionnaire ratings for attachments to same sex peers along with low ratings for parent relationships and general self (Hay, 2000). The adolescent self-concept profiles in Hay's (2000) research suggest that boys' antisocial behaviours are associated with striving for a masculine self-image and peer acceptance, while girls' antisocial behaviours are linked to greater social marginalization and anxiety. This finding is in contrast to the preadolescent research that identified that both parents and peers significantly influenced emotional stability and general self-concept (Hay et al., 1998b).

Given that Hay's (2000) research on the self-concept profiles of students suspended from school was conducted with a specific sub-population of adolescents, there is uncertainty as to its relevance to the wider adolescent population. What is needed is an investigation to identify the relative linkages of peer and parent relationships and other factors on the formation of adolescents' general self-worth and emotional stability.

Contemporary self-concept research has been enhanced through the development of multidimensional self-concept measures, such as Marsh's (1990) Self-Description Questionnaire (Byrne, 1996a, 1996b). This instrument contains a range of academic and non-academic dimensions together with a measure for general self-concept (overall self-worth) and emotional stability. The assessment of the influences of different factors on the formation of general self-concept has been an issue of debate in the recent psychological literature (see Marsh, 1995; Pelham, 1995a, 1995b). This debate has not been resolved, but the use of multiple regression beta values, as an estimate of the influence of the different factors on self-worth has been suggested by Marsh (1995), and was used by Hay et al. (1998b) to investigate the formation of preadolescents' general self-concept. In summary, the research question under investigation is, what are the relative linkages of peer and parent relationships and other factors on the formation of adolescent boys' and girls' general self-concept and emotional stability?

Method

Participants

The 684 participants (286 girls and 398 boys) were students enrolled in Year, (Grade) 9, mean age 14.6 years, sd. 4.3 months. The students attended five high schools, two government and three non-government schools, in two Australian states, Queensland and New South Wales. The schools were drawn from a range of urban, rural, and socio-economic locations.

Instruments

The Self-Description Questionnaire-II (Marsh, 1990) contains 102 items to measure self-concept in adolescents using eleven subscales. The three academic subscales are Mathematics, Verbal, and General School; the seven non-academic subscales are Physical Ability, Physical Appearance, Opposite-Sex Relations, Same-Sex Relations, Parent Relations, Honesty-Trustworthiness, and Emotional Stability. The SDQ-II contains one General self-concept scale. These 11 subscales are summed to yield a Total Self-Concept score. In completing the SDQ-II, adolescents respond to simple declarative sentences (e.g., Most things I do, I do well (general self question); I am a calm person (emotional stability question) with one of six responses: False; Mostly False; More False Than True; More True Than False; Mostly True; or True. The SDQ-II norms are based on the responses of 5,494 Australian students. The coefficient alpha estimates of reliability for each normative subscale varied from $\alpha = .83$ to $.91$, and the mean correlation among factors was $r = .18$. Hay, Ashman, & van Kraayenoord (1998c) have demonstrated that the New South Wales norms are reliable with Queensland data samples. The SDQ has received praise for its strong psychometric and theoretical construct characteristics (Boyle, 1994; Byrne, 1996a; 1996b; Hattie, 1992) and has been identified as a reliable and valid instrument for use in clinical and research settings (Keith & Bracken, 1996).

Procedures

Permission to conduct the research was received from the relevant school authority and the parents of participating students. The data were collected by the researchers in class groups with the regular classroom teachers present. The SDQ-II was administered in accordance with its instructional manual, taking about 20 minutes to complete, with the students reading the questions and selecting a response.

Results

Multiple regression analyses were used to examine the relationships between General Self and Emotional Stability and the other SDQ academic and non-academic domains. The multiple regression (Table 1) refers to the amount of variance explained in the dependent variable (General Self)

by the eight independent variables. The F value pertains to the difference between the obtained multiple regression and the null hypothesis: that the multiple regression is zero (Tabachnick & Fidell, 1989). The regression results are in the form of beta values (regression coefficients) which are converted to t-test scores at a prescribed level of statistical significance.

Physical Appearance, Emotional Stability, Parent Relationships, General School, and Same Sex Relationships demonstrated a significant relationship and an influence on the formation of adolescent boys' and girls' General Self, a measure of the students' sense of self-worth and confidence, see Table 1. Physical Ability was significance to adolescent boys' General Self formation while Opposite Sex Relationships and Mathematics had a negative relationship with adolescent girls' sense of self-worth.

Table 1:
The Construct of Adolescent Girls' and Boys' General Self-concept in Relationship with SDQ-II Self-Dimensions

Self-Description Questionnaire-II Subscales	Boys n = 398		Girls n = 286	
	Beta	t	Beta	t
Mathematics	-.04	-0.97	-.09	-2.19*
Verbal	-.06	1.63	-.01	-0.20
Physical Appearance	.18	4.88***	.35	8.32***
Honesty & Trustworthiness	.05	1.70	.04	1.03
Physical Ability	.13	4.28***	.03	0.65
Emotional Stability	.09	2.72**	.19	4.98***
Parent Relationships	.19	5.75***	.23	6.11***
General School	.44	8.83***	.47	8.63***
Same Sex Relationships	.17	4.51***	.12	3.14**
Opposite Sex Relationships	-.04	-1.01	-.09	-2.03*

***p<.001, ** p<.01, * p<.05

The formation of Emotional Stability demonstrated a higher level of gender diversity. For adolescent girls the critical factors were Physical Abilities, Opposite Sex Relations, Honesty and Trustworthiness, and General Self. For adolescent boys the critical factors related to Emotional Stability were Parent Relationships, General Self, and Same Sex Relationships, with Mathematics demonstrating a negative relationship (see Table 2).

Discussion

In terms of the formation of general self-worth, the findings of this research support the notion that both parent and same sex peer relationships play an important role in the development of adolescents' self-concept (Hatie, 1992; Hay et al., 1998b). The finding that general school influenced adolescents' general self-worth verifies the work of Mboya (1995) that school achievement and its associated positive feedback from parents and teachers positively affects adolescents' self-concept. The results of this study also confirm that physical appearance is an important factor in general self-concept formation. This is consistent with the

notion that physical appearance is highly regarded by adolescents and is associated with peer popularity and greater social confidence (Harter, 1990; Lerner & Karabenick, 1974).

Table 2:
The Construct of Adolescent Girls' and Boys' Emotional Stability in Relationship with SDQ-II Self-Dimensions

Self-Description Questionnaire-II Subscale	Boys <i>n</i> = 398		Girls <i>n</i> = 286	
	Beta	<i>t</i>	Beta	<i>t</i>
Mathematics	-.19	-2.94**	.09	1.44
Verbal	-.07	-1.24	.02	0.28
Physical Appearance	.08	1.41	.09	1.39
General Self	.22	2.72**	.44	4.97***
Honesty & Trustworthiness	.01	0.13	.15	2.47*
Physical Ability	.03	0.68	.20	3.45**
Parent Relationships	.19	3.43**	.02	0.38
General School	.11	1.22	.09	0.97
Same Sex Relationships	.13	2.11**	.04	0.65
Opposite Sex Relationships	.10	1.66	.20	3.01**

****p*<.001, ** *p*<.01, **p*<.05

Physical ability was identified as an important domain in the general self-concept of adolescent boys but not adolescent girls. In the SDQ-II, physical ability is related to sporting prowess and physical strength, along with dance and gym activities. Sporting and gym attributes are associated with a positive male self-image. In particular, adolescent boys who look physically stronger than their peers are considered more attractive as they better match stereotypical male physiques (Levy, 1997; Simmons & Blyth, 1987) and attractiveness is linked to social confidence and popularity (Harter, 1990).

Mathematics

Within this study mathematics is a complicated variable to interpret. The claim is that within secondary schools achievement in mathematics is used to label and identify the more able students and that persistence and success in mathematics is linked to higher career aspirations (Campbell & Evans, 1997). In this study mathematics had a small negative relationship with boys' emotional stability and a small negative relationship with girls' general self-concept. This somewhat paradoxical result, however, lends some support to Marsh's internal frame-of-reference notion (Marsh, 1986). Marsh claimed that students compare their mathematics and English abilities and rate one higher than the other. Given the importance of literacy and English skills across a range of secondary school subjects, high ability and self-concept in this domain, from an internal frame-of-reference notion, would be associated with lower Mathematics self-concept. Consequently, in the regression analysis a small negative relationship was identified in the data set for the dependent variable.

Peer Relationships

The finding that parent relationships were important for

the boys' emotional stability but not girls provides some support to the work of Gecas and Schwalbe (1986) who identified that boys' self-concepts were more closely related to parent relationships than girls. For girls opposite sex relationships significantly influenced the formation of emotional stability but for boys it was same sex relationships. Either way males, rather than, females were the "dominant" gender in shaping adolescents' emotional stability. Why receiving attention from members of the opposite sex was more of an issue for adolescent girls' emotional stability, than it was for adolescent boys is unclear. It is possible that there are different social pressures on adolescent boys than adolescent girls concerning opposite sex relationships and dating (Callan, Gallois, & Noller, 1986; Rathus & Nevid, 1983). For adolescent girls frequent dating with boys can suggest "loose morals", and not having a stable boyfriend indicates being unattractive to boys. In contrast, for adolescent boys frequent dating with girls enhances peer status as it demonstrates his prowess and conquests. The influence of opposite sex relationships on girls' emotional stability could be because in coeducational settings, girls' desire for opposite sex peer approval is more likely to be satisfied at the expense of academic achievement (Baran, 1987; Hollinger & Fleming, 1988; Poole, 1983). Girls who do not perceive school as relevant in the formation of their self-identity are associated with decreased achievement motivation and lower school aspirations (Poole, 1983; Scheye & Gilroy, 1994).

Different Gender Motivational Goals

The finding that parent relationships significantly influenced boys' emotional stability while opposite sex relationships and honesty and trustworthiness influenced girls' emotional stability indicate different gender motivational goals. Andrews (1970) and Poyntney (1978) reported that adolescent boys had higher levels of striving for success in school than did girls and Skaalvik (1983) found that adolescent boys reported stronger social and parental pressures to succeed in school than girls. Furthermore, Hattie (1992) reported that adolescent boys placed more value on being intelligent, while girls valued being loved by their family, being sure of themselves, and being liked in class. In terms of emotional stability, boys are thought to be under greater pressure from their families and significant others to adhere to stereotypical male role models, such as being the family breadwinner, than girls to the stereotypical female roles (Eccles, Wigfield, Harold, & Blumenfeld, 1993). Although, Yates (1993) claimed that adolescent girls placed more limitations on their career aspirations than boys, with concerns about marriage and having children still central to girls' thinking. The inclusion of the opposite sex variable in the formation of emotional stability for girls and the inclusion of parent relations for boys could reflect different gender values. One notion is that girls value co-operation and boys value independence and parental autonomy (Dekovic & Meeus, 1997; Demo et al., 1987; Gecas & Schwalbe, 1986). The inclusion of parental relationships as an important factor

for boys' emotional stability gives some support to the Butler-Por (1987; 1990) idea that parents show greater attention and more responsiveness to their sons' achievements than to their daughters'.

Physical Ability

For girls, physical ability was an important factor in their emotional stability (i.e., level of depression, anxiety, and calmness). In the SDQ-II, physical ability relates to one's ability in sport, dance, and gym activities. Dancing provides a public and safe opportunity for girls to interact with boys, while sport which is usually a same sex team activity provides girls with an opportunity to work co-operatively, receive positive team feedback, and have companionship. Whereas, achievement in sport, dance, and gym enhanced adolescent boys' general sense of self-worth, for adolescent girls it enhanced their emotional stability. This difference suggests that there are different motivational and outcome goals in physical activities for adolescent males and females. The co-operative team aspect of sport and physical activity may be more important to girls, while the display and competitiveness of sport and physical activity are more important to boys. In support of this notion, Corbin (1984) and Biddle (1997) identified that when physical activity was perceived to be competitive and focussed on aggression and strength it appealed more to adolescent boys.

Reputation Enhancement Theory and Findings from this Study

Whereas adolescents in this study rated parents as significant in the formation of their self-worth, this was not the case for students displaying antisocial behaviour who disregarded the influence of parents and rated male peers as significant to the formation of their self-worth (Hay, 2000). This difference between the two adolescent populations lends support to the reputation enhancement hypothesis (Carroll, Houghton, Hattie, & Durkin, 1999; Farrinton & West, 1990; Reicher & Emler, 1986). This hypothesis is that in contrast to nondelinquents, who often have the social support and positive feedback from families and school-teachers, delinquents tend not to use parents or school-teachers to uphold their reputations, but seek alternative audiences, such as peers. Peer reputation enhancement is a motivational goal for antisocial behaviour, as compensation for and an alternative to the negative feedback from parents and school.

Future Directions

Although the SDQ-II has been identified as a reliable and valid research instrument (Keith & Bracken, 1996), the questionnaire treats parent relationships as a single factor and so masks the different relationships fathers and mothers have with their sons and daughters. It is possible that mothers and fathers have divergent impacts on the development of their children's general self and emotional stability. Therefore, in the design of future self-concept instruments

two subscales, one for fathers and one for mothers, need to be considered, rather than, only one for parents.

A future direction for research would be to investigate if school setting was a factor. Would the factor same sex peer relations be more of an influence on the formation of emotional stability and general self-worth of adolescents attending same sex high schools, compared to adolescents attending coeducational schools? This question is particularly relevant given the claim that same sex schools enhance girls' academic performance and their ability to display leadership roles (Finn, 1980; Lee & Bryk, 1986), whereas in coeducational settings the boys monopolize physical space, linguistic space and the attention of the teacher (Mahony, 1985).

Conclusion

The results of the present study confirm the important role that parents, peers, and the school play in the development of a positive general self-concept and the emotional stability of adolescent boys and girls. Consequently, parents and school personnel need to work together for the common good of the adolescent. There is still a need for more research that investigates the development and structure of adolescent self-concept and a continuing need for the documentation of best educational and home practices and intervention programs that can enhance the psychological well-being and self-concept of adolescents. This is particularly, the case given the findings that peer and parent relationships were linked to and had an influence on the formation of adolescents' general self-concept (confidence and self-worth) and emotional stability (calmness and freedom from anxiety and depression). There are gender differences for the factors that are linked with emotional stability and the findings demonstrate that for girls the more dominant factor is opposite sex relationships, rather than, parent relationships. Just a finding suggests that girls' relationships with their parents need to be enhanced during adolescence and that the girls may need greater guidance on how to best manage their opposite sex relationships to foster their emotional stability.

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School Achievement Goals and Achievement Values Among Navajo Students: Do Achievement Values Mediate the Effects of Gender, Language, or Living Location?

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In this paper we first investigate whether a model of school achievement motivation that integrates students' achievement goals and achievement values is tenable for Navajo students. We then investigate the mediating effects of students' personal value and utility value of school for gender, language (Navajo, English), and living location (town, rural) on their mastery, performance approach, and performance avoidance goals. Navajo students (N=829) from years 9, 10, 11, & 12 and two different schools participated in the study. Using structural equation modeling methodology support was found for a 5-factor invariant model (factor loadings & correlations) of school motivation across all three cohorts. Support was also found for the personal and utility value factors as mediators of gender and language on mastery and for the utility value factor as a mediator of gender and language on the mastery and performance approach factors. The results suggest that female Navajo students personally value school more highly than males and that English speakers see more utility value in school than Navajo speakers.

In the United States there is persistent school underachievement among Native American students (e.g. James, Chavez, Beauvais, Edwards, & Oetting, 1995; Vadas, 1995; Pavel, 1997). This is great cause for concern and has led many researchers to investigate the potential causes. Among the factors cited as potential causes are the historical and adult experiences of Native Americans with the American education system (Chrisjohn, Towson, & Peters, 1988), structural inequalities and inequities in education (Deyhle & Swisher, 1997) and a cultural environment that can be contrasted with the one Native Americans experience at school (e.g. Ledlow, 1992; Vadas, 1995). In addition, the concept of the folk theory of success (Ogbu & Matute-Bianchi, 1986) has been cited. The folk theory of success holds that consistencies between the shared cultural knowledge of the community about the relationship of school success and success in adult life are reinforced through verbal encouragement of parents and significant others (e.g. teachers & peers) whereby students perceive the relative value of school (Deyhle & Swisher, 1997). These same factors have been cited as causes for school underachievement among Navajo high school students (e.g. Deyhle & Swisher, 1997; Vadas, 1995).

Many researchers view group membership such as gender, language (as a proxy for culture), and living location (town & remote) as causal factors related to Navajo school achievement (e.g. Vadas, 1995). Clearly these are important factors in understanding achievement motivation among Navajo high school students. However, such explanations do not tell us why these differences might exist. That is, this understanding does not allow for individuals' socio-psychological or psycho-cultural factors such as the attitudes toward learning (achievement goals), nor the mediating affects for group membership (e.g. gender) of factors such as students value of school (achievement values) on their learning attitudes.

In this paper we examine the structure of Navajo students' school achievement goals and school achievement values by constructing a measurement model incorporating students achievement goals and achievement values and testing for

the invariance of factor loadings and factor variances and covariances for the cohorts of gender, language spoken at home (Navajo, English), and living location (town, rural). Recent research suggests that these cohorts of gender, language, and location differ in terms of their school achievement (e.g. Vadas, 1995). We argue that cohort membership (e.g. gender) and achievement values precede and influence students' adoption of achievement goals insofar as these factors, which are brought to the school environment, are more stable and less malleable than achievement goals. Hence we assume that cohort membership and achievement values have affects for achievement goals. Further, that within cohorts, group member (e.g. male, female) may vary in terms of their achievement values such that there are differential mediating affects on students' achievement goals.

The purpose of these examinations was substantive, pragmatic and methodological. The substantive emphasis was the examination of Navajo students' school achievement motivation by evaluating a five factor model of school achievement motivation concerning Navajo students' achievement goals of mastery, performance approach and performance avoidance and their achievement values for school of personal value and utility value (usefulness). In addition to this purpose, we wished to determine whether students' personal and utility values of school mediate the effects of gender, language spoken at home or living location on their achievement goals. Our pragmatic emphasis was whether a comparison of responses offered support for the same school achievement motivation instrument for Navajo students across the three cohorts respectively. Our methodological emphasis was to demonstrate the Confirmatory Factor Analysis (CFA) approach to evaluating the factorial invariance of models (Marsh, 1993; 1994) and the use of Structured Equation Modeling (SEM) methodology to examine the mediating effects of the intervening values variables (Baron & Kenny, 1986). First we established a theoretical model that enabled these evaluations.

Academic Achievement Motivation

Recent literature suggests that theory and research regarding academic achievement motivation is alive and robust. Two examples serve to illustrate our point. First, the traditional view of a mastery goal and a performance goal (an approach orientation) has been that they are contrasting goals. It now emerges that these achievement goals may be complementary (e.g. Elliot, 1999; McInerney, Yeung, & McInerney, 2000). Instead of being seen as contrasting goals it is now considered that by providing performance feedback to students a performance goal may be related to a mastery goal. Further, theoretical refinement and research has clarified the performance construct through its partitioning into approach and avoidance goals (e.g. Elliot, 1999; Urdan, 1997).

There is also a sharper focus on the conceptual structure of academic achievement motivation. This has become manifest in different models and methods of analyses of the phenomena. For example, some view the structure of achievement motivation in terms of a hierarchical multi-faceted structure (e.g. McInerney et al, 2000; Marsh, Craven, McInerney, 2000). Other theorists favor a multi-faceted only approach. Here the focus is on the pattern of relations of factors (e.g. Pintrich, 2000, Urdan & Maehr, 1994). In addition, it has been suggested, it would be useful to bring together key motivational constructs into a single model despite their emergence from different philosophical assumptions (Bong, 1996; Pintrich, 2000; Urdan, 1997). This would assist in determining redundancy among the burgeoning array of motivational constructs (Bong, 1996, Wigfield, 1994). This latter approach to the concept of school achievement motivation was adopted in the present research.

We begin with an introduction to achievement goals and achievement values and briefly outline research concerning Navajo students. Next we outline the methodological approach taken and summarize the results of the present examination. Finally we present our conclusions.

Achievement Goal Theory

Achievement goals are cognitive representations of the purposes or reasons students' perceive for academic engagement and are presumed to guide students' behavior, cognition, and affect as they become involved in academic work (Ames, 1992; Ames & Archer, 1987; Dweck & Elliott, 1983; Maehr, 1984; Maehr & Midgley, 1996; Urdan, 1997). Some theorists see achievement goals as a function of individual or personality characteristics and as such relatively stable across a variety of achievement situations (Dweck & Leggett, 1988). Others, as we do in this paper, see achievement goals as more malleable and able to be influenced by factors in the environment such as school structures and students value beliefs about school (Pintrich, 2000; Maehr & Midgley, 1996). For example students bring to school perceptions concerning the value of school achievement in terms of its importance (personal value) and utility value (Pintrich, Marx, & Boyle, 1993). In this paper it

is posited that these achievement values influence students adoption of achievement goals. It is also posited that cohort membership influences not only students' adoption of achievement goals, but also their achievement values. Two achievement goals have received considerable attention in the literature. These are mastery goals and performance goals.

A Mastery Goal:

A mastery goal has as its focus the intrinsic value of learning (Meece & Holt, 1993). There are also associated attribution beliefs that effort and perseverance will lead to success (Ames, 1992a, 1992b; Ames & Archer, 1988). Based on self-referenced standards students are concerned to develop new skills, understand their work, and improve their competencies (Ames, 1992b; Meece, Blumenfeld, & Hoyle, 1988). Research suggests that a mastery goal is associated with work that involves challenge and risk taking (Ames & Archer, 1988; Elliott & Dweck, 1988) and positive attitudes toward learning (Ames & Archer, 1988; Meece, et al, 1988). A mastery goal has been associated with effective learning strategies which in turn have been linked with self-regulative learning behavior (Ames, 1992).

A Performance Goal as Two Goals

Recent theory and research concerning performance goals have focused on definitions and operationalization of this construct (e.g. Elliott, 1999; Urdan, 1997). Indeed, recent research regarding a performance goal has tended to partition a performance goal into two goals (e.g. Elliot, 1999; Middleton & Midgley, 1997; Middleton, Kaplan, & Midgley, 1998; Midgley, Kaplan, Middleton, Maehr, Urdan, Anderman, Anderman, & Roeser, 1998). Generally this partitioning has been along the lines of approach/avoidance dimensions. A performance approach goal can be seen as students wanting to appear more able than others and a performance avoidance goal as students wanting not to appear less able than others (Urdan, 1997). In the present research, both of these conceptions of performance goals are operationalized.

While the partitioning of a performance goal shows promise in refining our explanations about a performance goal and its relationship with valued school outcomes some researchers have suggested an additional direction. These researchers have suggested the possibility of the presence of other variable(s) that may be related to a performance goal and a mastery goal (e.g. Bong, 1996; McInerney, Yeung, & McInerney, 2000). Indeed, in an earlier work Urdan & Maehr (1995) posited the presence of other variables to help account for the conflicting results regarding a performance goal. Pintrich, et al, (1993) suggest the examination of the moderating effects of students' value beliefs will improve our understanding of academic achievement motivation (see also Blumenfeld, 1992; McInerney, Roche, McInerney, & Marsh, 1997).

Achievement Values

According to Feather (1982) the achievement value of a task can be understood as “criteria or frameworks against which present experience can be tested. They are tied to our feelings and can function as general motives” (p. 275). Thus there is a nexus between values and behavior. In this sense the achievement value of school can be seen in terms of students behaving consistently with their personal value of school and/or its perceived usefulness. Similar to a mastery goal the personal achievement value of school is self-referenced and, similar to a performance goal, usefulness of school is externally referenced. Achievement values differ from achievement goals in that they are considered more stable and less influenced by school situational variables than achievement goals and that they are personal and attitudinal characteristics brought by students to the school situation (Pintrich, et al, 1993). Recently Eccles and Wigfield (1995) demonstrated that perceived personal value and perceived utility are separate factors. In the present research both the personal value of school and the utility value of school are operationalized.

There has been little research regarding the relationships of achievement values with mastery and performance approach and performance avoidance goals. Pintrich, et al, (1993) have posited constructs similar to personal value of school (important) and utility value of school (usefulness) as mediators and/or moderators. Wigfield and Eccles (2000) propose that an important future task for motivation theorists is to investigate the similarities and differences of expectancy-value theory and achievement goal theory measures. Wigfield (1994) also comments on the similarities and differences in the structure of constructs advocated by the two theories and suggests that achievement values and mastery and performance goals may be importantly related.

In the present research the relations of two achievement values for achievement goals are examined.

Personal Value of School

Personal value of school is concerned with the attainment value of school in terms of the importance of the activity relative to an individual’s core personal values (Eccles & Wigfield, 1995; Wigfield, 1994. See also Feather, 1982; Eccles, Adler, Futterman, Goff, Kaczala, Meece, & Midgely, 1983). Such a core personal value could be the importance to the student of completing high school.

Utility Value of School

The utility value of school refers to the achievement value of the task because it is instrumental in attaining short or long term goals (Eccles & Wigfield, 1995; see also Eccles, et al, 1983). For example, I may value school because being successful at school will enable me to go to college or get a job.

Native Americans and Education

Studies concerning Navajo academic achievement and dropout rates suggest that those students for whom achievement is poor or dropout are either 1) more traditional, 2) live in more remote parts of the reservation, or 3) have parents who speak Navajo only. In addition, studies show that Navajo female’s academic achievement is more likely to be superior to Navajo males (Chavers, 1991; Platero, Brandt, Witherspoon, & Wong, 1988; Hobson, 1987; Vadas, 1995). Vadas (1995) suggests that a possible explanation for these achievement differences may be that the process of acculturation to the dominant culture has had paradoxically different effects for females than males. Briefly, Vadas (1995) suggests that the effects of acculturation for traditional female roles in the Navajo matriarchal culture have been minimal whereas the impact for the traditional male role of “warrior and hunter” has been far greater and this may have resulted in identity crisis for males and consequent negative affects for school achievement.

There are theories and research that link Native American parents and some teachers shocking educational experiences with the current generations’ underachievement (Chrisjohn, et al, 1988; Miller, Cleary, & Peacock, 1998). It has been suggested that Native American students may not personally value school as a consequence of being made aware of their parents’ bad school experiences (Chrisjohn, et al, 1988) and being socialized to believe that school activities are not the Indian way (Deyhle & Swisher, 1997). Further, there are theories that explain Native American students’ relative underachievement in terms of the juxtaposition of the culture of home with the culture of the school (e.g. Deyhle & Swisher, 1997). In addition, remoteness of living location combined with parents who need their children to help on the farm have been posited as explanations for students underachievement. Some researchers posit that socialization processes and students knowledge of the high and chronic unemployment on the Navajo Nation generally influence and reinforce students’ perceptions and beliefs about the relationship of school and societal success (Deyhle & Swisher, 1997; Ogbu & Matute-Bianchi, 1986). Clearly students would have little doubt that one purpose of school is to equip students to gain and hold employment (Maehr & Midgley, 1996; Ogbu & Matute-Bianchi, 1986).

In addition to influencing the achievement goals students adopt, any of the preceding circumstances would seem to have a significant influence on Navajo students’ valuing school, and this in turn would also have affects for the achievement goals that students adopt at school.

Aim of the Present Research

There were two main aims of the present paper. The first of these was to empirically establish whether a model of school achievement motivation that included two achievement values alongside a mastery goal, a performance approach goal and performance avoidance goals was tenable for Navajo students. The second was to evaluate the

mediating effects of the two achievement values for the effects of the three cohorts on the three achievement goals.

We constructed scales of motivation consisting of psychometrically sound measures (3 to 4 items per scale) of these constructs. Analyses were then conducted by first fitting to the data a model of school achievement motivation encompassing the above five factors. This was followed by a series of increasingly restrictive models to evaluate the invariance of factor loadings and factor correlations. The role of the two value belief factors (personal and utility) as mediators of the effects of gender, language or location on the achievement goals of mastery, performance approach and performance avoidance are examined next.

Method

Participants

Students from Kayenta High School (n=300) and Window Rock High School (n=529) participated in the survey. All students in years 9, 10, 11, and 12 participated in the data collection (year 9, n=313; year 10, n= 177; year 11, n = 169; year 12, n=165; missing, n = 5). Female and male students were approximately equally represented. Two hundred and sixty four students reported speaking Navajo only at home and 557 report speaking English only (missing n = 8). Four hundred and sixty nine students reported that they lived in a town and 329 that they lived in rural areas (remote) on the reservation (missing n=31). The distribution between town and rural for Window Rock was 348 and 171 respectively while for Kayenta the distribution was 121 and 158 respectively (missing n=31).

Administration

Parental authorizations were gained before administering the survey and students were informed that the survey was voluntary. In general, the response rate was excellent and the students' approach was enthusiastic.

Teachers administered the survey in the classroom during scheduled English classes. Prior to the administration of the survey the chief investigator trained the teachers in the administration of the survey instrument. Each survey session began with a standard explanation of the purpose of the survey and a request for the support from the students in completing the survey accurately. Students then responded to the items. The survey took approximately 50 minutes to complete.

The forms were checked for accuracy and completion immediately following administration. Details of absences and GPA were compiled and entered onto the survey form at the end of the survey session.

Instrumentation

Inventory of school motivation (ISM)

The ISM (McInerney, et al, 1997) was the instrument of choice. We selected from the ISM a subset of psychometrically sound items for the constructs of a mastery goal, a performance approach goal, a performance avoidance goal, a personal value of school and utility value of school. Items that were selected are presented in Table 1.

The instrument was administered using a 5 point Likert-type scale anchored at 1 (Strongly agree). For analyses items were reverse coded. In addition, coding for the dichotomous variables of gender, language and location were: Gender (male=0, female=1), language (Navajo=0, English=1) and location (town=0, rural=1).

Statistical Analyses

Descriptive statistics of means and standard deviations and Cronbach's Alpha Coefficients for the scales are reported in the appendices. The covariance matrix analyzed is also presented in the appendices.

Psychometric Properties and Construct Validity of the Motivational Scales

Confirmatory factor analysis (CFAs) were conducted with LISREL 8.3 using maximum likelihood estimation. Item scores were normalized with a mean of zero and a standard deviation of one (Jöreskog & Sörbom, 1996a). Following Marsh, Balla, and Hau (1996), and Marsh, Balla, and McDonald (1988) we emphasize the Non Normed Fit Index (NNFI), the Comparative Fit Index (CFI), and in addition the Root Mean Square Error of Approximation (RMSEA) to evaluate goodness of fit (MacCullum, Browne, and Sugawara 1996; Steiger 1989). Generally an NNFI and a CFI of .9 or greater and an RMSEA of less than 0.05 are considered acceptable fits. We also present the χ^2 test statistic. Following the conduct of CFA's to investigate the psychometric properties of the five motivational scales and the 5-factor model of school motivation, independent multi-sample analyses were conducted to evaluate the equivalency of factor loadings and factor variances and factor covariances for the cohorts of gender, language, and location.

Where parallel data exists for more than one group CFA's offer a powerful test of equivalency of solutions across multiple groups (Marsh, 1993). This is because the researcher is able to constrain any single, set, or all parameters equal across groups and thus contrast the structural relations of parameters between groups. In the present research the concern was for equivalency of factor loadings and factor correlations. Invariant factor variances and invariant factor covariances was evidence of invariant factor correlations.

Table 1:
Scales and Items Used in the Present Paper

Achievement Goals Scales:

Mastery (mastery) scale (4 items).

- B33 I like to see that I am improving in my schoolwork.
- B40 I work hard to try to understand something new at school.
- B56 When I am improving in my schoolwork I try even harder.
- B89 I am always trying to do better in my schoolwork.
- B34^a I need to know that I am getting somewhere with my schoolwork

Performance approach (approach) scale (4 Items).

- B1 I want to be better at class work than my classmates.
- B2 Winning is important to me.
- B14 I am happy only when I am one of the best in class.
- B76 I work harder if I am trying to be better than others.
- B53^a I like my schoolwork to be compared to others.

Performance avoidance (avoid) scale (3 Items).

- B80 Trying hard at school is not much fun if the competition is too strong.
- B95 I only like to do things at school that I am confident at.
- B98 I always chose easy work at school so that I don't have too much trouble.

Achievement Value Scales:

Personal value of school (Persval; 3 items)

- A31 School students should complete high school
- A32 Most people who are important to me think that I should complete high school.
- A33 I am the kind of person who would complete high school.
- A34 I personally feel that I should complete high school

Utility value of school (Utility; 4 items)

- B22 I want to do well at school so that I can have a good future.
- B38 I aim my schooling towards getting a good job.
- B48 I try hard to do well at school so that I can get a good job when I leave.
- B54 It is good to plan ahead to complete my schooling

Note^a = Item removed from the scale.

A path model using SEM methodology was used to evaluate whether the 2 achievement values mediate the effects of the gender, language and location cohorts on the 3 achievement goals (mastery, performance approach & performance avoidance). Baron and Kenny (1986) point out that in a mediator model the usefulness of ANOVA is limited because not all paths are tested and multiple regression is limited because measurement error is not controlled for and this may produce results that mislead. Instead they recommend the use of SEM methodology. A condition for concluding the presence of mediating effects is that the paths from the independent variable(s) to the dependent and intervening variable(s), and the path from the independent variable(s) to the dependant variable(s) be significant (Baron and Kenny, 1986). These paths are designated a, b, and c in Diagram 1. Perfect mediation is said to occur when there are zero effects for path c when the mediator is controlled for (Baron and Kenny, 1986).

The model adopted for the path analysis assumes the causal ordering of factors on three levels (cohorts to achievement values and achievement goals and achievement values to achievement goals). Of course, in the present study the true causal ordering cannot be established. For example

we could have said that the achievement goals caused the values. However, the ordering of factors in the present research reflects the theory outlined in the introduction and our interest was in the mediating effects of the values factors.

LISREL 8.3 reports standardized total and indirect effects (Jöreskog & Sörbom, 1996a). The total effects is the sum of the direct effects and the indirect effects (mediating effects). In the present research the concern is for the mediating effects of the intervening achievement values factors. Diagram 1 presents a conceptual path diagram of this model.

One-factor congeneric models were fitted separately to the responses for each scale. Two items (b34 & b53) were removed on substantive grounds from the mastery and performance approach scales respectively. The personal value of school scale included one correlated uniqueness (a34 with a33) that was also permitted on substantive grounds. All the scales yielded acceptable fits and the fit indices for these solutions are presented in Table 3. The results offered a reasonable basis on which to proceed with further analysis.

Table 2:
Mean Values and Standard Deviations of Motivational Scales by Cohorts

Factor	Sex		Language		Location		Single Group	Chronbach's Alpha
	M	F	Navajo	English	Urban	Rural		
Mastery	4.15(.61)	4.28(.54)	4.15(.66)	4.25(.54)	4.24(.56)	4.19(.59)	4.22(.58)	0.72
Approach	3.56(.79)	3.29(.74)	3.39(.78)	3.43(.79)	3.42(.78)	3.42(.78)	3.42(.78)	0.65
Avoidance	3.06(.80)	2.93(.85)	3.00(.78)	2.99(.85)	2.92(.85)	3.07(.80)	2.99(.83)	0.53
Persvalue	2.99(.21)	3.00(.20)	3.00(.20)	2.99(.22)	3.00(.22)	2.98(.21)	2.99(.21)	0.74
Utilvalue	4.40(.53)	4.48(.55)	4.37(.59)	4.47(.51)	4.45(.53)	4.12(.56)	4.43(.54)	0.70

Note: Standard Deviations are enclosed in brackets ()

A 5-Factor Model of School Motivation

The next stage of our analysis was to evaluate how well the achievement values factors fit alongside mastery and performance approach and performance avoidance factors in a single model. The CFA solution for this 5-factor model of school achievement motivation yielded an acceptable fit (NNFI = 0.97). The results suggest a well defined model with significant and reasonable item loadings on the

designated factors. The strong correlation between mastery and utility was expected (e.g. Wigfield, 1994). We then proceeded to further validate the model and address the substantive issues posed in the present research. Table 3 presents the goodness of fit indices for the solution of a 5-factor model of school achievement motivation. Table 4 presents the correlation matrix for this solution and Table 5 the factor loadings and uniqueness.

Table 3:
Fit Indices for the Solutions for the 5- Motivation Scales, the 5-Factor Model of Motivation, Tests of Invariance and Path Models.

Model	Chi	df	NNFI	CFI	RMSEA	Comments
M1 Mastery scale	1.91	2	1.00	1.00	0.00 (RMSEA ^a <.05=0.76)	
M2 Approach scale	5.90	2	0.96	0.99	0.06(RMSEA ^a <.057=0.52)	
M3 Avoidance scale.						This was a 3 item saturated model. Items were individually constrained equal to ensure the scale was unidimensional.
M4 Personal value scale	1.22	1	1.00	1.00	0.019 (RMSEA ^a <.05=0.55)	Items a34 & a333 uniqueness freed to correlate.
M5 Utility scale	5.90	2	1.00	1.00	0.012 (RMSEA ^a <.05=0.72)	
M6 5-Factor Model	205.11	141	0.97	0.98	0.032 (RMSEA ^a <.05=0.1)	
M7 Gender Baseline	367.31	282	0.96	0.97	0.032 (RMSEA ^a <.05=1)	Items a32 & a31 uniqueness free to correlate.
M8 Gender factor loadings invariant	398.59	296	0.95	0.96	0.034 (RMSEA ^a <.05=1)	Items a32 & a31 uniqueness free to correlate.
M9 Gender factor variances & covariances invariant	429.77	311	0.95	0.96	0.036 (RMSEA ^a <.05=1)	Items a32 & a31 uniqueness free to correlate.
M10 Language baseline	346.16	282	0.97	0.98	0.025 (RMSEA ^a <.05=1)	Items a32 & a31 uniqueness free to correlate.
M11 Language factor loadings invariant -	360.61	296	0.97	0.97	0.024 (RMSEA ^a <.05=1)	Items a32 & a31 uniqueness free to correlate.
M12 Language factor variances & covariances invariant	381.21	311	0.97	0.97	0.025 (RMSEA ^a <.05=1)	Items a32 & a31 uniqueness free to correlate.
M13 Location baseline	355.60	282	0.97	0.97	0.029 (RMSEA ^a <.05=1)	Items a32 & a31 uniqueness free to correlate.
M14 Location factor loadings invariant	367.34	296	0.97	0.97	0.027 (RMSEA ^a <.05=1)	Items a32 & a31 uniqueness free to correlate.
M16 Location factor variances & covariances invariant.	384.86	311	0.97	0.97	0.027 (RMSEA ^a <.05=1)	Items a32 & a31 uniqueness free to correlate.
M17 Mediator path model	299.69	183	0.94	0.96	0.033 (RMSEA ^a <.05=1)	Items a32 & a31 uniqueness free to correlate.

Note:a = P-Value for Test of Close Fit Note: * = p < 0.05 ** = p < 0.01

Table 4:
Latent Factor Correlations Between the Five Motivational Factors

	Mastery	Approach	Avoidance	Persvalue	Utility
Mastery	1.00				
Approach	0.37**	1.00			
Avoidance	-0.18**	0.14*	1.00		
Persvalue	0.44**	0.18**	-0.07	1.00	
Utility	0.85**	0.34**	-0.19**	0.43-*	1.00

Table 5:
Factor Loadings and Uniquenesses for the 5-Factor Solution

	Mastery	Approach	Avoidance	Persval	Utility	Uniqueness
b33	0.61	--	--	--	—	0.62
b40	0.61	--	--	--	--	0.64
b56	0.67	--	--	--	--	0.56
b89	0.60	--	--	--	--	0.64
b1	--	0.61	--	--	--	0.62
b2	--	0.55	--	--	--	0.69
b14	--	0.58	--	--	--	0.66
b76	--	0.55	--	--	--	0.69
b80	--	--	0.52	--	--	0.73
b95	--	--	0.43	--	--	0.82
b98	--	--	0.66	--	--	0.56
a31	--	--	--	0.59	--	0.66
a32	--	--	--	0.64	--	0.59
a33	--	--	--	0.72	--	0.48
a34	--	--	--	0.78	--	0.39
b22	--	--	--	--	0.59	0.62
b38	--	--	--	--	0.64	0.51
b48	--	--	--	--	0.72	0.44
b54	--	--	--	--	0.78	0.72

In this part of the paper our concern is for invariant factor loadings and invariant factor correlations. Baseline models with which to compare the chi-square statistic of the invariant models were constructed. The baseline models in the present research were constructed for each of the cohorts by constraining the pattern of starting values for one sub-set of the data equal to another (e.g. male with female). The NNFI and RMSEA fit indices were used to assess whether the model was invariant. For more detail see Byrne (1998) or Marsh, (1993; 1994).

Invariant factor loadings, factor variances, and factor covariances for the cohorts of gender, language, and location. Separate models were constructed for each of the cohorts to test for invariant factor loadings and invariant factor correlation's. The fit indices for the solutions for the constrained factor loadings and the constrained factor variances and factor covariances were compared with the fit indices for the baseline solutions. There was a slight variation in the fit indices for the gender cohort. The baseline model yielded an NNFI = 0.96 compared to and NNFI = 0.95 for invariant factor loadings and invariant factor variances and factor covariances. These differences were considered insufficient to warrant rejecting the hypothesis that factor loadings and factor correlations were invariant. The results for the language cohort and the location cohort factor yielded NNFI's of 0.97 respectively for the baseline, invariant factor loadings and invariant factor variances

and factor covariances for both cohorts. We concluded that factor loadings and factor correlations were invariant for all the cohorts. Table 3 presents the fit indices for these solutions.

The Mediating Effects of Personal Value of School and Utility Value of School for the Three Cohorts on the Three Achievement Goals

In the previous subsection we established that factor loadings and factor correlations were invariant for all three cohorts. This enabled us to use pooled data model comprising all participants to examine the mediating effects of the intervening two value factors for the three cohorts on the three achievement goals. Before reporting the indirect effects we report the direct effects.

There were significant direct effects on personal value and utility value for gender and language. However there were no direct effects of location on either personal value or utility value. In addition, there were significant direct effects of personal value on mastery only and significant direct effects of utility on mastery, approach and avoidance.

We report the results concerning the mediating effects of the two values factors in terms of the cohorts beginning with gender. Table 6 presents the total and indirect results.

Gender

For gender there were significant indirect effects on mastery and approach and no significant indirect effects on avoidance. Although the mediating effects were significant they were not strong and the mediating effects for the approach factor must be considered weak.

We concluded that both personal value and utility value of school mediated the effects of gender on the mastery factor

(there were no direct effects of personal value on approach. See statistical analysis section). Further, we concluded that the utility value of school also mediated the effects of gender on the approach factor.

We interpreted the sign (positive) for the mediating effects on the mastery and approach factors as suggesting that the mediating effects are likely to be stronger for females than for males.

Table 6:
Total and Indirect Effects

Standardized Total Effects of Language and Location Paired-groups.

	Gender	Language	Location
Mastery	0.16**	0.19**	0.00
Approach	-0.29**	0.03	0.07
Avoidanc	-0.16**	0.02	0.18**
Persval	0.10*	0.04*	0.01
Utility	0.12*	0.11*	-0.04

Note: * = p < 0.05
** = p < 0.01

Standardized Indirect Effects of the Gender, Language, and Location Cohorts.

	Gender	Language	Location
Mastery	0.11*	0.09*	-0.03
Approach	0.05*	0.04*	-0.01
Avoidanc	-0.02	-0.020	.01
Persval	--	--	--
Utility	--	--	--

Note: * = p < 0.05
** = p < 0.01

Standardized Direct Effects of the 2 Achievement Values on the 3 Achievement Goals.

	Mastery	Approach	Avoidance	Persvalue	Utility
Mastery	--	--	--	0.10*	0.79**
Approach	--	--	--	0.07	0.36**
Avoidanc	--	--	--	0.01	-0.18*
Persval	--	--	--	--	--
Utility	--	--	--	--	--

Note: * = p < 0.05
** = p < 0.01

Language

For language there were significant indirect effects on mastery and approach and no significant indirect effects on avoidance. Although the mediating effects were significant they were not strong and the mediating effects for the approach factor must be considered weak.

We concluded that, like gender, both personal value and utility value of school mediated the effects of language on the mastery factor (there were no direct effects of personal value on approach). Further, we concluded that the utility

value of school also mediated the effects of language on the approach factor.

We interpreted the sign for the mediating effects on the mastery and approach factors as suggesting that the mediating effects are likely to be stronger for English speakers than for Navajo speakers.

Location

Summary and Conclusions

The two main aims addressed in this paper were, first, to empirically establish whether a model of school achievement motivation that included two achievement values (personal and utility) alongside a mastery goal, a performance approach goal and performance avoidance goal was tenable for Navajo students. The other was to evaluate the mediating effects of the two achievement values for the cohorts of gender, language and location on the three achievement goals (mastery, performance approach, and performance avoidance).

The measurement model and the tests of invariance results offer support for a well defined 5-factor model of school achievement motivation that includes students' achievement goals and achievement values. We interpreted these results as evidence that the structure of Navajo students' achievement goals and achievement values are similar for the cohorts of gender, language and living location and concluded that this 5-factor model of school motivation was indeed tenable for Navajo students. In this context the model is useful. It is useful because it offers an instrument with which to evaluate the relations of these factors with other factors (e.g. development factors) or in different contexts (e.g. different schools) for Navajo students. Further, it offers a model for cross-cultural comparisons of achievement values and their relations with achievement goals.

We interpreted the mediating results as support for the hypothesis that students personal and utility values mediate the effects of the cohorts. The results concerning students personal value of school appear to support a hypothesis, as the literature suggests, that for Navajo students socialization processes may not emphasize that learning at school is valuable for its own sake. This contention is further supported by the fact that the mean for this factor ($M = 2.99$) suggests that students are ambivalent about the personal value of school. This is of concern when one function of schooling should be to impart to students the value that life long learning is individually important and as well as in today's society. It may be, as the literature suggests, that the affects of Navajo parents and significant others telling their stories of their school days to their children stands in contradiction to the values espoused by the schools. This aspect warrants further investigation.

The utility value of school results is in marked contrast to the personal value of school results. The results for the utility value factor offer support for a hypothesis that Navajo students see school as being of value to their future. This contention is further supported by the fact that the mean for this factor was 4.43. In a context of chronic unemployment among Navajo's this finding is indeed encouraging. Although the findings do not offer direct support for the folk theory of success (Ogbu & Matute-Bianchi, 1986) they nevertheless do not contradict it.

Notwithstanding the moderate to weak mediating effects of the value factors the findings are paradoxical.

In the literature it has been argued that the affects of the surrounding dominant Anglo culture have been less for Navajo females than they have for Navajo males (e.g. Vadas, 1995). Yet, the mediating effects were stronger for females and for English speakers. These results may suggest that there are interaction effects of gender and language. Exploration of this hypothesis was beyond the scope of the present paper but should not be ignored in future research.

In conclusion we would urge the participating schools to investigate ways in which they can further promote the personal and utility value of school to students. This may well entail, as recommended by Deyhle and Swisher (1997), the development of parent/community programs promoting to children these values as being a worthwhile pursuit for Navajo students.

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A Case Study of High and Low Levels of Self-Concept in Children

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This paper reports a study of Hong Kong Chinese university students' self-concept and compares the gender differences in eight facets of the construct. It also examines the developmental changes over a one-year period at the university setting. The participants were 549 full-time first year undergraduates in Hong Kong. Their self-concepts were measured by using Fleming's Personality and Academic Self-Concept Inventory which comprises 8 subscales: Self Regard, Social Esteem, Maths Self-Concept, Verbal Self-Concept, Physical Appearance, Physical Ability, Perceived Parental Acceptance, and Social Anxiety. Confirmatory factor analysis using LISREL 8 was conducted to test the construct validity of the scale. Repeated measures MANOVA were used to analyze the change over time between the two genders. The results showed that there was significant Time main effect for Social Esteem, Verbal self-concept, and Physical Appearance whereas significant Gender main effect was found for Maths self-concept, Physical Appearance, and Physical Ability. There were no significant interactions. The implications for teaching and learning at university level are then discussed.

Self-Concept/Self-Esteem in Relation to Child Development

Research suggests that self-concept/ self-esteem is a crucial aspect of a child's development (Fox, 1987; Harter, 1978; King, 1997; Steinem, 1992; Taylor, 1980). It can contribute to a child's sense of belonging, of self-worth, of competence, and of achievement. It may further influence the who and how of making friends, the experimenting and exploring of novel situations, the trusting of people, the assuming of responsibility for actions and behaviours, the being creative and imaginative, and the showing of initiative and related traits.

A positive self-concept/self-esteem leads to a perception of oneself as important, capable of performing at a normal or superior level and of utilising learning experiences. Such a self-concept consists of an acquired set of attitudes accompanied by feelings of self worth, of competence, of adequacy and of confidence. A child with a positive self-concept is not afraid of new situations, makes friends easily, experiments with new materials, trusts his/her teacher, is cooperative and is able to follow reasonable rules and to assume responsibility for his/her behaviour (Hamachek, 1995; Rotherham, 1987; Swayze, 1980). According to Taylor (1980) the child with a strong and positive self-concept during his/her early years has a distinct advantage in being able to confidently incorporate everyday problems and tends to be more independent, reliable, and free from undesirable characteristics such as anxiety, nervousness, excessive worry, tiredness, and loneliness.

It is generally believed that achievement is moderately to strongly related to self-perception (Byrne & Worth Gavin, 1996; Skaalvik & Rankin, 1990, 1995). Productive achievement is a consequence and an expression of a healthy self-concept. Children's self-views largely determine the nature of their achievement. If children hold favourable self views, they are likely to adopt an orientation towards success. The level of self-concept influences both children's choices of behaviour and the quality and persistence of performance (Fox, 1987). Moreover, the relationship between achievement and self-concept is likely to become reciprocal (Marsh & Yeung, 1997; Wigfield & Karpathian, 1991).

A negative self-concept/self-esteem leads to a perception of oneself as inferior or lower than normal and incapable of utilising learning experiences (Saracho, 1980). The child with low self-concept relies on others for direction, asks permission to do anything, seldom shows spontaneity or initiative, rarely enters new activities, isolates him/herself from others, rarely speaks, is possessive of objects and makes excessive demands (Rotherham, 1987). This negativity usually manifests itself in being unable to cope with the surrounding world or a feeling of not being loved (Yawkey, 1980). Children with low levels of self-concept tend to adopt strategies, such as withdrawing, which helps them avoid failure and thus preserve what little sense of self-worth they possess (Hamachek, 1995; Ishiyama, 1984).

It is believed that self-esteem is a primary factor affecting the quality of how an individual functions in society (Mecca, et al. 1989). Many of the major problems plaguing society have roots in the low self-esteem of the individuals making up that society (Vasconcellos, 1989). Several studies report that low self-esteem correlates with both prejudice and violence (Kaplan, 1980; Katz, 1988; Scheff, et al. 1989). There is a widely held belief that low self-esteem has predictable behavioural consequences associated with low motivation, lack of initiative, little social responsibility and greater dependence on social welfare. Some research in the USA found that welfare recipients had a lower self-esteem and that deterioration in self-esteem resulted from welfare dependency (Kunz, & Kalil, 1999; Popkin, 1990; Schneiderman, et al. 1989). As to the relationship between self-esteem, drugs and alcohol abuse, there is overwhelming evidence of an association between low levels of self-esteem and the use of drugs and alcohol. Low levels of self-esteem have been observed among heroin addicts (Emery, et al, 1993; Skager & Kerst, 1989).

Research has also demonstrated that a direct relationship exists between low self-concept and anxiety, depression and other mental disorders (Dishman, 1986). It is evident that heightened anxiety accompanies low self-concept and related frustration such as restlessness, aggression, apathy, fantasy, stereotype and regression. States of anxiety and depression most commonly accompany a deep underlying shame or a lowering of self-esteem (Lynch, 1981). It is estimated that

10% - 20% of depression leads to suicide, one important reason being loss of self-esteem (MacMahon, 1990). Young people who attempt suicide have a significantly lower level of self-esteem/self-concept (Beautrais, 1998). Clearly self-concept/self-esteem is central to the coping mechanism of every human being.

The Importance of the Physical Self-Concept

According to Shavelson (Marsh & Shavelson, 1985), self-concept is multifaceted and is hierarchically structured. The general self-concept can be divided into the academic and the non academic self-concept, which is further subdivided into social, emotional, and physical self-concept. The physical self includes physical appearance and physical ability.

Early research found that self-concept is initially a body image, an evaluated picture of the physical self (Burns, 1979). Physical appearance is a very potent agent for attracting particular social responses. The body is the most visible and sensed part of a person and open to private and public evaluation. Swayze (1980) found that people who had negative feelings about their bodies were likely to have negative feelings about themselves as individuals. High self-concept was thus correlated strongly with acceptance of one's physical body.

As to the physical ability self-concept, Piaget (1969) described how the body through its movements serves as an instrument of self-concept development in infants and young children. White (1959) saw that healthy mental growth in young children was, to a large degree, dependent upon developing a sense of physical competence and control over the environment. McDonald discovered (1980) that a child who learned to do exercise with his/her physical body was eager to join others in activities. Harter (1985) provided empirical evidence to show that for young children, physical experiences supplied the most silent information for the development of self-concept. It has been accepted by some researchers that the development of motor abilities, physical fitness and increased feeling of control over bodily functions provides the foundation for the formation of a positive self-regard (Gruber, 1986; Sonstroem, 1984; Welsh, & Labbe, 1994). Over a period of time, a strong and healthy physical self-concept contributes to a positive social and cognitive self-concept (McDonald, 1980).

As reviewed above, self-concept, including its physical component, is critical to a child's development and well being. The purpose of this study is to gain insight into children with different levels of self-concept in physical ability, academic and total self. The profiles of the four children represent an in-depth exploration of children at different levels of self-concept, how they experience their daily lives, what constitutes their happiness and enjoyment, their sadness and concerns, what are their ambitions and what they consider to be important events. The study seeks to provide an in depth understanding of such children in relation to school, home, community and especially physical activities. Thus appropriate strategies can be identified to assist low self-concept children in positive growth.

Method

Sample

This research is one of several related studies, consisting of both quantitative and qualitative research. Initially 1,149 children were surveyed from grades 4 to 6, at 12 selected Australian provincial schools. The survey utilised a Self-Description Questionnaire I (SDQ I) (Marsh, 1990) to identify the levels of subjects' self-concept, including categories of self-concept in physical appearance, physical ability, peer relations, parent relation, maths, reading, general school, general self and total self.

Based on the survey data, 33 grade 5 children from four schools, with different levels of total self, physical ability, academic self-concept, were interviewed. The selection of interviewees also took into consideration a gender balance. Table 1 demonstrates the selection criteria and number of interviewees in each category selected.

Table 2 demonstrates the means and standard deviations of the self-concept survey of fifth-grade children in a provincial city region. Interviewees were selected based on children's self-concept scores in physical ability, academic (the average of Maths, Reading and General School) and total self. If the child's score was 1 standard deviation lower than the mean he/she was considered to have a low self-concept on that self-concept scale. If the child's score was 1 standard deviation higher than the mean, he/she was categorised as having a high self-concept. For example, the mean of total self-concept was 29.3 and the standard deviation was 4.4. Children with a score under 24.9 were categorised as having a low total self-concept and those above 33.7 as having a high total self-concept. However, because of the limitation of the size of the sample available in grade five in the four schools, self-concept scores of some of the subjects could not fill every category ideally required.

Procedure

Interviews were conducted at the children's schools during school time. A series of structured role plays and simulation pictures were presented to the children. They were asked to describe or express their opinions concerning different pictures. All interviews were conducted in a similar manner. Each interview lasted an average of 50 minutes and was recorded on a mini cassette recorder.

Following the interviews, observations, totally 22 hours, were conducted during the periods of physical education and recess in two of the four schools, concentrating on children with representative cases of the category to which they belonged.

Over and above the analysis of interview data and the presentation of the observation results, 4 cases were identified to construct individual pictures of four categories of children with different levels of self-concept. These levels of self-concept were: (i) low self-concept, both in academic and physical ability. (ii) low self-concept, low in academic but high in physical ability; (iii) high self-concept, high in

academic and low in physical ability; and (iv) high self-concept, both in physical and academic ability. Interview with

the teacher of the low self-concept child, both in physical and academic, was also conducted, took approximately 30 minutes.

Table 1:
The Criteria of Selection and the Number of Interviewees Involved in Each Criterion

Male 16				Female 17			
High self-concept 8		Low self-concept 8		High self-concept 10		Low self-concept 7	
High total & high physical ability SC	High total & low physical ability SC	Low total & high physical ability SC	Low total & low physical ability SC	High total & high physical ability SC	High total & low physical ability SC	Low total & high physical ability SC	Low total & low physical ability SC
5	3	4	4	5	5	2	5

Table 2:
Means and Standard Deviations of Grade 5 Children’s Self-Concept Survey in the Provincial City Region

	Physical Ability	Physical Appearance	Peer Relations	Parent Relation	Maths	Reading	General School	General Self	Total Self
<i>M</i>	31.2	25.6	29.6	34.8	27.6	30.9	26.7	31.9	29.3
<i>SD</i>	6.3	7.7	6.4	5.4	8.0	7.7	6.5	5.2	4.4

Results

Case One: Ellen

Ellen was selected because of her very low total self-concept test score 17.7 out of 40. The test results indicated that she had a very low self-concept in physical ability(10), peer relations(16), academic (12.33) (average of her reading[17], maths[8] and general school[12]). The first thing I noticed in the interview was Ellen’s eyes. Though they were pretty, they were clouded, dark and expressive of a certain sadness. She was taller than most of her classmates and overweight for an eleven year old girl. She was taciturn, making interviewing her a hard task. Her responses were much slower in coming than those of other children. She appeared concerned about the precise meaning of her answers and limited herself to keeping them very short.

Ellen was from a low socio economic status family. Her father was unemployed, her mother a shopkeeper. Unlike most children who went to school by family cars, she and her younger brother went by bus everyday, accompanied by their unemployed father. They changed buses once on the way to school. After school, they would catch a bus at a designated time to meet their father on that bus.

Ellen arrived at school at the start of class. She would unpack her bag and start her school work immediately. Maths and doing projects was difficult and her teacher referred to her as a “battler”. A retired principal from another school, had volunteered to come along to help the slow learners. She had spent quite some time with Ellen for the past couple of years to improve her academic skills. Ellen enjoyed reading and English language and comprehended some stories of interest to her, in talking about them she presented them reasonably well. However, she disliked maths because “I am not very good at maths”. She could not work out the sums as quickly as the other children. She felt nervous in doing subjects because “I don’t really know if these questions are right.” She worried about giving the wrong answers and about other people laughing at her and teasing her. To be safe, most of the times when the teacher asked questions, she just did not put her hand up and only listened to other people’s

answers.

She liked doing art and music because she was good at them. She could make a Christmas card any way she liked. She painted whatever she thought was attractive in design and colour. There was no right or wrong answer in this kind of work and the teacher always encouraged original thinking and design. When creatively occupied there was no need to worry about making mistakes or being laughed at by other children. In music classes they played instruments and sang. Ellen had had singing and piano lessons for a couple of years at home. Clearly, she was better at playing instruments and at singing than most children in her class. Her feeling for rhythm was good and she was able to reach notes which other children could not. The music teacher sometimes asked her to demonstrate to her classmates and made positive comments about her musical skills. She felt really good and proud when she saw the surprise and respect in the eyes of her classmates. At the end of last year, a play directed by her teacher was performed by the children in her class in front of the whole school. She took part in it and although she did not have to say anything, only dance in a group, she still enjoyed participating.

Wednesdays and Fridays were school sport days. On those days all children were required to wear their school sport uniform. Ellen did not like to wear this uniform because it made her look even bigger. Instead she chose to wear her school skirt, shirt and leather shoes. She liked to go out and do some exercise, such as playing tennis, swimming, dancing and gymnastics. That was great fun, as there was not too much winning or losing involved. She believed she could learn from those activities. However, unfortunately most of the times the school sports involved competition and games, exciting to some children but more often than not, a source of embarrassment to Ellen. For example, one day the whole grade played a game, with eight children per group. They needed to throw and catch a tennis ball, then run up and down the court competing with other groups. Ellen was not very good at throwing, catching and running. She became so nervous that when it was her turn she lost her concentration and could not catch the ball. When she finally got hold of the ball, other children had already passed

her. Even though she tried her best, her poor fitness left her well behind. She would dearly love to win, but time and again she held her group back. They always finished last. Her teammates far from happy called her “slow”, “fat”. Some even carried this over to occasions outside of sports if Ellen happened to do something of which they did not approve. Their behaviour deeply upset Ellen. She wished she could avoid competition. For example, if people lined up for competitive games, and there were too many, she would take a place at the end of the line or even sit aside to avoid the activity.

School recess time was a good time for her, no need to do any school work, no worries about right or wrong answers, or winning or losing. She enjoyed a big bag of chips, some lollies or other food at recess, chatting with her friends while sitting somewhere or simply wandering around the school ground. Sometimes she would do some rolls on the low gymnastic bar in the school yard to show off some of the skills she had learned at her previous school and which children at this school did not possess. If her friends played with other children, she just spent recess time by herself, which was fine to her. She had grown accustomed to being alone and preferred it to playing with children who did not like her, or might tease her or boss her around.

Going home was another highlight in Ellen’s day. Even though she knew school was very important for her future to help get a job she liked, she was happy to leave it behind as it sometimes made her unhappy. She looked forward to playing with friends, watching TV, and sometimes singing, playing the piano or the guitar. Though, singing and playing music were duties immediately on getting home, if she was in a good mood, she enjoyed doing them. At such times she was able to concentrate on every note she played or on the song she sang, forgetting all her worries. At other times she might feel depressed because she had been teased at school by her classmates or on the way home by her younger brother. Nevertheless, she had to play to meet her parents’ expectations. If she dared refuse, her dad would yell at her and upset her. She would rather play than be yelled at. Besides, music and singing might do some good for her future as she dreamt of being a top singer or an actress when she grew up. She knew her dad meant well and spent a lot of money on her music and singing lessons just for the sake of her future. That might be partly the reason why he did get upset if she did not practise every day. However, she thought the practice was too much. Not only after school but also in the morning before going to school she had to practice singing and playing the piano half an hour each, for which she had to get up quite early. If she had not slept well the previous night, it was very hard to meet this commitment the next morning. Her dad also had high expectations for her younger brother. He was determined to turn him into a great weight lifter, for which purpose he had acquired the necessary equipment for home training. This had not been without success either. When the boy was in grade 2 he had been in the local newspaper because of his unusual ability in weight lifting.

Practice over, Ellen was allowed to go out to play with her friends or just talk. Though a lot of girls of her age played netball after school, she was not interested, saw it as a silly game, the ball being so hard to catch, pass and shoot. She knew if she

joined one of the club teams and did not play well she would be blamed by the others. She could do without that, experiencing enough of this kind of treatment at school. Playing with friends in the street was far less stressful. It made her very happy. After playing with friends she normally went home and had dinner, watched a bit of TV which made her happy and relaxed and then went to bed.

At weekends she was involved in choir practice. Once the choir members performed in a competition and came second. Although she felt nervous and embarrassed each time she had to walk onto the stage, she felt satisfied after the singing. The applause from the audience gave her a sense of achievement which she did not normally experience.

Thus Ellen’s life both at school and at home contained some contentment. However, she did experience periods of profound unhappiness. She was well aware of her low academic and sports ability and of her overweight body, the apparent mainspring of other people’s ridicule. She tried to avoid hurtful ridicule on the part of other children by keeping away from them, carefully selecting what she said and what she did. However, she lacked the courage and confidence for appropriate repartee, instead she passively accepted whatever came her way. According to a survey carried out by her teacher, most children saw Ellen as one who goes along, looks sad, never says much, thinks no one likes her, does not take part in many activities, gets teased and is not good at sport, all of this in spite of the fact that Ellen was creative in art, music and able to join in non competitive play activities.

Case Two: Victor

Victor was selected as a low self-concept child (Total self-concept score 21.96) with a very high level of self-concept in physical ability (40). His low self-concepts were in the areas of physical appearance (15) peer relation (21), parent relation (17), math (14) and general school (19). His physical appearance was that of any other ordinary child of his age, of average height. During the interview he was quite talkative and answered questions openly.

Victor was from a relatively high social economic background, his father was a manager and his mother a nursing sister.

Every morning after getting ready for school, Victor liked to go outside to have a punch on his boxing bag. The feeling of punching the bag, the strength he derived from training provided his enjoyment. After this he lately had been busy trying to fix up his BMX mountain bike which had fallen into a “million” pieces. He liked bike racing and hoped that he could be in the BMX bike racing championships soon. His interest in bike racing had been stimulated by his sister’s friend who was a good BMX bike racer and who had won a few trophies. So far he had not been able to fix his bike to his great disappointment, so he walked to school, which was only a few blocks away from home.

On arrival at school, he would play a game of cricket in the summer or footy in the winter with his friends, or sit and talk about what was on TV the previous night, or anything exciting in sports from the previous day. When the bell went, he reluctantly entered to start his school work. Complicated sums

in maths made him really unhappy and his grade had been going down recently. Language also bored him. As for projects, they required too much hard work, which gave him a headache. He disliked mental activities when he had to think too hard. However, he realised that language skills were needed every day and that to gain knowledge about different countries through his projects was important also. Moreover, without maths he would not be able to materialise his dream of becoming an accountant. Victor's attitude with regard to these subjects was one of endurance.

Victor found reading enjoyable and relaxing. He was interested in reading books about sport stars, how they became famous and how they had beaten others and had won world championships. Some of these books were available from the school library and library borrowing time was looked forward to with great anticipation. Computer was "cool" too. It provided an opportunity to play fascinating games and learning from the computer was much more fun than learning from the teacher in class.

Art and music were two of Victor's favourite subjects. Making things was fun and he liked singing and playing instruments, especially the drums. The school choir rehearsed every Monday and its occasional performances had been happy events. His guitar lessons after school had helped him to perform well in school music classes. He saw his skill in playing a musical instrument as an obvious advantage over his classmates which boosted his self confidence.

Sport was Victor's most favourite subject. Everyone agreed that he was very good at sports, especially at running and soccer. He liked most the "fast action moving sports" such as basketball, athletics, cricket, hockey, netball and softball. Games played in school physical education or sport classes were also exciting for Victor. He related how recently his whole grade had played a really "cool" game. There were eight teams each with eight children. Children took turns to run after throwing or catching a tennis ball. Two teams were running at a time to compete with each other. The running time of each team was recorded. As the last person in his team to run, Victor concentrated on catching a long passing ball and ran directly towards the other side of the baseline, under the deafening noise of his cheering classmates "Victor, hey, hey hey, Victor, hey, hey hey...". He had put tremendous effort in his acceleration, determined to beat his opposition, thanks to him, his team made the shortest running time of all eight groups. His team continued in this vein and eventually won the grand final of the game. Not missing any catch or throw, always beating the opposition in the end, earned Victor praise and respect from many of his classmates. Finishing second in the whole school in another athletics racing event added more to his sports reputation. He saw himself as a good runner, better than anyone else in his grade. Running however was not his sole achievement in sports. Many other school physical education and sport activities made him feel good about himself. One day his whole grade played another game. Approximately 30 pupils used a beach ball to throw it at an individual who had to run up and down through that group without being hit by the ball. Once five children from one class had been hit by the passing side, they exchanged sides.

Very few children succeeded in running through without being hit by 30 attackers. Victor was one of them. He scored twice for his team. Arriving at the finishing line without having been caught he was welcomed with much applause. If only he could play like this all day, every day, without any need to do other school work he commented wistfully.

Recess time meant "No work" and was undiluted bliss for Victor also. He normally played games with his friends. Victor mainly set up the rules, although sometimes he did not follow them himself. Most children playing these games had to follow him because he was so good at sports and so determined to get things done his way. No one could boss him around and only one child in his class would dare laugh at him occasionally.

After school, the first thing Victor would do when he got home was to change into his NBL basketball gear. The Chicago Bulls was his favourite basketball team, to be a second Michael Jordan was his dream. He enjoyed watching TV or running around outside, playing with his brother and sister. However, generally he was too busy trying out different leisure activities. Thus he had been to a few lessons in gymnastics at the YMCA. Unfortunately, practising the splits resulted in him getting hurt. He also participated in karate lessons for a while. When his classmates heard that he was practicing karate it seemed that they were scared of him and worried that he might punch them. This was one of the reasons why he stopped the karate lessons. Sometime ago he had also been involved in Little Athletics. Running and jumping over the hurdles were his strength. In addition to different sports activities, guitar lessons had for a while excited him. At the time of interview taking boxing lessons, together with his mother at the YMCA and playing soccer for a club, were his main activities.

He could be called an "old hand" at soccer since he had played his first soccer game when he was four years old. His brother had motivated him to play for an under 8's age group club. Ever since then he had not been able to live without soccer. He had a clear perception of his personal improvement in the game through training, and was able to play competently with under 18's boys. His club team was coached by his father who bought Victor "millions" of videos showing Ned Zelich. Victor had watched them over and over. To become a world champion soccer player was another one of Victor's dreams. Soccer training and competition was really enjoyable and he loved the congratulations and the "well done" after each victory. Encouragement and friendship continued even when the team lost. Winning or losing was not a big deal to him, but the importance of "being in the game" and "enjoying the fun of it" was something he had learned from his father.

Victor's dreams for the future were numerous, they were as diverse as becoming a basketball player, a soccer player, an accountant and even a policeman. Probably the best thing about himself as he saw it, and he was proud of it, was his achievement in sport and his excellent health. Though he was aware of his weakness in maths, he was happy with the way he was. During the 11 years of his life nothing had ever really upset him. Physically he was too strong to be taken advantage of by other children of his age. He was easily challenged into a fist fight and then promptly forgot the reason for the fight.

Case Three: Simon

Simon was selected as a relatively high self-concept boy but with a relatively low physical ability and physical appearance self-concepts. The total score of Simon's self-concept test was 30.97, just above the average 30.01, resulting from a combination of high academic self-concept scores – 35.33 (reading [38], maths [35] general school [33]) and relatively low non academic scores: physical ability (27), physical appearance (22), peer relations (25) parent relations (31) and general self (28). Technically, Simon did not fall completely into the category of one standard deviation above average in total self-concept and one standard deviation below average in physical ability self-concept. Because it is difficult to find a similar case where boys are concerned Simon was considered more appropriate representative.

Simon was a big boy, taller than most children of his age and overweight. He came from a high socio economic background, his father being a doctor and his mother a registered nurse.

Most days Simon started by swimming with his father at the YMCA in the early morning. Swimming over, he was always in a rush to go to school. On arrival at school he normally started school work immediately. He looked forward to maths, sums were not at all as hard as some children claimed. It took him less time than his classmates to work out the answers. Doing projects was good fun too, as he organised materials for different topics he learnt a great deal. Reading stories was a thrill, especially when they had unexpected endings. Writing stories was probably even better. Using all your imagination you could make up surprising endings which no one would have been able to guess. He loved it when the story was read out to the class and other people could not work out the ending.

Art and music classes were equally enjoyable for Simon, everyone in his class agreed that he was the best drawer in the class and he was proud of it. Making things was fun too. The presents he had made for his mum before Mother's Day were really impressive. As for music he liked to go into the music room and sing. It was so relaxing to just sing songs and forget everything else. Singing in the school choir was enjoyable too and he looked forward to participating in Carols by Candlelight soon.

In school physical education and sports Simon was normally quite happy, especially if his friends were on his team. Then no one would blame him if he did something wrong. However, if the competition became too serious he preferred to stay out because if he accidentally missed the ball some children would yell "you got us out," causing him to feel "down in the dumps". Football, softball, swimming and soccer were his favourite sports. What he liked was the feel of kicking, marking, hitting the ball. Though he considered that he played cricket quite well, for inter school cricket games, which people really wanted to win, he knew he would be "kicked off" the team. This embarrassed him and therefore he would rather not take part in such competitions. He loathed gymnastics, netball, basketball, volleyball and athletics because they were uninteresting and often caused arguments. Most

importantly, he could not really handle any of the skills involved.

Most of the times Simon found it enjoyable to go out in the open to play a game or to simply run around. Sometimes in fact he did very well in such games. He remembered how one day in a physical education class involving the whole grade, class A vs class B played a big game. Simon was in class B. Class A passed a beach ball to catch one individual runner from Class B, running around the basketball court. It was very hard to run up and down the court under attack from over 30 people. Though he was not very fast, Simon was good at reading the oppositions' passes, avoiding the attackers. He succeeded in scoring for his class which earned him his friends' praise. Therefore, sports without serious competition was fun for Simon. Nevertheless he did not care for too much sport at school, one or two hours a week was ample in his opinion.

Recess was a very happy time for Simon because he could be with his friends. He had four or five good friends, all boys, in his class. People liked him because he was good at telling jokes and making them laugh. Sometimes he even pulled his teacher's leg, embarrassing him. This was generally not well received and the teacher's angry response would get him "down in the dumps" again. Not all children were nice to him, some would pick on him when they played a game, which upset him a great deal. He was well aware of the reason for this behaviour: "Just because sometimes I'm not good at playing sport, that's probably about the main reason. They say 'you can't do that'" However, he had many friends who liked to play with him, listen to his jokes and told him "you did the best drawing in the class", all of which compensated for his disappointment in playing some sports. He just ignored those "mean" people, knowing that many people liked him anyway.

After sitting nearly all day in school, Simon enjoyed a bike ride in the open, after which he usually went to a friend's house which had a big back yard. There other children joined them and they organised teams and played footy. He had recently joined a football club team. The team was at the top of the ladder. Training and games were on Wednesdays and Saturdays. Apart from the morning swim with his dad he was instructed in swimming by a coach at the YMCA. Simon also participated in swimming races. The history of his swimming was a long one, it went back to when he was four years old. His mum had taught him to swim at an early stage. He was better in the water than on the ground - "I can swim fast".

He had taken part in some swimming races, although not at a very high level, coming first or second a few times. Such times everybody's congratulations had made him feel great with the achievement. When he did not finish in front his dad still encouraged him: "At least you enjoy it, and you don't have to win every time." Enjoyment and fun was the sole motivation for Simon's participation in different sports. He did not expect to achieve much in the future in swimming or any other sport. One year of dance practice at South Street also gave Simon enjoyment, though this was soon to be replaced by his new recreational activity - football.

Reading novels was one of his favourite pastimes, the unravelling of the plot being the main attraction.

Television was also important to him, especially the funny shows such as Mr. Bean, which supplied the resources for his jokes. On weekends he often went to friends' places to sleep overnight and ride his bike. He felt he needed this time away from home and family to be free to do what he liked.

Simon came across as a basically happy child, confident in himself except for his ability in sport at school. He proudly presented himself as the best drawer and story writer in his class and enjoyed making people laugh. Getting together with his friends and having a good time was very important to him. The fact however that some people criticised his lack of physical ability and his physical appearance was hurtful. Nevertheless, this was only a minor matter, as it was balanced by his positive perception towards self in academic areas. Neither did his lack of physical ability prevent him from enjoying a number of physical activities especially after school hours.

Case Four: Liz

Liz was interviewed because of her extremely high self-concept. She had both a high physical ability(40) and academic(39.67) self-concept. Her total self-concept score was 38.58, well above the survey mean. Liz was a tall, slim girl with a very pleasant physical appearance. She had an engaging smile with which she met the researcher from the start, keen to be interviewed and very friendly, in spite of the fact that she did not know the researcher.

A typical day in Liz's life, started with getting herself ready for school. She saw going to school and learning things as very important for her future. She reflected that if she did not learn enough she would not be able to get a job when she grew up. After packing her school bag in the morning, if there was spare time, the four girls in the family, one older and two younger sisters, would play cards together until it was time to go to school.

She found the daily morning assembly rather boring, too much talking. Maths was an exciting subject for her, although some of the maths questions were very hard she enjoyed having to stretch her brain. Generally she was able to come up with the right answers. She loved being the first one to come up with the right answer in her class. Her teacher would respond with "very good" or "well done", accompanied by an approving smile, which made her even happier. Language was interesting, too. Liz found pleasure in learning new words and using them in writing. She claimed that her writing was "getting better each day". Projects were a fun filled challenge as she learned and mastered new knowledge in different areas while doing "lots of work".

The Chinese classes offered to grade five and six children were hampered by discipline problems. Liz's classmates' behaviour caused trouble for their Chinese teacher. Liz strongly disapproved of this. In fact sometimes she would help her teacher by telling her noisy classmates to "be quiet". She enjoyed learning Chinese and was particularly fascinated by the Chinese characters which appeared to her like little pictures. She saw the value of learning Chinese in being able to talk to the people, as she hoped, to get there one day. She had heard

much about China and she knew that it was a very big country. Computer classes she approached light heartedly, computer games being her favourite, though she did say that it was more interesting to learn through the computer.

When it came to school physical education and sport, her enthusiasm was unbounded. The school offered physical education and sport three times a week. She enjoyed skipping, running, jumping and various games organised by the teacher. She loved developing ball skills such as hitting, passing, shooting, kicking and catching the ball. She had a clear notion of the learning value developed from sport skills for the future. The weekly school sports day allowed children to choose different sports to learn and to play. Liz normally played one sport for a few weeks and learned the basic skills. She had developed many skills in athletics, Karga cricket, hockey, tennis, basketball, netball, football and T ball, and had learned a few things about volleyball, swimming and fitness. She played better than most children in her class who had had the same time exposure to learning those sports. She confidently claimed to be the best in her class in netball, fitness running, dancing, gymnastics and different game skills - and apparently her classmates agreed with her on this point.

Socially, Liz was well balanced, enjoying all the fun at recess, playing and "mucking around" with friends, weather permitting of course. She took special pride in caring for the underdog. Thus, she was not afraid of telling off classmates, especially the boys when they were teasing someone. Neither did she tolerate unfairness or bossiness, she knew how to say "no" if required. Her kindness however was not always well received. Thus she turned a newcomer into her personal protegee. Believing that it was her responsibility to make her happy, she took her around the school and showed her different places. She was dismayed when this was met with indifference and the girl refused to mix with her group. She was worried that the child might tell her mother at home about the unpleasantness of other children at school. Somehow or other Liz felt that the onus was on her. Neither did she herself always altogether escape unkindness on the part of her classmates who sometimes laughed at her mistakes. Though this hurt her feelings, it was never for long. All in all Liz saw herself as a "good" person.

After school, while her parents were still at work, she remained at school to participate in the after school program organised by the school community. She and some other classmates played games, learned cooking, practiced drawing, watched videos and did a lot of things that were fun. She thought this was better than going home by herself. After her parents finished work, it was time for her to go to various training sessions or lessons. She practised dancing twice a week, had swimming lessons and played netball as well.

Playing netball was her favourite. She started playing netball at school and as she said "everyone told me I was good". Two years ago the competition at school level was not very high which aroused her interest in playing for a club after school. Whereas other children participating in extra curricular sport activities are usually introduced by their family members or friends to that activity, not so Liz, she took it on herself to approach the coach to express her willingness to play. Once

accepted, Liz lived for netball. Though her team did well last season, this season most good players left because they no longer belonged to that age group and she was left to carry the team. In addition she was not too impressed with the new male coach, who she felt acted like “an idiot”. He did not seem to know much about netball but did a lot of yelling, screaming and following the game “jumping up and down”. Although everyone relied on her as a very good player, her team had only won one game that season so far. However, winning or losing was not her major concern. She enjoyed the actual playing and felt “very, very happy” while playing, because of the fun involved. She did many good passes to the goal shooter and as a goal attacker she was the main scorer of the team. The only embarrassing and frustrating time would be when her team was beaten by a big margin and her friend, in the opposition, shot most of the goals. Fortunately her parents made her feel better on such occasions saying “bad luck. I hope you win next time”, and they always bought the same food as when she won a game - lollies, icy poles and hot dogs. Playing netball for Australia was Liz’s ultimate goal. For this reason she was seeking a better team to play with in order to fully utilise and improve her skills.

Dancing also ranked high on Liz’s list of preferences. Every Monday she participated in callisthenics. Performing in concerts was a really exciting experience. She found intense pleasure in learning and practicing a variety of dances. Numerous successes in competitions: “first in South Street this year and runner up in all the others”, had given her much satisfaction.

Her interest in swimming originated in a near drowning incident in a swimming pool a few years ago. It had given her an understanding of the importance of swimming. She committed herself to swimming once a week and consequently became a good swimmer. She found enjoyment in it and swimming had become a year round leisure activity.

Other leisure activities were less demanding. She liked to watch TV programs of human interest, such as “Home and away”, “Home Improvement”, “Blossom” and “Man O Man”. To be her mum’s shopping assistant was another fun thing to do. On Saturdays this meant going down the street with her mum and sisters to find the “stuff” they needed. On Sunday mornings they wandered around the “Trash and Treasure”, buying some more “stuff” and meeting many friends.

Liz’s portrait therefore is one of a young girl whose major ambition in life is to represent her country in netball. Second to which, but equally important, were her school work, dancing and swimming. “I can do sports”, proudly expressed, was meant to say it all. Liz’s life had been a rose garden so far, she had not been bruised by unkindness. She was well aware of her academic and sports achievements and oozed self confidence, not afraid of taking risks in trying anything new. Most people liked her and other children sought her out as a friend. In short Liz was intelligent, brave, sensitive, outgoing and friendly. It is not surprising that she had experienced mostly positive feedback and happiness during these first eleven years of her life.

Discussion

This study supports the previous research findings with regard to the characteristics of children with different levels of

self-esteem. A child with a positive self-concept is not afraid of new situations, is more friendly, independent, confident, responsible, less anxious, less nervous, has fewer worries and experiences less loneliness. (Hamachek, 1995; Rotherham, 1987; Swayze, 1980; Taylor (1980). The high self-concept child, Liz, was very friendly to new people (the researcher) and willing to take on the new challenge - being interviewed. She was also very helpful and volunteered to take responsibility with regard to a new classmate. She was sensitive to her dealings with other children and stood out in her effort to stop undesirable behaviour in class, even helping her teacher in this regard. She independently approached her netball coach and initiated one of her own extra curricular activities. She was outgoing, confident, happy and friendly.

Previous research has also indicated that children’s achievement tends to be related to self-concept (Byrne & Worth Gavin, 1996; Skaalvik & Rankin, 1990, 1995; Fox, 1987; Marsh & Yeung, 1997; Wigfield & Karpathian, 1991). Liz’s case further endorses this view. She set her goals, succeeded and received positive feedback in most areas. Though occasionally she experienced negative events or negative feedback, which did hurt her feelings, this was never for long. She was a high achiever, both at school and during extra curriculum programs, and full of positive dreams regarding her future.

Previous studies have also indicated that a child with a low self-concept shows opposite characteristics from the high self-esteem child mentioned above. These children seldom show spontaneity or initiative, rarely enter new activities, isolate themselves from others, feel unloved and withdraw from tasks to avoid failure (Rotherham, 1987; Saracho, 1980; Yawkey, 1980). Ellen was a clear example of such a low self-concept girl both at the physical and academic level. Except for music and art, most other school activities offered a challenge she was unable to meet, which was a source of constant anxiety particularly in academic subjects. She was taciturn, anxious and worried a lot about whether she was going to make mistakes. Her low physical ability and her overweight body caused her to perform poorly in physical education and sports, especially in regular competitions. She became the target of other children’s ridicule. Therefore she was reluctant to participate in activities, especially physical activities because of the embarrassment occurring during the activities and the ridicule from other children long after the activities. . She chose low challenging activities such as having a chat with friends or watching TV. Compared to Liz she had far fewer areas where she felt confident enough to be involved. Self protection against other people’s ridicule inhibited her from attempting to develop her potential. She experienced little enjoyment in life at school, at home and in the community and felt generally insecure in her environment. As she indicated, sometimes she could not sleep well and felt depressed after school, all factors signalling potentially more serious mental health problems in the future.

This study further supports the view that physical self-concept plays a very important part in how children generally feel about themselves (Gruber, 1986, McDonald, 1980; Sonstroem, 1984). Victor, low in academic self-concept but very high in physical ability self-concept, demonstrated contentment with school, home and community. Sports dominated his life.

His ability matched the challenges he faced in that area. His poor academic scores were of little concern to him. In his environment his talent for sports was highly valued. He had rarely been ridiculed by anyone. His courage in organising and directing people clearly flowed from his sports confidence. In addition, his ability in music, art and reading allowed him to successfully meet the challenges in these activities. Therefore, the difficulties he did experience in maths, language and projects appeared insignificant in proportion to his successes. He tried to participate in many different community activities which further extended his skills.

An interesting finding in this study was that in all four cases the children's happiness and quality of life appeared directly related to the levels of their physical ability self-concept. This has found little expression in previous studies carried out at this level. The pathways of the lives of the four children presented above all point in this direction. Victor, who had high physical ability self-concept, enjoyed his life although his total self concept was quite low. Ellen, the low level self-concept girl, felt unloved and was very unhappy because of ridicule on the part of other children mainly because of her lack of ability in physical activities. Liz's life, however, has been all sunshine and roses because of her high ability in all areas, particularly her success in sports and dancing. Simon's experiences share similarities with Liz's as well as Ellen's. Like Ellen his relatively low physical ability (much higher than Ellen's physical ability self-concept) and overweight appearance caused him to feel frustrated unable as he was to meet the challenges of some of the physical activities. He was ridiculed from time to time. However, his high academic achievement, talent for art and interest in music as well as his good sense of humour compensated for some unhappiness he experienced when physically challenged. His life in general appeared to be much happier than Ellen's.

Through observations during this study, it was recorded that school recess and lunch breaks constituted 25 - 27 % of the children's total time at school. Children, particularly boys, played sport and games or other physical movement related activities during those times. In addition, the children normally had another 1-2 hours per week of physical education or sport as part of the curriculum. After school around 77% of the children participated in extra curricular sport activities; 40% were involved for more than four hours a week. The children perceived their school, home and community as a continuum - sports and a variety of physical activities formed a major part of their lives (Jiang, 1996). It is clear then that children with a higher physical ability and related self-concept/self-esteem are generally more popular and less subject to ridicule, both at school and in the community, than children with a lower self-concept in physical ability.

This study further indicates that competitive activities at school can be threatening to low self-concept children. Ellen's experience clearly demonstrated how damaging to her self-concept were the competitive sport activities organised by her teachers. This threat to the self often causes some children to withdraw from school physical education and sport activities. Conversely, it is true that these activities do improve the high physical ability children's self-concept as in Victor's case. Therefore, competitive activities at school must be handled with

great sensitivity. Such activities can boost some children's self-concept/self-esteem. However, it should be recognised that this is invariably at the cost of other children's self-concept. This potential negative impact on the low self-concept children should be acknowledged and minimised.

The findings of this study have provided in depth pictures and explanations concerning how children with different levels of self-concept in physical ability and total self weaved different pathways in their lives. It has explored the unique contribution of the physical ability self-concept to children's happiness and consequently the quality of their lives. Children with low total self-concept may not necessarily be more highly at risk. However, those children who have a low total self-concept as well as a low physical self-concept tend to be subject to higher risks. Parents and educators need to encourage children to engage in suitable physical activities at school and after school, to improve children's physical ability and consequently benefit children both in physical health and mental well being.

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Dr. Xiaoli Jiang is a lecturer at the University of Ballarat. She completed her Ph D degree in the area of children's self-concept in relation to the quality of school physical education programs and participation in extra curricular physical activities. She also works privately as a self-esteem consultant to schools and community. Currently, she is conducting research in cross-culture self-esteem.

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Self-Concept of Hong Kong Chinese University Students: Gender Difference and Developmental Perspectives

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This paper reports a study of Hong Kong Chinese university students' self-concept and compares the gender differences in eight facets of the construct. It also examines the developmental changes over a one-year period at the university setting. The participants were 549 full-time first year undergraduates in Hong Kong. Their self-concepts were measured by using Fleming's Personality and Academic Self-Concept Inventory which comprises eight subscales: Self Regard, Social Esteem, Math Self-Concept, Verbal Self-Concept, Physical Appearance, Physical Ability, Perceived Parental Acceptance, and Social Anxiety. Confirmatory factor analysis using LISREL 8 was conducted to test the construct validity of the scale. Repeated measures MANOVA were used to analyze the change over time between the two genders. The results showed that there was significant Time main effect for Social Esteem, Verbal self-concept, and Physical Appearance whereas significant Gender main effect was found for Math self-concept, Physical Appearance, and Physical Ability. There were no significant interaction effects. The implications for teaching and learning at university level are then discussed.

Self-concept has long been recognized as an important variable through out the literature of psychology and education. It has been conceptualized as a psychological construct which refers to the cluster of ideas and attitudes an individual holds about himself/herself. It also involves all the ways an individual uses to describe himself/herself and all the evaluations he/she puts upon himself/herself.

Recent research in self-concept has seen a shift away from the global or unidimensional view of self to a multidimensional or domain-specific model of the self (See Brackem 1991; Damon & Hart, 1982; Harter, 1985, 1990; Hattie, 1992; Marsh, 1986, 1987, 1993; Shavelson et al, 1976; Shavelson & Marsh, 1986). Many recent research studies (e.g. Hattie, 1992; Marsh, 1987, 1989, 1990; Vispoel, 1995) have supported the multifaceted and hierarchical model of self-concept developed by Shavelson, Hubner, and Stanton (1976). According to Shavelson et al (1976), self-concept is an individual's perceptions of self that are formed through experiences with the world and interpretations of those experiences. These perceptions are thought to be organized into multifaceted, hierarchical, and categorical systems.

Cultural Relevancy of the Multi-Dimensional Model of Self-Concept

Despite the numerous studies in self and self-concept in Western countries, the study of self-concept of Chinese people is an intriguing area of research. One of the problems lies with whether it is appropriate to impose Western theoretical models of self on the Chinese who have a different cultural background. Many researchers have contended that self-concept is culturally bound (see Hattie, 1992). There are differences in the meaning of self-concept between cultures and there can be as many different views of the self as there are cultures. In major reviews of the literature, Triandis (1989), Markus and Kitayama (1991) have proposed that persons from non-Western cultures are likely to espouse more interdependent conceptions of self than are depicted in the Western literature. There have been therefore concerns about the appropriateness of transferring Western concepts of self to the Chinese culture and of using western-developed instrument to assess the self-concepts of Chinese samples.

Nevertheless, recent research reports have shown that the dimensionality of self-concept has been studied in many cultures including Chinese with good support for a hierarchical, multi-faceted model of self-concept such as proposed by Shavelson et al. Marsh's Self-Description Questionnaire, and Fleming and Courtney's Self-Rating Scale have been shown to be appropriate for Filipino, Nepalese, Nigerian and Chinese students (see Chung & Watkins, 1992; Watkins & Akande, 1992; Watkins & Dong, 1994; Watkins, Fleming & Alfon, 1989; Watkins & Gutierrez, 1989; Watkins, Lam & Regmi, 1991). In the study of Chinese students' self-concept, Watkins and Dong (1994) reported that the research results showed support for the Western hierarchical multi-faceted model of self-concept, even though they cautioned that some aspects of the Chinese cultural characteristics such as filial piety may not be adequately covered in western theoretical models and by Western-developed instruments. Cheng (1997), using an indigenously developed instrument to investigate Chinese adolescents' self-concept, also found strong support for a hierarchical multifaceted model of the self similar to that proposed by Shavelson et al. One of the aims of the present study was to explore the construct validity of a multi-dimensional self-concept instrument developed by Fleming and Whalen (1990) by using Chinese samples.

Gender Difference

Gender difference has also been an important and popular area in self-concept research. However, research studies in this area have yielded inconsistent results and the issue has remained controversial. Both Western and Chinese studies have reported that boys have higher general self-esteem than girls (O'Malley & Bachman, 1979; Skaalvik, 1986; Drew & Watkins, 1996; Lau, 1989) whereas such claim was not supported by other researchers (e.g. Hattie, 1992; Marsh, 1989; Wylie, 1979). Increasing research findings have suggested that gender variations in self-concept is domain-specific (Hattie & McInman 1991; Marsh, 1989; Piers, 1984; Boersma & Chapman, 1979). Some researchers further claimed that gender variations in general self-concept as a global score could be lost due to the counterbalancing effect derived from the different domains (Marsh, 1989; Wylie, 1979). It has also been reported that at

least by adolescent stage, boys have consistently higher self-concepts than girls in math, masculinity, achievement, physical abilities and physical appearance whereas girls are higher in self-concepts in facets of verbal, social, school satisfaction, honesty and trustworthiness, and same-sex relationship (Dusek & Flaherty, 1981; Harter, 1982; Meece et al, 1982; Marsh, 1989; Marsh, Parker & Barnes, 1985; Marsh et al, 1988). It has been contended that gender difference in different facets of self-concept are consistent with socialization patterns and sex stereotypes (Dusek & Flaherty 1981; Marsh et al, 1988; Piers, 1984). The second aim of the present study was to investigate gender difference in self-concept among Hong Kong Chinese university students.

Developmental Changes

In terms of developmental changes, numerous studies have been carried out to assess age difference in self-concept development. It has been reported that global self-esteem is rather stable over time (Demo & Savin-Williams, 1992, Gecas & Mortimer, 1987; Hattie, 1992; Tashakkori et al, 1990) whereas facets of self-concept may vary with age. Studies in Chinese adolescents showed that there were age difference in specific domains of self-concept (Cheng, 1997; Lau, 1989). It would be of interest to see if such changes would continue at the tertiary level, especially for late teenagers who enter higher education.

Studies in Chinese adolescent students' self-concept have increased rapidly in recent years. Yet studies into Chinese university students' self-concept are still limited. With the rapid development in university education in Hong Kong, university educators need to obtain better understanding of their students' characteristics such as self-concept as it is an important affective variable that has direct relevancy to learning at university level.

Aims of The Present Study

1. To test the construct validity of the multi-dimensional self-concept measuring instrument: Personality and Academic Self-Concept Inventory developed by Fleming and Whalen (1990).
2. To investigate Chinese university students' self-concept with particular reference to gender difference and developmental changes.

Participants

The participants were 549 full-time first year Hong Kong Chinese university students. There were 311 males, 230 females and 8 participants did not indicate their gender identity. The average age of the participants was 20.

Measurement of Self-Concept

Self-concept was measured by the Personality and Academic Self-Concept Inventory developed by Fleming and Whalen (1990). It was evolved from the earlier self-esteem scales of Janis and Field (1959), Fleming and Watts (1980), and Fleming and Courtney (1984). This instrument is based on the Shavelson model specifically designed for university samples. It comprises eight scales: General Self-Regard, Social Esteem, Verbal Ability, Mathematics Ability, Physical Appearance, Physical Ability, Perceived Parental Acceptance, and Social Anxiety. There were a total of 40 items each with a 7-point semantic differential rating ranging from 'Practically Never' to 'Very Often', or from 'Not At All Confident' to 'Very Confident'.

The data on the participants' self-concept were obtained on two occasions, i.e. Time 1 and Time 2. Time 1 measurement was made at the start of the academic year when the students first joined the university. Time 2 measurement took place at the end of the first academic year.

Results

Reliability and Construct Validity

Table 1 shows the internal consistency reliability estimates, coefficient alphas, for the general self-regard, social esteem, math self-concept, verbal self-concept, physical appearance, physical ability, perceived parental acceptance and social anxiety. Other than the physical appearance and perceived parental acceptance scales which were relatively low, the alpha values for all other scales ranged from 0.63 to 0.90 and were considered to be adequate reliabilities for research purposes. They were comparable to those of Fleming and Whalen's (1990) which reported reliability alpha values ranging from 0.72 to 0.88. The low alpha values for physical appearance and perceived parental acceptance may reflect participants having problems in response to certain items of the two scales.

To test the construct validity of the measuring instrument, confirmatory factor analysis using LISREL 8.02 was conducted. The items of each factor were clustered into two item parcels for the analysis. The results showed that the goodness-of-fit index (GFI)=0.96, and the Tucker-Lewis Index (TLI)=0.93. The chi-square statistics=203.20, df=76, N=549. The X^2/df ratio (2.6) showed that the data fitted the model well. The chi-square and goodness-of-fit statistics for the eight-factor model and alternative models of the Personality and Academic Self-Concept Inventory using Time 1 data. was superior to those of other alternative models. Table 2 shows the model fit for the eight-factor model and alternative models of the Personality and Academic Self-Concept Inventory using Time 1 data.

Table 1:
Reliability Coefficient Alphas for the PASCI Scales at Times 1 and 2

Scales	Coefficient Alphas	
	Time 1	Time 2
General Self-regard	0.62	0.63
Social Esteem	0.76	0.81
Math self-concept	0.89	0.90
Verbal self-concept	0.64	0.69
Physical appearance	0.48	0.36
Physical ability	0.75	0.73
Perceived parental acceptance	0.47	0.38
Social anxiety	0.67	0.68

Table 2:
Model Fit for the Eight-Factor Model and Alternative Models of Personality and Academic Self-Concept Inventory

X ²	X ²	df	Differences ^a	df ^a	GFI	TLI
Model						
1. Eight-factor model	203.20	76	—	—	0.96	0.92
2. Seven-factor model with self-regard and social esteem combined	397.33	83	194.13	7	0.91	0.83
3. Six-factor model with self-regard, social esteem and perceived parental acceptance combined	848.68	89	451.35	13	0.85	0.61

*p<0.001

GFI: Goodness-of-fit Index

TLI: Tucker-Lewis Index

^a Difference in chi-square and degrees of freedom between the eight-factor model and the alternative models

Descriptive Statistics and Repeated Measure ANOVA

Table 3 shows the means and standard deviations of the scales for male and female at Times 1 and 2. Table 4 shows the summary F-statistics from Time and Gender ANOVA for Personality and Academic Self-Concepts scales. The statistical results showed that significant gender difference was found in math self-concept, physical appearance and physical ability. Male students scored significantly higher than female students in math self-concept, physical appearance and physical ability self-concepts. The male mean scores for math self-concept were 18.83 for Time 1 and 19.31 for Time 2 whereas for the females, they were 16.30 for Time 1 and 16.72 for Time 2. The mean scores for male physical appearance were 19.10 for Time 1 and 19.52 for Time 2 whereas the female mean scores were 18.04 and 18.91 for

Times 1 and 2. As for physical ability, the mean scores for the male participants were 20.88 and 20.99 for Times 1 and 2 and for the female participants, they were 18.79 and 18.93 at Times 1 and 2.

As for developmental changes, the results showed that time main effect was found in social esteem, verbal self-concept and physical appearance. There was a significant increase in scores for the whole sample in social esteem, verbal self-concept and self-concept of physical appearance over the period of one academic year. There were no significant interaction effects of gender and time for any scale though.

Table 3:
Mean and Standard Deviations for Personality and Academic Self-Concept Inventory Scales for the Male and Female at Times 1 & 2

Scale	Male				Female			
	Time 1		Time2		Time 1		Time 2	
	M	S.D.	M	S.D.	M	S.D.	M	S.D
General Self-concept	22.20	33.91	21.94	4.70	22.36	4.70	22.38	4.30
<i>Social Esteem</i>	17.55	5.22	18.59	5.15	16.91	5.53	17.51	5.60
Math self-concept	18.83	6.10	19.31	6.15	16.30	6.35	16.72	6.31
Verbal self-concept	18.94	3.74	19.71	3.83	18.69	4.58	19.01	4.56
Physical appearance	19.10	3.57	19.52	3.21	18.04	4.14	18.91	3.77
Physical ability	20.88	4.53	20.99	4.38	18.79	6.05	18.93	5.66
Perceived parental acceptance	22.15	5.34	22.12	3.32	22.28	4.63	22.31	4.37
Social anxiety	23.11	5.34	23.40	5.08	23.53	6.28	23.47	6.08

Table 4:
Summary F-Statistics from Time and Gender ANOVA for Personality and Academic Self- Concept Inventory Scales

Effects Scale	Time		Gender	Time x Gender
F-value	F-value	F-value		
Self-Regard		0.86	0.58	1.15
Social Esteem		17.90**	3.76	1.
Maths Self-Concept		5.23	23.41	**0.02
Verbal Self-Concept		11.41**	1.96	2.02
Physical Appearance		17.54**	8.03**	2.19
Physical Ability		0.63	22.88**	0.01
Perceived Parental Acceptance		0.00	0.25	0.03
Social Anxiety		0.38	0.25	0.78

** p<0.01

Discussion

Overall, the reliability estimates for the scales were within reasonable range and were considered adequate for research purposes. For the physical appearance and perceived parental acceptance scales, the reliability analysis results showed that there was one item in each scale if deleted would improve the alpha values to 0.62 for both scales. This showed that there was one specific item in each scale which participants could have response problem. No doubt further analysis would be needed for the items concerned.

On the other hand, the results of the confirmatory factor analysis have shown support for the eight-factor model structure as proposed by Fleming and Whalen (1990). The LISREL analysis has yielded a good model fit which supported the within construct validity of the instrument. The multi-faceted model of the measuring instrument was considered appropriate and suitable for use for the Chinese university sample.

The results of the study showed that among Chinese university students, there was no gender difference in general self-regard. Rather male students had a significant higher

math self-concept than the female. Male students also had higher self-concept of physical appearance and physical ability than their female counterparts. These findings are consistent with those reported in previous Western studies and studies of Hong Kong Chinese adolescent students (see Marsh, 1989; Marsh, Relich, & Smith, 1983; Lau, 1989). Reviews of the literature in gender differences in self-concept have indicated that there is little difference in overall self-concept but boys tend to obtain a higher self-concept than girls in specific areas such as physical abilities and math (Hattie, 1992; Marsh, 1989; Cheng, 1997; Lau, 1989). Marsh (1989) suggested that specific facets of self-concept could counterbalance each other and thus gender difference in general self-concept as a global score could be masked. Cheng (1997) also found in his study that among Chinese adolescents between 11-, there were no main gender and age effects in 19 general self-esteem but gender variations were found in the seven facets of self-concept (i.e. General Self, Intellectual Self, Sport/Physical Self, Appearance Self, Moral Self, Family Self, and Social Self). Gender variations were mainly found in physical domains and in math self-concept. This trend was found at the secondary level and continued

into university level as shown by the results of this study.

This study showed that male students had higher self-concepts of physical appearance, physical ability and math than their female counterparts. This finding was also consistent with previous studies. The reasons could be due to natural biological characteristics and sex stereotyping. In the traditional oriental society, male's superiority in physical characteristics has long been recognized. It would be natural that university male students endorse more positively physical appearance and physical ability and thus assume a more favourable and positive image of themselves than their female counterparts.

Research findings have consistently shown that male adolescent students have higher math self-concept than their female counterparts. Results of the present study also showed that Chinese university male students have higher math self-concept than the female students. The explanation for it, however, is inconclusive. It has been a common belief that boys achieve better in maths than girls thus maintain a higher math self-concept. Students who perform well in maths would naturally lend greater importance to the subject and develop a more positive self-concept. However, other studies have reported that sex difference in math self-concept has been found where there was no correlation between math self-concept and math achievement (Cheng, 1997; Marsh, 1989). It has been suggested that math self-concept was not related to math achievement as in other academic areas but rather it was influenced by traditional sex stereotyping. In the present study, an analysis of the student characteristics found that most male students were enrolled in the construction and engineering disciplines while most female students were enrolled in languages and health studies. It is plausible that the sex difference in math self-concept could be attributed to the subjects of study of the students. Again the choice of subject discipline could be influenced by social expectation and traditional sex stereotyping.

Studies in the developmental changes of self-concept have reported that general self-esteem is quite stable especially among adolescents and young adults. Tashakkori et al (1990) studied general self-esteem and found that general self-concept was stable across a two-year time period in late teens. The results of this study showed that in the first year of university education, no significant changes were detected with respect to general self-regard, math self-concept, physical ability, perceived parental acceptance and social anxiety. There were, however, increase in scores in social esteem, verbal and physical appearance self-concepts over one academic year period for the entire sample. A possible explanation for university students' significant gains in the three domains was that on entering higher education, students' social activities increased and their social experiences were much enhanced. University students were subjected to new socialization processes and experiences which were much richer than in the secondary school environment. Verbal ability and physical appearance which were important aspects in social communication and interaction were further endorsed. It would not be surprising that university students attached more importance to these aspects of their university

experiences and hence developed higher self-concepts in these areas. This is consistent with the fact that in the university environment, social skills, social interactions, interpersonal activities, and collaborative work have taken up more important roles in learning at university level.

Conclusions

This study investigated Chinese university students' self-concept by using Fleming and Whalen's (1990) Personality and Academic Self-Concept Inventory. The results supported the factor structure of the instrument and its appropriateness for use for the Chinese university sample. It was found that male and female students differed in self-concept domains such as math, physical appearance and physical ability. During the first year of university study, all participants had made significant gains in social esteem, verbal and physical appearance self-concepts. It was suggested that the socially-related aspects including social esteem, verbal ability, and physical appearance have emerged as important aspects of development in the university environment. The results of the study help provide useful information for university educators who are concerned with their young adult students' self-concepts, in particular with regard to gender difference and developmental changes.

About the Author

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Problem-Solving Strategies Associated with Cultural Adjustment and Well-Being

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Research on migrant well-being has only recently gained attention. The subjects in this study were 101 Mauritian immigrants to Australia. Using a correlational design and lisrel analysis, the results indicated that identification with culture of origin appeared to be the central variable accounting for the highest number of relationships and was also related to stress. According to the final model, 2 of the 3 dimensions of problem-solving appraisal were associated with the positive and negative aspects of life satisfaction. A self-assured style while engaging in problem-solving activities was associated with a positive evaluation of life circumstances. The more highly respondents evaluated the 'uplifts' or motivators related to their emigration to Australia, the more positively they evaluated their life satisfaction. The factors that this study and previous studies have identified as being related to successful migration to a western context are discussed.

Life Satisfaction and Immigration

The study of the means by which humans create meaning and order out of life's challenges and exigencies is very important. It is human nature to seek meaning in existence (Angrosino, 1995). Coping suggests an element of creativity as the individual needs to devise new ways to deal with problem situations which cannot always be met by well established habits or ready-made answers. Newly acquired patterns of dealing with different situations can be termed adjustment processes (Lazarus, 1991).

As opposed to the term happiness which denotes mood states, life satisfaction stresses the cognitive component of the evaluation an individual gives to the success of his/her coping processes in dealing with the tasks of living (Strack, Argyle & Schwarz, 1991). There are two conceptual aspects of well-being - the emotional component and the cognitive evaluational aspect which comprises life satisfaction which consists of independent positive and negative dimensions (Pavot, Diener, Colvin & Sandvik, 1991). Life satisfaction shows considerable stability over time (Headey & Wearing, 1989) only in as far as it measures the particular life domains appropriate to the individuals under study. In addition merely comparing life satisfaction measures with other measures is not sufficient for validation of such scales unless external criteria are applied.

Self-report measures of subjective well-being show adequate levels of validity and reliability. Subjective well-being resides within the experience of the individual and includes the measurement of both positive and negative factors (Diener, 1994). According to Veenhoven (cited in Diener, 1994) individuals use two components in evaluating their lives - their affects and their thoughts. Satisfaction defines the cognitive component as "the perceived discrepancy between aspiration and achievement, ranging from the perception of fulfillment to that of deprivation. Satisfaction implies a judgemental or cognitive experience while happiness suggests an experience of feeling or affect. One's emotions are likely to return to an average baseline which is set by one's temperament and one's general life circumstances. Thus, although immediate emotions may change constantly, one's long-term subjective well-being is likely to have considerable stability. Similarly, one's life satisfaction might change if one's life circumstances change

dramatically. There are likely to be many life circumstances, however, which are consistent over time, and this leads to a degree of stability in life satisfaction especially as our appraisals of events are continuous over time and in turn influence our emotional reactions (Lazarus, 1991). Thus, people with high subjective well-being are those who make a preponderance of positive appraisals of their life events and circumstances and would presumably also experience positive life experiences. Life satisfaction refers to a conscious global judgement of one's life. Broader categories of well-being are useful scientifically because they point to more global psychological phenomena. Studying long-term levels of well-being is defensible because temporally stable and cross-situationally consistent levels of longer-term subjective well-being, clearly exist.

Studies that have been conducted on migrant happiness indicate that when migrants in the host culture are asked to evaluate their life satisfaction they usually compare their situation with that of people usually relatives in the homeland. If their living conditions are better in the country of settlement than they are in the country of origin, then the evaluation of life satisfaction is likely to be positive (Diener & Diener, 1995). The extent to which moods can influence well-being is tempered by the fact that when our moods are called into question respondents do not use them as an indicator of well-being. When this occurs, a comparison strategy for selection of relevant information is used depending on whether it has an influence on one's own current living conditions or not. The happiness of these migrants is closer to their compatriots than with those from their country of origin (Michalos, 1985). Differences in subjective well-being covary with the discrepancies one perceives between what one has, what others have, and what one had in the past (Michalos, 1991).

Life satisfaction can present a different picture for different cultural groups. From the perspective of Mauritians in contrast to the Western viewpoint, life satisfaction is related more closely to social relationships with the family rather than with friends. Their goals and aspirations are closely aligned with achievements and although these are generally lower than that of other migrant groups and that of the Anglo-Celtic population, this can contribute to happiness according to some researchers (Michalos, 1985). This lowering of expectations reflects their conservatism and reluctance to take high risks in ventures that

they know very little of (Duyker, 1988). Collectivism is favoured over individualism and hence high goal aspirations and individual effort are not favoured. Such activities are viewed as contributors to loneliness, anomie and unhappiness (Dinan, 1985). There is a greater reliance on the Christian church (predominantly Catholic) and outside welfare organisations rather than reliance on the individual (Moutou, 1996).

Previous Studies on Life Satisfaction of Mauritian Migrants

Lingayah's (1988) Study - Mauritian Immigrants in Britain

The results of Lingayah's study of 150 Mauritian immigrants to Britain revealed a group who were risk-takers and entrepreneurs and who acted positively in difficult times. The earlier immigrants are described as being more adventurous and harder than the later ones. A large proportion of the respondents migrated young between the ages of 20 and 30 years of age.

The stated reasons for migration by subjects were the better employment and education opportunities in Britain and their drive to do better than what they could have done if they'd stayed in Mauritius. These immigrants took whatever jobs they could and used these as springboards to better jobs. They were not deterred by the initial rejection and prejudice they experienced. For the majority of respondents, their primary goals were to acquire an education and as much material comforts as they could so that they could return and show these off to their compatriots in Mauritius.

Although Lingayah's study was conducted in the 1980's and no further studies followed, a sense of frustration and disillusionment is also reported by respondents despite their successes. Their main complaints were that despite their hard work, they were frustrated by the discrimination and prejudice which they experienced from their English counterparts. Discrimination in the work-place made the immigration decision seem like a useless endeavour.

The area of greatest dissatisfaction with life in Australia for Mauritians has also been in the work setting. Through a series of interviews of Mauritians who'd immigrated to fourteen international destinations Dinan (1985) stated that for those in Australia, dissatisfaction with work represented the greatest number of complaints. While those interviewed felt that their income was a good deal higher than what was earned in Mauritius, there was a feeling that they were working below their capacities in unskilled work due to discrimination in the form of lack of recognition for qualifications and experience gained in Mauritius. The dissatisfactions expressed by Mauritians in the workplace echo that of other migrant groups in Australia (Mak, 1991; Mak, 1995). In a study comparing the occupational attainment of migrants from non - English speaking backgrounds (NESB) backgrounds with those from English - speaking countries, Miller's (1987) disturbing findings indicated that for NESB migrants, job advancements were unlikely despite further education in

contrast with their counterparts from English - speaking countries.

Review of Studies on Immigrant Life Satisfaction

In a cross-cultural comparative study by Ying (1992) on how Chinese-Americans viewed the quality of their lives subgroup analyses revealed that biculturalism (Beta = 0.42, $p = 0.000$) was the most powerful predictor of life satisfaction for Chinese-Americans, whereas for the American-borns level of friendship satisfaction was the strongest predictor (Beta = 0.46, $p = 0.000$). Ying (1992) also noted that the subjective domain satisfactions (Biculturalism, Health, Combined work satisfaction, Marriage/singlehood and Friendship) recorded higher positive relationships with life satisfaction than the demographic factors of length of residence in U.S.A, sex, age, marital status, SES and generation. The subjective domain satisfactions accounted for 37 % of the variance in overall life satisfaction for the Chinese-Americans. ".....for immigrants, their experiences of being a Chinese person in American society is quite salient and important to their life quality, as immigration itself is a major change for them, and they undoubtedly compare these experiences to those in their home culture. Thus, those who report a higher level of biculturalism satisfaction also experience a greater overall life satisfaction. "(Ying, 1992 p.18).

In support of Ying's (1992) findings, Meredith's (1984) study on the quality of life for Lao Hmong refugees in Nebraska indicated that subjective life domains such as those related to this group's own conceptualisations of quality of life - view of the future (optimism) and life control accounted for a greater percentage of the variance (42%); whereas items investigating objective life domains such as housing and standard of living contributed little to the prediction of global quality of life.

Using Path-analysis in his investigation of the determinants of psychological well-being of Vietnamese refugees, Tran (1987) concluded that membership of ethnic social organisations, availability of ethnic confidants, self-esteem and income revealed the most significant effects on well-being. Length of residence, education, social adjustment, and English speaking ability were also important contributing variables.

Thomas'(1995) findings on the predictors of Life Satisfaction in institutionalised elderly Vietnamese indicated that those with a high level of internal locus of control, active problem-solving activities, and high optimism were more likely to be satisfied with life than those with an external locus of control who engaged in emotion focussed coping and were high in negativity.

There are many issues to be considered when evaluating the means by which life satisfaction has been studied. Typically the variables have been self-report type questionnaires, the measurement of affective or mood states, even the presence of psychiatric disorders, socio-demographic factors, such as, SES, employment levels, income, and in the case of immigrants, level of cultural assimilation and attitude change have been used (Strack et al., 1991).

Culture and Well-Being

Cultural variation in outlook or a national ethos has been noted by some researchers (Veenhoven, 1994). The problems in interpreting findings across nations is in the measurement of the happiness construct and its stability as a unit of measure. Events do seem to affect the temporal stability of happiness. A transition may involve a change in quality of life and thus a change in the evaluation of it as new situations such as, immigration encourage a reorientation on life. A change in tentative judgements occurs before a final evaluation is made which tends to affect the temporal stability of happiness. Most people remember distinct differences in happiness. Unhappiness seems to be less constant than happiness. Australian data on the stability of happiness (Headey & Wearing, 1989; 1990; 1992; Headey, Kelley & Wearing, 1993), indicate that it is an essentially variable state reproduced over time. Baseline personality measures such as, mental health and self-criticism appear to predict later happiness.

Some studies have indicated that personality variables have been strong predictors of subjective well-being (Costa & McCrae, 1980, 1990). Diener and Diener (1993) reported that self-esteem correlated about 0.53 with life satisfaction in eight western countries and an average of 0.47 across the 31 diverse countries they studied. Emmons (1986) found that past goal success predicted positive affect. Ambivalence over one's strivings predicted negative affect, and that the importance of one's strivings predicted life satisfaction. There are cross-cultural differences in happiness and life satisfaction which are not completely explained by income differences (Balatsky & Diener, 1992; Diener, Sandvik, Seidlitz, & Diener, M., 1993; Diener, Suh, Smith, & Shao, 1994; Shao, 1992). Okun and Stock's (1987) research indicated that subjective well-being measures were moderately associated with adjustment, neuroticism, work satisfaction, and with family satisfaction, but were more substantially related to each other. Personality may also influence subjective well-being, not simply in terms of temperament propensities to experience specific types of affect, but also in terms of certain individuals' avoidance of emotional reactions. More objective indicators of well-being are obviously needed to overcome denial. The fact that subjective well-being reacts to life changes and life events also indicates that it is not isomorphic with personality traits. Positive and negative affect, however, each appear to make independent contributions to life satisfaction (Bradburn, 1969; Pavot et al; 1991).

The purpose of this paper is to investigate the adaptive processes amongst immigrants i.e how immigrants come to organise their experiences as migrants and the extent to which these processes are related to personality related coping styles and whether these coping processes are related to life satisfaction. The approach investigated in this study is based on previous research on the existence of two dimensions of well-being, positive and negative devised by Bradburn (1969) and supported by (Warr, 1978; Warr, Barter & Brownbridge, 1983).

Method

Subjects

One hundred and one Mauritians participated in the study. Participation in the study was voluntary and every attempt was made to enlist participation in the study from a broad spectrum of the community. Questionnaires were distributed across varied age groups amongst all the Mauritian social clubs in Melbourne and Sydney where the largest concentration of Mauritians are found. The questionnaires were distributed at sporting, religious, and social events by the author and key members of the Mauritian community. A greater percentage of females completed questionnaires than males. An explanation for the higher percentages of participants in the older age categories (25% and 38%) in the 46-55 and 55+ categories respectively, could be said to be related to the overall demographic characteristics of Mauritians who have immigrated to Australia and that is that they are concentrated in these age groups (ABS, 1991). Over 73.6% of subjects had been residing in Australia for over 16 years which is also representative of Mauritians as an immigrant group and reflects the decline in the numbers of immigrants from this island community due to Australia's tighter controls on immigration (Duyker, 1988). In addition as this study concerns itself with life satisfaction, the fact that the majority of subjects are in the 16 years + category means that they have had a sufficient amount of time to assess their situation in Australia and to report on their experiences.

Measures

Adaptation to host culture: was developed by Gebart-Eaglemon (1997) measured via 15 questions on a 4-point scale subjects' attitudes towards the host culture (how comfortable subjects felt living in Australia, how they liked Australian culture, the extent to which they thought they were similar to the average Australian); for example 'How do you like Australian culture?', 'How much is life in Australia an enjoyable experience?'

Positive aspects of life in Australia: was measured via 13 questions generated by the author. The reasons for inclusion of these items came from the literature on immigrant acculturation which notes a dearth of studies investigating the positive aspects and motivators of immigration (Furnham and Bochner, 1988). Items included statements from the author's general knowledge, verbal reports from Mauritians themselves and socio-historical studies (Duyker, 1988) of the common possible motivators for Mauritian immigration to Australia. Subjects were asked 'what have been the highpoints (uplifts) of your life in Australia?' and 'circle the events (on a 4-point scale from 1-'Very important' to 4-'Not important at all') during your time in Australia that have made you feel good and given you a sense that it's been worthwhile being in Australia'. Examples of items are 'Learnt to be independent', 'For the children, the opportunity to prosper' and 'Material comforts are better than in Mauritius'.

Table 1:
Subject Demographic Information

Sex	M (43) 43%	F (58) 57%			
Age Cat.	16-25 (5) 5%	26-35 (15) 15%	36-45 (18) 17.8%	46-55 (25) 24.8%	55+ (38) 37.6%
Residence	0-5 (4) 4%	6-10 (13) 13%	11-15 (8) 8%	16+ (75) 74%	Child (1) 1%
Educn	Prim. (6) 6%	2ndary (55) 54.5%	Trade C. (8) 8%	Tert. (32) 32%	
Liv.Cond.	Housing Comm (3) 3%	Renting (7) 7%	Own Flat (3) 3%	Own Home (88) 87%	
Eng. at Home	Only Engl (17) 16.8%	Franglais (44) 44%	French (23) 23%	French/Creol (17) 17%	
Knowl. English	Poor (2) 2%	Not V.G (2) 2%	Good (21) 21%	V. Good (37) 37%	Excellent (39) 39%

Stressors of Migration

The scale investigating stress contained 27 questions, generated by the author adapted from verbal self-reports of Mauritians themselves and from the work of Berry (1995) and Furnham and Bochner (1988). The scale requested an appraisal of the subjective impact of the following groups of stressors typically encountered by immigrants. These stressors were related to jobs, health problems, isolation, discrimination, less time for leisure, no help with domestic chores, climate in Australia, expectations not fulfilled by children, discrimination, dealings with Australian bureaucracies. All of the above scales have been used with other immigrant samples.

Sensation Seeking

This scale was adapted from Zuckerman's Sensation Seeking Scale (1971). Eighteen items were chosen from Zuckerman's (1971) 35-item scale based on the author's knowledge of Mauritians and what would be meaningful to them. Instead of a Yes/No response set as in Zuckerman's (1971) original scale, another response set was devised by the author in keeping with the response sets of the rest of the other scales in the study. Subjects were asked 'How would you rate yourselves on the following?' and to rate themselves on a 5-point scale ranging from '1-Not like me at all' to '5-Very much like me'. Some examples of questions were 'I would like a job which would require a lot of travelling', 'I get bored seeing the same old faces' and 'The worst social sin is to be rude'.

Problem-solving: was measured by Heppner's Problem Solving Inventory (PSI) (Heppner, 1988). The inventory is a 35-item 6-point Likert-type scale. (Items are reverse scored). *Problem-solving confidence* (PSCon) measures self assurance while engaging in problemsolving activities for example, "I am usually able to think up creative and effective alternatives to solve a problem" and "Many problems I face are too

complex for me to solve". *Approach avoidance* (PSAA) style is defined as a general tendency to approach or avoid problem solving activity, examples are "I generally go with the first good idea that comes to mind" and "When confronted with a problem, I stop and think about it before deciding on a next step". *Personal control* (PSPC) deals with the extent to which individuals believe they are in control of their emotions and behaviour while solving problems for example, "When my first efforts to solve a problem fail, I become uneasy about my ability to handle the situation" and "I make snap judgments and later regret them.

Identity with Mauritian Culture

This scale investigated the degree to which subjects were socialised into Australian culture versus preferring to maintain their former traditions and behaviours. The scale is made up of 80 questions and was compiled by the author and Gebart-Eaglemt (1997). Subjects were asked 'What is your opinion about the following?' and to rate their responses on a 4-point scale ranging from '1-not like me at all' to '4-like me'. Examples of questions are 'I prefer to use French than English', 'I have more Australian than Mauritian friends' and 'I think in French rather than in English'.

Psychological well-being: was measured using a 40-item General Well-being Scale (unpublished) that assesses current life satisfaction (Gebart-Eaglemt, 1997).

An alpha reliability coefficient of 0.70 and above is required for a scale to be considered as having good inter-item and internal consistency (Cronbach, 1951; Nunnally, 1978). Analyses of the above scales revealed reliabilities above the accepted standard with alpha values ranging from 0.71 to 0.94.

Procedure

The questionnaires were distributed by the author in English (as this was the preferred language of subjects) to

members of the Mauritian cultural groups via key members of the communities under study. Questionnaires were distributed across varied age groups among all the Mauritian social clubs at sporting, religious, elderly and social events. Subjects were instructed that participation was voluntary and anonymity was ensured through the provision of pre-paid envelopes addressed to the author.

Results

The highest frequencies reported were divided into benefits construed out of material gains (higher income, material comforts, car, house, etc) and individual and group benefits (personal growth, learnt to be independent, the chance for the children to prosper). Learning English and another culture and ventures concerning high risk were not important factors in keeping this migrant group here. While the above results are

retrospective and could only be said to depict these subjects' re-evaluation of the reasons for why they immigrated, they represent valuable insights into the readjustments that this group had to make in migrating to Australia.

Factor Analysis

Using Principal Axis Factoring (PAF)(Extraction Method) OBLIMIN rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization the following pattern matrices were obtained for the scale **scale** measuring the Positive aspects of migration. important at all") during your time in Australia that have made you feel good and given you a sense that it's been worthwhile being in Australia'. Examples of items are 'Learnt to be independent', 'For the children, the opportunity to prosper' and 'Material comforts are better than in Mauritius'.

Table 2:
Reported Positive Aspects of Life in Australia

Positive aspects of life in Australia	Percentage reporting Important to Very important
For the children, the opportunity to prosper	(76%)
Learnt to be independent	(72%)
The chance to earn a higher income	(70%)
Personal growth, "Found myself" (Gained new perspectives & outlooks)	(64%)
Material comforts are better than in Mauritius	(62%)
Had the opportunity to get the material things (car, house, etc;) that I wouldn't have been able to if I'd stayed in Mauritius	(57%)
Learnt to drive a car	(52%)
Learn English and another culture	(48%)
Had the chance to experience 'liberte' and escape the constraints of Mauritian society	(46%)
Had the chance to try a different career	(45%)
To be able to continue with life unchanged from what it was in Mauritius	(41%)
To find support from an expatriate community of Mauritians here	(35%)
Established my own business	(15%)

The results revealed a number of significant associations between the dimensions of coping and life satisfaction for Mauritians. Confidence in problem situations was directly related to a positive evaluation of life satisfaction. A style of approaching problem situations was associated with a positive evaluation of life satisfaction via risk-taking behaviour, not identifying with Mauritian culture and adaptation with the host culture. A style of approaching

problem situations was also associated with ameliorating reports of stress and reports of a negative evaluation of life satisfaction via risk-taking behaviour, not identifying with Mauritian culture and adaptation to the Australian culture.

FIGURE 1

Proposed Model

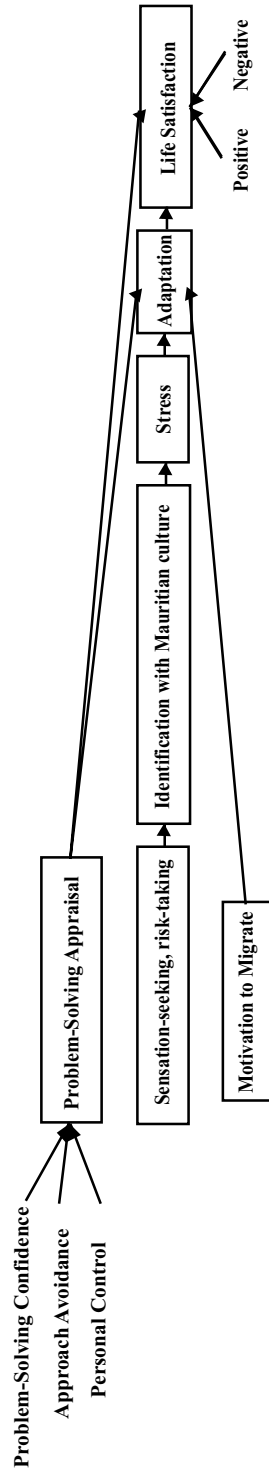
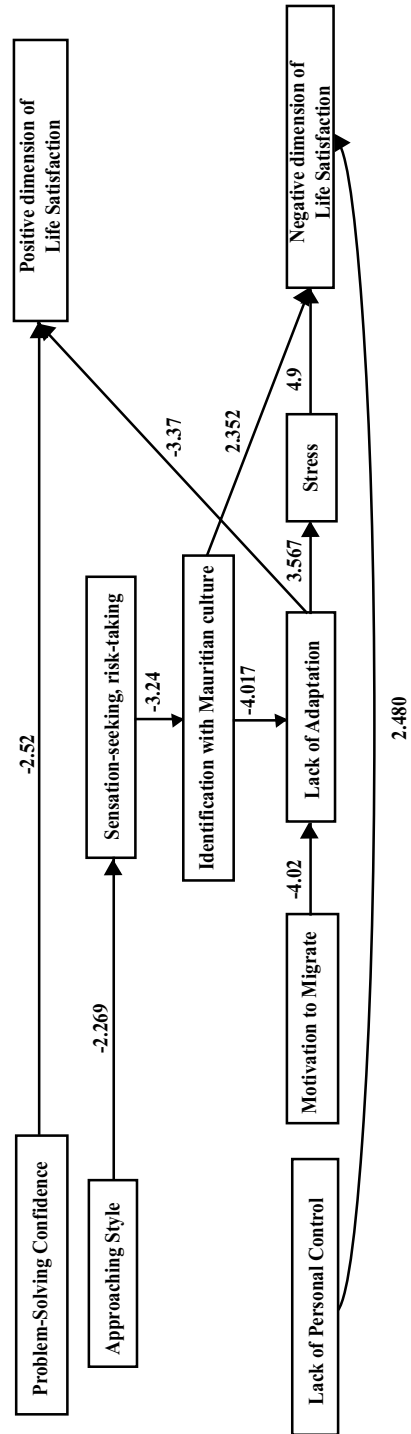


FIGURE 2

Path-analysis (Final Model)



* Problem-solving appraisal is reverse scored hence negative relationships between the dimensions of problem-solving and other variables should be interpreted as positive relationships

Table 3:
Positive Aspects of Migration Factors

Variables	MA.ACQ	EN.VENT
PMAT	.84588	
PINC	.74145	
PCOM	.67494	
PEC	.67287	
PLIB	.63443	
PCARE		.85803
PPGR		.57348
PDRI		.49598

*NOTE: Factor labels: MA.ACQ - Material Acquisitions ; EN.VENT - Enterprising Ventures/risk-taking ventures. Variable labels: PMAT - Had the opportunity to get the material things (car, house, etc) ; PINC - Chance to earn a higher income; PCOM - Material comforts are better than in Mauritius ; PEC - Learn English and another culture ; PLIB - Had the chance to experience 'liberte' & escape the constraints of Mauritian society ; PCARE - Had chance to try different career ; PPGR - Personal growth ; PDRI - Learnt to drive a car.

Based on a review of the literature of the important factors related to well-being for migrants the model below was tested, Figure 1. Based on the results of exploring the relationship between variables, using the Maximum Likelihood method recommended by Joreskog and Sorbom (1989), the model in Figure 1 was evaluated and the following model defined in Figure 2.

Another path through which a style of approaching problem situations was associated with *low* reports of a negative evaluation of life satisfaction was via risk-taking behaviour and not identifying with Mauritian culture. Being in control of one's emotions in problem situations was also associated with less reports of a negative evaluation of life satisfaction.

Identification with Mauritian culture appeared to be the central variable accounting for the highest number of relationships and was also related to stress, poor knowledge of English, a style of avoiding problem situations and, low educational attainment. Having more goals and motivators for being in Australia was associated with positive evaluations of life satisfaction for this group via adaptation to host culture.

Discussion

The results of this study are representative of a group of immigrants who are proud of their cultural origins as indicated by their participation in their own language and customs. The results indicate a people who feel that they are a lot better off as a result of migration.

The chance to gain improvements in material well-being was rated as a major positive aspect of migration. Items related to material improvement such as the chance to earn a higher income (70% of sample) recorded high ratings on the positive aspects of migration.

The first generation perception (over 70%) is that for the children, the movement was definitely a positive one, as the opportunities in Australia vis a vis their counterparts in Mauritius are better.

It also appears from the results, that for this group, contact with those from the culture of origin reinforces a sense of identity when the situation outside the group is uncertain, stressful and competitive. According to Brewer (1991) one way to deal with

the undesirable nature of stigmatisation is to convert the stigma from a feature of personal identity to a basis of social identity. Members of minority groups tend to face a barrage of questions from other groups about their identity for example, Where are you from ? Where's Mauritius ? Where's Madagascar ? Within one's own group there is greater familiarity and acceptance where one can speak one's language and be more relaxed. Collective identities can buffer the individual from many threats to self-esteem and contribute to well-being (Brewer, 1991). Groups are also often better than individuals in creating their own versions of social reality and to isolate themselves successfully from others (Festinger, 1954). Membership of a group forms part of our self-concept where we minimise the differences between ingroup members and maximise differences between outgroup members. Where group membership leads to discrimination, minimisation of the differences between ingroups and outgroups occur (Tajfel, 1981).

Mauritian subjects' responses on the positive aspects of life in Australia indicate that their intentions in migrating were to experience change; for example, the results of the factor analysis produced 2 factors material acquisitions and participation in enterprising & risk-taking ventures. Only 41% and 35% of subjects respectively, ranked the items - To be able to continue with life unchanged from what it was in Mauritius and To find support from an expatriate community of Mauritians here as being Important and Very Important in assessing the positive aspects of their lives in Australia.

Migration represents an experience akin to a rebirth where the migrant undergoes intensive re-socialisation. Hence there will be a tendency for the migration experience to be evaluated overall as a positive one by the individualistic group which is supported by the results. As migrants acculturate linguistically, an increasing marginal loss of ethnic identification occurs (Laroche, Kim, Hui & Tomiuk, 1998).

Causal influence becomes implausible in the absence of an association. Specifically, structural modelling provides evidence in support of a particular theory of associative links between variables. Such a model might be adopted as a set of working hypotheses for future research.

About the Author

Claudie Larose is a psychologist in private practice who is currently completing her PHD at Macquarie University on coping amongst migrants. Her practice includes work with principally French-speaking clients surrounding issues related to culture.

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Testing the Generalizability of the Factor Structure Underlying the PSDQ with Spanish Adolescents

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Confirmatory factor analysis was used to test the structural equivalence of responses by Spanish and Australian adolescent to the Physical Self-Description Questionnaire (PSDQ). The English version of the PSDQ was administered to 986 Australian teenagers, and a translated version into Spanish of the PSDQ was administered to 986 Spanish teenagers. The invariance of the factor structure was confirmed; the eleven-common-factor model also fitted the Spanish sample. Additional CFA were carried out to test factor loadings invariance across groups. Results suggested that only the factor loadings of 14 items were not invariant. Finally, the factor correlations invariance across groups was tested. The results support the generalizability of the PSDQ factor structure in the Spanish sample, and suggest that the translated version into Spanish of the PSDQ can be a useful instrument to be used in physical self-concept cross-cultural research.

In the course of their lives, people develop an empirical aggregation of things objectively known about themselves. Individuals' social interactions contribute to the construction of that self-concept through an internalization process of what others think about their appearance, motives, deeds, character, and so on. Prior to the 1980s self-concept was considered a unidimensional construct (Marsh & Shavelson, 1985; Marsh, 1990a; Marsh & Hattie, 1996). Consistent with the dominant theoretical orientation, early self-concept measurement instruments were characterized by unidimensionality and an emphasis on global self-concept. Examples of such unidimensional scales are the Rosenberg Self-Esteem Scale (Rosenberg, 1965, 1979), the Coopersmith Self Esteem Inventory (Coopersmith, 1967), the Tennessee Self-Concept Scale (Fitts, 1965), and the Piers-Harris Children's Self-Concept Scale (Piers, 1969, 1984). In contrast, since the 1980s most self-concept theorists accept the multidimensionality of self-concept, and, as a result, most measurement instruments developed subsequently assess several facets of self-concept in addition to a global component. Examples of such multidimensional scales are the Offer Self-Image Questionnaire-Revised (Offer, Ostrov, Howard, & Dolan, 1992), the Self-Perception Profile for Children (Harter, 1982, 1985), the Self-Esteem Index (Brown & Alexander, 1991), the Multidimensional Self-Concept Scale (Bracken, 1992), and Marsh's Self-Description Questionnaire instruments SDQI, SDQII and SDQIII (Marsh, 1988, 1990b, 1992a) (for a revision of self-concept instrumentation see Keith & Bracken, 1996).

An important basis for the theoretical movement toward a multidimensional conceptualization of self-concept is the article by Shavelson, Hubner, and Stanton (1976). The authors posited a multifaceted, hierarchical model of self-concept, which has been subsequently extended (Shavelson & Bolus, 1982), and revised (Marsh & Shavelson, 1985; Shavelson & Marsh, 1986), leading to the Marsh/Shavelson model. The Shavelson et al. (1976) model has been the basis for the subsequent development of other multidimensional models of self-concept (Song & Hattie, 1984; Hattie, 1992; Harter, 1982; Pallas, Entwisle, Alexander, & Weinstein, 1990). But surely, the main contribution of the Shavelson et al. model was to be the basis for the development of multidimensional self-concept measurement instruments. The studies on these instruments have offered empirical evidence supporting the

multifaceted nature of self-concept and have indicated that self-concept cannot be understood adequately if its multidimensionality is ignored (Marsh, 1990a). For example, the different areas of self-concept assessed by Marsh's SDQ instruments are based largely on the Shavelson et al. model. The findings of the numerous studies carried out using these questionnaires indicate that the SDQ instruments provide reliable and valid measures of self-concept suitable for testing the Shavelson et al. model (e.g., Marsh, 1987a, 1987b; Marsh & Byrne, 1993a, 1993b; Marsh & Hocevar, 1985; Marsh & Shavelson, 1985), and offer support for the use of multidimensional measures of self-concept instead of general measures of self.

The hierarchical nature of self-concept posited in the Shavelson et al. model implies that multidimensional, hierarchical models can be developed for separate domains. More recently, the need to develop multidimensional instruments that are specific to self-concept domains has been recognized (Marsh, 1990a; Marsh & Redmayne, 1994). Thus, researchers have developed self-concept instruments to measure specific aspects within the academic, physical and performing arts domains. Academic self-concept has been the most widely studied. Examples of multidimensional scales designed to measure specific aspects within the academic domains are The Perception of Ability Scale for Students (Boersma & Chapman, 1992), and the Academic Self-Description Questionnaire (Marsh, 1990c, 1992b). The Arts Self-Perception Inventory (Vispoel, 1995) distinguishes between self-concepts in distinct performing arts domains. And in the physical domain, the Physical Self Perception Profile (Fox, 1990; Fox & Corbin, 1989), the Physical Self Concept Scale (Richards, 1988), and the Physical Self Description Questionnaire (Marsh, Richards, Johnson, Roche, & Tremayne, 1994), are multidimensional instruments designed to measure specific dimensions of physical self-concept, appropriate to be used with participants over the age of 12. More recently, a multidimensional physical self-concept instrument specific to elite athletes has been developed, the Elite Athlete Self Description Questionnaire (Marsh, Hey, Johnson, & Perry, 1997).

There is general agreement among self-concept researchers regarding the idea that multidimensional instruments that measure specific self-concept domains may be more useful

than more global measures of self-concept (Marsh, Hey, Johnson, & Perry, 1997; Marsh, Hey, Roche, & Perry, 1997). Within this general framework, theory and practice must work together to posit and evaluate more detailed subdomains that are specific to a particular domain of self-concept. As Marsh et al. (1994) pointed out, the development and evaluation of multidimensional instruments that are specific to self-concept domains needs to be based on theory, followed by factor analytic investigations that offer further support for the hypothesized factor structure. Moreover, the development of translated versions of the questionnaires into other languages to be used with different cultures would offer further evidence of the construct validity of the instruments, and of the generalizability of the factor structure across several cultures.

The focus of the present investigation is on the measurement of physical self-concept, and, more concretely, on the construct validity of one of the multidimensional physical self-concept instruments cited above, the Physical Self Description Questionnaire (PSDQ; Marsh et al. 1994). Based on the Marsh/Shavelson model (Marsh & Shavelson, 1985; Shavelson & Marsh, 1986), previous research carried out with the SDQ instruments, and a preliminary version of the questionnaire (Marsh & Redmayne, 1994), the PSDQ was developed to measure nine specific components of physical self-concept (Health, Coordination, Activity, Body Fat, Sports Competence, Appearance, Strength, Flexibility, Endurance/Fitness), and two global components (Global Physical Self-Concept and Self-Esteem). As Marsh (1994) pointed out, the PSDQ was designed as a hierarchical, multidimensional measure of physical self-concept. Thus, the global physical scale refers to super-ordinate physical self-perceptions in general, and the nine specific scales refer to specific domains of physical self-concept (see Marsh, 1996, for a description of the PSDQ scales).

The psychometric properties of the PSDQ have been tested in several studies. Estimates of the internal consistency reliability of scores of the eleven PSDQ scales were good for different samples of Australian adolescents (Marsh, Hey, Roche, & Perry, 1997; Marsh et al., 1994), varying from .82 to .96. Support for the convergent and discriminant validity for the PSDQ scales was provided using multitrait-multimethod analysis of the scores of the PSDQ and two other multidimensional physical self-concept instruments (Marsh et al., 1994), and the relation of PSDQ responses to external validity criteria reflecting body composition, physical activity, and other components of physical fitness (Marsh, 1996). The confirmatory factor analyses (CFA) carried out to test the factor structure of the PSDQ responses have provided clear support for the eleven components of physical self-concept that the PSDQ is designed to measure, and for the replicability of the factor structure over gender (Marsh et al., 1994) and across samples of elite athletes and non-elite high school students (Marsh, Hey, Roche, & Perry, 1997).

These results demonstrate the appropriateness of the PSDQ and provide support for the reliability and construct validity of the questionnaire for Australian adolescents. The development of translated versions of the PSDQ into other languages would offer the opportunity to study the construct validity of the questionnaire in different cultures and assess the generalizability of its factor structure. However, it is well-known among test

developers that the use of a test in a culture other than the one in which it was developed requires evidence of the test's reliability and validity in the new setting. The purpose of the present investigation is to test a number of invariance hypotheses regarding PSDQ psychometric properties across two samples of Australian and Spanish adolescents. This will allow us to ascertain to what extent a number of the questionnaire's psychometric properties estimated in an Australian sample are generalizable to a Spanish one. Concretely, we are concerned with testing the invariance of the factor structure underlying the questionnaire, the invariance of factor loadings and factor correlations, and additionally the invariance of factor variances and uniquenesses across the two samples.

Method

Participants and Procedure

Data from a total of 1,972 subjects were used in this study. In Australia, 986 high school students (54% males, 46% females) with a mean age of 13.5 (SD = 1.11) completed the English version of the PSDQ. These data correspond to the two non-elite groups used in the Marsh, Hey, Roche, and Perry (1997) study, discarding only the subjects under the age of 12. In Spain, 986 high school students (51% males, 49% females) with a mean age of 13.3 (SD = 1.07) completed the translated into Spanish version of the questionnaire. The ages of the subjects in the Australian and Spanish samples ranged from 12 to 16. Moreover, the two samples were equated as much as possible on the demographic variables of gender, age, and grade level. We tested for differences in percentages of males and females in the two samples, but the value obtained for the test was not statistically significant ($z=1.74$, $p > 0.05$). We also tested for differences in age mean and variance between samples. The difference in age mean was statistically significant ($t=5.16$, $p<0.01$), and the difference in age variance was also statistically significant ($F=13.6$, $p<0.01$). Taking into account that the differences in age mean and variance between the two samples were very small, the aforementioned significant results may be due to the high statistical power of the tests.

In all cases participation was voluntary. Permission to participate in the study was obtained from the participants and their parents. In the Australian sample, the PSDQ was administered by classroom teachers to intact classes of no more than 30 students, according to written instructions. In the Spanish sample, the questionnaire was administered by the same researcher to classroom units of students during one regular class period. Prior to completion of the instrument, test instructions were paraphrased by the test administrator, and procedural questions were solicited and answered.

Instruments and Tests Translation

The Physical Self-Description Questionnaire (PSDQ) is a 70-item instrument which is designed to measure the following eleven scales: Health, Coordination, Activity, Body Fat, Sports Competence, Appearance, Strength, Flexibility,

Endurance/Fitness, Global Physical Self-concept, and Global Self-Esteem. Each scale is represented by 6 or 8 items; each item is a simple declarative statement and participants respond using a 6-point true-false response scale (see Marsh et al., 1994, for a full presentation of the instrument).

In this study, the source English version of the PSDQ and a translation into Spanish of the questionnaire (Tomás, 1998) were used. The PSDQ was translated to Spanish following the back-translation procedure widely described in the literature (Hambleton & Kanjee, 1995; Van de Vijver & Leung, 1996). The test was initially translated from English to Spanish separately by the two authors of the present study and a translator whose first language is Spanish. Translation discrepancies between the three translated forms were discussed in order to develop an initial Spanish version of the questionnaire. A second bilingual translator whose native language is English, and who had not seen the original English version, translated this initial Spanish version of the test from Spanish back to English. The original and back translated versions of the tests were then compared. Translation differences revealed by the back translation were corrected. Next, a pilot study was carried out in order to test the adequacy of the questionnaire to be used with Spanish teenagers. The Spanish version was administered to a group of 27 Spanish boys and girls whose ages ranged from 12 to 13. Some changes were introduced to make the items more understandable. Finally, a second pilot study was carried out to test these modifications, concluding with a final Spanish version of the PSDQ.

Estimates of internal consistency reliability for the eleven PSDQ scales in the Spanish sample were good, ranging from .79 to .93, with a mean alpha of .87. For the Australian sample reliability estimates ranged from .82 to .94, with a mean alpha of .88.

Statistical Analyses

A series of multi-sample CFAs were performed with LISREL 8 (Jöreskog & Sörbom, 1993) to test the invariance of the factor structure of the PSDQ across the two cultural groups and, additionally, to test the invariance of factor loadings, factor correlations, factor variances, and uniquenesses. Thus, a total of five nested models were tested. Model 1 (M1) tested whether or not an 11 common factor model held in the two samples, but no invariance constraint was imposed in any parameters. This model was used as a baseline for fit comparisons of the later more restricted models. In Model 2 (M2), factor loadings were constrained to be invariant across groups. As pointed out in other studies (Marsh, 1994b; Marsh, Hey, Roche, & Perry, 1997), in tests of factorial invariance the invariance of factor loadings is of primary importance; but it may also be important to test for the invariance of relations among factors. Model 3 (M3) tested whether or not factor loadings and factor correlations were invariant across the two cultural groups. The procedure described by Marsh and Hocevar (1985; Marsh, 1987a) to conduct a test for the invariance of factor correlations when factor variances are free was followed. There is no reason to expect that the variability of individuals on each factor should be the same in the two cultural groups, even if relations among the factors are

invariant; nevertheless, the invariance of factor variances was also tested. Thus, Model 4 (M4) posited factor loadings, factor correlations, and factor variances to be invariant across groups. Finally, in Model 5 (M5) all estimated parameters (factor loadings, factor correlations, factor variances and uniqueness) were hypothesized to be invariant. For all the models, the analyses were performed on within-group covariance matrices.

To assess the goodness of fit for the models we used three absolute fit indices (the chi-square goodness-of-fit statistic, χ^2 ; the root mean square error of approximation, RMSEA; and the adjusted goodness-of-fit index, AGFI), and one relative fit index (the non-normed fit index, NNFI). The chi-square test statistic has been widely used by researchers to assess the fit of the models. It is a test of statistical significance that evaluates whether or not a solution adequately fits the data. However, one of the concerns in the application of the chi-square test statistic to the evaluation of goodness of fit is its sample size dependence (e.g., Jöreskog, 1993; La Du & Tanaka, 1995; Tanaka, 1993). The chi-square statistic is calculated as $N-1$ times the minimum value of the fit function, where N is the sample size. Thus, in large samples even trivial deviations of a model from the actual structure could be detected and could lead to the rejection of the model. The use of practical fit indices (such as the RMSEA, AGFI and NNFI) has been suggested as an alternative to tests of statistical significance (e.g., Marsh, 1994b; Marsh & Hocevar, 1985; Marsh, Hey, Roche, & Perry, 1997; Reise, Widaman, & Pugh, 1993). The RMSEA (Steiger, 1990) was defined as a measure of the discrepancy per degree of freedom of the model. This badness of fit measure is bounded below by zero and will be zero if the model fits perfectly. Guidelines for interpretation of RMSEA have been recommended, suggesting that values of about 0.05 or less would indicate a close fit of the model, values of about 0.08 or less would indicate fair fit of the model or a reasonable error of approximation, and values greater than 0.1 would indicate poor fit (Browne & Cudeck, 1993; Browne & Du Toit, 1992). The AGFI (Jöreskog & Sörbom, 1989) is a modification of GFI by dividing the numerator and denominator terms of the GFI equation by their corresponding degrees of freedom. This index was suggested to avoid a serious limitation reported for the GFI, such as its tendency to increase as more parameters are introduced into the model. Thus, the AGFI applies a penalty for additional parameters. AGFI values near 0.0 indicate poor fit, whereas values near 1.0 indicate good fit. It is fairly conventional to use a threshold value of .90 as indicating good model fit. Finally, the NNFI (Bentler & Bonett, 1980; Tucker & Lewis, 1973) is a relative measure that also applies penalties for a lack of parsimony. It has been suggested that NNFI values of .90 or above indicate good model fit (Bentler & Bonett, 1980). Values near 0.0 indicate poor fit, whereas values near 1.0 indicate good fit.

The comparison of the fit of the competing models was done in terms of the difference in chi-square values ($\Delta\chi^2$). As more restricted models (models 2 to 5) are nested within the baseline model (Model 1), the difference in chi-square values for these models regarding Model 1 can be estimated. For each particular comparison, evidence for the fit of the hypothesized model is given by the degree to which the difference in chi-square value for the model being tested does not differ in a statistically

significant way from the baseline model. However, tests of statistical significance of the change in chi-square are subject to the same limitations discussed for the chi-square test statistic. And consequently, the same assertion can be made: the comparison of the goodness of fit of competing models cannot be evaluated solely on the basis of statistical grounds; it should be useful to consider the information provided for the differences in practical fit indices. With these considerations in mind, and taking into account the large sample sizes in this study, we used the differences in NNFI, AGFI and RMSEA as an alternative to compare the fit of the tested models. Widaman (1985) considered differences between models in NNFI less than .01 as an indication of unimportant practical differences. Although suggestions for evaluating differences in AGFI have not been developed, La Du and Tanaka suggested that “an incremental change in GFI greater than .01 for a single degree of freedom comparison might be indicative of nontrivial model improvement, particularly for samples sizes greater than 200” (La Du and Tanaka, 1995, pp. 308). As AGFI is a modification of GFI by dividing the numerator and denominator terms of the

GFI equation by their corresponding degrees of freedom, a relationship between population values of AGFI and GFI can be established (see, e.g., MacCallum & Hong, 1997). Finally, the RMSEA will decrease if the inclusion of additional parameters substantially reduces the population discrepancy function value (Brown & Du Toit, 1992). However, standards for evaluating differences in RMSEA have not been developed.

Results

The outcomes of confirmatory factor analyses are summarized in Table 1; in this table, the goodness of fit indices for the five tested models are presented. Results show that the chi-square goodness of fit test for Model 1 is statistically significant, indicating that this model does not hold exactly in the population. However, as has been discussed above, the chi-square is so powerful for large problems with large sample sizes, that the observed chi-square will nearly always be statistically significant even for models with a reasonably good fit to the data.

Table 1:
Goodness of Fit Indices for Tested Models

Model	Model description	df	χ^2	Δdf	$\Delta\chi^2$	Fit function	RMSEA	AGFI	NNFI
M1	Baseline model	4580	13449.05*			6.83	0.031	0.90	0.89
M2	FL invariance	4639	14124.22*	59	675.2*	7.17	0.032	0.90	0.89
M3	FL+FC invariance	4694	14339.73*	114	890.7*	7.28	0.032	0.90	0.89
M4	FL+FC+FV invariance	4705	14370.14*	125	921.09*	7.29	0.032	0.90	0.89
M5	FL+FC+FV+U invariance	4775	16697.59*	195	3248.54*	8.48	0.036	0.89	0.86

Note: df = degrees of freedom; Δdf = change in degrees of freedom; $\Delta\chi^2$ = change in chi-square statistic; FL = factor loadings; FC = factor correlations; FV = factor variances; U = uniquenesses. * = $p < .01$

That seems to be the case in this study since the fit of Model 1 would be considered to be acceptable from the point of view of other measures of fit (RMSEA = 0.031; AGFI = 0.90; NNFI = 0.89). Thus, it can be concluded that the same factor model is able to fit the data from each group. And consequently, the freely estimated eleven-factor model (Model 1) will be used as a baseline model to test the fit of additional models that posit some or all of the parameters to be invariant across the two samples.

Table 1 shows that the difference in chi-square value for Model 2 with respect to Model 1 is statistically significant ($c^2(59) = 675.2, p < .01$), indicating that constraining the factor loadings to be invariant across groups leads to a statistically significant decrease in model fit. Taking into account this result, it is clear that Model 2 should be rejected from a strictly statistical viewpoint. However, the chi-square's relation to sample size can lead to the rejection of the model of factor loading invariance even when there are only small or trivial differences between the two groups. Actually, as can be seen in Table 1, for small differences in the fit function

values between models 2 and 1, a statistically significant change in chi-square is obtained because of the large sample size. Moreover, taking into account the practical fit indices values obtained for Model 2 (RMSEA = 0.032; AGFI = 0.90; NNFI = 0.89), it does not seem unreasonable to accept the adequacy of this model. And furthermore, the RMSEA, AGFI and NNFI values for Model 2 show minimal differences with respect to values attained for Model 1. Comparison of Model 2 with regard to Model 1 indicates that the decrease in RMSEA for the baseline model was just 0.001. The AGFI and NNFI values for the baseline model and Model 2 were exactly the same (.90), indicating that according to practical fit indices, there are no differences in goodness of fit between models 2 and 1. Thus, it can be concluded that the invariance of factor loadings across the two samples is tenable.

Results for models 3 and 4 yield similar conclusions as those described for Model 2. As the goodness of fit of these two models is similar, the most parsimonious (Model 4) should be selected. According to results in Table 1, it is clear that Model 4 should be rejected from a strictly statistical

viewpoint since change in chi-square with respect to Model 1 is statistically significant. However, the practical fit indices provide a different message, suggesting that the fit of Model 4 may be considered to be acceptable: the RMSEA shows a satisfactory value (.032); the AGFI value (.90) indicates good model fit; and the NNFI (.89) indicates a fairly reasonable level of practical fit. Comparison of Model 4 with regard to Model 1 indicates that the decrease in RMSEA for the baseline model, where no invariance constraints of parameters are imposed, is just 0.001. As has been pointed out above, standards for evaluating differences in RMSEA have not been developed. However, we consider that for a difference of 125 degrees of freedom, such a small difference in RMSEA could be considered unimportant on practical grounds. Finally, the AGFI and NNFI values for the baseline model and Model 4 are exactly the same, indicating that there are no changes in practical fit with respect to Model 1. Hence, Model 4 should be preferred since it is more parsimonious. Tables 2 and 3 show the parameter estimates for Model 4.

AGFI = 0.89; NNFI = 0.86). For this model, the change in NNFI with respect to Model 1 is .03, indicating a nontrivial decrease in model fit. These results provide support for the selection of Model 4 as the “best model”. In summary, taking into account that the indices of practical fit do not show important differences between models 1 and 4, Model 4 is preferred over Model 1 because of its parsimony. Hence, we conclude that the results offer support for the invariance of factor loadings, factor correlations, and factor variances across the two groups. However, the invariance of the uniquenesses is not tenable.

Discussion

The aim of this study was to test a number of invariance hypotheses regarding PSDQ psychometric properties across two samples of Australian and Spanish adolescents. The main purpose was to ascertain to what extent some of the questionnaire’s psychometric properties estimated in an Australian sample could be generalizable to a Spanish one. A series of multi-sample CFAs were carried out to test the invariance of the factor structure underlying the questionnaire, the invariance of factor loadings and factor correlations, and, additionally, the invariance of factor variances and uniquenesses across the two samples. Results provide support for the reliability and construct validity of the questionnaire in the Spanish group. The reliability for the eleven PSDQ scales in the Spanish sample is good, and results of the multi-sample confirmatory factor analyses afford promising support for the construct validity of the PSDQ for Spanish high school students. The generalizability of the factor structure underlying the questionnaire with Spanish adolescents is supported. Results demonstrate that the hypothesized eleven factor structure is invariant across responses by the two cultural groups. Moreover, constraining factor loadings, factor correlations, and factor variances to be invariant across the two groups also results in a reasonable fit to the data. The invariance of uniquenesses is rejected.

According to the purpose of this study, support for the

invariance of factor loadings and factor correlations is substantively important. Support for the invariance of factor loadings indicates that the relation between items and the underlying latent constructs that they are posited to measure, are the same for the Spanish and English versions of the questionnaire. This conclusion implies that the translated version into Spanish of the PSDQ is a useful instrument to be employed in the development of physical self-concept research with Spanish adolescents, and furthermore, that the Spanish version of the PSDQ can be used in cross-cultural comparison research across samples of Australian and Spanish adolescents. As different authors have pointed out (Byrne, Shavelson, & Muthén, 1989; Ghorpade, Hattrup, & Lackritz, 1999; Reise, Widaman, & Pugh, 1993), the only requirement for comparing groups on a latent variable is that factor loading invariance can be established. Thus, comparisons involving scale scores across groups of Australian and Spanish adolescents are psychometrically justified, since the items in the Spanish and Australian versions of the PSDQ appear to relate equivalently to their hypothesized latent factors.

Support for the invariance of factor correlations implies that the pattern of relationships among the 11 factors of the PSDQ is the same for the Australian and Spanish samples. This finding supports the questionnaire’s construct validity across the two samples considered, and also offers support to the multidimensionality of the physical self-concept construct.

The fit for Model 5 (which tests the invariance of all parameters constrained to be invariant in Model 4, plus the invariance of uniquenesses) is somewhat poorer than the fit of the models already considered (RMSEA = 0.036;

Although support for the invariance of factor variances is substantively less important, it leads us to some considerations. Previous research carried out with PSDQ responses to test the replicability of its factor structure over gender has shown that responses by females, compared to males, are somewhat more variable (Marsh, et al., 1994). The factorial invariance across sex and age for a more general self-concept questionnaire, the Self Description Questionnaire, has also been tested (Marsh, 1987a; Marsh, 1994b), showing that the invariance of factor variances cannot be supported across sex and age. These findings, together with the results obtained in the present study, seem to point out that the differences in factor variances of self-concept dimensions may not be related to Spanish-Australian cultural differences. On the contrary, differences on the variability of self-concept dimensions seem to be related to gender, age, and their interactions.

In summary, the results obtained in the present study offer further evidence of the construct validity of the PSDQ, and of the generalizability of its factor structure, factor loadings, factor correlations, and factor variances for a sample of high school students from the Spanish culture. These results support the use of the PSDQ Spanish version for Spanish-Australian cross-cultural research.

Table 2:
Factor Loading Estimates for Model 4

Factor	Item	Factor loading	Factor	Item	Factor loading
1. Health	1	.33	7. Strength	8	.81
	12	.67		19	.84
	23	.56		30	.77
	34	.59		41	.53
	45	.78		52	.83
	56	.63		63	.72
2. Coordination	67	.72	8. Flexibility	9	.45
	69	.49		20	.83
	2	.58		31	.44
	13	.53		42	.62
	24	.77		53	.76
	35	.74		64	.82
3. Activity	46	.74	9. Endurance	10	.79
	57	.72		21	.77
	3	.47		32	.73
	14	.68		43	.82
	25	.69		54	.77
	36	.72		65	.76
4. Body Fat	47	.79	10. Global Physical	6	.75
	58	.80		17	.81
	4	.88		28	.83
	15	.79		39	.86
	26	.90		50	.82
	37	.87		61	.86
5. Sport Competence	48	.84	11. Self-Esttem	11	.53
	59	.77		22	.61
	5	.77		33	.59
	16	.86		44	.70
	27	.74		55	.64
	38	.87		66	.75
6. Appearance	49	.73	68	.69	
	60	.87	70	.64	
	7	.77			
	18	.79			
	29	.79			
	40	.74			
	51	.87			
	62	.54			

Note. All parameter estimates are standardized in relation to a common group metric. The solution presented is for Model 4 that holds the factor loading estimates to be invariant across the two groups. All factor loading estimates are statistically significant ($p < .01$).

Table 3:
Factor Correlation and Factor Variance Estimates for Model 4

Factor	1	2	3	4	5	6	7	8	9	10	11
1. Health	.96										
2. Coordination	.22	1.02									
3. Activity	.07	.64	1.29								
4. Body Fat	.17	.37	.24	1.20							
5. Sport Competence	.15	.79	.66	.34	1.23						
6. Appearance	.17	.48	.33	.40	.50	1.13					
7. Strength	.16	.55	.48	.06	.63	.50	1.08				
8. Flexibility	.15	.70	.49	.34	.57	.44	.41	1.07			
9. Endurance	.16	.72	.71	.45	.75	.45	.52	.60	1.28		
10. Global Physical	.20	.59	.43	.53	.59	.68	.46	.43	.54	1.19	
11. Self-Esteem	.33	.59	.39	.42	.53	.66	.46	.43	.48	.78	.91

Note. Factor variance estimates appear in the main diagonal. Factor correlation estimates appear below the main diagonal. All parameter estimates are statistically significant ($p < .05$).

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Self-Handicapping and Defensive Pessimism: How Students Protect their Self-Worth

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The present study examines predictors and consequences of self-handicapping and defensive pessimism (comprising defensive expectations and reflectivity) from a self-worth motivation perspective (Covington, 1984, 1992). Consistent with self-worth motivation theory, self-handicapping and defensive expectations are proposed as two strategies students use to protect their self-worth in the event of potential failure, and in some cases to enhance their worth in the event of success. In students' (n=328) first and second years at university, a longitudinal process model was examined and the patterns of relationships emerging at both times were broadly congruent: an external attributional orientation, performance orientation, and uncertain personal control all positively predicted self-handicapping, defensive expectations, and reflectivity, while task-orientation was found to negatively predict self-handicapping and defensive expectations and positively predict reflectivity. In turn, self-handicapping and defensive expectations negatively predicted persistence and self-regulation, while reflectivity positively predicted these outcomes. Data also demonstrated the negative effect of Time 1 self-handicapping on subsequent academic grades. Application of the quadripolar model of need achievement (Covington & Omelich, 1991) provided an integrative conceptual rationale to assist substantive interpretations suggesting that reflectivity involved both a success orientation and a motive to avoid failure, defensive expectations primarily reflected failure avoidance, while self-handicapping actually bordered on failure acceptance. The data hold implications not only for current understanding and existing theory regarding self-handicapping and defensive pessimism, but also for educational practice and research dealing with these phenomena.

Individuals can use a variety of strategies to deal with threats to their self-worth. Two such strategies - self-handicapping and defensive pessimism - have received little joint attention to date and their separate and combined effects are the focus of the present study. We propose that self-handicapping and defensive pessimism share a common motivational base: namely, the motive to avoid failure. We aim to explore the extent to which this is empirically manifested both in terms of the factors that underpin self-handicapping and defensive pessimism and in terms of their consequences. We do so through two empirical processes. First, we undertake structural equation modelling to examine the predictors and consequences of self-handicapping and defensive pessimism. Second, we explore the data using multidimensional scaling with the aim of identifying common motivational bases to self-handicapping and defensive pessimism.

Self-Handicapping

Self-handicappers choose impediments or obstacles to successful performance that enable them to deflect the cause of failure away from their competence and on to the acquired impediments. By these means, self-handicappers are able to avoid disconfirmation of a desired self-conception. Self-handicapping can take a variety of forms. Typical examples include procrastination, the choice of performance-debilitating circumstances, engaging in little or no practice for upcoming tasks, and the strategic reduction of effort (see Berglas & Jones, 1978; Higgins & Harris, 1988; Tice & Baumeister, 1990). In the event of failure, the individual has a ready excuse. For example, the lack of effort is seen as the cause and not the individual's lack of ability. Findings in relation to the consequences of self-handicapping have been mixed - some suggesting it leads to positive outcomes (Deppe & Harackiewicz, 1996; Feick & Rhodewalt, 1998; Garcia, Matula, Harris, Egan-Dowdy, Lissi, & Davila, 1995), others

more reflective of negative consequences (Eronen, Nurmi, & Salmela-Aro, 1998; Midgley, Arunkumar, & Urdan, 1996; Midgley & Urdan, 1995; Urdan, Midgley, & Anderman, 1998). We seek to clarify the consequences that follow from self-handicapping.

Defensive Pessimism

Defensive pessimism involves setting unrealistically low expectations and thinking through a variety of possible outcomes prior to events in which one's performance is to be evaluated (Norem & Cantor, 1986a, 1986b). There are, then, two components underpinning defensive pessimism: defensive expectations and reflectivity. From a self-worth motivation perspective defensive pessimism can be viewed as a self-protective strategy that is aimed at protecting one's ability and consequent self-worth. Setting lower and safer standards against which one's ability is judged reduces the likelihood that it will be deemed as inadequate in a way that would call into question one's self-worth. In the short term, it has been shown that defensive pessimism does not lead to impaired performance (Norem & Cantor, 1986a, 1986b). A smaller body of research, however, has shown that in the longer term defensive pessimists' GPAs are lower than optimists' GPA and they report experiencing more global life stress, more psychological symptoms, and less satisfaction with their lives (Norem & Cantor, 1990). As with self-handicapping, we seek to lend clarity to the issue of consequences as they pertain to defensive pessimism. We propose, however, that there is a difference between simply thinking about a negative outcome and actually expecting a negative outcome and that this is suggestive of a difference between reflectivity and defensive expectations. We further propose that these two components of defensive pessimism represent distinct self-protective strategies, impacting on academic outcomes in distinct ways.

Specifically, we hypothesise that defensive expectations are negatively associated with academic outcomes while reflectivity is positively associated with these outcomes.

Predictors of Self-Handicapping and Defensive Pessimism

The first means by which we clarify the similarities and differences between self-handicapping and defensive pessimism is to examine the relation of these two strategies to affective and motivational measures that are conceptually relevant to the issue of self-worth motivation. We invoke self-worth motivation theory as a means to select a range of factors that we hypothesise are predictive of self-handicapping and defensive pessimism. We suggest that these predictors can be conceptually grouped into a number of variable clusters (see Cohen & Cohen, 1983; Martin, 1998). The predictor clusters we propose comprise subscales subsumed under *performance orientation*, *external attributions for success and failure*, *individuals' views of intelligence*, and *uncertain personal control*. Two variables are not in the first instance incorporated into these variable clusters. These are *task-orientation* and *level of self-concept*. Correlations between these and other constructs should assist in the interpretation of these constructs in the context of our clustering.

Performance Orientation and Task Orientation

We hypothesise that performance orientation and task orientation are conceptually feasible predictors of self-handicapping and defensive pessimism. Performance-oriented individuals tend to be competitive, feel most successful outperforming others, see outcomes as due primarily to ability rather than effort, are concerned with how they are viewed and evaluated by others, and are motivated to avoid poor performance and its negative consequences (Martin, 1998; see also Dweck, 1991). We hypothesize that they are motivated to self-protect because of this. Task-oriented individuals, on the other hand, are motivated to attain mastery rather than outperform others. They view tasks in terms of effort rather than ability and see failure as diagnostic feedback that can lead to improvement at a later time (Middleton & Midgley, 1997). Because of this effort and mastery orientation, task-oriented individuals are not so threatened by failure because failure reflects on their effort rather than their ability. From a self-worth motivation perspective their self-worth is not at stake because their private and public sense of ability is not threatened (Covington, 1984, 1992).

Uncertain Personal Control

Perceived control is relevant to self-worth motivation in that individuals who feel they have little or no control over outcomes are increasingly uncertain as to whether they can avoid failure or bring about success and may choose to self-protect in response to this. In terms of self-handicapping,

Baumeister and Scher (1988) argue that “the central cause of self-handicapping appears to be some form of induced insecurity about future performances” (p. 8; see also Riggs, 1992). In relation to defensive expectations, there is little research to guide hypotheses. Because defensive pessimism is a strategy aimed at enhancing one’s control (Norem & Illingworth, 1993), we speculate that giving rise to this need for control is the perception that one is uncertain in his/her control.

External Attributional Orientation

We also propose that an external attributional orientation underpins self-handicapping and defensive pessimism. Students who attribute favourable outcomes to external factors such as luck, good teaching, or easy marking perceive little or no (as distinct from uncertain - see above) control over their ability to maintain their success (Abramson, Seligman, & Teasdale, 1978). Concerning external attributions for failure, Rhodewalt (1990) reports that “a person who characteristically construes negative self-relevant outcomes as externally caused . . . might be the person most drawn to self-handicapping” (p. 103).

Level of Self-Concept

We also examine the relationship between self-concept and self-protective behaviour. Individuals high in self-concept have more to lose through failure and could be predicted to engage in anticipatory self-protection. On the other hand, individuals low in self-concept could be predicted to defend themselves from a continually low self-image. In view of these competing possibilities, it has been suggested that further work be conducted into strategies such as self-handicapping that are designed to protect, enhance, and/or maintain the self-concept (Hattie & Marsh, 1996). The findings in relation to defensive pessimism specifically, and expectations/pessimism more generally, are more clear-cut. Norem and Cantor (1986b) have shown that defensive pessimists are significantly lower in self-concept than optimists.

The processes described above are shown in Figure 1.

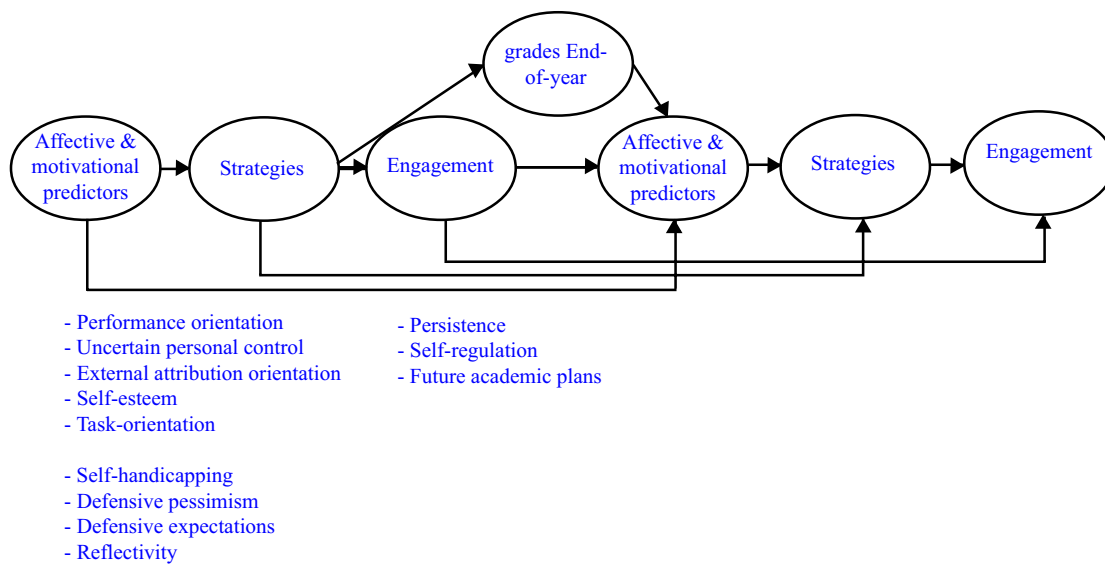


Figure 1: Basic Structure of the Hypothesised Longitudinal Model and Central Constructs Involved

Mapping the Strategies in Multidimensional Space

In addition to testing the predictors of self-handicapping and defensive pessimism, we undertake multidimensional scaling to explore the motivational bases underpinning self-handicapping and defensive pessimism. We propose that these two distinct empirical approaches (structural equation modelling and multidimensional scaling) are a means of ‘triangulating’ the data thereby lending greater support to conclusions about the congruence (or lack thereof) between self-handicapping and defensive pessimism.

The classic theory of need achievement (Atkinson, 1957; see also McClelland, 1965) has recently been revisited and represented in a two dimensional model that represents students in terms of the dual motives to avoid failure and approach success (Covington, 1992, 1997; Covington & Omelich, 1991). This two dimensional model yields four broad typologies - students high in success orientation and low in failure avoidance; students high on both dimensions; students low in success orientation and high in failure avoidance; and, students low on both dimensions. Individuals high on success orientation and low on failure avoidance have been referred to by Covington and Omelich as optimists. Individuals high on both dimensions have been referred to as overstrivers. Individuals low in success orientation and high in failure avoidance are failure avoiders, while those

low on both dimensions are failure accepters. This two dimensional framework is shown in Figure 2.

The quadripolar need achievement model as proposed by Covington and Omelich (1991) provides a useful framework by which to integrate self-handicapping, defensive expectations, and reflectivity. Firstly, it is suggested that the overstriver shares characteristics with the reflective student. Because these individuals are both success oriented and failure avoidant (see Arkin & Oleson, 1998), they tend to contemplate both success and failure - a hallmark of reflectivity (Norem & Illingworth, 1993). Thus, we predict that reflectivity will be empirically positioned in the overstriving quadrant. Failure avoiders are more inclined to contemplate failure, motivated to avoid it, and engage in strategies designed to protect the self (Covington, 1992). Setting defensive expectations and engaging in self-handicapping are two such strategies and we hypothesise that these two strategies will be empirically located in the failure avoidance quadrant. We propose that self-concept is most likely to ‘behave’ in the same way as optimism and therefore empirically positioned in the optimism quadrant. Consistent with this prediction, previous research has found self-concept/esteem and optimism to be highly correlated.

(Abel, 1996; Davis, Hanson, Edson, & Ziegler, 1992; Weingert & Rosen, 1995). The Hypothesised Quadripolar Framework is Shown in Figure 3.

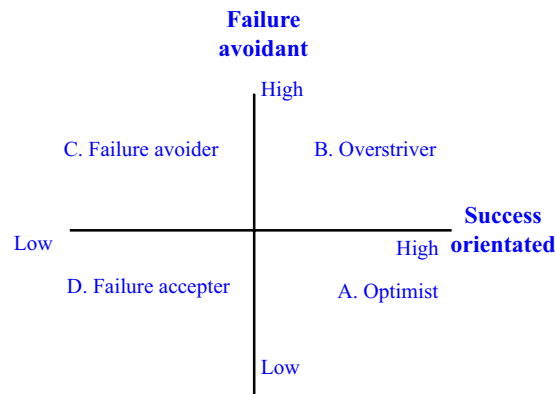


Figure 2: Quadripolar Model of Need Achievement
Adapted from Covington (1992, 1997)

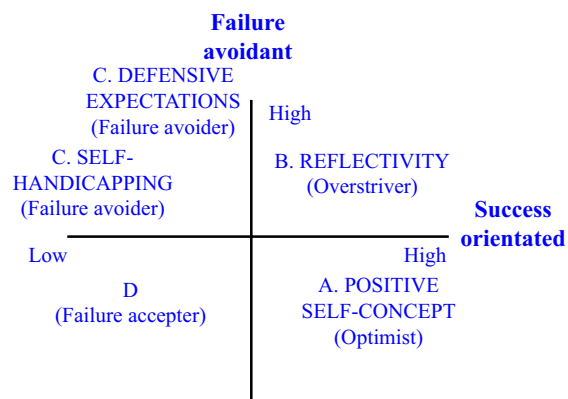


Figure 3: Hypothesised Quadripolar Model of Need Achievement
Incorporating Self-Handicapping, Defensive Expectations, Reflectivity and Positive Self-Concept
 Note. Present study's constructs in caps; Covington's (1992, 1997) constructs in parentheses

Focus of the Study and Hypotheses

The study, then, has two distinct empirical components, each aimed at clarifying the motivational bases, predictors, and consequences of self-handicapping and defensive pessimism. The first component involves testing an hypothesised longitudinal model of predictors and consequences of self-handicapping and defensive pessimism. We undertake structural equation modelling to test this model. The second component involves testing an hypothesised quadripolar model to better understand the motivational bases underpinning self-handicapping and defensive pessimism. We undertake multidimensional scaling to test this model.

In relation to the longitudinal model, we hypothesise that (a) performance orientation positively predicts self-handicapping and defensive expectations, (b) task-orientation negatively predicts self-handicapping and defensive expectations, (c) uncertain personal control positively predicts self-handicapping and defensive expectations, (d) an external attributional orientation positively predicts self-handicapping and defensive expectations, and (e) self-concept negatively predicts defensive expectations (no hypotheses are advanced in relation to self-concept and self-handicapping). Due to the apparent non-existence of evidence in relation to factors predicting reflectivity, no hypotheses are advanced, so this too is an exploratory component of the study. In terms of the consequences in this longitudinal model, we hypothesise that (a) self-handicapping negatively predicts self-regulation, persistence, future academic plans, and grades, and based on the distinction between thinking about and expecting outcomes outlined earlier, we hypothesise that (b) defensive expectations negatively predicts self-regulation, persistence, future academic plans, and grades while (c) reflectivity positively predicts these outcomes. Because self-handicappers actually place obstacles in the path to success, it is hypothesised that the negative effects of self-handicapping are more marked than those of defensive expectations.

In terms of the quadripolar model, self-handicapping, defensive expectations, reflectivity, and self-concept are hypothesized to be positioned in two-dimensional space such that self-handicapping and defensive expectations are located in a quadrant representing failure avoidance, reflectivity is located in a quadrant representing overstriving, and self-concept is positioned in a quadrant representing optimism.

Method

Sample

Students enrolled in Teacher Education programs from three universities in metropolitan Sydney, Australia, were surveyed midway through their first year at university (Time 1) and again midway through their second year (Time 2). Data for both Time 1 and Time 2 were available for a total of 328 respondents. Most respondents ($n=291$, 88.7%) were female, 37 (11.3%) were male. The mean age at Time 2 was 21.31 years ($SD=4.84$). Primary Education students ($n=240$,

73.2%) represented the majority of this sample, 57 (17.4%) were enrolled in the Secondary Education program, and 31 (9.5%) in an Early Childhood Education program.

Procedure

At Times 1 and 2, questionnaires were administered to students during lecture time. Students were briefly oriented to the broad aims of the study, but were not informed about the specific issues of interest to the researcher. The background questions on the instrument were worked through by the researcher with the group. Following this, the rating scale was explained to students and a few related example items were also worked through with the group. Students were then asked to complete the questionnaire on their own and to return the completed form to the researcher at the end of the lecture time.

Statistical Analyses

Structural Equation Modelling

Data were analysed using SPSS for Windows and LISREL 7.2 (Joreskog & Sorbom, 1989). The first phase of analyses entailed structural equation modelling (SEM) using LISREL. A detailed presentation of the conduct of SEM is beyond the scope of the present investigation and is available elsewhere (e.g., Bollen, 1989; Joreskog & Sorbom, 1989; Pedhazur & Schmelkin, 1991). Maximum likelihood was the method of estimation used for the models. The raw data were used as input to PRELIS (Joreskog & Sorbom, 1988) and a covariance matrix was produced which was subsequently analysed using LISREL. In terms of goodness of fit indices, the Tucker Lewis Index (TLI) is emphasised as simulation studies have shown that it is relatively independent of sample size and also imposes an appropriate penalty for inclusion of additional variables in a given model (Marsh, Balla, & Hau, 1996). Following Marsh et al. (1996), the Relative Noncentrality Index (RNI) and Root Mean Square Error of Approximation (RMSEA) are also emphasised as measures of goodness of fit. TLI and RNI values above .90 and RMSEA below .05 are typically considered to indicate acceptable fit of the data to the model.

Item Parcels and Composite Scores

Forming Item Parcels

Items in each subscale were aggregated into three to four (depending on the number of items in the subscale) item-pairs such that the first two items in the subscale were assigned to the first pair, the next two to the second pair, and so on. Item parcels were computed by generating the mean of two (in most cases) or three (in a few cases) items in a given subscale and these item parcels were used as indicators in the CFAs.

Forming Composite Scores

To estimate the entire longitudinal model at item parcel level requires more parameters to be freed than is appropriate given the present sample size. For this reason, a number of constructs were subsequently estimated in the longitudinal model (see Figure 1) as factors represented by composite scores that were formed through the aggregation of item parcels (see Martin, 1998, for detailed rationale and empirical support for this).

Test-Retest Parameters

Longitudinal data pose statistical problems particular to their structure. If Time 1 and Time 2 constructs are measured using the same (or parallel) items then measurement errors associated with matching Time 1 and Time 2 items are likely to be correlated and the failure to take into account such correlated uniquenesses will bias parameter estimates. Without estimating test-retest paths between the factors in this longitudinal model, the extent to which Time 1 factors in the model predict the Time 2 constructs will be positively biased. The estimation of the longitudinal model, then, not only explores the proposed process model (see Figure 1) but also the test-retest paths between Time 1 - Time 2 constructs.

Multidimensional Scaling

The second phase of analyses involved multidimensional scaling (MDS). MDS was used to explore the strategies from the quadripolar need achievement perspective. MDS assists the researcher in determining the perceived relative position of a set of objects or items (Hair, Anderson, Tatham, & Black, 1995). If two items are similarly rated by respondents, they will be located in multidimensional space in a way that the distance between them is smaller than the distance between other pairs of items. The resulting perceptual map indicates the relative positioning of all items. The researcher then interprets the underlying dimensions in a way that best explains the positioning of items in the map, particularly as it relates to an underlying theoretical rationale that in this case, is the quadripolar need achievement model.

Materials

Participants were asked to respond to each item in the questionnaire in relation to the mathematics domain ("Subjects that mainly involve maths and numbers"). The math domain was selected as the one on which to focus because recent data have demonstrated mathematics anxiety amongst university students (e.g., Pajares & Urda, 1996) and this was considered to be particularly relevant to the present study of self-protection. Aside from the demographic and background details, items on all subscales were responded to using a 7-point Likert-type rating scale (1=Strongly disagree to 7=Strongly agree). After reversal of appropriate items, high scores on items reflected more agreement to the respective item and subscale referents. Items

were randomly interspersed throughout the questionnaire rather than presented subscale-by-subscale.

Items used in the questionnaire are presented in Appendix A. The reader is referred to Martin (1998) for details about the source and psychometric properties of the questionnaire items.

In addition to these self-report questionnaire items, students were asked about their academic performance. Each grade students received at the end of their first year was assigned a score. Fails were scored zero; Passes were scored one; Credits were scored two; Distinctions were scored three; High Distinctions were scored four. Sums of these scores were computed for each student and a final Grade score was computed by dividing this sum by the total number of grades received. Because most Education students study broadly-based subjects that incorporate both maths and verbal domains, collecting maths-specific grades was difficult. Consequently, the performance measure used throughout the majority of analyses is a representation of academic grades generally rather than maths grades in particular.

Results

Testing the Longitudinal Structural Equation Model

We examined the central relationships in the hypothesised longitudinal model presented in Results in Figure 4 indicate that at Time 1, performance orientation positively predicts the three strategies. External attributional orientation positively predicts self-handicapping and defensive expectations. Uncertain personal control positively predicts defensive expectations and reflectivity. Task-orientation negatively predicts self-handicapping and defensive expectations, and positively predicts reflectivity. Self-concept predicts reflectivity and persistence and to a large degree predicts future academic plans. Path coefficients between Time 2 predictors and Time 2 strategies are consistent with the parallel Time 1 relationships but are generally weaker (primarily because the bulk of the variance of Time 2 strategies has been explained by their Time 1 counterparts).

Testing Three Submodels

Relationships between strategies and outcomes, however, are problematic. For example, the generally non-significant

predictive role of Time 1 and Time 2 defensive expectations - particularly in the context of the significant correlations with Time 1 and Time 2 outcomes (see Martin, 1998) - is of some concern. Its non-significant role in the longitudinal model seems largely an artefact of collinearity with self-handicapping and this gives rise to the suppression of defensive expectations effects (for a more detailed discussion of this general problem see Bollen, 1989). We therefore considered it important to examine three submodels designed to assess the separate effects of self-handicapping, defensive expectations, and reflectivity. In Submodel 1, we exclude self-handicapping and reflectivity at Time 1 and Time 2 from analyses. In Submodel 2, we drop defensive expectations and reflectivity at Time 1 and Time 2. In Submodel 3, we drop defensive expectations and self-handicapping. All submodels fit the data well (see Table 1). When defensive expectations, self-handicapping, and reflectivity are dealt with in this way, their respective roles - independent of their collinearity - are clarified. Because the relationships between predictors and strategies are much the same as those presented in Figure 4, only the paths between strategies and outcomes are presented. Standardised path coefficients are presented in Table 1.

Table 1:

Fit of Submodels and Beta Paths Between Strategies and Educational Outcomes Estimated in Each of the Three Submodels

	Time 1 outcomes				Time 2 outcomes		
	Grades	Self-reg	Persist	Future plans	Self-reg	Persist	Future plans
Submodel 1 - Defensive expectations $c^2=2470.49$, $df=1349$ $RNI=.91$, $TLI=.90$, $RMSEA=.050$	ns	-.21	-.31	ns	ns	-.19	ns
Submodel 2 - Self-handicapping $c^2=2364.42$, $df=1348$ $RNI=.91$, $TLI=.91$, $RMSEA=.048$	-.27	-.50	-.52	ns	-.14	-.24	-.12
Submodel 3 - Reflectivity $c^2=2595.58$, $df=1457$ $RNI=.90$, $TLI=.89$, $RMSEA=.049$	ns	.39	.12*	ns	.20	ns	ns

ns=not significant at $p<0.1$; * $p<0.01$.

All other paths significant at $p<0.05$.

In Submodel 1, Time 1 defensive expectations negatively predict Time 1 self-regulation and persistence. To a lesser extent Time 2 defensive expectations negatively predict Time 2 persistence. In Submodel 2, Time 1 self-handicapping quite

strongly negatively predicts Time 1 self-regulation and persistence and negatively predicts later academic grades. To a lesser extent, Time 2 self-handicapping negatively predicts Time 2 self-regulation, persistence, and future

academic plans. In Submodel 3, Time 1 reflectivity positively predicts Time 1 self-regulation and to a lesser extent positively predicts persistence. At Time 2, reflectivity positively predicts Time 2 self-regulation.

Representing the Strategies in Multidimensional Space

The second phase of the analyses involved MDS. Time 1 and Time 2 data were tested in the one model. The data fit the model well (RSQ=.96, S Stress=.119). Stimulus coordinates are mapped in Figure 5. In broad terms, these data conform to the proposed quadripolar need achievement model. As predicted, self-concept is positioned in the

‘optimism’ quadrant (high success orientation and low failure avoidance) and reflectivity is positioned in the ‘overstriver’ quadrant (high success orientation and high failure avoidance). The defensive expectations item parcels are positioned in a way that reflects high failure avoidance (but is partly positioned in the high success orientation dimension and partly in the low success orientation dimension). Not only was self-handicapping diametrically opposed to a success orientation, its relative positioning actually bordered failure acceptance. These patterns are consistent across Times 1 and 2 and attest to the stability of the proposed quadripolar model over time.

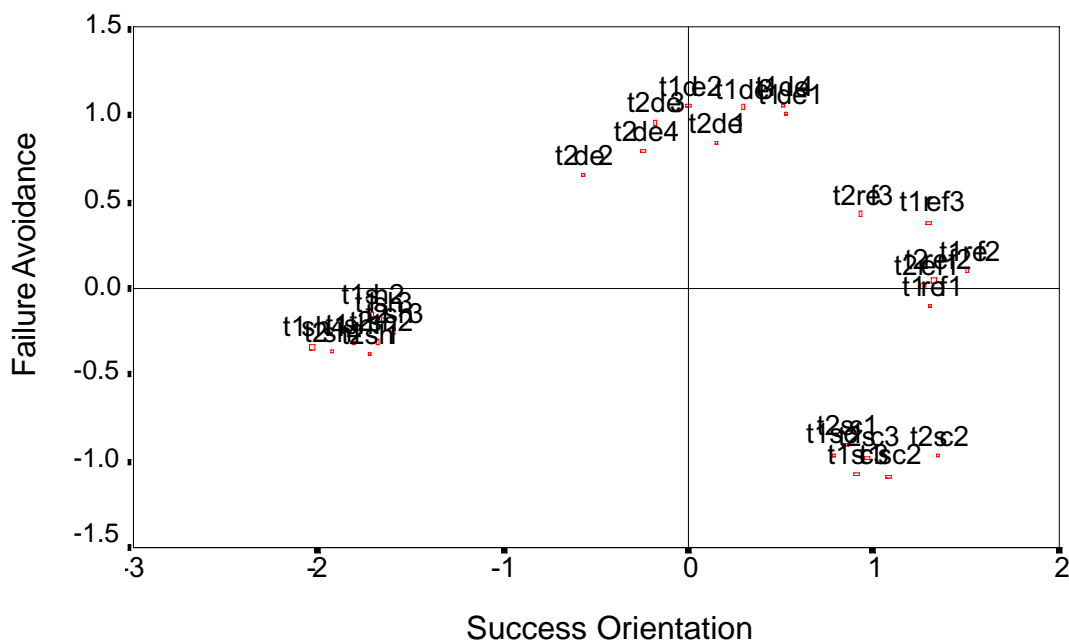


Figure 5: Stimulus Configuration Derived from Time 1 and Time 2 MDS

Note: t1de and t2de = Time 1 Defensive Expectations and Time 2 Defensive Expectations
 t1sh and t2sh = Time 1 Self-Handicapping and Time 2 Self-Handicapping
 t1ref and t2ref = Time 1 Reflectivity and Time 2 Reflectivity
 t1sc and t2sc = Time 1 Self-Concept and Time 2 Self-Concept

Discussion

The two primary objectives of the study were to test the proposed longitudinal model and to explore how the central strategies are mapped in multidimensional space. Jointly, these were aimed at assessing the empirical congruence (or lack thereof) between self-handicapping and defensive pessimism and the motivational bases that underpin them.

Predictors of Self-Handicapping, Defensive Expectations, and Reflectivity

The data show that attributions to external causes evoke implications for self-worth to the extent that individuals who perceive that external factors contribute to their failure or success are also inclined to self-handicap or be defensively expectant. These findings are supportive of the present position on external attributions and self-protection which is that when students see success and failure as externally caused, they perceive little control over their ability to maintain success or avoid failure and so manoeuvre defensively in response to this. Similarly, uncertain personal control predicted defensive manoeuvring. Uncertain personal control reflects individuals' uncertainty regarding their ability to perform. When students are uncertain as to their ability to perform, the perceived threat of failure is increased as is a consequent self-worth vulnerability. In response to this vulnerability, the present data show that individuals set defensive expectations and engage in reflectivity.

The data also showed that task-orientation is inversely associated with self-handicapping and defensive expectations and positively associated with reflectivity. Task-oriented individuals have a mastery focus and tend to see success as deriving from effort rather than from ability (Middleton & Midgley, 1997). Consequently, failure tends not to be attributed to low ability and so from a self-worth motivation perspective, task-oriented individuals are not particularly vulnerable to threats to their self-worth. The data in relation to performance orientation were quite different. From a self-worth motivation perspective, performance orientation contributes to an emphasis on one's ability to perform which renders one's self-worth vulnerable in competitive achievement scenarios in which there exists the possibility of failure (Covington, 1984, 1992). The data presented here provided some support for this in the sense that higher performance orientation was associated with self-handicapping and defensive pessimism.

Consequences of Self-Handicapping, Defensive Expectations, and Reflectivity

The consequences of self-handicapping were consistent with Covington (1984) who argued that ultimately self-handicapping tactics are not adaptive. It seems that individuals who tend to place obstacles in the path to success are also inclined to follow this through with low persistence, low self-regulation, and diminished performance. Furthermore, in the context of the other two strategies, the strength of the paths associated with self-handicapping confirms it as the least adaptive strategy of the three.

Consistent with hypotheses, the data confirmed a significant negative association between defensive expectations and both self-regulation (at Time 1) and persistence (at Times 1 and 2). While these findings are contrary to the bulk of research on defensive pessimism (Cantor & Norem, 1989; Garcia et al., 1995; Norem & Cantor, 1986b; Showers, 1992; Showers & Ruben, 1990), they are supportive of a small body of research that makes a distinction between thinking through outcomes and expecting outcomes (Goodhart, 1986; Sherman et al., 1981). In line with this research it was earlier hypothesised that it is the expectation component of defensive pessimism, and not the reflectivity component, which brings about reduced persistence and self-regulation.

The data in relation to reflectivity were generally consistent with hypotheses. The fact that reflectivity was most strongly associated with self-regulation may suggest how it is that individuals high in reflectivity take control: They are more inclined to plan their approach, set goals, monitor the extent to which they are meeting these goals, and make the appropriate adjustments if necessary. It seems, then, that the reflectivity component of defensive pessimism is the component that enables the individual to take control through self-regulation and persistence.

The Quadripolar Model

Consistent with hypotheses, positive self-concept reflected high approach and low avoidance and was therefore akin to optimism; reflectivity was marked by high approach and high avoidance and therefore aligned with overstriving; defensive expectations primarily reflected failure avoidance; and, self-handicapping was diametrically opposed to success orientation and actually bordered failure acceptance.

The designation of each of these strategies as reflecting either optimism, overstriving, failure avoidance, or failure acceptance is consistent with previous findings as are the consequences associated with each of these strategies (described above). Covington and Omelich (1991; see also Covington, 1997) showed that overstrivers displayed good study skills and spent much time studying and this parallels the reflective students who were higher in self-regulation and persistence. Failure-avoiding students in Covington and Omelich's analysis were found to have poor study skills. Similarly, in the present study, students high in defensive expectations were poor self-regulators. Failure-accepting students in Covington and Omelich's analysis also had poorer study skills and consistent with this, self-handicappers in the present study were poor self-regulators and persisters.

Educational Implications

The data show that an external attributional orientation is not particularly adaptive in that it is a primary predictor of self-handicapping, and to a lesser extent, defensive expectations. In the educational context, a number of attribution retraining studies have shown that encouraging participants to attribute outcomes more to effort promotes individuals' control over given outcomes and adaptive approaches to learning (Craven, Marsh, & Debus,

1991). The data also underscored the centrality of uncertain personal control in predicting defensive expectations. Uncertainty regarding one's control over outcomes is often evoked through non-contingent feedback (Skinner, Wellborn, & Connell, 1990). It is therefore important to promote students' perceived control over academic outcomes.

The finding that performance orientation predicted self-handicapping and defensive expectations also holds implications for educational practice. A prime factor that promotes a focus on performance and performance-related issues is competition. Competition perpetuates the notion that success is derived from ability rather than from effort (Covington & Omelich, 1984) and so failure in this context reflects directly on ability and hence one's self-worth. Thus competition for those not guaranteed success can represent a climate in which self-protection is a primary objective. Mastery, on the other hand, has as its focus success by way of effort and thus failure in this context is not seen as a threat to one's ability. Rather, it is seen as diagnostic effort-related feedback that one can use to enhance performance in the future (Covington, 1997). It seems, then, that it may be more desirable to gear the learning environment towards mastery and cooperation rather than competition (see also Garcia et al., 1995; Thompson, 1994).

As noted earlier, the designation of self-handicapping as failure accepting is parallel to the profile of the helpless student and so from a pedagogical perspective, interventions that have been successful with learned helpless students may also be successful for self-handicappers. Given that self-handicappers are concerned with casting potential failure in the best attributional light possible (Berglas, 1987), interventions involving attribution retraining (see Craven et al., 1991) may be more critical to the self-handicapper than to the reflective or defensively expectant student.

Limitations and Future Directions

The present data not only provide a number of new perspectives on the constructs involved in the investigation but also extend current understanding of these constructs. There were, however, a number of potential limitations that are important to consider when interpreting findings. Firstly, in some instances, the present study did not incorporate original measures. For example, rather than incorporate a measure of optimism in the multidimensional framework, consistent with that incorporated in Covington and Omelich's (1991) quadripartite need achievement model, the present study incorporated positive self-concept into the multidimensional scaling procedures. While positive self-concept is a feasible proxy, it is not strictly congruent with previous formulations and findings must be interpreted with this in mind. Notwithstanding this, self-concept is correlated with optimism (see Abel, 1996; Davis, Hanson, Edson, & Ziegler, 1992; Weingert & Rosen, 1995) and so using self-concept as a proxy can be considered empirically defensible.

Some qualification of the multidimensional framework is also required. It will be recalled that this framework is essentially based on the interpretation of the axes as representing failure avoidance and success orientation. Because no direct measures of failure avoidance and success orientation were incorporated

into the study, it can only be inferred that these axes represent the quadripartite need achievement dimensions proposed by Covington and Omelich (1991; see also Covington, 1992, 1997). Thus, while the predicted empirical positioning of the strategies in the framework validates our interpretation of these axes, we suggest that further work is required that more directly establishes this interpretation.

Other potential limitations concern the content domain and the nature of the sample. When interpreting present findings, it is important to recognise that they relate largely to the maths domain. Importantly, however, in a pilot study ($n=204$) that assessed both maths and verbal domains, data analysis quite clearly established that there was very little differentiation between the two (Martin, 1998). Also, end-of-year grades were not specifically maths-related and so the fact that the study's performance measure was not unambiguously attuned to the other measures must be considered when interpreting related findings. Furthermore, the role of sex was not emphasised in the present study because the invariance of the factor structure across sex had been previously tested and findings showed that there were no marked differences between males and females in terms of the number of factors, the factor loadings, the uniquenesses associated with each item parcel, and the correlations among factors (Martin, 1998).

Conclusion

The first phase of the study contributes to current understanding of self-worth motivation by systematically unifying a variety of self-worth-related constructs and showing how they predict self-handicapping, defensive expectations, and reflectivity. The second phase of the study represented the two strategies in terms of the dual motives to avoid failure and approach success. In testing this framework, the study has provided insights into the specific strategies students use to not only avoid failure and approach success, but also how they coordinate these dual motives. The data have demonstrated from need achievement and self-worth motivation perspectives the ways the strategies under focus are congruent and the important ways in which they are distinct. The findings hold substantive and methodological implications for researchers studying the predictors, means, and consequences of self-worth protection and are relevant to educational practitioners operating in contexts in which students are motivated to manoeuvre defensively.

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Appendix A

Motivational and affective constructs that render students vulnerable to the ability-related implications of failure

Esteem-relevant competence valuation	Feeling I am competent is very important to how I feel about myself
Ability attributions for failure	Low marks cause me to question my academic ability
External attributions for failure	Some of my lower grades have seemed to be due to bad luck
External attributions for success	Sometimes my success on exams depends on luck
Academic public self-consciousness	I'm concerned about how I'm seen to be performing academically
Ego-orientation	I feel really successful when I know more than other people
Task/mastery orientation	I feel really successful when what I learn really makes sense
Avoidance-oriented performance	Often the main reason I do my uni work is because I do not want to get bad marks
Entity view of intelligence	Some students will never be smart, no matter how hard they try
Incremental view of intelligence	Any student could get smarter if they worked hard
Uncertain control over avoid failure	When I don't do well I'm unsure about what to do to avoid that happening again
Level of self-esteem	I learn quickly in these subjects
Stability of self-esteem	My opinion of myself tends to change a good deal instead of always remaining the same

Strategies students use to self-protect

Self-handicapping	I tend to not try hard at assignments so I have an excuse if I don't do as well as I hoped I don't attend all the classes in this area so I have an excuse if I don't do as well as I hoped
Self-presented SH	I let people think that I don't try as hard at assignments as I actually do, so if I don't do as well as I had hoped, I can say that is the reason I let people think that I sometimes don't study as hard for exams as I actually do, so if I don't do as well as I had hoped, I can say that is the reason
Defensive expectations	No matter how well I have done in the past, I go into academic situations expecting to do worse No matter how well I have done in the past, I often expect I will do more poorly in the future
Self-presented defensive expectations	No matter how well I have done in the past, when going into academic situations, I let others think that I expect to do worse than I really think I'll do No matter how well I have done in the past, I tell others that my expectations for future performances are more negative than they actually are
Reflectivity	I carefully consider all possible outcomes before tests and assignments I spend a lot of time thinking through possible outcomes when a test or assignment is coming up

Current and anticipated engagement

Self-regulation	When I do an assignment, I first get it clear in my head what I am trying to accomplish
Persistence	If I have trouble understanding a problem or task, I keep going over it until I understand it
Future plans	I don't mind doing subjects in this area in my further education

Self-Concept: the Hierarchical Model Revisited

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The hierarchical structure of self-concept as proposed by Shavelson, Hubner and Stanton (1976) has received weak empirical support. This study revisited the Shavelson et al. hierarchical model of self-concept and hypothesised that the first order domains at the base of the hierarchy should define four second-order factors-Academic, Physical, Social and Moral. The study was based on the responses of 506 participants from Ireland to the Self Description Questionnaire III (Marsh, 1990). The sample consisted of high level athletes, non-sporting academics and mental health clients. Confirmatory factor analyses were performed using a three-phase process. For all four factors the fit was acceptable. The results provided stronger support for the hierarchical structure than has been hitherto available from previous studies.

The current emphasis on the multidimensional model of self-concept is in sharp contrast to the traditional unidimensional approach to self-concept that minimised the role of specific domains and facets. The multidimensional model proposed by Shavelson, Hubner, and Stanton (1976) stated that self-concept is hierarchically organised with specific domains of the self at the base moving to inferences about self in sub-areas, and to a general self-concept at the apex. The model also stated that domains of self-concept become more distinct with age. The Self Description Questionnaire III (SDQ III, Marsh, 1990) reflects the multifaceted hierarchical structure of self-concept derived from the Shavelson et al. (1976) model. The structural validity of this model has been tested by Marsh and O'Neill (1984), Marsh (1987), and Marsh (1990) utilising Confirmatory Factor Analysis.

The participants in the Marsh and O'Neill (1984) study were college/university students attending two universities and a teachers' college. They completed the first version of the SDQ III (Marsh, 1990) which evaluates 13 domains of self-concept: Physical Ability, Physical Appearance, Same Sex Relations, Opposite Sex Relations, Parent Relations, Religion/Spiritual Values, Honesty/ Trustworthiness, Emotional Stability, Problem Solving, Mathematical Skills, Verbal, Academic, and General Esteem. The correlations among the domains were quite small and, consequently, Marsh and O'Neill (1984) concluded that no strong hierarchical structure underlay the SDQ III factors. The findings of Marsh and O'Neill (1984) showed support for neither the unidimensional model nor the hierarchical model of self-concept.

In contrast, the Marsh (1987) findings confirmed the hierarchical model but also suggested that the hierarchy was more complicated and weaker than originally anticipated. The Marsh (1987) study utilised data from 361 male and female participants (median age = 21) and tested various formulations of the Shavelson et al. model. These formulations hypothesised 13 first-order factors at the base, 5 second-order factors and 1 third-order factor. The 13 first-order factors consisted of 4 academic, 7 non-academic and general (Esteem) domains. The non-academic domains comprised physical, social, and moral facets. The academic domains were hypothesised to define two second-order factors (math/academic and verbal/academic) the non-academic domains were hypothesised to define three second-order factors (physical, social, and moral), while a third-order general self-concept was hypothesised to

be defined by Esteem, Emotional Stability, and the second-order factors math/academic, verbal/academic, physical, social, and moral self-concepts.

Marsh (1987) argued that the existence of a well defined, a priori, first-order factor structure was a prerequisite to testing higher order models because subsequent higher order models were based on it and its goodness of fit represented the upper limit for the goodness of fit of higher order models. The Marsh (1987) results suggested that the first-order factor correlations among the four academic factors supported the existence of two second-order academic factors. However, correlations among the non-academic factors did not clearly support the physical, social, and moral second-order factors that were posited. Support for the second-order facets proposed to explain the physical and social facets was tenuous; correlations between some physical and some social facets were higher than correlations among the physical and among the social facets. Marsh (1987) argued that this pattern of correlations suggested that support for the higher order factors defined by non academic factors may be more problematic than for those defined by academic facets. He then tested a range of alternative higher order factor models to examine the hierarchical structure of the non-academic factors. The factor loadings consistently failed to support the hypothesised physical and social second-order factors but did provide support for two second-order academic factors and one second-order moral factor. The most superior of these a posteriori models stipulated three second-order factors (math/academic, verbal/academic, and non-academic) and 1 third-order (general) factor. Marsh (1987) concluded that, with the exception of the moral factors, the non-academic factors (physical, social) "are substantially correlated and contribute substantially to the hierarchical general self-concept, but support for the particular hierarchical ordering proposed here is not strong". However, Marsh (1987) suggested that there was an intuitive consistency to the pattern of correlations among the physical and social facets which was inconsistent with the Shavelson model and called for further research utilising alternative models and formulations.

Further questions regarding the strength of the hierarchical structure of the model were raised by the Marsh (1987) conclusions regarding the direction of the causal ordering between the first-order and the higher order facets of self-concept. While no causal ordering was specified in his 1987

study it was hypothesised that relations would be reciprocal in that the hierarchical general self-concept would have some influence on specific facets and specific facets would have some impact on the hierarchical construct. However, no evidence was presented to support this supposition. The question of direction of causal flow was revisited by Marsh and Yeung (1998) but the findings were inconclusive in that neither the top-down nor the bottom-up model were supported; they introduced the phrase “horizontal effects that support neither bottom-up nor top-down models” to depict the stability of the matching self-concept factors over time.

In the Marsh (1990) study the entire set of 2,346 SDQ III responses in the normative archive were divided into four groups representing younger (less than 20 years old) and older (more than 20 years old) males, and younger (less than 20 years old) and older (more than 20 years old) females. Four separate factor analyses similar to the one previously conducted with the total group were conducted on each of the four subgroups. Marsh (1990) reported that the general pattern of results for each of the four separate factor analyses was similar to that shown for the total group. In order to more fully evaluate the comparability of the factor structures, Marsh (1990) derived two sets of scores for each subject. One was based on the total group analysis and the other was based on the factor analysis of the subgroups to which the participant belonged. He then correlated the two sets of factor scores. In each of the four subgroups the matching factor scores based on different analyses were highly correlated (median correlation over .99). The results of the factor analyses of the four subgroups demonstrated the similarity of the SDQ III factor structure across gender and across age.

The evidence to date has modestly supported the multifactorial, hierarchical structure of self-concept but with a somewhat different format than the original Shavelson et al. (1976) model. Empirical investigation has supported the existence of two second-order academic factors and one non-academic second-order factor but the existence of separate physical, social, and moral second-order factors was not empirically supported. Marsh (1990) concluded that the empirical findings suggested that the hierarchy was more complicated and weaker than originally anticipated. However, it is possible that other variables may have influenced these findings. The participants in the Marsh and O’Neill (1984) and Marsh (1987, 1990) studies were young adults whose limited range of life experiences may have predisposed them to be less cognitively aware of certain facets of self-concept than would older and more experienced participants (cf. Shavelson et al., 1976). It is therefore possible that age and life experiences act as moderating variables on Marsh’s hypothesised second-order factors, or that there are alternative formulations for the second-order factors that better represent the non-academic factors. Whatever the cause, it was the authors view that there were sufficient doubts regarding aspects of the hierarchical structure of self-concept to warrant further empirical investigation utilising a sample of participants that provided greater variation with regard to age, gender, and life experiences.

Method

Participants

The data were collected as part of a larger study examining the influence of importance as a variable in the shaping of self-concept. The study reported in the present paper was based on the responses of 506 participants from Ireland to the SDQ III (Marsh, 1990). The participants comprised of 255 males (mean age = 25.67; SD 7.41) and 251 females (mean age = 24.22; SD = 7.17). They were drawn from three populations: high level athletes (n=184); non-sporting academics (n=175); and mental health clients (n=147). Following listwise deletion of missing values the covariance matrix of the 136 variables of the SDQ III was based on a total sample size of 444 participants.

Hypothesised Factor Structure for SDQ III Responses

The multifaceted and hierarchical model of self-concept as proposed by Shavelson et al. (1976) pointed to the intuitive notion of an ascending order of latent factors within that structure. If this model was valid then similar domains at the base of this structure should reflect various higher order latent factors. The Marsh (1987, 1990) results failed to fully support this hypothesis but acknowledged it’s intuitive appeal.

The authors reviewed the Shavelson (1976) and Marsh (1987) models and posited that the Mathematics, Verbal, Academic and Problem Solving first order domains of the SDQ III should have sufficient fit to define a single higher second-order ACADEMIC factor. The two physical first order domains - Physical Ability and Physical Appearance - had items of sufficiently similar content to possibly define a second-order PHYSICAL factor. Cultural influences pointed towards a further second order MORAL factor consisting of three first order domains- Religion, Honesty, and Emotional Stability while developmental, cultural and familial influences together with the common theme of relationships suggested a possible fit between Same Sex Relations, Opposite Sex Relations and Parent Relations to define a further second-order SOCIAL factor. The final domain- GENERAL ESTEEM- was hypothesised to define a third-order factor. This hierarchy differed somewhat from the Marsh (1987,1990) hypothesised factor structure in that there was only one second-order ACADEMIC factor, Problem Solving was included in this second-order ACADEMIC factor, Emotional Stability was part of the second-order MORAL factor and the third-order factor was defined by one factor only – GENERAL ESTEEM.

Model-Testing Strategy and Assessment of Fit

A three-phase process (Joreskog, 1993; Markland & Ingledew, 1997) was utilised to test these hypotheses. Confirmatory factor analytic procedures using LISREL 8.12 (Joreskog & Sorbom, 1993a) were employed. In Phase 1, the authors used a measurement model for this process rather than the structural model that was used by Marsh (1987). Twelve domains (excluding General Esteem) were tested individually

in order to eliminate items that were poor indicators of their domains by examination of global goodness of fit, standardised residuals, and modification indices. The theta-delta matrix was set to be symmetric and fixed so that the measurement errors of the observed variables were not allowed to correlate. Ten of the domains examined had ten items while the remaining two domains had twelve items. Large values for the standardised residuals and large modification indices for Theta-Delta indicated that the fit would be improved if certain specific items were deleted. Utilising these sources of information problematic items were deleted and the fit reassessed. In Phase 2, each of the twelve domains was paired with every other domain hypothesised to load on the same second-order factor, and the fit again assessed. In Phase 3, the second-order hypothesised models were examined by combining the groups of domains hypothesised to reflect the four second-order factors. The complete hierarchical structure was not tested because the model was too complex and the sample too small.

Multiple criteria were utilised in the assessment of fit. Global fit was assessed by the χ^2 likelihood ratio statistic, the Root Mean Square Error of Approximation (RMSEA), the Standardised Root Mean Square Residual (SRMR), the Goodness-of-Fit Index (GFI), the Non-Normed Fit Index (NNFI) and the Comparative Fit Index (CFI). The problems

with the use of χ^2 as a test statistic have been documented elsewhere in detail (Scott Long, 1983; Marsh, Balla & McDonald, 1988; Marsh & Roche, 1996; Marsh, Hey, Johnson, & Perry, 1997; Anderson & Gerbing, 1998). However, in order to facilitate comparison with earlier studies, χ^2 was still used as a badness-of-fit measure in the sense that small values are held to indicate a good fit and large values a poor fit, with the number of degrees of freedom being used as a standard by which to judge the size of χ^2 (Markland & Ingledew, 1997)

Results

Phase 1: Single-Scale Analyses

Table 1 shows the domains and results for the initial single-scale analysis. Nine of the twelve domains showed good fit i.e. the items were all good indicators of their factors. However, three domains – Honesty, Physical Ability, Religion - showed poor fit.

On the basis of examination of the standardised residuals and modification indices for theta-delta two items were deleted from Honesty, three items were deleted from Physical Ability, and one item was deleted from Religion. This resulted in an improved fit for all three domains (Table 2).

Table 1:
Initial Single-Scale Analysis – Twelve Domains with All Items Included in Each Domain

DOMAIN	χ^2	d. f.	P(χ^2)	$\chi^2/d. f.$	RMSEA	SRMR	GFI	NNFI	CFI
HONS	140.32	54	0	2.598	0.06	0.05	0.96	0.62	0.71
PHYS	180.07	35	0	5.144	0.097	0.048	0.93	0.80	0.85
RELG	82.7	54	0.0072	1.531	0.035	0.038	0.97	0.88	0.90
EMOT	65.95	35	0.0012	1.884	0.045	0.041	0.97	0.88	0.90
OSEX	40.69	35	0.23	1.162	0.019	0.033	0.98	0.97	0.97
PRNT	14.77	35	1	0.422	0	0.022	0.99	1.33	1
APPR	33.67	35	0.53	0.962	0	0.032	0.99	1.01	1
SSEX	36.81	35	0.38	1.051	0.011	0.033	0.98	0.99	0.99
ACAD	23.52	35	0.93	0.672	0	0.027	0.99	1.16	1
VERB	22.57	35	0.95	0.644	0	0.027	0.99	0.85	1
MATH	9.88	35	1	0.282	PERFECT FIT				
PROB	47.81	35	0.073	1.366	0.029	0.037	0.98	0.86	0.96

Note. RMSEA = Root Mean Square Error of Approximation; SRMR = Standardised Root Mean Square Residual; GFI = Goodness of Fit Index; NNFI = Non-Normed Fit Index; CFI = Comparative Fit Index.

Note. PHYS = Physical Ability; APPR = Physical Appearance, SSEX = Same Sex Relations; OSEX = Opposite Sex Relations; PRNT = Parent Relations; RELG = Religion/Spiritual Values; HONS = Honesty/Trustworthiness; EMOT = Emotional Stability; PROB = Problem Solving; MATH = Mathematical Skills; VERB = Verbal; ACAD = Academic.

Table 2:
Single Domains With Problematic Item(s) Deleted Following Single-Scale Analysis

DOMAIN	χ^2	d. f.	P(χ^2)	$\chi^2/d. f.$	RMSEA	SRMR	GFI	NNFI	CFI
HONS	35.88	35	0.43	1.025	0.0075	0.033	0.99	0.99	0.99
PHYS	26.28	14	0.024	1.877	0.045	0.032	0.98	0.95	0.97
RELG	8.08	44	1	0.183	Perfect Fit				

Note. RMSEA = Root Mean Square Error of Approximation; SRMR = Standardised Root Mean Square Residual; GFI = Goodness of Fit Index; NNFI = Non-Normed Fit Index; CFI = Comparative Fit Index.

Note. PHYS = Physical Ability; APPR = Physical Appearance, SSEX = Same Sex Relations; OSEX = Opposite Sex Relations; PRNT = Parent Relations; RELG = Religion/Spiritual Values; HONS = Honesty/Trustworthiness; EMOT = Emotional Stability; PROB = Problem Solving; MATH = Mathematical Skills; VERB = Verbal; ACAD = Academic.

As a result of these adjustments the fit for all twelve domains was good with χ^2 non-significant in all domains (except Emotional Stability, which was almost non-significant), RMSEA and SRMR small and not greater than .05, and GFI, NNFI and CFI approaching or reaching unity. For Verbal Ability and Problem Solving the NNFI was somewhat smaller than for other domains and indicative of some misfit but, reviewed in the context of the remaining goodness of fit indices, still indicated a reasonably good fit. Furthermore, a significantly better model was not achieved by further item elimination so it was decided to proceed with these scales as they were initially constituted.

Table 3:
Paired Domains Hypothesised to Load on to the Same Second-Order Factor

DOMAINS	χ^2	d. f.	P(χ^2)	$\chi^2/d. f.$	RMSEA	SRMR	GFI	NNFI	CFI
PHYS / APPR	243.21	118	0	2.061	0.049	0.042	0.95	0.82	0.85
HONS / EMOT	219.67	169	0.0053	1.299	0.026	0.038	0.96	0.91	0.92
HONS / RELG	142.83	188	0.99	0.759	0	0.031	0.97	1.14	1
RELG / EMOT	176.79	188	0.71	0.94	0	0.033	0.97	1.02	1
SSEX / OSEX	183.98	169	0.2	1.088	0.014	0.034	0.06	0.97	0.98
SSEX / PRNT	121.33	169	1	0.717	0	0.03	0.97	1.14	1
OSEX / PRNT	145.02	169	0.91	0.858	0	0.033	0.97	1.06	1
MATH / VERB	108.14	169	1	0.639	PERFECT FIT				
MATH / ACAD	116.21	169	1	0.687	0	0.031	0.97	0.75	1
VERB / PROB	261.97	169	0	1.55	0.035	0.041	0.95	0.85	0.86
VERB / ACAD	106.04	169	1	0.627	PERFECT FIT				
PROB / ACAD	181.74	169	0.24	1.075	0.013	0.037	0.96	0.97	0.98
PROB / MATH	168.83	169	0.49	0.998	0	0.034	0.97	1	1

Note. RMSEA = Root Mean Square Error of Approximation; SRMR = Standardised Root Mean Square Residual; GFI = Goodness of Fit Index; NNFI = Non-Normed Fit Index; CFI = Comparative Fit Index.

Note. PHYS = Physical Ability; APPR = Physical Appearance, SSEX = Same Sex Relations; OSEX = Opposite Sex Relations; PRNT = Parent Relations; RELG = Religion/Spiritual Values; HONS = Honesty/Trustworthiness; EMOT = Emotional Stability; PROB = Problem Solving; MATH = Mathematical Skills; VERB = Verbal; ACAD = Academic.

Table 4:
Fit of the Four Hypothesised Higher Order Factors – Moral, Social, Physical, Academic

DOMAINS	χ^2	d. f.	P(χ^2)	$\chi^2/d. f.$	RMSEA	SRMR	GFI	NNFI	CFI
MORAL									
HONS, RELG, EMOT	434.96	431	0.44	1.009	0.0046	0.035	0.95	1	1
SOCIAL									
SSEX, OSEX, PRNT	383.42	402	0.75	0.951	0	0.034	0.95	1.02	1
PHYSICAL									
PHYS, APPR	243.21	118	0	2.061	0.049	0.042	0.95	0.82	0.85
ACADEMIC									
MATH, ACAD, VERB, PROB	838.75	734	0.0043	1.142	0.018	0.037	0.93	0.92	0.92

Note. RMSEA = Root Mean Square Error of Approximation; SRMR = Standardised Root Mean Square Residual; GFI = Goodness of Fit Index; NNFI = Non-Normed Fit Index; CFI = Comparative Fit Index.

Note. PHYS = Physical Ability; APPR = Physical Appearance, SSEX = Same Sex Relations; OSEX = Opposite Sex Relations; PRNT = Parent Relations; RELG = Religion/Spiritual Values; HONS = Honesty/Trustworthiness; EMOT = Emotional Stability; PROB = Problem Solving; MATH = Mathematical Skills; VERB = Verbal; ACAD = Academic.

Phase 2: Scale-Pairing Analysis

The second phase involved pairing each domain with every other domain hypothesised to load on the same second-order factor in order to identify and eliminate ambiguously loaded items. The three domains which had items deleted in Phase 1 were used in their amended format. There were 13 pairings and the results are outlined in Table 3.

In summary, the fit of the 13 pairings was good to excellent. The results from Phases 1 and 2 suggested that, in general, we had single domains and paired domains that displayed good fit.

This phase involved testing the fit of the four hypothesised second order factors – MORAL, SOCIAL, PHYSICAL, ACADEMIC. Table 4 shows the fit statistics for each of these factors.

The fit was excellent for the Moral, Social, and Academic factors while the fit for the Physical factor was not as strong but, nevertheless, good. For all four factors the c^2 was acceptable, the RMSEA and SRMR were small and not significantly greater than 0.00, and the GFI, NNFI, and CFI were high. Thus these analyses gave strong support for the hypothesised four-factor model.

Discussion

The aim of this study was to test the factorial validity of the SDQ III in the context of the multi-faceted and hierarchical model of self-concept as proposed by Shavelson et al. (1976) and tested inconclusively by Marsh (1987, 1990). A full hierarchical model was not tested because the sample was too small and the model too complex. The Phase 1 analyses showed that at the single-scale level nine of the twelve domains tested had items that were good indicators of their factors. The remaining three domains had items that were problematic; following deletion of these problematic items, the remaining items were good indicators of their hypothesised factors. The number of deleted items was minimal and thus unlikely to result in a significant loss of information. The Phase 2 analyses showed that the fit for domains that were hypothesised to load on the same second-order factor was good. In general, the Phase 2 results supported the Phase 1 results. The analyses from Phase 1 and Phase 2 suggested a set of twelve well-defined single factors with good indicators. These single factors were hypothesised to form the base of the hierarchical structure of self-concept and the analyses of Phases 1 and 2 supported this.

The hypothesised hierarchical model of self-concept posited in this study stated that particular groups of first order domains from the base of the model would form higher second-order factors. Phase 3 results (Table 3) provided a level of support for this hypothesis which was stronger than in the Marsh (1987, 1990) results. The second-order ACADEMIC factor, consisting of Mathematics, Verbal, Academic and Problem Solving was supported with good fit indices. The Marsh (1987, 1990) second-order ACADEMIC factor did not include the Problem Solving domain. The second-order MORAL factor was also supported by good fit indices. The

influence of religion in the Irish culture of the participants, both from a developmental perspective and as a support to those under significant stress (e.g. Mental Health Clients), possibly contributed to the strength of this factor. Furthermore, the value system based on the three domains of Religion, Honesty, and Emotional Stability reflects the core characteristics of a culture strongly influenced by religious practices. The strength of the second-order SOCIAL factor may have reflected the influence of the family in Irish culture and the importance of relationships for the three groups of participants with regard to age and range of life experiences. The PHYSICAL factor, which consisted of just two first-order domains (Physical Ability and Physical Appearance), also displayed reasonably good fit indices.

The relevance and influence of culture on the results of this study merits some comment. The participants in the present study were from a predominately Catholic culture that was relatively homogeneous in terms of its value system. Such a cultural environment may facilitate a more consistent and acute awareness of some facets of self-concept, in particular the values of Religion, Honesty, Emotional Stability and strong family relationships. These are core values of the Catholic culture and ethos and may be a factor in the support obtained for the authors' hypothesis. In contrast, the participants in Marsh's studies that utilised the SDQ III to test the hierarchical structure of self-concept (Marsh & O'Neill, 1984; Marsh, 1987; Marsh, 1990) were from a more heterogeneous culture with varying levels of emphasis and importance on different facets of self-concept. It is possible that varying cultural and ethnic variables may have confounded responses to the SDQ III. However, it is important to note that Marsh (1987, 1990) was testing a different factor structure than the authors.

The stronger support for the hierarchical structure of self-concept may be linked to differences between the authors' model testing strategy and that used by Marsh (1987, 1990). The authors' analysis was based on a measurement model that utilised all 136 items in the first-order models i.e. each first-order domain had either ten or twelve items. The authors set the theta-delta matrix to be symmetric and fixed so that the measurement errors of the observed variables were not allowed to correlate. However, Marsh (1987) utilised a structural model and used three sub-scales, each the sum of responses to 3 or 4 items, to represent each of the thirteen domains. These sub-scales were arbitrarily defined by the first third, the second third, and the third third of the items from each scale. Marsh (1987) argued that "when each first-order factor has many indicators the formation of three or more sub-scales to represent each first-order factor may be reasonable and will reduce the typically substantial computer time needed" (p. 35). The Marsh (1987) model raised a number of critical questions. Did this strategy make it difficult to identify problematic items as the range of items that each particular item could correlate with was greatly reduced? Did the use of three sub-scales to represent each domain result in a significant loss of information? The authors' use of all items for each domain facilitated accurate identification of problematic items and did not result in any significant loss of information. The Marsh (1990) model also differed significantly with the authors' model;

the ten or twelve items from the 13 SDQ III domains were divided into 5 or 6 item pairs resulting in 78 item pairs instead of 136 items. While Marsh (1990) argued that the pairing of items should result in more reliable variables that have a smaller component of unique variance than individual items and that factor loadings “should be less affected by idiosyncrasies of individual items”(p. 17), he acknowledged that the major disadvantage of using item pairs was loss of information on individual items.

It could be argued that the data from this study indicated a better fit than previous studies because the model was only tested in three segments. However, while Marsh (1987, 1990) and the present authors used slightly different estimation procedures these procedures are, nevertheless, comparable in that, in all three studies, the authors broke the full model down into smaller segments. Consequently, this segmenting of the confirmatory process cannot be the cause of the better fit.

A number of other limitations can be identified in the present study. The sample was not large enough to permit confirmatory factor analysis of the full hierarchical model. Consequently, it is possible that significant cross-loadings have not been identified, thereby causing the fit statistics to be inflated. However, the authors would argue that the three-phase model testing procedure that was used can provide a considerable amount of useful psychometric information regarding construct overlap and misspecification. This is particularly the case when models are too large in relation to sample size or too complicated with regard to the interpretation of diagnostics. Furthermore, this procedure also encourages a more specific hypothesis testing approach to item elimination than does simply performing a confirmatory factor analysis of the whole model (see Joreskog, 1993; Markland & Ingledew, 1997; Rees et. al, in press).

A further limitation of the present study was that the sample was also not large enough to allow for analysis by gender and type (i.e. high level athletes, non-sporting academics and mental health clients.) The analysis did not reflect the marital status or occupation of the participants and a wider age range might have provided more or less support for the hierarchical model of self-concept. Future studies might include participants with a much wider age range, especially those from late adulthood. Such a sample would give further insights into the impact of life experiences on the development of a hierarchical self-concept.

In conclusion, the results of this study provided stronger support for the hierarchical structure of self-concept than has hitherto been available. The authors’ results supported the original Shavelson et al. (1976) model and the empirical and clinical relevance of this could be significant. If further research supports the authors’ conclusions then clinical intervention strategies that address self-concept should seek to concentrate on specific domains in order to enhance deficits in self-concept.

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Mindfulness, Metacognition and Interpersonal Communication Skills Training

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Mindfulness is a cognitively active state in which an individual consciously engages with the immediate elements of the communication environment, and challenges 'premature cognitive commitments' to the meaning to be constructed from and in that communication environment. Mindfulness is characterised by cognitive differentiation rather than categorisation. To adapt to rapid and continual change, individuals will increasingly need to develop qualities such as contextual responsiveness, process orientation, the ability to formulate new mental categories, and an increasingly differentiated perceptual base. Mindfulness is a construct which encompasses these fundamental metacognitive processes. The results of my research indicate that the teaching of interpersonal communication skills in a conditional or probabilistic fashion that encourages variability and multiple frames of reference, and in which metacognitive processes are made explicit, may be a way of providing individuals with the cognitive and behavioural flexibility to communicate from a perspective which is neither linear nor exclusive in orientation.

Students who are being educated today in order to practice a profession tomorrow must interact with vast, complex and exponentially increasing bodies of knowledge. How are they to organise and respond to these bodies of knowledge, and how are they to apply the knowledge that they are presently acquiring to situations which have not yet evolved? It seems clear that they will need to be taught ways of thinking, rather than factual content which is likely to be obsolete by the time they come to implement it. Learning about process in education rather than product will need to become the focus of the new age.

As a way of approaching teaching for and about process, I utilise the constructs of mindfulness and transfer. The ability to effectively transfer existing knowledge and experience to new and very different contexts will be a critical skill of workers who wish to adapt to career and environmental change. The explicit teaching of mindfulness theory according to a mechanism which I present in this paper effectively facilitates transfer of learning because it operates to empower students to be cognitively flexible and responsive to emergent circumstances, without imposing previously constructed commitments to meaning on those emergent circumstances.

Mindfulness: What Is It?

Mindfulness is a construct developed by Ellen Langer, presently Professor of Psychology at Harvard University, whose theories have been accorded a great deal of scholarly attention.

Mindfulness is characterised by active distinction making and differentiation (Langer, 1997). A mindful individual engages in the process of creating new categories and differentiating information more finely, and remains "open to the processes through which meaning arises within and among people. This openness to the perspectives of others and to information viewed as novel allows us to construct meaning" (Langer, 1994:50-51).

Mindlessness, on the other hand, is characterised by a rigid use of information during which the individual is unaware of its potentially novel aspects (Langer & Piper, 1987). Information is managed as though it has a single meaning and is available for use in only that way, and this results in a lack

of attention to details which might in fact invalidate such assumptions if they were considered carefully. After limited experience with one solution to a problem, simpler or more effective solutions are not considered even when they are available and appropriate. In a similar vein Reardon & Rogers (1988) argue that there is a tendency for categories, once formed and found to be efficacious, to persist in use even when the earlier situation of utility has changed.

Research would seem to support the idea that in many situations adults tend to interact mindlessly with the environment unless they are provoked into mindfulness, for example by a circumstance such as an unfamiliar situation for which existing conceptions are no longer adequate (Langer & Imber, 1980). In fact "the research on mindlessness suggests that much of the time people are not hearing what is being said to them or reading what has been written to them, as long as the structure of the communication is familiar. Moreover, they are unaware that this is occurring" (Langer & Imber, 1980:361).

An important component of mindfulness theory is the notion of premature cognitive commitment, which is a commitment that is unconsciously made to the meaning of information and its anticipated implications. Once a premature cognitive commitment is made the relationship between the information and the experience which it represents remains fixed. In fact the information "in essence, only exists in the single, rigid form in which it was initially encoded. Alternative understandings of the information are not available" (Langer (1989:149). Premature cognitive commitment is characteristic of mindlessness.

Mindfulness, by contrast, is a cognitively active state in which an individual consciously engages with the immediate elements of his or her environment, and challenges premature cognitive commitments in regard to the meaning to be constructed from and in that environment. Mindfulness is characterised by cognitive differentiation rather than by categorisation. Mindfulness theory essentially challenges a commitment to previously constructed meanings, and to the circumscribed nature of the meanings so constructed. Teaching from a mindfulness perspective may have the potential to facilitate transfer of newly acquired knowledge and strategies to other contexts, because by taking a mindful approach such

contexts are not conceptualised, constructed or interpreted in rigid and constricted ways. The inclusion of a mindfulness perspective in education may empower students to identify the instability of experience as it differs across a range of events and over a period of time, and to accept and accommodate the resulting uncertainty.

However, the construct of mindfulness is not accurately represented by the concept of the reflecting solitary mind studying complex alternatives and selecting among them. This representation may lead to a false belief in objectivity, and ignore the obvious point that any 'fact' is an assertion by an individual in a context, based on a background of prior understanding. Problems or difficulties or predicaments are ultimately questions of meaning, and questions of meaning can rarely be resolved, but rather need to be attended to, interpreted, and interacted with (Van Manen, 1991).

Mindfulness is not taught or modelled in our society in general or in our education systems in particular because of the traditional emphasis on the acquisition of 'facts' and on the search for the 'right' answer to a variety of problems, and this leads to the formation of premature cognitive commitments that subsequently remain unquestioned. As Langer & Brown (1992:15) suggest, "Learners are often taught to view facts as immutable, unconditional truths", but actually the 'facts' will often change when the context changes. Rogers (1997:687) notes that under present pedagogical approaches "students devote their efforts to mastering a set of facts, often without the sense that those facts connect in a significant way to some process, some experience." (For further discussion see also Kruglanski, 1989; Nicholls, Nelson & Gleaves, 1995; Breuer & Streufert, 1996; Mezirow, 1996; Yeatman, 1996; Hofer & Pintrich, 1997; Candy, 1998).

It is rare that an individual will continue to seek solutions to a problem once he or she has come upon one that will serve the purpose. After a time the first solution that he or she has found will come to seem to be the best and only solution and no further questioning of propositions or assumptions will occur. However, if the perspective is adopted that consequences have meaning within a context, and contexts keep changing, then the positive or negative aspects of the event/problem keep changing, and it probably would be appropriate at some point to seek alternative methods and solutions (Langer & Brown, 1992). The awareness that the 'evidence' which is frequently cited to support the discussion of a particular topic is actually conditional and open to interpretation allows students to countenance differing interpretations of the same topics, ideas or issues and helps to prevent a mindless commitment to the meaning and significance of previously unquestioned evidence or information.

For example, a mindful perspective on communication and technology would involve an orientation towards the new possibilities which are constantly being created by the use of technology as well as an awareness of the possibilities which are constantly being eliminated by it. A mindful perspective on technological processes, such as technologically mediated communication, would involve an awareness of the novel and unique aspects of that technology and would not simply be an attempt to impose familiar existing processes onto new

communication technologies. At the same time a mindful perspective on communication and technology would involve an awareness of the dangers inherent in technological determinism, or "the blindness created by design" (Winograd & Flores, 1987:166), whereby the opening of new possibilities closes off other possibilities and the nature of the technology seems to automatically determine and frequently restrict the range of possible responses to it. The development of a new technology can have far-reaching significance, because it can create new ways of being that previously did not exist and a framework for actions that would not have previously made sense.

When people adapt to new technologies and restructure their behaviours based on what the technologies currently allow them to do, they tend to take technologies for granted and do not question their social effects (Dutton, 1999). As Woolgar (1998:444) argues, technology incorporates certain assumptions about the identity and nature of users, their capacity to actually use the technology, their requirements and their expectations. These assumptions become built into the new technology during the process of design, development, marketing and implementation. "During this process views and assumptions become fixed and set within the emerging technology. The technology comes to embody an assembly of ideas about social arrangements. Technology, we might say, is this network of congealed social relations." (Woolgar, 1998:444).

Following from this argument, and because adult learning is incremental and grounded in previous experiences (Brookfield, 1986), even a new topic is approached with preconceived ideas. The explicit teaching of principles of mindfulness addresses this issue because it provides students with a mechanism which enables them to contest premature cognitive commitments to meaning. Students who can apply the principles of mindfulness will necessarily be more competent because they are interacting on the basis of the information which is present in the immediate context, and not on the basis of previously established and presently uncontested commitments to meaning.

How Does Mindfulness Relate to the Transfer of Learning?

The construct of transfer of learning is critical to a consideration of thinking and of learning in general. In fact, the boundaries between transfer and learning are so indistinct that knowledge transfer is commonly used as a measure to assess learning. If students can only solve a problem about which they have been instructed within a specific context but cannot solve the same problem in a related context, then they are not considered to have attained subject mastery (Pea, 1988; Greeno; 1997).

Of course the issue of transfer and the question of whether or not cognitive skills and strategies are domain specific or domain independent have been debated at very great length. Comprehensive reviews of research relevant to the debate (Lave, 1988; Perkins & Salomon, 1989; Pea, 1988) suggest that the answer still appears to be equivocal. Further discussions

by Anderson, Reder & Simon (1996), Butler (1996) Greeno (1997), and Anderson, Reder & Simon (1997) support this view.

Fogarty, Perkins & Barell (1992: xv-xvii) identify three historical perspectives on transfer in teaching and learning, which they summarise in the following distinctive way:

The Bo Peep Theory of Transfer: Transfer Takes Care of Itself

(Leave them alone and they'll come home)

The Black Sheep Theory of Transfer: Transfer Doesn't Happen

(Transfer stubbornly refuses to do what it is supposed to do)

The Good Shepherd Theory of Transfer: Transfer Will Happen With Mediation

(Teachers can 'shepherd' knowledge and skills from one context to another)

In a somewhat more formal manner Perkins & Salomon (1989) express a similar view. Early advocacy of domain independent cognitive skills assumed that general heuristics would readily make contact with an individual's knowledge base and that transfer was a process which operated automatically. When this failed to occur in experimental situations a view developed that cognitive skills were in fact context bound. However, recent emphasis on domain-based knowledge may well undervalue the importance of general heuristics, so that common accounts of failure of transfer may be explained in terms of lack of conditions needed for transfer, rather than in terms of domain specificity (Perkins & Salomon, 1989). This position would lead to the interconnection of general cognitive and domain specific material in instruction (Perkins & Salomon, 1989), and has obvious applications to strategies for teaching about mindfulness in its emphasis on the salient nature of context.

Ceci & Roazzi (1994:83), working from a somewhat different perspective, nevertheless come to a similar conclusion when they suggest "It may be that the use of proximal examples and explicit instructions are a necessary first step to inculcating transfer, at least in most people", while Anderson, Reder & Simon (1996:6) argue for the need to include "ability to transfer as a specific goal in instruction, a skill that is given little attention in most current instruction."

However, while acknowledging the convergences and divergences between the situated and cognitive perspectives on learning and transfer, it should be remembered that in attempts to take the full range of such perspectives into account, "we could be forever lost in appreciating the complexity of the situation and never get on to doing something about it." (Anderson, Reder & Simon, 1997:20).

How do the Constructs of Mindfulness and Transfer Converge?

I believe that the explicit teaching of mindfulness theory according to a mechanism which I now present will "get on to doing something about" effectively teaching for transfer

of learning (Murray, 1997) because it involves the facilitation of metacognitive processes which provide students with insight into their own learning activities. It is argued that this insight empowers students to more effectively manage their own learning as well as to apply that learning more successfully in authentic situations (Elen & Lowyck, 1999; Georghiades, 2000).

This mechanism operates to empower students to be cognitively flexible and responsive to emergent circumstances without imposing on those emergent circumstances the students' previously constructed commitments to meaning. That is, this mechanism may equip students to transfer previous learnings to emergent circumstances in a way which is functional and adaptive rather than rigid or prescriptive.

This mechanism consists of the concept of a communication environment. This is based on the premise that people do not interact without regard to their surroundings, but rather within a communication environment, which consists of those factors which are immediate and dynamic in an interaction.

This communication environment can be classified into three components which are:

- Topic
- Situation
- Participants

I do not suggest that these three components comprise the total intrapersonal and interpersonal elements of the communication environment. Factors such as past experience, past learnings, perceptions, relationships, attributions, status and so on may well be expected to influence interactants, so the significance of such factors is clearly not to be underestimated. In fact, a consideration of such issues is fundamental to the understanding of interactive processes. However, these factors are not immediate or dynamic, but rather they are brought to the interaction by the participants, and are essentially fixed for the course of the interaction.

Focusing attention on elements which are dynamic and grounded in the present by attending to the topic, situation and participants will promote a mindful approach to their interactions. I have described this process of attending to the topic, situation and participants as *enhancing immediacy*. My own research indicates that teaching students to enhance immediacy together with explicit statements about theories of mindfulness and transfer enables students to be mindful in authentic interactions (Murray, in press).

The method which I used in my research involved the explicit presentation of principles of mindfulness, followed by the introduction of the concept of the communication environment. I then asked students to work in small groups to identify particular interactions from their own authentic workplace experiences wherein the topic, the situation and the participants were reasonably discrete. The students did not find this difficult. I then asked them to reconsider their perceptions of the interactions if one of the elements of topic, situation and participants was varied and the other two remained stable.

Students were then asked to consider how this variation in the communication environment affected their perspectives on the interaction. They were consistently able to identify additional significant factors and perspectives which had not occurred to them previously in their reflections on the interaction. In consequence, they were also able to identify a range of strategies which would operate to greater or lesser effect to bring the interaction to a satisfactory resolution depending on the circumstances. I consider that they thereby demonstrated increased cognitive flexibility as a result of using this device. I found that by mindfully considering facts not as stable commodities but as potential sources of ambiguity students were able to gain a more insightful perspective on everyday interactions and became more open to perceiving the many perspectives from which any activity may be viewed.

Education based on a mindfulness approach will generate social interactions in which thinking processes are made explicit, and this will provide important fostering conditions for learning to think well and transfer knowledge to new problem contexts within a broad domain. In a mindful state, learning and change occur constantly because the very nature of mindful interaction with the environment means that both the environment and the individual are different.

Conclusion

In a time of change, where the immutability of factual information is no longer the only appropriate perspective from which to conceptualise and construct meaning and interaction, the construct of mindfulness has much to offer. Teaching that values and fosters a recognition of variability and multiple frames of reference may be a way of providing students with the cognitive and behavioural flexibility to respond to interactions in a genuine and appropriate fashion, and to view issues from a range of perspectives which are neither linear nor exclusive in their orientation (Murray, 1996). This will allow students to transfer their existing knowledge to emergent contexts in a flexible and creative fashion.

Education which emphasises a mindful approach allows changing interactions to be evaluated and responded to in contemporaneous and relevant terms, and essentially allows for the "creation of new categories" to describe the new situation, rather than assuming that the existing situation is similar to previous situations. The adoption of such an approach means that crucial skills would include the ability to mindfully evaluate the situation and then mindfully adapt strategies to suit it. The mindfulness approach presented in this paper thus provides a device for becoming aware of more than one perspective and for shifting perspective as this might be appropriate, and this will necessarily extend the interactive competence of those who use it.

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Appendix 1.

Dependent variables employed in studies, and *a priori* classified as affective, cognitive or unclear.

DVs unmarked = effect size cases; * = interaction description cases; ** = both effect size and interaction description cases.

Affective DVs

Reactions to feedback (at times, combinations of a variety of these presented in studies as a single result), including: rating of feelings, e.g., humiliated, pleased, appreciative; **measure of mood state (depression, anxiety, hostility); description of feelings from a list of 40 emotion words, e.g., confident, ashamed, angry.

- * Liking for source of feedback, e.g., computer program. Enjoyment of the task for which feedback has been received.
- * Level of intimacy with marriage partner.

Cognitive DVs

Reactions to feedback (at times, combinations of a variety of these presented in studies as a single result), including: **perceived accuracy of feedback; **perceived competence of evaluator; **diagnosticity of rating technique; **attributions regarding feedback to ability, effort, luck, task difficulty; justification of feedback; reliability/validity of task; *perceived success, recalling score, optimism regarding exam and term paper.

- ** Self-rating change, for self-esteem or personality trait; **confidence rating change before seeing and attempting to solve each part of a task.
- * Self-rating favourability on personality traits directly related to feedback.
- * Self-rating favourability on personality traits not related to feedback.
- ** Self-evaluation, e.g., of performance on a task, or of level of ability and effort on a task.
- * Appraisal of self relative to appraisal of others. Rating of how considerate the evaluator was when giving feedback.
- * Eliciting favourable reactions from the evaluator. Attribution of whether feedback from the evaluator was “sincere” or “role-playing”.
- * Reflected appraisals – favourable/unfavourable perception of the evaluator’s feedback. Marital commitment to spouse who appraised subject favourably or unfavourably.
- ** Group favouritism – subjects rated how good they thought a solution to a previously set task was for “us” the own/in group, and “them” the out group.

Information seeking – amount of time spent reading positive/negative statements.

- * Making excuses for performance.
- ** Assessment of accuracy of feedback. [Purer measure than that noted above.]
- Future expectancy of performance.
- * Certainty of prediction made of future expectancy of performance.
- Recall of positive/negative feedback.
- Recall of sentences of positive and negative behaviours of others.

Unclear DVs

- ** Choice of favourable/unfavourable interaction partner.
- Choice of favourable/unfavourable feedback.
- * Choice of feedback pertaining to positive or to negative attributes.
- Choice of meeting or not meeting the positive/negative evaluator to discuss the feedback.
- Social comparison - subjects could compare, or avoid comparing altogether, with others;
- * social comparison choice with best and/or better-off others.
- Intrinsic motivation – amount of free-choice time spent doing more of the task for which feedback had been received.
- Reported motivation to succeed on a task that is the same as that for which feedback had been received.
- ** Persistence (increased effort) – amount of time subjects chose to work on an activity which was the same as the one for which they had received feedback.
- ** Extrinsic motivation – performance on a task similar generally to pre-feedback task, but not the same; *desire for improvement – changes in subsequent task performance.
- ** Attraction to evaluator.
- Attraction to prospective interaction partner unrelated to the positive/negative feedback or evaluator (reactions indirect to feedback).
- Helping or not helping others (prosocial behaviour).
- Satisfaction with feedback; affective index of satisfaction with feedback, happy, depressed.
- Self-justifying attitude change.
- * How much of a task subjects would like to get right.

Mathematics Self-Efficacy in Primary Schools: Evidence of A Hierarchical Structure

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The objectives of the present study were to explore the latent structure of mathematics self-efficacy for varying levels of domain specificity (Global, intermediate, specific), the latent structure of the four sources of information, and the order of potency. Two structured multiple-choice questionnaires (FSSEI-M, SEI-M) were administered to primary school students in 3rd - 4th grades ($N=241$). The confirmatory factor analytic findings reported provided evidence for a three-factor structure of mathematics self-efficacy - wherein mathematics concepts assessed at varying levels of domain specificity were empirically distinguishable from one another. For the four sources of information, four first-order factor models were tested. The findings reported indicated the four-factor latent structure provided the best model representation for the four efficacy sources. Furthermore evidence was found for a higher order factor structure, wherein performance accomplishment, vicarious learning and verbal persuasion loaded distinctively and significantly onto a second-order factor - Personal Experience. Structural equation modeling (SEM) was used to determine the order of potency of the efficacy information sources. The findings confirm Bandura's (1986, 1997) order of potency for two of the four sources - performance accomplishment and physiological states. Based on the findings found in the present study, educational implications are discussed for the dimensionality and order of potency. Finally, several future directions for further research on the four sources of self-efficacy information are considered.

Current theory in educational psychology has posited that personal cognitions influence instigation, direction, strength, and persistence of behaviours (Schunk, 1989a). One type of personal cognition refers to *self-efficacy*, defined as "people's judgements of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). Besides the knowledge and skills one possesses, what individuals believe about themselves and about their academic competence in part helps to govern their academic success in schools. Ultimately, one's academic attainments can markedly differ to others even when knowledge and skills are of the same level (Pajares & Valiante, 1999).

Bandura's (1986, 1997) social cognitive theory posits a strong sense of self-efficacy leads individuals to undertake challenging tasks (Bandura & Schunk, 1981), expend greater effort in accomplishing a given task (Salomon, 1984; Schunk, 1983a), persist longer in the face of adversaries (Bandura & Schunk, 1981; Schunk, 1982), self-regulate better than others (Zimmerman, Bandura, & Martinez-Pons, 1992), and use more effective strategies (Pintrich & De Groot, 1990).

Since Bandura's (1977) original paper, "Self-efficacy: Toward a unifying theory of behavioural change", self-efficacy has been applied in academic settings to various grade levels (e.g., primary, secondary, tertiary), content domains (reading, writing, mathematics, computing science), and student ability levels (average, gifted, remedial) (Schunk, 1995). In the various educational fields of research, self-efficacy has been shown to relate to: goal setting (Locke & Latham, 1990; Schunk & Swartz, 1993), attributional feedback (Schunk, 1982, 1983a), performance feedback (Schunk, 1983b), predictive utility (Relich, Debus, & Walker, 1986), self-concept (Pajares & Miller, 1994), self-regulation (Schunk, 1989b, 1996), and career choice and major (Betz & Hackett, 1983).

The Varying Levels of Specificity of Self-Efficacy

The importance of Bandura's (1997) social cognitive theory is that self-efficacy concerns one's capabilities in specific situations and performance domains. This suggests that self-efficacy is not a unitary, generalised, or decontextualised personality trait. Individuals' self-efficacy beliefs are expected to vary in accordance with the particular activity domain or situation under consideration. In a classroom, for example, a student may perceive that he or she has strong mathematics capabilities but weak skills at music composition; consequently, he or she would be more likely to prefer and pursue course work emphasising mathematics and not music composition.

Because individuals' self-efficacy beliefs are task and domain specific, Bandura (1986) has cautioned that "ill-defined global measures of perceived self-efficacy or defective assessments of performance will yield discordances" (p. 397). Other researchers (e.g., Lent & Hackett, 1987; Multon, Brown, & Lent, 1991) have acknowledged that often this caution has gone unheeded, where assessments of self-efficacy frequently bear little resemblance to the criterial task with which they are compared, resulting in ambiguous and inconclusive findings. For this reason, assessments of self-efficacy should not reflect generalised or unrelated attitudes of capabilities, but be specifically tailored to the criteria task being assessed and the domain of functioning being analysed.

According to Pajares and Miller (1995), many research studies often employ assessments of self-efficacy that do not conform to Bandura's (1986) guidelines regarding specificity of measurement, making this mismatch between self-efficacy and criteria task assessment a recurring theme in educational research. When assessments of self-efficacy do not reflect any sense of specificity to the criteria tasks with which they are being assessed, their predictive and exploratory value is diminished.

Exploring this theme in detail, one example of research that involves ill-defined assessment measures includes the relation between mathematics self-efficacy and selection of career choices. This line of research uses self-efficacy measures that are assessed at three levels: self-efficacy concerning mathematics courses, self-efficacy concerning problems, and self-efficacy concerning tasks (Betz & Hackett, 1983). Over the years, the Mathematics Self-efficacy Scales (MSES) designed by Betz and Hackett have been used in numerous research studies to examine the link between self-efficacy and students' performance, majors, and choices (e.g., Hackett, 1985; Hackett & Betz, 1989; Randhawa, Beamer, & Lundberg, 1993). The three sub-scales, according to Betz and Hackett, required "detailed specification of the domain of mathematics-related behavior" (p.331), wherein these domains included solution of mathematics problems, mathematics behaviours used in daily life, and of particular relevance to university students, satisfactory performance in a university course.

Since its creation, researchers have used composite scores of the three subscales of the MSES to examine the relations between mathematics self-efficacy, selection of career choices and performance. For example, Hackett (1985) used composite scores in a path analysis to discover the mediational role of self-efficacy. A correlation of .50 was found between mathematics self-efficacy and choice of major. Similarly, Hackett and Betz (1989) used a composite score of the three MSES subscales and found from hierarchical regression analysis a beta ($=.45$) between mathematics self-efficacy and choice of college major. Importantly, a correlation (.44) that was not as large as expected was found between the full-scale MSES scores and performance scores on an alternate-forms test of the MSES Problem scale. Randhawa *et al.* (1993) used Structural equation modeling (SEM) with the composite score of the full-scale MSES as a generalised mathematics self-efficacy to find that generalised self-efficacy mediated the effect of various mathematics attitudes on problem solving. Importantly, the criteria task, the solving of mathematics problems, was conceptually related only to the Problem subscale. Mathematics attitude had a stronger effect on performance (.44) than did generalised self-efficacy (.32).

Apart from Betz and Hackett's (1983) MSES, other research studies regarding the close correspondence between assessment of self-efficacy and the criterial task with which they are compared have also suffered from similar conceptual and measurement flaws. For example, Bensen (1989) found that mathematics self-efficacy to performance was not significant, whereas that between mathematics self-concept and performance was. However, students' mathematics self-efficacy beliefs were assessed with three global items dealing with expected success in a statistic class (e.g., "No matter how hard I study, I will not do well in this class"). Self-concept was assessed with seven items specific to feelings of mathematics self-worth (e.g., "I feel insecure in a mathematics class"). Performance was the midterm exam grade in a statistics course.

In a recent study, Pajares and Miller (1995) argued that the appropriateness of the match between self-efficacy assessment and the outcome is crucial to optimal prediction of that outcome, especially where generalised measures of multiple-scale self-

efficacy scores are used. In their study, the three subscales of the MSES were treated as separate and not as one composite, generalised score. Performance outcome measures consisted of students' ability to solve problems on which their confidence was assessed and the mathematics-relatedness of their academic majors. According to Bandura's (1986, 1997) theory, judgements of capability to solve specific problems should be more predictive of capability to solve those problems than course-related majors and similarly, judgements of confidence to succeed in mathematics-related courses should be more predictive of choice of mathematics-related majors that enrolling in such courses.

The results from the Pajares and Miller (1995) study confirm Bandura's (1986, 1997) cautions regarding the close correspondence between self-efficacy and performance assessment. According to the results, students' confidence to solve mathematics problems was a more powerful predictor of their ability to solve those problems than was their confidence to obtain an A or a B in mathematics-related courses. Similarly, students' confidence to succeed in a mathematics-related course was more predictive of their choice of majors that required them to make take many of the mathematics-related courses on which they expressed that confidence.

Recently, Lent, Brown, and Gore (1997) used the method of Confirmatory factor analysis (CFA) to differentiate the three subscales of the MSES (Course, problems, tasks) into three separate confirmatory factors. It was postulated in conjunction with Bandura's (1986, 1997) social cognitive theory, that self-efficacy and self-concept, assessed at different levels of specificity, would represent distinct yet related dimensions. It was proposed that domain-specific mathematics self-efficacy beliefs would predict more efficiently mathematics-related choice and performance criteria than would more global (i.e., non-domain-specific) academic self-concept.

The CFA results reported of the five first-factor models proposed, one through to five-factor models, the five-factor model provided the best model fit to the data (NNFI=.957, CFI=.967, $X^2/df=2.05$). This suggests then that academic self-concept and various facets of self-efficacy (e.g., perceived capabilities to complete common university requirements, to succeed at college-level mathematics courses, and to solve mathematics computation problems) each represent unique, though related, latent dimensions (e.g., Factor 1 corresponded to self-efficacy course, Factor 2 to academic self-concept, Factor 2 to self-efficacy problems, etc.). In this sense, these confirmatory factor analytic findings suggest and confirm the social cognitive view that self-efficacy is a differentiated set of performance expectations (Bandura, 1986), wherein individuals' self-efficacy percepts assessed at varying levels of domain specificity are empirically distinguishable from one another.

The Four Sources of Self-Efficacy Information

Individuals' self-efficacy beliefs are acquired and modified from four principal information sources. Performance experiences act as a first source and serve as an indicator of capability; vicarious experiences, as a second source of self-efficacy information, explain self-efficacy beliefs from

competencies and informative comparison with the attainments of others; verbal persuasion, as a third source of self-efficacy information, refers to verbal feedback from teachers and adults; and finally physiological and affective states, imply one judging capableness, strength, and vulnerability to dysfunction. The development of self-efficacy beliefs arises from the acquirement of the four principal information sources. This, however, requires the integration, modification, weighting, and assessment of the multiple sources available.

One area of self-efficacy research involves examining the antecedents of the four sources of self-efficacy information. In particular, the latent structure and the order of potency (Bandura, 1986, 1997) of the primary sources of experiential information has been researched in the fields of academic and mathematics learning. Up to the present date, five studies have examined the structure of the four sources of information for academic and mathematics self-efficacy using structured multiple-choice questionnaires.

In the earliest study, Matsui, Matsui, and Ohnishi (1990) found from regression analyses three of the four sources, performance accomplishment, vicarious experiences, and physiological states, but not social persuasion, explained the unique increments in mathematics self-efficacy for 1st-year university students. In a similar study Lent, Lopez, and Bieschke (1991) found students' performance experiences contributing foremost in students' development of mathematics self-efficacy. Though vicarious experience, verbal persuasion, and physiological states added significant bivariate correlations, they did not, however, account any significance in the final analysis. Lopez and Lent (1992) found with grade 9 students performance accomplishment and physiological states, and not vicarious learning or verbal persuasion, explained significant increments in mathematics self-efficacy variation. Finally, Hampton (1998) found performance accomplishment and vicarious experiences predicted students' academic self-efficacy beliefs for both students with non-learning and learning disabilities.

In each of the four studies, the findings reported the four information sources to be significantly and, with the exception of vicarious learning, interrelated. Recently, Lent, Lopez, Brown, and Gore (1996) extended this line of research to include the purported structure of the four efficacy source variables. The observed interrelation findings between the source variables from the Hampton (1998) study, the Lent *et al.* (1991) study, the Lopez and Lent (1992) study, and the Matsui *et al.* (1990) study suggested the possibility of fewer than four constructs.

As a result, using Confirmatory factor analysis (CFA), Lent, Lopez *et al.* (1996) explored the latent structure of the four source variables with a number of models proposed, in this case, a one, two, three, and four latent structure possibility. The findings reported the latent structure of the four source variables with the various fit indices indicating the four-factor model as the best fitted model. Though the findings found emphasised the four efficacy source variables as unique and distinct, substantial interrelations among three of the four source variables indicated the presence of a

hierarchical representation, wherein performance accomplishment, verbal persuasion, and emotional arousal combined to form a higher order factor-*Direct experience*.

Objectives of the Present Study

In sum, the objectives of this study were in threefold. As reviewed in the literature, up to date, research concerning the various self-efficacy facets, the latent structure of the four information sources, and the order of potency (Bandura, 1986, 1997) has focused predominantly with high school and university students. The assumption made in the present study was that by clarifying the three objectives proposed concerning the latent dimensions of mathematics self-efficacy and the four sources of information with primary school students (3rd & 4th grades), the findings found might shed additional light on the dimensionality of mathematics self-efficacy beliefs.

Firstly, the latent structure corresponding to different levels of mathematics self-efficacy specificity was examined. Mathematics was elected in this study as it is a major core participants learn in primary schools. Regarding self-efficacy in a primary school setting, a literature review of findings posits the assessment of students' self-efficacy beliefs at a domain specific level. In mathematics, researchers have employed instruments assessing students' judgements at a problem solving level; for example, Norwich (1987) assessed 5th grade students' self-efficacy with items, such as, "How certain are you that you could solve 57×5 ; $75 \div 5$; 6^2 ?" ; Pajares and Graham (1999) included items such as, "Suppose that you were asked to answer the following mathematics questions in a multiple choice test tomorrow. Please indicate how confidence you are that you will give the correct answer to each question correctly. (Sample item: 'A train is traveling an average speed of 75 miles per hour. Use the four-step plan to find out how far it will travel in four hours.');" ; Skaalvik and Rankin (1998) included items such as, "How certain are you that you can do (solve) these kind of mathematics problems?"

It is of interest to note that these findings in primary schools have not included the use of composite scores of different subscales of self-efficacy. Importantly, up to the present date, instruments such as the MSES (Betz & Hackett, 1983), where subscales (Course, problems, tasks) are included as one composite score, have not been created or employed for primary school students. This point raises the question of the differentiation between the different levels of domain specificity; for example, "I can learn mathematics" (Global), "I can learn addition and subtraction" (Intermediate), and "I can solve $____ + 15 = 27$ " (Specific), and the use of composite scores of subscales. To explore the issue of whether various facets of self-efficacy each represent unique latent dimensions, CFA was used to propose a number of different factor models. Adapting the findings in the Lent *et al.* (1997) study to the present study, model 1 proposed a one-factor model wherein items from the three levels (i.e., global, intermediate, specific) were specified to load onto a single-factor model, thus reflecting a larger, unitary construct. Model 2 proposed a two-factor model wherein items from the global and intermediate levels were specified to load on the first factor, and specific items were specified to load on

the second factor. Finally, model 3 proposed a three-factor model wherein items from the three levels were specified to load onto three separate factors, thus reflecting each level as having a relatively unique form of self-cognition. From the Lent *et al.* study, wherein levels of specificity of self-efficacy were found to correspond to separate distinct factors, it was proposed that the three-factor model would provide the best model fit.

Secondly, the latent structure of the four mathematics self-efficacy information sources was examined. Up to date, research concerning the structure of the self-efficacy source variable has been few, if any, for primary school students. Drawing upon the theoretical literature of self-efficacy (Bandura, 1986) and the findings from the numerous studies under review, the present study used the method of confirmatory factor analysis in presenting four separate first-order confirmatory models. It was postulated that one of the four separate first-order factor models proposed would provide the best representation of a model fit to the empirical data.

Though not examined in prior research studies (e.g., Lent, Lopez *et al.*, 1996), the present study tested a one-factor model where all items from the four sources of information were set (i.e. freed) on a common factor. It was reasoned that if this one-factor model provided a good fit, then the implication would be that primary school students view the four source variables as homogenous in nature and not distinct as theorised (Bandura, 1986). Model 2 tested a more parsimonious two-factor model based upon the findings from the Lent *et al.* (1991) study. Substantial intercorrelations found between three of the four sources established a factor 1, deriving from performance accomplishment, verbal persuasion, and physiological states, and a factor 2, deriving from vicarious experiences. Model 3 tested a more distinct three-factor model, drawing upon the findings from the Matsui *et al.* (1990) study. Accordingly, individuals' performance accomplishments are often accompanied by verbal persuasion from teachers and parents and thus, factor 1 derives from performance accomplishment and verbal persuasion, factor 2 from vicarious experiences, and factor 3 physiological states. Finally, Bandura's (1986) theory suggests the four sources of information provide relatively distinct, though additive, data for individuals to appraise their self-efficacy, resulting in a four-factor model wherein items for the four sources were freed as four separate factors.

Thirdly, the present study examined the order of potency (Bandura, 1986) of the four sources of information. The method of Structural equation modeling (SEM) was used to determine the order of influence of the four sources for mathematics self-efficacy beliefs. Accordingly, the findings from prior studies confirm performance experiences contributing foremost to mathematics self-efficacy (e.g., Lent *et al.*, 1991) followed by vicarious learning (e.g., Hampton, 1998; Matsui *et al.*, 1990), and physiological states (e.g., Lopez & Lent, 1992) but not verbal persuasion. Recently Bong and Clarke (1999) have shed an additional insight concerning the order of potency, arguing that often for young individuals, the four sources may differ in terms of acquirement, weighting, and importance as a result of prior experiences. Lack of experiences for an

information source, for example, vicarious experiences, may then lead individuals to seek alternative information sources for self-efficacy appraisal. Up to date, in the numerous studies reviewed, the significant variance made in self-efficacy by the four sources has been explored using the statistical method of multiple regression analyses. Multiple regression analyses do have limitations (Mueller, 1996; Tabachnick & Fidell, 1996), and as a result, it was proposed in the present study that the sophisticated method of SEM would be used instead.

Method

Participants

Two hundred and forty-one students (110 boys and 131 girls) enrolling in 3rd to 4th grades from one school participated in the present study. The sample taken from this study was a pilot study conducted for a Ph.D. thesis research by the first author of this paper.

Procedures

The administration of the Four Sources of Self-efficacy Information instrument (FSSEI-M) and the Self-efficacy instrument (SEI-M) was conducted by the author and a female research assistant in the students' classes. The teacher was present in the room but was not involved with administering the questionnaires. Students were assured of confidentiality that their answers would only be seen by the author and research assistant. The questionnaires were presented on an over-head projector (OHP) and were read out aloud to all students. For each question students were guided to work at the same pace, and were given 5 seconds for each question. Students were encouraged to ask for any clarification regarding unclear items, and those students missing out on any item were given the opportunity at the end of class to complete. The time it took to answer the questionnaires was approximately 60 minutes.

Instruments

The Four Sources of Self-efficacy Information Instrument for mathematics (FSSEI-M) contained twenty multiple-choice items. In-brief, the items from the FSSEI-M instrument included, for example, "I always get good marks in mathematics" and "I am not good in mathematics" (Performance accomplishment); "I have a close friend who is good in mathematics" and "My classmates are good in mathematics" (Vicarious experience); "When my teacher praises me, I want to do well in mathematics" and "My friends tell me I am good in mathematics" (Verbal persuasion); and "I hate mathematics" and "I am always worried about mathematics" (Physiological states). Participants responded on a 7-point Likert scale their level of agreement with each statement, for example, 1 (Not true at all), 4 (Average), 7 (Very true).

The Self-efficacy Instrument for mathematics (SEI-M) contained twenty items, comprising of general, intermediate, and specific items. Participants responded on a 7-point Likert scale their level of perceived competence, for example, 1 (Not

well at all), 4 (Average), 7 (Very well). The NSW Board of Education in Australia specifies curricula (e.g., K-6 Mathematics Curriculum) in primary schools at three levels-Level (1)(1st and 2nd grades), Level (2)(3rd and 4th grades), and Level (3)(5th and 6th grades). For each level of learning (e.g. Level (1)), specific topics and sub-topics are specified for students to learn. In the present study, the level examined was level (2)(i.e., 3rd & 4th grades combined).

The items designed in the SEI-M corresponded as close as possible to the mathematics curriculum. The items included, for example, "How confident are you that you can learn Mathematics?" (General item), "How confident are you that you can do Addition?", "How confident are you that you can do Subtraction?" (Intermediate item), and "How confident are you that you can solve _____ - 11 = 3?" (Specific items).

Analysis

The latent structures and the order of potency of the four sources of self-efficacy information were evaluated using the methods of (CFA) and SEM respectively with the statistical programs Lisrel V8.30 and SPSS (Statistical Program for the Social Science) V8.00. The confirmatory factor analyses were performed with all measurement errors specified as uncorrelated, and using covariance matrices, maximum likelihood solutions, and listwise deletion methods. The preference for the use of covariance matrices and not correlation matrices is based on the latter having potential problems, such as producing incorrect goodness-of-fit indices and standard errors (Joreskog & Sorbom, 1989).

In its basis form, CFA differs from other exploratory factor analyses (EFA) as it posits the premise that observable variables are imperfect indicators of certain latent constructs (Mueller, 1996). The CFA approach to multivariate data analysis specifies the researcher to theorise an underlying structure and then assess whether the observed data 'fit' this a priori specified model. By contrast exploratory factor analysis, principal component analysis, and other variable reduction techniques let a particular set of data dictate, identify, or discover underlying dimensions. The assessment of the overall fits of the different confirmatory and structural models proposed were assessed with the chi-square goodness-of-fit test (Joreskog & Sorbom, 1984), the ratio of chi-square to the degrees of freedom test, and the various fit indices (e.g., CFI, NNFI). According to Lent *et al.* (1997), a chi-square statistic that is significant may suggest that the proposed model does not adequately fit the observed data, whereas a non-significant chi-square suggests adequacy to a model. However, this index is sensitive to sample size and violations of the assumption of multivariate normality and thus, alternative fit indices have been recommended (Bentler, 1983).

One alternative index includes the ratio of the chi-square to the degrees of freedom (Tabachnick & Fidell, 1996). Taking the ratio as one form indicator of a fit of a model, a ratio less than 2.0 is generally considered as indicative of an excellent model fit. Alternatively, another index includes the goodness-of-fit indices (e.g., CFI, NNFI). When sample size is small, CFI is more advantageous than other indices (e.g. NNFI) in estimating the fit of a proposed model (Bentler, 1990). For

example, the Nonnormed fit indice (NNFI), which is mathematically equivalent to the Tucker and Lewis' (1973) index, compares the fit of a proposed model to a null base-lined reference model that assumes no influences among the variables, and appears to be relatively independent of sample size when maximum likelihood estimations are used (Lent, Lopez, Brown, & Gore, 1996). In contrast, the Comparative fit indice (CFI) has the advantage over the NNFI in estimating fit in relatively small samples (as was the case in this study) when it is performed using maximum likelihood methods (Bentler, 1990). The CFI indexes the relative change in model fit as estimated by the noncentral chi-square of a target model versus the independence model (Lent *et al.*, 1997). Unlike the NNFI, the CFI does not underestimate the fit of well-specified models where small samples are used. For these reasons, it was considered that the CFI would be the primary index in this study.

Results

Preliminary Analysis

The preliminary analyses in the present study included a reliability test for the two instruments administered. The reliability estimates for the FSSEI-M were .81 (performance accomplishment), .66 (vicarious experiences), .69 (verbal persuasion), and .84 (physiological states). For the SEI-M, the reliability estimate was .94.

Different Levels of Specificity

Accordingly, based on the theory of CFA, guidelines are used to determine the status of a well-fitted model. The principal indices (e.g., CFI) use to determine a specified model have values ranging from 0 (reflecting poor fit) to 1 (indicating perfect fit)(Bentler, 1990). Researchers have recommended a value of greater than .90 as representing a good fit model (Bollen, 1989; Bong, 1997, 1999; Mueller, 1996). The Root Mean Square Error Approximation (RMSEA) is often used as it is relatively insensitive to sample size. According to Steiger (1989) and others, RMSEA values below .10 are considered as 'good' and below .05 as 'very good'. For the X^2/df , values taken as less than 2.0 is usually indicative of a well-fitted model. This recommended value (2.0), however, is not absolute as other researchers have suggested ratios as high as 3.0, 4.0, or 5.0 are also representative of a good model fit (Bollen, 1989; Marsh, Balla, & McDonald, 1988; Mueller, 1996). For measured variables loading onto their respective latent factors, t -values > 1.96 are generally considered as statistically significant, and t -values < 1.96 are considered as non-significant (Loehlin, 1998).

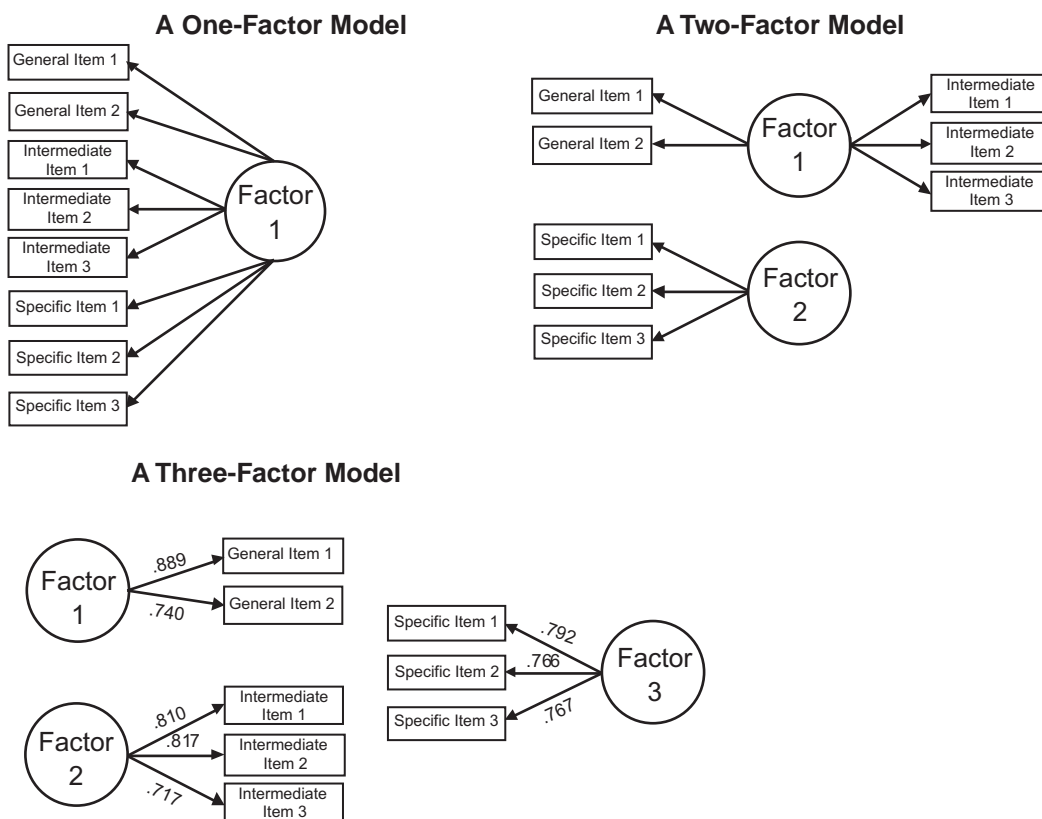
Initial CFA performed for the one-factor model, wherein all items were specified onto a single-factor, indicated a weak fit to the data for mathematics (CFI=.737, GFI=.785, NNFI=.632, and $X^2/df=266.308/20=13.315$). The two-factor model, wherein items from the global and intermediate scales loaded onto factor 1, and items from the specific scale loaded onto factor 2, showed an increase in model fit (CFI=.987,

GFI=.970, NNFI=.981, and $X^2/df = 31.057/19 = 1.635$). Progressing onto the three-factor model, the various fit indices indicated a well-fitted model. Here items from the three scales (global, intermediate, specific) loaded onto three separate factors, factor 1 through to 3, respectively. For the three-factor model, the fit indices indicated CFI(=.992), GFI(=.975), NNFI(=.986), and $X^2/df (=24.812/17 = 1.460)$. Based on the procedures wherein direct tests of chi-square differences between nested models can be made (Hoyle & Panter, 1995), the chi-square difference indicated $<X^2(= 241.496, p<.05)$ between model 1 and 3, and $<X^2(= 6.245, p<.05)$ between model 2 and 3;

Based on the incremental fit indexes of CFI and GFI, as well as the chi-square differences between the nested models, the findings showed that mathematics self-efficacy were differential from one level of domain specificity (e.g., global

domain) to another (e.g., specific domain). The findings for the various fit indices for mathematics for the three proposed models are shown in Table 1. The three first-factor models proposed with their significant loadings are illustrated in Figure 1. For model 3, all loadings from the self-efficacy items for the three scales (global, intermediate, specific) to their respective factors (factor 1, 2, 3) are significant, $p<.05$. Loadings from the self-efficacy items for the three scales for model 1 and 2 are not shown as both models failed to fit adequately to the observed data. In sum the results of the confirmatory factor analyses revealed that of the three proposed models, the three-factor model (Model 3) provided the best fitting model for mathematics self-efficacy. Importantly, the findings indicate that self-efficacy is differential on three levels of domain specificity.

Figure 1: Three Models representing the Generality of Self-Efficacy: A One, Two, Three-Factor Model



Note: Factor 1 = General Self-efficacy, 2 = Intermediate Self-efficacy, 3 = Specific Self-efficacy. All Paths are significant, $p < .05$.

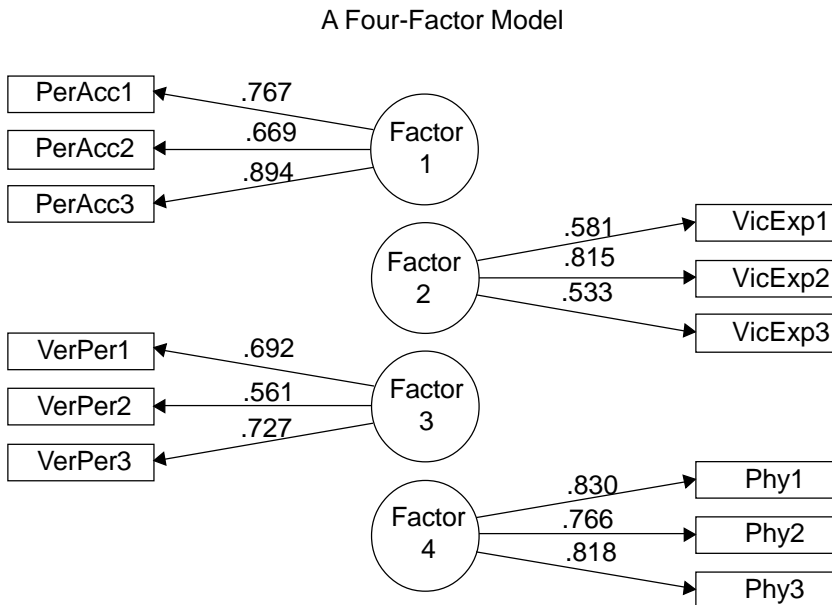
Four first-factor models were performed for mathematics self-efficacy sources. The findings are presented in Table (2). From Table (2), the findings indicated a progressively increase in model fit from a one-factor model through to a four-factor model. In this analysis, from Table 2, initial CFA performed for the one-factor model indicated a weak fit to the data. For the proposed two and three-factor models performed, the chi-squares and the goodness-of-fit indices (CFI, GFI, NNFI) improved the fit slightly but still failed to fit the data adequately.

Finally, for the four-factor model, the findings reflected a well-fitted model representation for the four self-efficacy information sources. For the four-factor model, the findings reported the fit indices of GFI(=.897), CFI(=.901), NNFI(=.863), RMSEA(=.0809), and X^2/df ratio(= 97.476/48 = 2.031). Direct tests of chi-square differences between nested models indicated $<X^2(= 256.500, p<.05)$ between model 1 and 4, $<X^2(=199.020, p<.05)$ between model 2 and 4, $<X^2(= 57.704, p<.05)$ between model 3 and 4.

In sum, from the findings reported in Table (2), the indication is that the four sources of information are distinct as theorised (Bandura, 1986) for mathematics. All twelfth measured variables loaded significantly onto the four latent

factors (See Figure 2). Figure 2 presents the four self-efficacy sources as four separate first-order factors: Factor 1 reflects performance

Figure 2: A Four-Factor Model for the Four Sources of Self-Efficacy Information



Note: Peracc=performance accomplishment, Vicexp=vicarious experiences, Verper=verbal persuasion, Phy=physiological states. All path coefficients are significant, $p < .05$.

The Latent Structure of Mathematics Self-Efficacy Sources

Table 2 indicated the four self-efficacy sources are distinct as four separate factors, phi matrix in the completely standardised solutions revealed significant intercorrelations between three of the four factors (See Table 3). From Table 3, Factor 1 correlated with Factor 3 ($r = .321, p < .05$), and Factor 4 ($r = -.242, p < .05$); Factor 2 correlated with Factor 3 ($r = .557, p < .05$).

Table 1: Fit Indices for 3 Models of Global, Intermediate, and Specific Self-Efficacy

Model	X ²	df	GFI	NNFI	CFI	<X ²
One-Factor	266.308	20	.785	0.632	0.737	241.496*
Two-Factor	31.057	19	.970	0.981	0.987	6.245*
Three-Factor	24.812	17	.975	0.986	0.992	—

Note: N= 241; * = $p < .05$.

Table 2: Fit Indices for Three Models of Self-Efficacy Information

Model	X ²	df	GFI	NNFI	CFI	<X ²
One-Factor	353.975	54	.667	.264	.398	256.500*
Two-Factor	296.496	53	.719	.391	.511	199.020*
Three-Factor	155.180	51	.830	.729	.791	57.704*
Four-Factor	97.476	48	.897	.863	.901	—
Three 2 nd -Order	43.196	24	.929	.906	.938	—

Table 3: Factor Intercorrelations for the Four-factor Model

	1	2	3	4
1. Performance Accomplishment	—	.		
2. Vicarious Experiences	0.19	—		
3. Verbal Persuasion	.321*	.557*	—	
4. Physiological States	-.242*	-0.01	-0.06	—

Note: Subscripts * are significant, $p < .05$.

Similar to the findings in the Lent, Lopez *et al.* (1996) study, this finding is somewhat puzzling—the fact that the four-factor model achieved a better fit than the one, two, or three-factor model proposed, yet substantial correlations were found among three of the four factors. This led to the examination of a possible higher order structure. The higher order model specified resulted in the three primary latent factors representing performance accomplishment, vicarious experiences, and verbal persuasion—Factor 1 (performance accomplishment), Factor 2 (vicarious experiences), and Factor 3 (verbal persuasion), loading on a higher order latent factor representing personal experiences for mathematics. The findings indicated that the hierarchical factor model proposed for three of the four sources was plausible GFI(=.929), CFI(=.938), NNFI(=.906), RMSEA(=.0804), and X²/df ratio(= 43.196/24 = 1.80). The hierarchical model is shown in Figure 3.

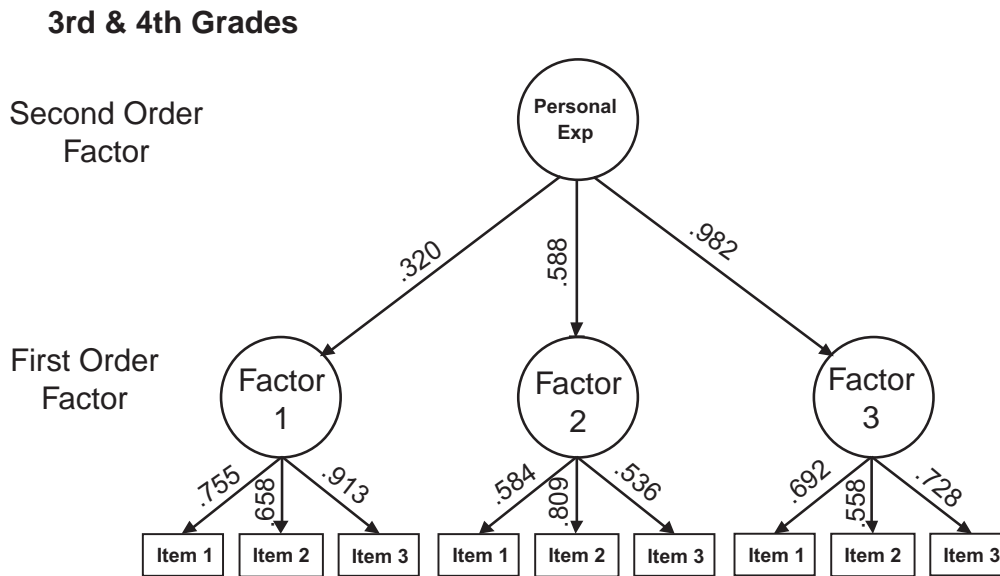
The Order of Potency of the Four Sources

The order of potency of the four sources of mathematics self-efficacy information was analysed using SEM. In prior studies, the order of potency of the sources has been examined using multiple regression analyses (e.g., Hampton, 1998; Lent *et al.*, 1991; Lopez & Lent, 1992; Matsui *et al.*, 1990). Though regression analysis is an appropriate method in explaining

significant increments made in self-efficacy, it does, however, have various limitations, for example, the assumption that errors are negligible, and that no decomposition of correlations can take place (Mueller, 1996; Tabachnick & Fidell, 1996).

The assumption made in the present study was that by clarifying the order of potency of the four sources of self-mathematics self-efficacy.

Figure 3: A Second-Order Factor Model



Note: Personal Exp=personal experiences, Factor 1=performance accomplishment, Factor 2=vicarious experiences, Factor 3=verbal persuasion. All paths are significant, $p < .05$.

Structural equation modeling is judged by researchers to be more advantageous compared to other statistical methods as it allows the researcher to specify different structural models using both latent and observed variables. The theory of SEM is complex and is beyond the scope of this paper in consideration, thus readers are advised to consult elsewhere for further understanding (e.g., consult Mueller, 1996; Tabachnick & Fidell, 1996).

In SEM analysis, the technique of item parcels, averaging a large pool of items to form composite scores of latent variables, is often used (e.g. Bong, 1997; Lent *et al.*, 1996, 1997; Marsh, 1990; Marsh and Yeung, 1997). According to Vispoel (1995), the advantage of utilising item clusters rather than individual items refers to the fact that this a) creates a high ratio between the number of participants and the number of variables, b) creates more reliable indexes of each construct, and c) reduces the effects of idiosyncrasies in the wordings of individual items (Vispoel, p. 137). The small sample size in this study further emphasised the need to use item parcels.

The parsimonious a priori structural model proposed posited a specific structure in which: a) each indicator has a non-zero factor loading on the factor that it was hypothesised to measure, and b) correlations among factors were freely estimated. In the subsequent SEM analyses, all measurement errors were specified as uncorrelated, and the covariance matrices, maximum likelihood solutions, and listwise deletion methods were used.

For mathematics, the structural a priori model yielded the fit indices of GFI (= .872), CFI (= .902), RMSEA (= .074), and X^2/df ratio (= $147.667/80 = 1.846$). The direct effects of the four sources of self-efficacy information indicated performance accomplishment and physiological states, but not vicarious experiences or verbal persuasion, were predictive of mathematics self-efficacy (Standardised coefficients: .489, -.191 respectively, $p < .05$).

Discussion of Findings

The objectives of the present research study were to explore: a) the discriminant of different levels of mathematics self-efficacy specificity was examined, b) the latent structure of the four sources of information, c) the order of potency of the four sources. Regarding the varying levels of domain specificity, the confirmatory factor analytic findings confirm that self-efficacy percepts, assessed at varying levels of domain specificity, are distinguishable empirically from one another. Similar to the findings in the Lent *et al.* (1997) study, wherein a five-factor was significant in representing good model fit, the three-factor model proposed in this study offered good model fit to the data, indicating the various self-efficacy facets are unique latent dimensions. Fundamental to this study was the use of three subscales of self-efficacy measures-Global, intermediate, and specific

scales. The three levels of domain specificity, global, intermediate, and specific, loaded distinctively and significantly onto factor 1, 2, and 3 respectively

The educational implications arising from the present study suggest that one's self-efficacy can be assessed at different levels of specificity, for example, "I can learn mathematics" versus "I can learn addition/subtraction", and "I can solve _____ - 11 = 3". Important though, is the suggestion to educators that they should take note of this fact and question whether it is advantageous or confounding to use composite scores of different subscales or a single scale. Bandura (1997) recently has suggested that multiple facets of self-efficacy (e.g., self-regulatory efficacy, coping efficacy, academic milestone efficacy) may assist in predicting criteria that are multifaceted in their requirements. Primary school mathematics may represent one example wherein successful performance may depend more than just specific self-efficacy regarding specific skills (e.g., solve arithmetic problems), and that broader self-efficacy percepts related to one's capabilities as a student may be required.

Similarly, Pajares and Miller (1995) have suggested that sometimes it makes no sense to use detailed self-efficacy measures, comprising of different subscales, to assess performance outcomes when it would be more productive to use simpler measures. As emphasised (e.g., Lent & Hackett, 1987; Lent *et al.*, 1997; Multon *et al.*, 1991; Pajares & Miller, 1995), assessments of self-efficacy should not reflect generalised or unrelated attitudes of capabilities, but be specifically tailored to the criteria task being assessed and the domain of functioning being analysed. Educators should take note then that with primary school students, the use of multiple facets of self-efficacy may be more appropriate in predicting criteria that are multifaceted in their performance. Thus, examples of self-efficacy include, "I can learn mathematics", "I can participate well in mathematics activities", "I can do tasks that involve addition", may be more appropriate than using domain specific items.

Though it was not included in the present study, it is imperative that the relation between assessment of self-efficacy beliefs and performance outcome be emphasised. The fact that self-efficacy beliefs are empirically distinguishable from one level of specificity to another, it is up to educators then to decide whether it is more appropriate to employ composite scores of self-efficacy subscales, that of a global measure of capabilities, or a more specific measure of capabilities in assessing specific problem performance outcome. One important recognition to make is that primary schools often do not engage in quizzes, tests, or end of term or year examinations for that matter. Instead one form of assessment that is often employed in primary schools in Australia is the use of accumulative assessment scores over a one-term, half-a-year, or a one-year period. This overall accumulative assessment mark may comprise of marks for in and out of class activities, self and group presentation, or take-home assignments. Returning to the question of levels of self-efficacy assessment, one should then decide the *appropriate* level of specificity of self-efficacy (i.e., global, intermediate, specific) that would best tailor to the needs of students.

Though the findings in this study add further to the fields of self-efficacy, one should keep in mind that there are several

methodological caveats that are worth consideration. As Lent *et al.* (1997) suggest, one potential useful direction would be to design and test multivariate causal models that incorporate different facets of self-efficacy. It might be posited that students' academic self-efficacy beliefs, similar to self-concept (Marsh, 1990; Marsh & Shavelson, 1985), are organised hierarchically such that, over time, students develop differentiated beliefs regarding their capabilities in larger academic domains (e.g., mathematics), as well as in more specific subtopics (e.g., addition), skills, and situations. As Bandura (1997) suggests, students' performance, in addition to being influenced by domain-specific self-efficacy beliefs, may also be affected by multiple aspects of self-efficacy (e.g., regarding study, time management, and anxiety-coping skills) that extend beyond subject matter expertise per se.

According to Bandura (1986, 1997), self-efficacy beliefs are developed and modified from four principal sources of information: performance accomplishment (an indicator of capability), vicarious experiences (competencies and informative comparison with the attainments of others), verbal persuasion (verbal feedback from teachers and adults), and finally physiological and affective states (capableness, strength, and vulnerability to dysfunction). Intervention research is needed to examine whether one facet of self-efficacy (e.g., global: perceived capabilities to learn mathematics) versus another facet (e.g., specific-perceived capabilities to perform 'addition') differs in their development from the four sources of information. Over time, students developing differentiated beliefs regarding their capabilities in larger academic domains as well as in more specific subtopics, skills, and situations may depend differently on their use of information sources. For example, as a proposition, when developing a global sense of capabilities, students may acquire more from performance experiences than any other information sources. Similarly, developing a specific sense of capabilities may require students to depend more on vicarious learning, verbal persuasion, or physiological states, and not performance accomplishment.

Regarding the latent structure of the four sources, four first-factor models were proposed. For 3rd and 4th grade students, the four-factor confirmatory model provided the best model representation. The moderate intercorrelations among the first-order factors revealed three of the four sources-performance experiences, vicarious experiences, and verbal persuasion, loaded significantly onto a higher order factor-*Personal Experiences*. This finding, as that of the finding in the Lent, Lopez *et al.* (1996) study, emphasises the precedence between first and second-order factor models.

Regarding the latent structure of the four sources, the advantage of using the statistical method of CFA is that it allows researchers and educators to scrutinise closely the nature of the different variable sources. Though the different self-efficacy sources are discrete in their dimensions, they are, however, interrelated among themselves as first-factors, implying a more parsimonious model wherein there are fewer than four sources. Interpreting the findings in the present study, it seems that primary-school students depend interchangeably on their mastery experiences, vicarious learning, and verbal persuasion when acquiring and modifying their mathematics self-efficacy

beliefs. The three sources may occur naturally as children their skills. For example, one student may model himself (herself) to another student as a result, excel himself (herself) in mathematics. As a result of this performance, the student then receive positive praises, for example, "You're doing really well Tom!", from an adult or a teacher. On the other hand, a student who has no appropriate social model may impede his (her) learning, subsequently because of this poor performance receive less social and verbal recognition from an adult or a teacher.

Finally SEM was used to infer the order of potency of the four self-efficacy sources. From the findings, performance experiences and physiological states are seen as the main information sources in accounting for students' mathematics self-efficacy beliefs. Vicarious experiences and verbal persuasion did not affect students' mathematics self-efficacy beliefs. In this sense, comparing beta weightings across two of the four sources, the order of potency is confirmed (Bandura, 1986, 1997).

From an educational perspective, the findings in the present study in conjunction with the findings from the numerous studies under review emphasise the importance of individuals' performance experiences in mathematics self-efficacy appraisal. The fact that vicarious experiences and verbal persuasion did not account any significant variance in mathematics self-efficacy suggest then that educators and teachers should do more in emphasising these two information sources. Vicarious learning in terms of peer and adult modeling should be encouraged more in classrooms, for example, through verbal persuasion, one can suggest; "Look how Tom is doing, and follow his steps" or "See if you can this like Sarah".

Similarly, the notion of verbal persuasion is an important quest in classroom learning. Verbal expressions such as, for example, "David, you're doing really well!", "You're very good at this!", and "Sally, You're working very hard!" have shown to increase self-efficacy, persistence, and academic learning (Schunk, 1982, 1983a,b). Though this is a fact, it should be acknowledged, however, that students should be made aware of the purpose, meaning, and effectiveness of verbal persuasion. It can only be implied at this moment, until further research is shown, that students might have appraised verbal persuasion as a possible information source, but failed cognitively to understand its true meaning and effectiveness.

Researchers and educators should take note that though the present study was limited in terms of sample size, it was fundamental in terms of its usage of the statistical methods of CFA and SEM, and that the sample was of a different age group compared to other research studies. Importantly, the findings found help to establish different confirmatory, hierarchical, and structural models that can be further explored in future research studies. Having stated this, there are several methodological caveats and directions for future research that are worth consideration.

First, replication of the current findings should be made to other subject disciplines (e.g. Music, Social, and Sports self-efficacy). This would provide a wider and in-depth perspective regarding the latent structures of the four information sources. One limitation acknowledges in the present study is the age of the sample used. With a research study where young children are involved, the factor of fatigue and boredom must be taken

into account. As was the case in the present study, where more than one instrument was administered, consideration was made to make the instruments short and precise for 3rd and 4th grade students. As a result, the instruments administered in this study do not lend themselves to reflect fully all aspects of the four sources. For example, the vicarious scale only reflected the aspect of peer learning and not adult learning. Research studies in future should have more refined measurements, for example, structured multiple-choice questionnaires reflecting adult vicarious learning ("My parents are good in mathematics"), qualitative interview, reflecting the questions of how children acquire and modify their self-efficacy beliefs. In a recent study, Lent, Brown, Gover, and Sukhvender (1996) used the technique of Thought-Listing Analysis to cognitively analyse and assess the four mathematics sources of self-efficacy information. This cognitive method may help to illuminate how students process efficacy-relevant information and arrive at efficacy estimates under more natural conditions (Lent *et al.*, 1996).

Second, a full structural equation model may extend further to include the dimensionality of the four efficacy information sources, their influence on individuals' self-efficacy beliefs, and subsequent academic achievement outcomes. This would provide an in-depth perspective of the contribution of the four information sources in affecting subsequent academic performance (e.g., English, mathematics), mediated by self-efficacy.

Third, the latent structures of the four sources of self-efficacy information should be examined longitudinally. Though CFA is a powerful statistical technique and is robust enough to handle cross-sectional data, it is important to examine the latent structures of the four sources from a developmental perspective. One aspect refers to how the four sources of information operate over the course of time to provide convergent information concerning one's self-efficacy beliefs. For example, it maybe that in the early stage of development students rely more heavily on performance-based experiences in acquiring and modifying their self-efficacy. As time progresses, students may be exposed to other information sources, for example, vicarious learning and verbal persuasion from teachers and adults, in their self-efficacy appraisal.

Finally, as mentioned previously, the confirmatory and structural models proposed in the present study should be replicated with a larger sample size of students. Though the statistical method of SEM is a powerful method in handling cross-sectional data, one should be cautioned that an appropriate sample size is required when performing SEM. Too few participants per parameter may result in inconclusive results, for example, a decrease in predictive and explanatory powers (Tabachnick & Fidell, 1996). Recently with the increase of usage of CFA and SEM, many researchers have recommended the appropriate number of participants required per parameter included in a proposed model to conduct a proper SEM; for example, Byrne (1996) and Mueller (1996) have suggested that 5 to 10 participants per parameter should be used.

Perhaps the comment to make then from the findings in the present study is that the lack of predictiveness from the four information sources to mathematics self-efficacy might have been the result of the small sample size used. Though many

researchers (e.g., Bollen, 1989; Bong, 1997, 1999; Mueller, 1996) have recommended the optimal value of greater than .90 for the various fit indices (e.g., CFI, GFI, NNFI) as a determinant of a good model fit, one should, however, seek to achieve a value that is as close to 1.00 as possible. For example, in the recent study, Lent, Lopez *et al.* (1996) obtained fit values that were close to 1 for the four-factor model (CFI = .989, GFI = .992) and for the second-factor model (CFI = .982, GFI = .977) with high school students. In this sense, future research studies should use the confirmatory and structural models established in the present study to extend and make further improvement.

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Self and Adaptation: Defining the Healthy Self

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A literature review was undertaken to clarify the nature of the self and its functions, with the specific intent of defining a healthy self. To accomplish this task, literature from a variety of theoretical perspectives including philosophy, psychoanalysis, analytic psychology, humanistic psychology, social cognitive theory, social information processing theory, psychopharmacology, psychophysiology, and academic psychology was reviewed. Based on the results of this process, a model of psycho-adaptation was proposed, along with a list of characteristics representing a healthy self. To facilitate research on self-health, the Healthy Self-Survey (HSS) was constructed. Preliminary analysis of the construct validity of the HSS is underway. Implications for mental and physical health are discussed, and alternative research methodologies for the assessment of self-processes are proposed.

This paper is the product of a long process that began with a reading of Herman Hesse's classic novel about self-discovery, *Narcissus and Goldmund*, in 1982, and continues today as I harvest the theoretical and research knowledge sown through countless hours of careful study. I have long been interested in why some achieve happiness, regardless of environmental circumstances, while others suffer dearly at the hands of powerful psychological forces, like anxiety and depression, even in the midst of apparent tranquility, and how such forces prevent the realization of dreams. In this paper, I present my first efforts at answering such questions, focusing on the central concept of the self and its processes. Yet unlike Hesse and other writers, philosophers, and some clinicians tackling this evasive concept, I attempt to ground the lofty notions encountered in much literature on the self, operationalizing esoteric terms like "oceanic feeling," "real self," and "transcendent function" where possible. While these expressions evoke profound emotional responses in many, they are difficult to study scientifically. Therefore, my goal in writing this paper is to synthesize a definition of self-health, based on the literature, and generate a useful survey for research purposes.

The concept of self-health is not new. It would be unethical to pretend I have discovered something so fundamental. Every person on earth, regardless of education, has likely wished for psychological wellbeing at some point, and has probably generated a definition of a healthy self, suitable for their purposes; I do not claim to know more than these people. However, I have read the literature and prepared a list of characteristics, extracted from those proposed by a selection of writers in clinical and research psychology as indicative of a healthy self. I then operationalized these characteristics and generated a set of 60 items to form a survey I call the Healthy Self Survey (HSS). In this article I describe the theory and research that lead to the HSS, provide a definition of self and its functions, and discuss potential physiologic correlates of healthy self-functioning, in the context of a model I refer to as psycho-adaptation. It is my hope that this paper can generate interest in novel methodologies to further knowledge of self-processes.

Self: Some Basic Questions

The self is a natural concept. It is the product of aggressive competition with others for the control of scarce resources (Cooley, 1902/1983). The self is a concept because it is a cognitive construction with shared meaning among members of a given culture (Wood & Wood, 1999). Everyone knows what it is: myself, yourself, and ourselves, are just some of the personal pronouns used to communicate self. Yet no two individuals share exactly the same conception, as self is a product of one's unique life circumstances. Self is a natural concept precisely because it is understood through experience struggling for control of valued resources (e.g., a toy or mother's love during childhood, or a colleague's praise as an adult). Just as a child learns the concepts "bird," "car," and "squirrel" interacting with the environment, the concept "self" is attained through social interaction. A struggle for possession of a favorite doll brings about cries of "it's mine!" and "I want to play with the doll now!" Therefore, self is a natural consequence of social existence, living in an unyielding environment where supply does not always equal demand. No one can exist socially without achieving self, as life without self in a world of selves would be sheer chaos.

The purpose of the self is to provide the beholder a sense of continuity, order, and determination. Yet because this powerful cognitive construction has no physical presence, it cannot be understood by common scientific means. Therefore, instead of atomic weights and moles of molecules, attempts to measure self are made by less reliable and valid methods like surveys and case studies, each of which engenders a considerable amount of subjectivity. While the products of our labors have provided psychology with tremendous advances into the enigmatic waters of the self, many questions remain unanswered, two of which are "what is its true nature" and "what are the characteristics of a healthy self?" I begin by defining the self, reviewing literature pertaining to its structure and functions.

The Structure of Self

William James (1892/1961), an American pragmatist philosopher, believed that the self is divided in two parts, the “I” and “Me” selves. He defined the “I” self as the “knower,” the sum total of our consciousness at a given time. According to James, the “I” self is responsible for one’s sense of self-continuity (e.g., being the same person upon waking in the morning as just prior to losing consciousness to sleep); it is the subject that observes the “Me” self. In contrast, James defined the “Me” self as that which is known about the self. The “Me” self is self-concept.

James believed that self-concept is composed of three hierarchically organized parts: the bodily self (i.e., material possessions including the body and its functions), social-self, and spiritual self. Of the social self, James wrote with characteristic eloquence, “We are not only gregarious animals, liking to be in sight of our fellows, but we have an innate propensity to get ourselves noticed, and noticed favorably, by our kind.” (p. 46) The spiritual self was defined as the entirety of one’s psychic capacities, states of consciousness, and dispositions. These three divisions, according to James, were organized such that the bodily self rests on the base with the spiritual self on top. In between he placed the non-bodily material self, and the social self.

James’s hierarchical organization is strikingly similar to Plato’s tripartite definition of the soul (Lavine, 1984). Plato proposed a soul in which the instinctual desires (e.g., hunger, thirst, and lust) rested at the base, and speech and reason at the summit, with spirited-soul (e.g., courage and ambition) in between. Like contemporary self-theorists, Plato believed the soul (I equate soul with self here) plays a unique role in the achievement of happiness and virtue (perhaps a forerunner to a definition of healthy self). Plato believed that in order to achieve happiness, one must balance the three dimensions of the soul, with reason in charge of desire, and spirit as its ally. Virtue, Plato believed, was achieved by a maximization of the relations amongst the three, and was reflected by temperance, courage, and wisdom. This definition foreshadows contemporary definitions of healthy ego functioning (see Loevinger, 1976).

Like James, George Herbert Meade (1934/1962) believed the self is divided into a subject and object. He believed that the unique quality of humanness is self-consciousness. While many animals are capable of receiving and perceiving sensations from their environments (i.e., consciousness), only humans (as far as we know) are capable of reflection upon their actions in such a way that they become the objects of their own observation (i.e., self-consciousness). In order to facilitate his explanation of the self, Meade (1934/1962) hypothesized a “generalized other.” By “generalized other,” Meade had in mind the incorporated attitudes of others that allow individuals to observe themselves as outsiders. Meade used the example of a baseball game to clarify his concept. In baseball, each team player must be aware of the roles of other team members. Therefore, in the situation in which a grounder is hit to the shortstop, the first baseman must be aware of the response required of the shortstop, and prepare to receive the

ball in turn. It is in this manner (i.e., through games and play), according to Meade, that individuals learn to function as members of a complex society by incorporating the attitudes of others, and learning to anticipate responses in coordinated action toward socially valued goals. The ability to anticipate responses of others is characteristic of empathy, a key feature of strong social relationships (Cotrell Jr., 1978). Success in one’s social roles is likely to impact self-esteem, and is a key factor in healthy self-functioning.

Albert Bandura views the self from a social-cognitive perspective. According to Bandura (1989), the unique capabilities that distinguish human beings from other animals go beyond self-consciousness. The distinguishing capabilities of humanness are forethought, self-reflection, symbolic representation, vicarious learning, and self-regulation. Self-concept is discussed under self-reflective capability, and for Bandura takes the form of situation specific self-confidence, or self-efficacy beliefs (Bandura, 1977, 1989, 1997). Self-efficacy is defined as the belief that one can perform a certain behavior to attain a specific outcome. (p. 193, Bandura, 1977) Self-efficacy is measured in magnitude (i.e., the difficulty of the event), generality (i.e., the ability of expectations to generalize to other events), and the strength of one’s expectation. According to Bandura, the most important sources of self-efficacy beliefs are performance accomplishment, vicarious experience, verbal persuasion, and emotional arousal, in that order. His research with phobic subjects has supported this hierarchy (see Bandura, 1977). Further, Bandura (1989) proposed that self-efficacy beliefs and other personal factors (both physical and psychological) interact with behavioral outcomes and environmental influences in a reciprocal fashion. It is the results of this reciprocal interaction that Bandura proposed influence the course of self-development. Thus, according to Bandura, self is dynamic, structured by its reciprocal interaction with behavior and the environment, with self-efficacy beliefs as its core.

Psychiatrist J. Masterson (1985) hypothesized several key dimensions of the self in his book, *Real Self*. According to Masterson, self-image, the first of these dimensions, is the image a person has of himself at a particular time or in a particular situation. Self-image includes both one’s body image and mental states. Self-representation, the second of Masterson’s dimensions, is defined as the representation an individual constructs of himself based on the totality of the self-images, distorted or accurate, he has had at different times, some of which he may not be consciously aware of. The super-ordinate self-organization, the third of Masterson’s dimensions of self, is the unifying principle that organizes experience into a cohesive self. It is the super-ordinate self-organization that allows for the continuity that is characteristic of the self. The total self then, from Masterson’s perspective, is the whole person, body and psychic organization. It is the being that is opposed to other persons and objects beyond the boundary of the self. Masterson’s definition is structural in that he proposed a hierarchical organization to self.

Academic researchers have also been interested in the structure of self. Beginning in the middle of the 1970s, and

particularly in the 1980s, researchers designed surveys to assess the structure of self, focusing on self-concept across different facets of experience, such as academic or physical, and the relation of these facets to more global dimensions like self-esteem. Susan Harter and her colleagues (e.g., Harter, 1982), focused on a self-concept as a taxonomy. In taxonomies, different self-concept facets are hypothesized to rest side by side as correlated constructs, with global self-worth as one such facet. While assessing constructs at different dimensions of the self, specific and general, these researchers did not test for the possibility of hierarchical factor structures. In contrast, other researchers (e.g., Marsh & Shavelson, 1985; Shavelson, Hubner, and Stanton, 1976) focused on self-concept as a hierarchy with more global facets (e.g., academic self-concept) representing the covariance among more specific facets (e.g., math self-concept and reading self-concept).

In these hierarchical structures, several levels have been proposed. First-order factors (representing correlated constructs on the first level) are those latent variables that are proposed to account for the covariance in measured variables (i.e., survey items), whereas second-order factors (representing more global constructs) are those latent variables proposed to represent the covariance among first-order factors. Although not as common, third-order factors (representing even more global constructs) are those latent variables proposed to represent the covariance among the second-order factors (Marsh, 1987). This hierarchical organization is consistent with that of Masterson, but differs from the structure proposed by James and Plato, the latter structures being qualitative in nature.

Another important contribution made by these researchers is the virtual limitlessness of specificity in self-concept facets. Today, surveys exist to assess self-conceptions as broad as self-esteem, and as specific as math and tennis self-concept. However, researchers disagree about the specificity of self-concept assessed by surveys. For instance, Harter (1998) questioned the utility of surveys that measure facets more specific than academic or athletic self-concept (e.g., math self-concept, endurance self-concept), feeling that such surveys would have little predictive utility. However, Marsh and his colleagues (see Marsh, 1990a, 1996; Marsh & Sutherland-Redmayne, 1994) have designed surveys measuring specific facets such as endurance and strength self-concept. Research findings associated with these and other surveys assessing specific facets of self-concept and their relation to behavior and self-esteem have supported the utility of instruments with specific facets.

Research findings are supportive of both a hierarchical and taxonomic view of self-concept structure. Harter and her colleagues developed a set of self-perception profiles for children, adolescents, college students, and adults to assess the proposed structure of self-concept (Harter, 1982; 1985; 1986; Neeman & Harter, 1986; Messer & Harter, 1986). They chose perceived competence as the dimension of self-concept to study. Employing exploratory factor analysis, Harter and colleagues found that self-concept is differentiated across several facets (e.g., athletic competence,

school competence) including global self-worth. They also found that the number of these facets increases with age. For instance, in exploring the construct validity of the Self-Perception Profile for Children, Harter (1985) identified a total of five self-concept factors in children (i.e., scholastic competence, social acceptance, athletic competence, physical appearance, and behavioral conduct). With the Self-Perception Profile for Adolescents (Harter, 1986), three more self-concept factors were identified (i.e., romantic appeal, job competence, and close friendship). However, as previously noted, Harter and her colleagues failed to assess self-concept as a hierarchically organized construct, placing self-esteem and finer self-conceptions on the same dimension.

Regarding self-concept as a hierarchical structure, researchers designed surveys and conducted factor analyses, both exploratory and confirmatory, to assess this hypothesis (e.g., Fox & Corbin, 1989; Marsh, 1990b; Marsh, Perry, Horsley, & Roche, 1995; Marsh, & Sutherland-Redmayne, 1994; McAuley & Gill, 1983; Rodriguez, 2000; Ryckman, Robbins, Thornton, & Cantrell, 1982; Shavelson et al., 1976). For instance, Marsh and Shavelson (1985) tested a revision of Shavelson and colleagues' (1976) model with a survey designed to assess self-concept across seven first-order facets (i.e., physical appearance, physical abilities, peer relations, parent relations, reading, mathematics, and school) in second to fifth grade children, and adolescents. They found that while a hierarchical factor structure fit their data well, the hierarchy was more complex than envisioned originally by Shavelson and his colleagues (1976), and that the hierarchy weakened with age. Instead of having one second-order academic factor representing the covariance among the first-order academic self-concept factors, as envisioned by Shavelson and colleagues (1976), the best fitting model had two second-order academic factors (i.e., mathematics and reading), and only one second-order non-academic factor representing the covariance in the non-academic factors. A model with one general self-concept factor fit the data least well.

The results of this research indicate that self-concept is as multifaceted as researchers are willing to assess with surveys. In other words, I could design surveys to assess facets as broad as academic self-concept, or as specific as bubble blowing self-concept. It also appears that the degree of differentiation of facets increases with age, related to an increase in life experience. However, as to the extent of facets, no one really knows, as it is easy to imagine a facet of self-concept for virtually any act, from the ability to blow bubbles to the ability to string a bow in archery.

It is also clear that self is hierarchically organized. However, the nature of the hierarchy is still under debate. Using statistical techniques, we can assign any name to a factor so long as it makes sense based on its indicators. What is clear, though, is that as the facets of self-concept increase, hierarchies become more complicated. As to who is right, Masterson, James, or Plato, regarding hierarchies, only research employing a diversity of methodologies can illuminate the answer. I turn now to the functions of the self.

The Functions of Self

In defining the self, Masterson differentiated between the self and the ego by calling the self "...the representational arm of the ego," and ego "...the executive arm of the self." (p. 22) The ego is that dimension of self assigned the task of carrying out self-functions. James (1892/1961) proposed that three functions are responsible for action relative to the self: general feelings about the self (including positive feelings like complacency and negative feelings like despair) and self-seeking and self-preservation instincts. For example, the self-seeking instincts (e.g., social self-seeking) impel individuals to seek verification from others, a major source of self-esteem.

Cooley (1902/1983) discussed the emotional nature of the self, and its development. According to Cooley, the self is identified in common speech by personal pronouns like "I," "me," "mine," and "myself." He believed people have an innate tendency to appropriate the material and non-material into the self. Cooley labeled this proclivity "self-feeling." It is this self-feeling that is hypothesized responsible in part for the genesis of self-conceptions, and is also thought responsible to a great degree for the regulation of human behavior.

Epstein (1973) introduced the notion of self-concept as self-theory, the vehicle by which people construe themselves and their experience. Epstein hypothesized three unique functions of the self-theory: The assimilation of experience, promotion of self-esteem, and maintenance of a positive pleasure/pain balance.

Regarding the maintenance of self-esteem, Harter and her colleagues (see Harter, 1998, for a review of their findings) have found significant relations between different facets of self-concept and global self-esteem across the life span. The two facets found as the most important correlates of self-esteem in their research are physical appearance, and social support, in that order. Harter and colleagues (see Harter, 1990a; 1998) reported the correlation between physical appearance and global self-worth ranges anywhere from .60 to .80, for subjects ranging in development from children to the adults. Other researchers have focused on the relations between specific self-concept facets (e.g., strength self-concept, endurance self-concept) and self-esteem (Fox & Corbin, 1989; Marsh, 1994; Marsh & Sonstroem, 1995; Sonstroem, Harlow, & Josephs, 1994). For instance, Fox and Corbin (1989) found endurance self-concept significantly correlated with self-esteem. Using Fox and Corbin's Physical Self Perception Profile, Marsh & Sonstroem (1995) found that the specific self-concept facets (e.g., sport competence and body attractiveness) significantly predicted self-esteem in a sample of adult female aerobic dancers. These findings clarify the importance of experience-based self-conceptions in the maintenance of self-esteem. Consistent with the function of maintaining a positive pleasure/pain balance, researchers have found that low self-esteem is associated with depression, negative affect, and suicidal ideation (Harter, 1990a, 1998; Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). We already discussed the assimilation of

experience in the previous section, as self-concept expands with age and experience (see also Harter, 1990b, for a review of literature on change in self-conceptions with age).

Similar to the work of Epstein (1973), Hazel Markus and her colleagues (e.g., Markus, 1977; Markus, Cross, & Wurf, 1990; Markus & Wurf, 1987) conceptualized self-concept as an experience-linked construction. However, instead of a theory, they hypothesized the self as an intricate set of mental schemata. According to Markus and her colleagues, self-schemata have several functions; they summarize sets of abilities, help form one's sense of identity, and direct behavior (Markus, 1977; Markus & Wurf, 1987; Markus, Cross, & Wurf, 1990). Self-schemata result from a repetition of life experience. For instance, believing oneself conscientious results from past experience reflective of this trait, like regularly being on time for important meetings.

One of Markus and colleagues' unique contributions to the theory of self is the notion of the working self-concept (Markus & Nurius, 1986; Markus & Wurf, 1987). The working self-concept represents that dimension of self-concept, with all its related content, that is functioning at a given time. This working self-concept is triggered by a specific set of internal or external cues related to its content. Within this working self-concept exist not only schemata related to one's past and present experience, but also schematic representations of future possibilities in the form of possible selves (Markus & Nurius, 1986). It is these possible selves (both negative and positive) that regulate behavior by predicting desirable and undesirable outcomes of one's actions. Further, it is the existence of these working self-conceptions that allow, according to Markus and her colleagues (e.g., Markus & Herzog, 1991), self-concept to remain dynamic across the life span. Therefore, like Epstein (1973), Markus and colleagues hypothesized the role of self-concept in the regulation of cognition and behavior.

The Characteristics of a Healthy Self

Clearly, based on the literature reviewed so far, the self is a cognitive construction that serves to make sense of one's experience through organization. Further, this self, best studied through one's conception of self (self-concept), increases in complexity with experience, whilst maintaining its relation to the core of one's being, Masterson's superordinate self. Other functions include the assimilation of experience, the maintenance of a positive pleasure-pain balance and self-esteem, and the regulation of behavior through the exercise of forethought (i.e., the generation of possible selves). That having been stated, what is the healthy self? I will now outline my synthesis of theoretical perspectives about this rather vague concept.

In Brammer, Abrego, and Shostrom's (1993) classic text on counseling and psychotherapy, a working model of the structure of personality is hypothesized. The emphasis of this model was placed on the realization of a self-actualized personality, a concept articulated by Maslow (1970). Maslow conducted a rather informal study of individuals he considered having attained the highest level of personality

function, self-actualization. Reviewing biographical data from important historical figures, and interviewing selected subjects, he proposed the following characteristics of actualized people.

- ◆ Acceptance of themselves, others, and human nature
- ◆ Spontaneity (not merely unconventionality to be different)
- ◆ Problem centering – strongly focused on problems outside of themselves
- ◆ The need for privacy, and the ability to feel comfortable alone. In fact, according to Maslow, they often prefer to be alone.
- ◆ An autonomous self, independent of culture and the environment
- ◆ A continued freshness in appreciation of even the most common event, like a sunset
- ◆ Capable of experiencing “The Oceanic Experience,” a feeling of oneness with nature
- ◆ A genuine feeling of empathy and sympathy for their fellow human beings, regardless of their frailties of mind and body
- ◆ Actualized people have deeper interpersonal relationships than do other people. However, Maslow also noted that they are very selective of their friends, and they tend to have friends who are close to achieving actualization as well.
- ◆ They are very democratic in their relationships with others, ignoring such superficialities as race, gender, or SES
- ◆ They have a strong sense of morality, although not in the conventional sense.
- ◆ They clearly distinguish means from ends, focusing more on the latter than the former. However, they can appreciate the process as much as the end product.
- ◆ They have a philosophical/non-hostile sense of humor
- ◆ They are creative people
- ◆ They resist enculturation, but do not stand out for the sake of being different. In fact, according to Maslow, they are not bothered by being perceived as “one of the crowd,” it is only when there is a clear reason that violates their principles that they set themselves aside from others to defend their beliefs.

Returning to Brammer and colleagues’ (1993) actualizing model, personality was defined as a dynamic interaction among five distinct but hierarchically organized levels in service of actualizing behavior. These levels are, in order from outside inward: façade, actualizing, manipulative, character, and core. The façade level is the exterior an individual presents to others; it is the mask one wears in public. The façade level acts to protect one’s more vulnerable core-self from threat. In research conducted by Harter (1990b) to assess adolescent self-concept formation, participants identified the façade as a characteristic of the false self; a mask one wears to protect the real self from rejection. According to Brammer and his colleagues (1993), the façade level functions in service of the second outermost. The manipulative level functions to protect the person, manipulate others, and gain control of the environment. Manipulative acts serve to protect the self from experiencing

the ambivalent emotions characteristic of the self in relation to others. For instance, it is not uncommon for a person to love a good friend while hating him for some seemingly insensitive act, like forgetting her birthday. In allegiance with the façade level, the manipulative level seeks to control others so as to protect the vulnerable core self from the source of such ambivalent feelings, and the realization that others do not always see the world as we would like them to. Returning to the example of the angry friend, she may retaliate in a passive-aggressive fashion until her companion realizes something is wrong, and propitiates her. This course of action is easier, and certainly less painful, than the realizing that she is not as important to others as she once believed, and perhaps more importantly, if she wants someone to acknowledge her birthday, she has to let them know that it’s around the corner.

The character level is defined as a stylized pattern of behavior, or a unified system of habits (in William James’s vernacular), that function to achieve the specific aim of maintaining critical interpersonal relationships. Brammer and colleagues (1993) hypothesized that one function of the character level is to provide definition to the self. Because of the interaction of this function with that of stylizing behavior in service of interpersonal harmony, the character level is frequently misinterpreted as the real self. A good example of such misinterpretation is found in the clinical account of William C. (Coopersmith, 1997). According to Coopersmith, William C. believed that the effeminate, “big-teated,” boy he was in the presence of his family, is his real self. William C. was ashamed of that self. However, according to Coopersmith, that self was actually a defensive false self that served to protect William C. from experiencing his true self, which if exposed, could be rejected. Coopersmith proposed that the defensive false self arose from William C’s perceived need to please the father. It was only by conforming to his father’s conditions of worth (employing Rogerian terminology) did William C. believe he could achieve happiness. Therefore, by real self, Brammer and colleagues were referring to one level of the individual’s false self that emerges in the developmental process as the child, in need of parental protection and affection, attempts to maintain a loving relationship with his parents, what Bowlby (1988) referred to as secure attachment. Therefore, according to psychodynamic theorists, a child’s behavior is stylized in an attempt to meet the conditions of worth placed upon him by his parents.

At the center of Brammer and colleagues’ model is the core self. The core self is the point of intersection for all polar emotions. Some of these emotions are present at birth, such as the drive to reproduce and, perhaps, the drive to affect one’s environment (Cooley, 1902/1983; Harter, 1978; White, 1959). Others are learned variations on these and other innate dispositions (e.g., the drive for academic excellence or athletic success). Finally, there is the actualizing level. Although Brammer and colleagues (1993) place the actualizing level adjacent to the façade level, it is presented last here, as it is the goal of healthy self-development. The primary function of the actualizing level is to experience the self and others with clarity, absent of the paratactic baggage of the past. The actualizing level is similar to the psychoanalytic ego, in that

it acts as a filter of internal and external stimuli. It organizes experience to fit with one's past experience. This is a function similar to that attributed to the self by Epstein (1973). Recall that Epstein hypothesized that one of the functions of the self-theory is the assimilation of experience. The actualizing level also acts as an integrating force in that it attempts to rationalize conflicting feelings. According to Brammer and colleagues, when the actualizing level performs these functions, the individual is believed to possess a "strong actualizing system." Further, this person perceives "events as accurately as possible with his or her unique experience background. The person is aware of a feeling of competence to master both internal and external pressures and to reconcile polarities. The person is also aware of a feeling of value and individuality, which is the goal of the actualizing process." (p. 70) Two additional functions of the actualizing level are action and the expression of feelings. Actualizing behaviors are expressed in interpersonal relationships, and feelings put in service of actualizing goals.

Brammer and colleagues' (1993) actualizing model of personality is a hierarchical organization designed to defend the core self (i.e., one's true humanness) while at the same time providing for adaptation through the appropriate expression of feeling and the regulation of behavior. I would like to return briefly to the issue of the defensive false self, the character level in Brammer and colleagues' model. The defensive false self is hypothesized to result from a lack of unconditional support from parents and other relevant figures (including peers) during childhood (Rogers, 1961). Recently, in a study of the correlates of false self behavior in adolescents, Harter and her colleagues (Harter, Marold, Whitesell, & Cobbs, 1996) found support for the importance of conditions of worth, or quality of support in their vernacular, in relation to false self behavior. They found that the best fitting model to their data had perceived quality and level of parental/peer support predicting hope about future parental/peer support, which in turn predicted false self behavior. More specifically, adolescents believing support from significant others is conditional, and for whom little hope of future support was expected, reported engaging in the most false self behaviors. Further, consistent with the findings reported earlier (Harter, 1990b), adolescents reported enacting false self behaviors for several reasons. They enact false self behaviors to protect the true self from rejection (Harter et al., 1996, call this motive "devaluation of self"), to experiment with different roles, and to please or impress others. Interestingly, Harter and her colleagues also found that those expressing the self-devaluation motive were the most likely to express false self behaviors, had the least knowledge of their true selves, and had the poorest psychological adjustment (depression). Adolescents scoring highest on these three dimensions were those expressing false selves for role experimentation purposes, followed by those motivated to please or impress others. Therefore, it is clear from these findings that false self behaviors can result from the belief in conditional regard from significant others, and belief in little hope for support in the future. Further, regular expression of false self can lead to psychological

maladjustment.

The clinical literature supports the maintenance of a defensive false self in order to protect the core self from exposure. However, the focus is directed more at early parent/infant interactions (Bowlby, 1988; Winnicott, 1965). According to Winnicott, false self results from poor mothering. Winnicott defined "good enough mothering" as meeting an infant's needs in a timely fashion, an idea also articulated by Erikson (1968) in his stages of ego development (see also Loevinger, 1976). Winnicott believed that it is impossible to separate the mother from the infant in the earliest period of infancy. However, as the infant ages, the mother or primary caregiver must adjust her parenting style to her child's burgeoning autonomy needs. Consistent with Brammer and colleagues (1993), Harter and colleagues (1990b, 1996) and Coopersmith (1997), Winnicott (1965) defined the false self as follows.

1. The false self sets up as the real self; others tend to perceive it as the real self. However, it begins to fail in complex interpersonal relationships.
2. The false self exists to protect the true self. The true self is acknowledged as potential and allowed a secret existence
3. The false self has as its main concern the search for conditions appropriate for the revelation of the true self. If it fails, it organizes new defenses. If all else fails, suicide is the ultimate yet paradoxical defense¹
4. The false self is built on identifications (conditions of worth in Rogers's vernacular)
5. In healthy individuals, the false self is an integral part of self-adaptation, allowing for appropriate self-expression alone. (pp. 142-143)

While some degree of false self is healthy in all individuals, there are certain cases in which false self is reality, as with the borderline or the narcissistic personality. Individuals suffering from borderline personality disorder are characterized by disturbance of mood, poor interpersonal relationships, and uncertainty in self-definition (Kendall & Hammen, 1995). Masterson (1985) described the borderline personality as follows. "In the borderline personality disorder, all capacities of the real self are impaired to some degree: to spontaneously activate the self with supportive self-assertion, to acknowledge self-worth and self activation and mastery, to feel self-entitlement, to be able to soothe intense affects, to identify the self's unique individuated wishes and activate them in reality, to make and pursue a commitment, and to be creative." (p. 31)

Narcissism is characterized by feelings of grandiosity and entitlement to special treatment by others (Kendall & Hammen, 1995). The narcissistic individual can easily mislead others, with his boundless energy (reminiscent of the manic/depressive in the manic phase) into believing that he is in fact healthy. However, as soon as reality challenges

¹ according to Yegdich (1998), this is a potential reason for the incidence of suicide and self-mutilation found in borderline personality.

his perception of grandiosity, and the true self is exposed, its weakness becomes clear (Masterson, 1985).

While not everyone expressing a false self can be classified as having a personality disorder, a false self can lead to ineffective regulation of affect (see Harter et al., 1996). As opposed to the false self, the culmination of proper self-development results in a healthy sense of self. Masterson discussed the notion of a real self. According to Masterson, the word “real” in real self is synonymous with healthy. Therefore, according to Masterson, the real self is a healthy self. Masterson hypothesized several capacities of the real (healthy) self. These are:

- Spontaneity and aliveness of affect - The capacity to experience affect deeply with aliveness, joy, vigor, excitement, and spontaneity
- Self-entitlement – The self is entitled to experience mastery and pleasure, as well as an environment appropriate to manifest these experiences
- Self-activation, assertion, and support – the capacity to identify one’s unique wishes and use autonomous assertion to achieve them and defend them should they come under attack
- Acknowledgment of self-activation and maintenance of self-esteem – the ability to acknowledge one’s efficacy in dealing with an affective state or environmental challenge. This capacity is the basis for autonomous control of self-esteem
- Soothing of painful affects – the capacity to autonomously limit, minimize, and soothe painful affects
- Continuity of self – the ability to recognize that the “I” of all experiences is continuous over time
- Commitment - to commit the self to a specific objective or relationship, and to persevere in spite of road blocks
- Creativity – to use the self to generate novel patterns out of the familiar
- Intimacy – The capacity to express the self freely in an interpersonal relationship, with minimal anxiety about separation or dependence. (pp. 26-27)

Epstein (1973) discussed the similarity between a self-theory, discussed earlier, and scientific theories. He believed that for a self-theory to function in a healthy fashion, it must meet several criteria appropriate to all theoretical perspectives, self or scientific. According to Epstein, a self-theory must be extensive. He wrote, “A person with an extensive self-theory will have concepts available for coping with a wide variety of situations.” (p. 408) A self-theory must be parsimonious. In order to avoid behavior being situation specific (schematic), it is critical that a self-theory be hierarchically organized around central integrative postulates. A self-theory must have empirical validity. Epstein recognized that no theory is completely valid, especially a self-theory developed through direct and vicarious experience. Instead of taking validity at face value, Epstein preferred the term “self-correcting.” Therefore, a good self-theory is one that is self-correcting rather than rigid. Whereas rigidity may be functional to prevent a total dissolution of the self, it is only through self-correction that an individual can

hope to achieve a healthy self. Rogers believed that a lack of congruence between self-concept and reality is the cause of anxiety (Brammer et al., 1993; Rogers, 1961).

A self-theory must be internally consistent. It is important for one’s view of the self to read like a story with a solid plot. While contradictions are tolerable, and even healthy (see Harter, 1990b), they must make sense as sub-postulates of broader postulates (i.e., a hierarchical organization). A self-theory must be testable. Epstein believed that self-theories should become more valid with experience. To do so, postulates, especially broader postulates, must be testable. It is not uncommon, though, for a self-theory to rest on a foundation of postulates that are beyond verification. Many people seek to maintain self-esteem by constructing a fantastic world in which they are the stars of their own feature production. The less testable a postulate, the more difficult it is to disprove, the easier it is to maintain. However, while such postulates may mask reality well to outsiders, they hardly save the individual from brushes with the incongruity of their beliefs, creating a potentially intolerable feeling of anxiety, an anxiety that the truth may one day be exposed (see also Brammer et al., 1993). Therefore, for health, a self-theory must be congruent with reality, regardless of the pain associated with self-knowledge.

Finally, a self-theory must be useful. As you will recall, Epstein proposed three functions of the self-theory: to assimilate the data of experience, promote self-esteem, and maintain a positive pleasure/pain balance. Therefore, so long as the self-theory carries out these three functions, it is useful. If it fails at any one of these functions, self-reorganization is necessary. However, not everyone is strong enough to reorganize the self. The most likely scenario is that the individual will maintain a deficient self-theory so long as it is useful.

The Characteristics of a Healthy Self

Based on the literature reviewed, 15 conditions emerged as indicative of a healthy self. An individual possessing a healthy self has a strong sense of personal autonomy without sacrificing the benefits of culture (Maslow, 1970). He is spontaneous in his expression of feelings, able to experience affect deeply and with aliveness (Brammer et al., 1993; Masterson, 1985). The healthy self is creative, not limited by functional fixedness; he finds novel uses for familiar objects (Maslow, 1970; Masterson, 1985). The healthy self is characterized by self-activation; he is capable of identifying his unique wishes and defending them as necessary (Masterson, 1985). He has an uncanny sense of self-awareness, fearing not the shadow side of his personality, integrating it into a unique whole being (Jung, 1969). His self-perceptions are congruent with reality, precluding a need to defend a faulty self-theory (Brammer et al., 1993; Epstein, 1973, Rogers, 1961). Therefore, he is capable of maintaining a positive pleasure/pain balance, with normal levels of anxiety and depression (Brammer et al., 1993; Epstein, 1973). The healthy self feels entitled to mastery experiences and pleasure (Masterson, 1985). Therefore, you are likely to find

him enrolled in courses learning new skills, or reading books or the newspaper, always expanding his range of knowledge. Socially speaking, he has a capacity to be alone, and even desires to spend time by himself, when others would shy away from similar situations (Maslow, 1970). Therefore, you are likely to find him alone at restaurants and movies, not because he is unable to be with others, but because he chooses to spend quality time by himself. He is capable of commitment to goals and others, remaining committed even when progress hits walls (Masterson, 1985). Because of his commitment to people, he can count on others when in need of social support. He is capable of role playing, displaying false selves as needed, but not allowing them to interfere with achievement of valued objectives (Brammer et al., 1993; Harter, 1990b; Harter et al., 1996; Winnicott, 1965). He is problem focused. Thus, he gets deeply involved in his pursuits, directing his attention outward rather than ruminating on the inadequacies of his self (Maslow, 1970). As such, he has frequent experiences of the “oceanic” feeling, feeling at one with nature (Maslow, 1970). Finally, he has learned to accept others and himself, without unnecessary judgement (Maslow, 1970; Masterson, 1985). Therefore, he focuses not on his faults or the faults of others, but realizes frailty is a characteristic of human nature.

Based on these characteristics, 60 Likert-scale items were generated in the first version of the Healthy Self Survey (HSS). I am currently collecting data to assess the construct validity of the HSS. The first step is an internal structure analysis. Subsequent studies will be designed for cross-structure analysis. The latter studies will include attempts to validate the HSS against physiologic measures of autonomic functioning, like respiratory sinus arrhythmia (see Porges, 1992, for information on the use of respiratory sinus arrhythmia as a measure of stress response) and concentrations of serotonin metabolites.

Summary, Conclusions, and Directions for Future Research

The self and its processes play a critical role in human survival. It is the ability to reflect upon oneself as an outsider and the capacity to evaluate one’s efforts in relation to situational constraints that allows us to adapt successfully to changing circumstances. A person who can reflect upon his performance accurately, experience the negative feelings associated with failure of his old self-theory, change it, and validate it anew, possesses a healthy sense of self. People who fail to adapt to the constraints of their environment are apt to experience low self-concept and self-esteem. As noted previously, researchers have found that self-esteem is correlated negatively with affective states like depression and anxiety (Harter, 1990a; Rosenberg et al., 1995).

The current model of a healthy self reflects a psychological mechanism that serves to adapt the organism to the constraints of his environment, a process I call psycho-adaptation. As the individual progresses from one set of circumstances to another, a series of psychological processes occur, including an assessment of fit of the current self-theory to the prevailing

environmental constraints. If the self-theory is successful in accounting for experience, the individual pushes forward toward his goals. If on the other hand, the self-theory fits the data poorly, the result is anxiety, as there is a threat to one’s self-definition. This threat is as imposing as a threat to one’s physical person. Therefore, an attempt is made to defend the self-theory against dissolution. As discussed previously, Epstein (1973) hypothesized that the functions of the self-theory include maintenance of self-esteem and a positive pleasure/pain balance. This translates into attempts to make the current self-theory fit the data of experience, whether or not it is congruent with reality.² At times this strategy will work; the public lauds those who succeed against all odds. However, more often it results in failure, and the individual suffers consequences such as depression.

Let me elaborate further on the role of emotional experience in the process of psycho-adaptation. Rather than hanging on desperately to a poor self-theory, riding an infinite loop nowhere, the anxiety discussed above, felt in association with a crumbling sense of self, may be adaptive as it forces the individual to reevaluate his failing self-perceptions. However, because environmental competence is so important to survival, a defeat of one’s pretensions must be forestalled until an alternative self-theory is erected. Once the realization occurs that the current self-theory is no longer valid, depression is likely to set in. Like anxiety, depression is probably an adaptive response as well, as it affords the individual time to give the self-theory several final tries while seeking alternative goals (Neese, 2000). In this way, the ability to experience variation in mood (e.g., anxiety and depression) may be quite adaptive, an idea also articulated by Rogers (1961) and Brammer and colleagues (1993).

As I mentioned previously, one of my goals is to validate the HSS with measures of psychophysiological functioning, as I believe the survey research design is plagued with problems (e.g., social desirability). One psychophysiological system that is implicated in adaptive functioning is the serotonergic neural network of the central nervous system. Deficiencies in the neurotransmitter serotonin (5-HT) are implicated in a variety of psychological disorders indicative of poor adaptation (Carlson, 1999). Serotonin is implicated in Attention Deficit Hyperactivity Disorder (ADHD) (Gainetdinov, et al., 1999; Halperin et al., 1997; Marx, 1999), alcoholism (Lovinger, 1997), aggression (Stanley et al., 2000), clinical depression (Malt, Robak, Madsbu, & Loeb, 1999; Sallee, Hilal, Dougherty, Beach, & Nesbitt, 1998), obsessive-compulsive disorder (Mataix-Cols et al., 1999), panic disorder (Gorman, Kent, Sullivan, & Coplan, 2000; Kirchner, 1999), and suicide (Steegmans et al., 1996; Tanskanen et al., 2000), just to name a few psychological disorders. Researchers speculate that SSRIs (selective serotonin reuptake inhibitors, antidepressant drugs used to treat the aforementioned psychological disorders) may affect autonomic reactivity to feared stimuli by inhibiting neural projections originating in the central nucleus of the amygdala.

² Recall that the third task of the self-theory proposed by Epstein is the assimilation of the data of experience.

These projections affect neural structures involved in the fear response, including the brain stem, hypothalamus, periaqueductal gray matter, and prefrontal cortex, among others (Carlson, 1999; Gorman et al., 2000).

The experience of fear (anxiety), with all its associated responses, is critical to adaptive functioning. For instance, in one study exploring the effects of reduction in prefrontal gray matter volume on adaptive functioning, researchers found that individuals diagnosed with antisocial personality disorder had attenuated autonomic reactivity to normal fear-provoking stimuli (Raine, Lencz, Bihrl, LaCasse, & Colletti, 2000). Evidently, the inability to experience fear in the individual diagnosed with an antisocial personality, precludes rational judgement, hence mature ego functioning. The latter is an important characteristic of the healthy self. Further, all of the disorders discussed involve the inability to control impulses, another characteristic indicative of a deficiency in ego function. Perhaps the serotonergic neurons, originating in the raphe nuclei of the brain stem, are the biologic equivalent of the psychological ego, what Masterson (1985) hypothesized as the executive arm of the self. Perhaps deficiencies in the serotonin system cause one to overreact to stimuli contradicting one's self-theory. There is already some evidence linking serotonin levels to self-esteem (Sylwester, 1997). Only psychophysiological research can reveal the nature of relation of serotonin and other neurotransmitters in ego function and healthy self-functioning. I plan to pursue this research further.

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Social Group Identity and Its Effect on the Self-Esteem of Adolescents with Immigrant Background in Norway and Sweden

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Social identity theory suggests that being a member of a group, and identifying with the group is an important determinant of one's well-being, and in particular, self-esteem. Poor self-esteem is suggested to result if the group the individual is a member of is subject to negative stereotypes, prejudice and discrimination. Although a link between group identity in general and self-esteem has been demonstrated, the role of group identity on the self-esteem of disparaged group members has yielded conflicting results. The poster recasts some of the central issues by focusing on a group of adolescents with immigrant background (from Vietnam, Turkey and Chile) living in Norway (N = 309) and Sweden (N = 528) and their peers from the two respective host societies (N = 436). The relationships between majority (Norwegian/Swedish) identity, minority ethnic identity and self-esteem are examined together with how perceived discrimination may mediate/moderate the adolescents' self-esteem.

Problem Area

Do adolescents with ethnic minority status report of lower self-esteem than their peers belonging to the majority group? What is the nature of the relationship between social group identity and self-esteem, with respect to ethnic minority group members? To what extent is this relationship moderated or mediated by perceived discrimination? These are the central questions this paper seeks to address using adolescents with immigrant background living in Norway and Sweden.

A burgeoning area of research in the acculturation of ethnic minority adolescents and adolescents with immigrant background is the role of ethnic identity in their psychological well-being (see e.g., Crocker, Luhtanen, Blaine & Broadmax, 1994; Liebkind, 1993; Phinney, 1990; 1991; Phinney & Chavira, 1992; Phinney & Devich-Navarro, 1997; Rosenthal & Fedman, 1992a & b; Sanchez & Fernandez, 1993; Verkuyten, 1994, 1995; Yu & Berryman, 1996; Zak, 1993). Following social identity theory (Tajfel, 1978; Tajfel & Turner, 1986) it has been postulated that being a member of a group and identifying with the group is an important determinant of a person's self-esteem. A low self-esteem however, is suggested to result if the group the individual is a member of is the subject of negative stereotypes, prejudice and discrimination. While a link between group identity in general and self-esteem has been demonstrated (Crocker, Voelkl, Testa, & Major, 1991; Crocker, Cornwell & Major, 1993), this link with respect to disparaged group members has been plagued by ambiguity, confusion and conflicting results (Crocker & Major, 1989; Hughes & Demo, 1989; Richman, Clark & Brown, 1985; Jensen, White & Galliber, 1982; Rosenberg & Simmons, 1972; Verkuyten, 1994).

Part of the confusion stems from failure to observe a linear relationship between degree of ethnic identity (one form of social group identity pertinent to ethnic group members) and self-esteem among racially and ethnically disparaged groups. Several reviewers of the literature (e.g., Cross, 1991; Phinney, 1990; 1991; Porter & Washington, 1979) have concluded that there is little consistent evidence for the postulated relationship. Further, there have been mixed findings with respect to levels of self-esteem between members of racially disparaged groups and their often more esteemed White majority counterparts. The hypothesis is that stigmatised ethnic group members would have

lower self-esteem than their White counterparts. In a review of 16 studies, Verkuyten (1994) for instance, identified eight studies wherein no differences were found between White majority members and ethnic group members presumed to be targets of racial discrimination. Of the remaining eight studies, while four observed higher self-esteem among the White group members, the remaining four found the exact opposite.

Reasons put forward to account for these mixed findings have varied. They have included differences in the conceptualisation of ethnic identity, failure to take into consideration the individual's degree of identification with the larger society, the socio-cultural context under which the investigations have taken place, level of ethnic identity development and the stigmatised group members' own self-protective measures for resiliency (Crocker & Major, 1989; Phinney, 1990, 1991; Phinney & Chivera, 1992; Verkuyten, 1988; 1994).

In this study, the effect of social identity (made up of majority and ethnic identity) on the self-esteem of ethnic minority adolescents in Norway and Sweden is examined. In addition, majority identity and perceived discrimination are examined to identify any possible moderating/mediating effects they may have on the relationship between ethnic identity and self-esteem.

The Moderator - Mediator Distinction

Although moderator and mediator factors are well known concepts in the psychological literature, Baron and Kenny (1986) have suggested that the concepts are often used wrongly and as synonymous. It is therefore essential that these terms are well clarified before proceeding further with the paper.

A variable is said to be *moderator* if it affects the direction and/or strength of the relationship between an independent and a dependent variable. A *mediating* variable is one that accounts for the relation between an independent and a dependent variable. Baron and Kenny (1986) have suggested that while *mediating* variables "speak" to the underlying mechanisms by explaining how or why particular effects occur, *moderating* variables "speak" to specifying the conditions under which particular effects occur. Rogosch, Chassin and Sher (1990) have also suggested that *moderator* variables can be thought of as protective or buffer variables that act to reduce the impact of a

known vulnerability, or serve as magnifying variables that increase the impact of known vulnerability.

Using perceived discrimination as an illustrative example, for it to qualify as a *mediator* between ethnic identity and self-esteem, Baron and Kenny (1986) argue that two conditions have to be met. (a) ethnic identity must first be able to predict both self-esteem and perceived discrimination, and perceived discrimination must also be able to predict self-esteem; (b) the strength of the relationship between ethnic identity and self-esteem must be eliminated or greatly weakened when self-esteem is regressed on ethnic identity and perceived discrimination. For perceived discrimination to qualify as a *moderator* in the same relationship, it is important to demonstrate a significant interaction between perceived discrimination and ethnic identity. Although significant main effects for ethnic identity and perceived discrimination on self-esteem may be observed, these are not necessary prerequisites in order to demonstrate the *moderator* effect of perceived discrimination.

Previous Research

Conceptualisation of Ethnic Identity

As a concept, ethnic identity has been suggested to be multidimensional, where in her review, Phinney (1991) identified at least six different dimensions. These dimensions have included: self identification as a group member; involvement in ethnic behaviours and practices; knowledge about the group; commitment to, or sense of belonging to the group; and positive evaluation of the group. Arguably, these dimensions may have different relationships to one another, and to self-esteem. For instance, it is possible to have a strong attachment to the group, but lack knowledge about the group's history and values, a phenomenon referred to as unexamined or pre-encounter (Cross, 1995; Helms, 1990, Marcia, 1980; Phinney, 1989). Group membership *per se* has been found not to be related to the level of self-esteem (Phinney, Cantu & Kurtz, 1997). Failure on the part of previous research to examine how the various dimensions of ethnic identity are related to self-esteem makes predictions about the relationship problematic. In this study, two aspects of the concept – ethnic identity as commitment to, or sense of belonging to the group and the positive evaluation of the group – are jointly examined. A positive relationship is expected between this aspect of ethnic identity and self-esteem since both this conceptualisation of ethnic identity and self-esteem focus on the affective component of self-concept.

Majority Identification

Ethnic identity is not the only social group identity for members of plural societies. Identification with the majority group, majority identity, is suggested to be the other form of group identification which ethnic members have to deal with. Identification with the larger society has been argued to have important ramifications for the psychological task of self-definition. Specifically, the argument is that a strong sense of ethnic identity devoid of positive identification to the larger

society may trigger additional psychological conflict (Phinney, 1991). This argument suggests that majority identity could possibly serve as a moderator or a mediator in the relationship between ethnic identity and self-esteem. These roles of majority identity in the relationship between ethnic identity and psychological well-being have however, received less attention. In a study among African-Americans, and Latino adolescents in Southern California, Phinney, et al., (1997) found no significant relationship between identification with American identity (i.e., majority identity) and self-esteem. This suggests that majority identity could possibly not be a *mediator*. Majority identity as a *moderator* is however inconclusive from the study as the authors did not check on the significance of the interaction between ethnic and majority identities on self-esteem. Sanchez and Fernandez (1993) on the other hand have demonstrated the *moderator* role of majority identity on the relationship between acculturative stress and ethnic identity among a group of Latino adolescents in the Miami area.

It has been argued that majority identification on the part of disparaged group members may be problematic because prejudice, discrimination and negative stereotypes are often perpetrated by members of the larger society (Birman, 1994; Inman & Baron, 1996). That is, a dissonance is expected to arise if one identified with his or her “oppressors”. Stated in another way, the more one perceives discrimination from the larger society, the more difficulty the individual will have in identifying with the larger group (Birman, 1984). While some studies have found support to this argument (e.g., Aguirre, Saenz & Hwang, 1985; Floyd & Granman, 1995), others have found contradictory results (Portes, 1994; Portes, Parker & Cobas, 1980). Thus, the precise relationship between perceived discrimination and majority identity still remains unclear.

Bicultural Identification and Psychological Adaptation

Ethnic identity and majority identity were previously viewed as belonging to the opposite ends of a uni-dimensional construct where a high identification with one group necessarily meant a low identification with the other. Thus, it was deemed incompatible to simultaneously have high or low identification with the two groups. Currently, ethnic identity and majority identity are viewed as two separate constructs, where it is possible to have high identification or low identification on both constructs (Phinney, 1990; Sanchez & Fernandez, 1993). It is also possible to have high identification on one construct, and a low on the other. These identifications have variously been referred to as Integration or biculturalism, when the individual has high identification on both constructs; Marginalization when one has low identification on both constructs. A high identification with the ethnic group, and a low identification with the majority group is referred to as Separation, and the opposite, i.e., low identification with the ethnic group and a high identification with the majority group is referred to as Assimilation (Birman, 1994; Phinney, 1990).

Studies have suggested that Integrated individuals or biculturals generally report of better psychological well-being than Marginalized, Separated and Assimilated individuals. Furthermore, Marginalized individuals tend to be worse-off than

the others (Berry & Sam, 1997; LaFromboise, Coleman, & Gerton, 1993; Sam, 2000). It is

self-esteem scores among the four ways of identification, and Marginalized individuals will have the lowest self-esteem scores.

The Relationship Between Perceived Discrimination and Self-Esteem

There is ample evidence to the effect that racial and ethnic discrimination either directly or indirectly causes psychological problems (Clark, Anderson, Clark & Willimans, 1999; Dion & Earn, 1975; Dion, Dion, & Pak, 1992; Pak, Dion & Dion, 1991). A positive sense of ethnic identity however, is suggested to protect the individual from the potentially negative impact of prejudice and discrimination against the group (Phinney, 1990). In other words, a positive sense of ethnic belonging will moderate the relationship between perceived discrimination and psychological well-being. However, without explicitly testing for ethnic identity as a moderator, Phinney, Madden and Santos (1998) could not find support for the buffering effect of ethnic identity on the relationship between perceived discrimination and self-esteem.

Is it possible that perceived discrimination mediates the relationship between ethnic identity and self-esteem? van Oudenhoven and Eisses (1998) have found that migrants who sought to maintain their ethnic identity felt that they received more stereotyping prejudice and discrimination from members of the larger Dutch society. Such a finding and the known relationship between perceived discrimination and self-esteem provide some of the prerequisites needed for perceived discrimination to qualify as a *mediator*. However, this is yet to be demonstrated.

Adolescents with Immigrant Background in Norway and Sweden

Prior to the end of the 2nd World War, neither Norway nor Sweden were regarded as attractive countries for immigration. However, both countries have over the past five decades attracted large numbers of migrants from the South either fleeing political and ethnic violence, or in search of labour and subsequent family reunification. Currently, approximately 6% and 18% of the national population of Norway and Sweden respectively are made up of persons with foreign background. About a third of these foreigners in both countries come from the developing countries of Asia, Central and South America and Africa (Brochmann, 1999; Hammar, 1999). Of interest in this paper are those from Chile, Turkey, and Vietnam, who are also among the largest ethnic groups in both countries. These three ethnic groups in addition share similar immigration history to the two countries. Turks were recruited to the two countries as alien workers following the economic growth in Europe in the late 1960s. However, while permanent residency was offered to those arriving in Sweden, alien workers to Norway and the rest of Europe were regarded as temporary guest workers, who could be repatriated following the end of their work contract (Hammar, 1999). Vietnamese and Chileans, both with refugee background, migrated to the two countries following the fall of Saigon in

1975 in Vietnam and the rise of Pinochet to power in Chile in 1973.

Resettlement policies for foreign nationals in both Sweden and Norway is Integration where equality, freedom of choice and partnership are the underlying key concepts (Westin, 1999). Sweden, however, is more liberal with their practice of freedom of choice with respect to cultural heritage than in Norway. This is due in part to the long history of independence in Sweden (Hammar, 1999). Norway on the other hand as a result of being ruled by both Sweden and Denmark, and the occupation by the Nazis have made them somewhat more restrictive in the freedom of choice offered to foreigners. A focus on these three ethnic groups in the present study is not so much as to compare them with each other, but to examine processes applicable across groups and across the two countries.

In summary, the present study was interested in verifying whether ethnic minority adolescents differed from their majority peers with respect to self-esteem. We also examined the relationship between these adolescents' self-esteem and social group identity and perceived discrimination, with the aim of identifying the possible mediating or moderating roles of perceived discrimination and majority identity in the relationship between ethnic identity and self-esteem. Finally, we were interested in verifying how combinations of ethnic and majority identity may affect the adolescents' self-esteem.

Method

Participants

These were made up of 837 adolescents with immigrant background (mean age = 15.40 years, *sd* = 1.81; 412 girls and 425 boys) living in Norway (*n* = 309) and Sweden (*n* = 528). The adolescents belonged to three distinct ethnic groups: Vietnamese (*n* = 225); Turks (*n* = 400) and Chileans (*n* = 162). A little over half of the adolescents (*n* = 436; 52.22%) were foreign-born, born in the country corresponding to their ethnicity. The remaining 399 (47.78%) were born in the host country (i.e., either in Norway or Sweden). The foreign-born adolescents had on the average lived 9.35 years (*sd* = 3.88) in the respective host country. The socio-economic status (SES) of the adolescents (based on the combined occupational type of both parents) indicated that the majority of the adolescents belonged to lower middle and low social class status.

In addition to the adolescents with immigrant background 209 Norwegian (mean age = 15.13 years, *sd* = 1.58) and 227 Swedish adolescents (mean age = 16.05 years; *sd* = 1.73) were recruited as a reference group for the study. The gender distribution of the host nationals was evenly distributed. Table 1 gives a more detailed demographic description.

Procedure

Participants were recruited from junior and senior high schools in the Greater Stockholm area in Sweden, and five major Norwegian cities with relatively high concentrations of immigrant families. With some few exceptions (e.g.,

Table 1: Demographic Description of the Sample

	NORWAY				SWEDEN			
	Norwegians n = 209	Vietnamese n = 150	Turks n = 112	Chileans n = 50	Swedes n = 227	Vietnamese1 n = 106	Turks n = 289	Chileans n = 133
Age (in yr.) Mean (sd) ²	15.13 (1.58)	15.52 (1.65)	15.36 (1.81)	14.98 (1.53)	16.06 (1.73)	16.25 (1.82)	15.11 (1.74)	15.51 (1.99)
Gender								
Girls	99 (47.83%)	80 (53.69%)	52 (46.85%)	24 (48.98)	118 (51.98)	76 (52.20%)	139 (48.10%)	61 (45.86%)
Boys	108 (52.17%)	69 (46.31%)	59 (53.15%)	25 (51.02)	109 (48.02)	50 (47.80%)	150 (51.90%)	72 (54.14%)
Birth place								
Host-born	208 (99.5%)	50 (33.56%)	56 (50.00%)	6 (12.24%)	226 (99.6%)	29 (27.36%)	221 (77.00%)	37 (28.03%)
Foreign-born	1 (0.5%)	99 (66.44%)	56 (50.00%)	43 (87.76%)	1 (0.4%)	77 (72.64%)	66 (23.00%)	95 (71.97%)
Length of stay (in yr.) ³ Mean (sd)		9.83 (3.98)	8.35 (3.90)	8.51 (2.66)		9.08 (4.79)	7.90 (4.15)	10.99 (2.25)
Occstat4								
Unskilled	7 (4.12%)	40 (52.63%)	43 (81.13%)	7 (17.95%)	31 (15.74%)	40 (64.51%)	126 (66.97%)	37 (35.92%)
Skilled	23 (13.53%)	26 (34.21%)	7 (13.21%)	14 (35.90%)	36 (18.27%)	13 (20.97%)	34 (17.80%)	22 (21.36%)
White collar	68 (40.00%)	4 (5.26%)	1 (1.89%)	8 (20.51%)	79 (40.10%)	4 (6.45%)	19(9.95%)	34(33.01%)
Professional	72 (42.35%)	6 (7.89%)	2 (3.77%)	10 (25.64%)	51 (25.89%)	5 (8.06%)	12 (6.28%)	10 (9.71%)

Notes: The group referred to as Vietnamese in Sweden was made up of 59% Chinese and 41% Vietnamese both of whom migrated to Sweden from Vietnam. The two groups in Sweden have been found not to differ on key demographic and psychological variables (Virta & Westin, 1999). The groups differed on their mean ages [$F(7, 1265) = 10.16, p < 0.001$]. Tukey's HSD post-hoc test indicated that the differences were as follows: NC < S & SV; ST < S & SV and N < S & ST. N = Norwegians, S = Swedes, NC = Chileans in Norway; ST = Turks in Sweden; SV = Vietnamese in Sweden

1. Of foreign-born adolescents in host country
2. OCCATAT = Occupational status is a rough estimation of SES, and is based on the highest occupation of both father's and mother's. The groups differed significantly on their SES $\chi^2(21) = 363.29, p < 0.001$.

Vietnamese in Sweden), data collection involved completing a structured questionnaire during a school session. Data collection was undertaken by a team made up of the project leader in the respective countries and a team of student assistants who travelled to the cities and schools. The questionnaires were self-explanatory, but a standard instruction was given at the start of the session in which students were informed that participation was voluntary, and that responses were confidential. For more detailed description of data collection in the two countries see Virta and Westin (1999) and Sam (1999 & 2000). Response rates based on student participation (i.e., percentage of students who were approached and those who actually participated in the study) was approximately 85% in both countries.

Measures

Measures used in this study were compiled by an international group of scholars for use in the study of adaptation of immigrants and ethnocultural youth across cultures (Berry, Kwak, Lebkind, Phinney, Sabatier, Sam, Virta, & Westin 1994). Measures were either developed for the project, or taken directly or with modification from existing scales as described below. Except for the demographic questions, nearly all the items were answered on a 5-point Likert scale ranging from 1 = "strongly disagree" or "never" to 5 = "strongly agree" or "very often".

Demographics:

Participants had to report on their gender, age, place of birth (whether Norwegian/Swedish or foreign-born), age of arrival in Norway/Sweden, ethnicity of themselves as well as that of their parents. Participants were asked to report on their mother's and father's current occupations.

Self-esteem

Global self-esteem was measured using Rosenberg's (1986) 10-item self-esteem inventory. A sample item was "On the whole I am satisfied with myself".

Perceived Discrimination

This scale consisted of nine items, five of which assessed direct experience of discrimination – negative or unfair treatment from others (e.g., I have been teased or insulted because of my ethnic background). The remaining 4 items assessed the sources of the negative treatment (e.g., teachers, pupils etc.).

Social Group Identity

Two forms of these – Ethnic identity and Majority identity were separately assessed. Ethnic identity was assessed using 7 items drawn from Phinney's Multigroup Ethnic Identity Measure (1992). It included statements such as "I feel I am part of the Vietnamese/Turkish/Chilean culture", and "Being part of the Vietnamese/Turkish/Chilean culture is embarrassing to me (reversed in scoring), and focused primarily on ethnic belonging and pride. (Majority) Norwegian/Swedish identity was assessed using three items adapted from Phinney and Devich-Navarro

(1997). An example of item from this scale is: “I am proud of being Norwegian/Swedish”.

All the scales used in the study had acceptable internal reliability. See Table 2 for Cronbach’s alpha for the different scales for the different groups. Pan-cultural factor analyses of the different scales showed Tucker’s phi values of over .90 for all the items suggesting good structural equivalence of the measures across the countries and ethnic groups (van de Vijver, Liebkind, & Vedder, 2000).

Results

Initial analyses examined the relationship between two demographic factors, SES and age, and self-esteem. These indicated that self-esteem was neither related significantly to age nor SES. The F-test for self-esteem based on SES for the entire group was $F(3, 1215) = 2.25, p = 0.08$. Subsequently, these factors have not been used in the analyses.

Self-esteem: Comparison Between Ethnic Minorities and their Majority Peers

Tables 3a & b show that although ethnic minority adolescents in Norway and Sweden differed from their majority peers with respect to level of self-esteem [$F(7, 1244) = 11.16; p < 0.01$] they did not always report of lower self-esteem than their majority counterpart. In both countries, Chileans reported of the highest self-esteem, with those in Sweden reporting of higher self-esteem than both groups of majority adolescents. Vietnamese reported of the lowest self-esteem in both countries, with those in Sweden reporting of higher self-esteem than their peers in Norway.

Relationships Between Ethnic Identity, Perceived Discrimination and Self-Esteem

With the exception of Chileans in Norway, ethnic identity was positively related to self-esteem among the different ethnic groups in both countries. These relationships were consistent and strong in Sweden (see Table 4). For all ethnic groups, and in both countries, perceived discrimination was found to be negatively related to self-esteem. Majority identity showed mixed relationships with the other factors.

Table 2: Internal Reliability (Cronbach’s alpha) of Scales for the Different Ethnic Groups in Norway and Sweden

	Self-esteem	Ethnic Identity	Majority Identity	Perceived Discrimination
Norway				
Norwegians	.87	-	.85	-
Vietnamese	.77	.89	.85	.87
Turks	.78	.77	.85	.82
Chileans	.83	.90	.92	.76
Sweden				
Swedes	.84	-	.80	-
Vietnamese	.83	.86	.90	.88
Turks	.73	.74	.89	.86
Chileans	.80	.74	.86	.79

Note: Norwegian and Swedish youth did not answer questions on ethnic identity and perceived discrimination

Table 3a: Mean Scores and (standard deviation) of Self-Esteem for the Different Ethnic Groups in Norway and Sweden

	Mean	Standard Deviation
Norway		
Norwegians	3.75	.74
Vietnamese	3.46	.59
Turks	3.49	.72
Chileans	3.80	.74
Sweden		
Swedes	3.77	.65
Vietnamese	3.74	.62
Turks	3.84	.63
Chileans	4.06	.65

$F(7, 1244) = 11.16, p < 0.001$

Table 3b: Between Group Comparisons Using Tukey's HSD Post-Hoc test

Groups			1	2	3	4	5	6	7	8
1. Norwegians										
2. Vietnamese in Norway			*							
3. Turks in Norway			*							
4. Chileans in Norway				*						
5. Swedes				*	*					
6. Vietnamese in Sweden				*						
7. Turks in Sweden				*	*					
8. Chileans in Sweden			*	*	*		*	*	*	

Note: * Significant difference

Table 4: Relationship Between Self-esteem, Ethnic Identity, Majority Identity and Perceived Discrimination Among Vietnamese, Turks and Chileans in Norway and Sweden ♣

Bivariate pairs*	Vietnamese		Chileans		Turks	
	Norway	Sweden	Norway	Sweden	Norway	Sweden
SE – EI	.20*	.34***	.10	.25**	.23*	.21**
SE – MI	.18*	.13	.10	-.17*	.22*	-.01
SE – PD	-.36	-.42***	-.52***	-.17*	-.28*	-.25***
EI – MI	-.10	.07	-.31*	-.33**	-.14	-.27**
EI – PD	-.06	-.15	-.12	-.05	.02	-.18**
MI – PD	-.19*	-.19	.14	-.17*	-.14	-.01

Note: Abbreviations used in the bivariate relations: .SE = self-esteem; EI = ethnic identity; MI = Majority identity; PD = Perceived discrimination. * $p > 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 5: Regressions Predicting Self-Esteem from Perceived Discrimination, Ethnic Identity, and their Interaction for Different Ethnic Groups in Norway and Sweden ♣

	Step I		Step II	
	Beta	Multiple R ²	Beta	Multiple R ²
Vietnamese in Norway				
Ethnic identity	.18*		.39	
Perceived discrimination	-.37***	.18***	-.02	
Interaction (EI*PD)			-.39	.19***
Turks in Norway				
Ethnic identity	.23*		-.15	
Perceived discrimination	-.29**	.13**	-1.00	
Interaction (EI*PD)			.82	.14**
Chileans in Norway				
Ethnic identity	.10		.33	
Perceived discrimination	-.52***	.30***	-.31	
Interaction (EI*PD)			-.43	.31**
Vietnamese in Sweden				
Ethnic identity	.29***		.55*	
Perceived discrimination	-.34***	.23***	.18	
Interaction (EI*PD)			-.56	.24***
Turks in Sweden				
Ethnic identity	.16***		-.01	
Perceived discrimination	-.21***	.08***	-.68	
Interaction (EI*PD)			.49	.08***
Chileans in Sweden				
Ethnic identity	.24**		.01	
Perceived discrimination	-.16a	.09**	-.82	
Interaction (EI*PD)			.69	.09**

Notes: ♣ Multiple R² reported under Step 1 is for both predictors (PD and EI), and that reported under Step II is for both predictors and the interaction effect.
 $a p = 0.06$; * $p > 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 6: Regressions Predicting Self-Esteem from Ethnic Identity, Majority Identity, and their Interaction for Different Ethnic Groups in Norway and Sweden

	Step I	Beta	Multiple R ²	Step II Beta	Multiple R ²
Vietnamese in Norway					
Ethnic identity		.22**		.92**	
Majority identity		.20*	.08**	1.25**	
Interaction (EI*MI)				-1.23*	.12***
Turks in Norway					
Ethnic identity		.26*		.23	
Majority identity		.25*	.11**	.18	
Interaction (EI*MI)				.08	.11*
Chileans in Norway					
Ethnic identity		.15		.00	
Majority identity		.15	.03	.20	
Interaction (EI*MI)				.34	.03
Vietnamese in Sweden					
Ethnic identity		.33***		.35	
Majority identity		.10	.12**	.14	
Interaction (EI*MI)				-.05	.12**
Turks in Sweden					
Ethnic identity		.22***		.36*	
Majority identity		.05	.05**	.61	
Interaction (EI*MI)				-.55	.05**
Chileans in Sweden					
Ethnic identity		.22*		.23	
Majority identity		-.10	.07**	-.06	
Interaction (EI*MI)				-.04	.07*

Notes: ♣ Multiple R² reported under Step 1 is for both predictors (MI and EI), and that reported under Step II is for both predictors and the interaction effect.

* $p > 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7: Regressions of Perceived Discrimination on Ethnic Identity; Self-Esteem on Ethnic Identity and Perceived Discrimination Separately, and Self-Esteem on Ethnic Identity and Perceived Discrimination at the Same Time for Vietnamese, Turks and Chileans in Norway and Sweden ♣

	Dependent Variables	Perceived Discrimination ^a	Self-Esteem ^b
Self-Esteem^c			
Vietnamese in Norway			
Ethnic identity	Ns	.19*	Ns
Perceived discrimination		-.38***	Ns
Turks in Norway			
Ethnic identity	Ns	.22*	Ns
Perceived discrimination		-.28**	Ns
Chileans in Norway			
Ethnic identity	Ns	Ns	Ns
Perceived discrimination		-.54***	Ns
Vietnamese in Sweden			
Ethnic identity	Ns	.34***	.29**
Perceived discrimination		-.38***	-.34***
Turks in Sweden			
Ethnic identity	-.15**	.19***	.16***
Perceived discrimination		-.24***	-.21***
Chileans in Sweden			
Ethnic identity	Ns	.25**	.24***
Perceived discrimination		-.17*	.16Ns

Notes: ♣ only significant beta values are reported. Regression of Perceived discrimination on ethnic identity

a) Regression of self-esteem on ethnic identity and perceived discrimination separately

b) Regression of self-esteem on ethnic identity and perceived discrimination at the same time.

c) Ns = not significant; * $p > 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 8:

Regressions of Majority Identity on Ethnic Identity; Self-Esteem on Ethnic Identity and Majority Identity Separately, and Self-Esteem on Ethnic Identity and Majority Identity at the Same Time for Vietnamese, Turks and Chileans in Norway and Sweden ♣

	Dependent variables	Majority Identity ^a	Self-Esteem ^b
Self-Esteem^c			
Vietnamese in Norway			
Ethnic identity	Ns	.19*	.22**
Majority identity		.18*	Ns
Turks in Norway			
Ethnic identity	-.20*	.22*	.26*
Majority identity		.22*	.25**
Chileans in Norway			
Ethnic identity	-.31*	Ns	Ns
Majority identity		Ns	Ns
Vietnamese in Sweden			
Ethnic identity	Ns	.34***	.33*
Majority identity		Ns	Ns
Turks in Sweden			
Ethnic identity	-.28*	.19**	.22**
Majority identity		Ns	Ns
Chileans in Sweden			
Ethnic identity	-.33***	.25**	.22**
Majority identity		-.17*	Ns

Notes: ♣ Only significant beta values are reported.

a. Regression of majority identity on ethnic identity

b. Regression of self-esteem on ethnic identity and majority identity separately

c. Regression of self-esteem on ethnic identity and majority identity at the same time.

Ns = not significant; * $p > 0.05$; ** $p < 0.01$; *** $p < 0.001$

Perceived discrimination and Majority Identity as a Moderator/Mediator in the Relationship Between Ethnic Identity and Self-Esteem

Neither perceived discrimination nor majority identity appeared to act as a moderator in the relationship between ethnic identity and self-esteem with the exception of one case – Vietnamese in Norway. The interaction effects either did not change the explained variance, or increased it by just 1% in all the analyses (see Tables 5 & 6). The only exception was the interaction between ethnic identity and majority identity among Vietnamese in Norway (Table 6) where the explained variance rose from 8% to 12%.

Regarding the mediating roles of majority identity and perceived discrimination (see Tables 7 & 8), none of the two criteria suggested by Baron and Kenny (1986) were met among the three ethnic groups in Norway. Ethnic identity could neither predict perceived discrimination alone nor together with perceived discrimination could it predict self-esteem in any of the ethnic groups in Norway. Although some of the initial conditions regarding majority identity as a mediator were met, not all of them were met at the same time in any of the three ethnic groups in Norway. Similarly in Sweden, while some of the prerequisites were met, the final decisive condition was not met in any of the groups. The only case that was close to mediation was Turks in Sweden with respect to perceived discrimination. However, the effect of ethnic identity did not change dramatically (the beta co-efficient dropped from .19 to .16) when perceived discrimination was introduced into the

equation. Both beta values were significant at $p < 0.001$). In the prediction of self-esteem, perceived discrimination was once again found to consistently predict self-esteem in both countries and among all the ethnic groups.

Bicultural Identification and Self-Esteem

In order to categorise respondents into Assimilation, Integration, Separation and Marginalization mean scores on ethnic identity and majority identity were used. Using means scores of 4.2 and 3.1 as examples for ethnic identity and majority identity respectively, an Integrated individual would be classified as having ethnic identity score equal to, or higher than 4.2 on that scale, and a majority identity score as equal to, or higher than 3.2 on the majority identity scale. A Separated person would be classified as having an ethnic identity score equal to, or higher than 4.2, and a majority identity score lower than 3.2. These categorisations were separately done for the different ethnic groups in the different countries based on the group's mean scores. The 4 categories were then combined into a single variable (with 4 levels) and used as a factor against self-esteem.

Table 9 shows that with Chileans in Norway as the only exception, adolescents who strongly identified with both their ethnic group and with the majority group, i.e., integrated or biculturals, consistently reported of higher self-esteem than those who reported low identification with both groups, i.e., Marginalized. Adolescents who identified strongly with their own ethnic group and reported of low identification with the majority group (separation) also generally reported of high self-esteem.

Table 9: Mean Scores, *sd* and *F*-test (with post-hoc) of Self-Esteem Based on Different Combinations of Ethnic and Majority Identity for Vietnamese, Turks and Chileans in Norway and Sweden

	Mean	Sd	<i>F</i> -test	Post-hoc test
Vietnamese in Norway				
Assimilation	3.41	.58	<i>F</i> = 3.33 <i>p</i> = .02 <i>df</i> = 3, 138	I > M
Integration	3.67	.69		S > M
Separation	3.51	.50		
Marginalization	3.05	.65		
Turks in Norway				
Assimilation	3.43	.69	<i>F</i> = 3.41 <i>P</i> = 0.04 <i>df</i> = 2,49	S > M
Integration	3.96	.67		I > M
Separation	3.83	.66		
Marginalization	3.18	.88		
Chileans in Norway				
Assimilation	3.70	.71	<i>F</i> = 0.53 <i>p</i> = 0.66 <i>df</i> = 3, 31	
Integration	3.83	.88		
Separation	3.78	.71		
Marginalization	3.25	.55		
Vietnamese in Sweden				
Assimilation	3.60	.59	<i>F</i> = 3.70 <i>p</i> = 0.01 <i>df</i> = 3, 85	I > M
Integration	4.02	.61		I > A
Separation	3.84	.75		
Marginalization	3.47	.55		
Turks in Sweden				
Assimilation	3.66	.65	<i>F</i> = 2.93 <i>p</i> = 0.03 <i>df</i> = 3, 228	I > M
Integration	3.97	.62		I > A
Separation	3.88	.64		
Marginalization	3.63	.65		
Chileans in Sweden				
Assimilation	3.85	.66	<i>F</i> = 3.85 <i>p</i> = 0.01 <i>df</i> = 3, 115	I > M
Integration	4.29	.59		I > A
Separation	4.04	.64		
Marginalization	3.85	.64		

Notes: Abbreviations A, I, M, S correspond to Assimilation, Integration, Marginalization and Separation respectively

Discussion

The results of this study provide some insights into the self-concept of ethnic minority adolescents, and in particular the role of ethnic identity on their self-esteem. Social identity theory contends that ethnic minority adolescents may be vulnerable to poor self-esteem if the group to which they belong is a target for negative stereotypes, prejudice and ethnic discrimination. The resulting self-esteem is expected to show a direct positive relationship with their ethnic identity. In addition, a lower self-esteem is expected for the ethnic minority group member when compared with more esteemed White majority group member. In spite of the intuitive nature of the theory, findings from the research literature have been mixed and have given rise to a number of speculations.

A problem with many of the findings is that several of the studies have either focused on one or a few ethnic groups in one country (eg. Rotheram-Borus, 1990; Verkuyten, 1995, Phinney, Ferguson & Tate, 1997) or an ethnic group in two different countries (e.g., Rosenthal & Feldman, 1992b). From a cross-cultural psychological perspective, findings from such studies may be specific either to the ethnic group(s) in the study, or the country where the study was undertaken (Berry, Poortinga, Segall, & Dasen, 1992; Segall, Dasen, Berry & Poortinga, 1999).

One advantage of the present study is the fact that it involved two countries, and three ethnic groups in addition to the majority national group. As such, the stability and generality of the findings go a step beyond that of previous ones.

Results from the present study indicate that ethnic minority adolescents do not necessarily report of lower self-esteem than their majority peers. While some ethnic minority group members report of lower self-esteem, others have either higher or comparable self-esteem scores to that of their majority peers. This finding is consistent with the conclusion reached by Verkuyten (1994), which nonetheless involved studies conducted in single countries with no cross-national comparisons. It appears that high or low self-esteem among ethnic minority adolescents may arise against a background of the person's ethnicity, degree of perceived discrimination and a combination of the person's identification with his/her own on the one hand, and the majority group on the other.

The finding that Chileans reported of self-esteem levels comparable to that of their majority peers, and did not differ from each other raises the view that self-esteem to some extent may be a function of one's ethnicity and the country of residence. This view is perhaps further reinforced by the fact that Vietnamese in both countries also reported of the lowest self-esteem. This latter finding among Vietnamese may be consistent

with their Confucian child upbringing (see Ho, 1994) where modesty may be deemed as a virtue. It may be worth to add that low self-esteem among Vietnamese may not necessarily be related to other aspects of their adaptation. Virta and Westin (1999) for instance found that Vietnamese adolescents in Stockholm reported of better school adjustment than their peers with Turkish, Swedish and Finnish background. Studies have also indicated that there is an acceptance hierarchy for immigrants and ethnic minority groups in various settlement countries where some groups are more preferred or accepted than others (Berry & Kalin, 1995). It is therefore possible that the relative self-esteem scores found among the three ethnic groups is a reflection of their relative positions on the acceptance hierarchy by the majority group members. In other words, Chileans are probably more preferred in the two countries than Vietnamese. This assertion however, is only a speculation.

As this study shows, high perceived discrimination was consistently related to low self-esteem among the three ethnic groups in both countries suggesting that discrimination may be detrimental to a person's self-esteem. While this finding gains support from previous ones (e.g., Clark et al, 1999) it does not resolved the question of causality, namely, whether perceived discrimination causes poor self-esteem or the other way round as has been suggested by Phinney and her associates (1998).

While ethnic identity appears to booster one's self-esteem, this does not appear to moderate the negative effects of perceived discrimination. The generally higher self-esteem found among the adolescents in Sweden may be due to the fact that the Swedish multicultural ideology enshrined in their conception of integration fosters a strong ethnic identity which in turn promotes good self-esteem. Analyses of the data suggested that ethnic minority adolescents in Sweden generally reported of higher ethnic identity than their peers in Norway.

Although majority identity alone does not appear to be related to one's self-esteem, together with ethnic identity, the two appear to be an important determinant of one's self-esteem. This finding is a further support to the view that a combination of one's old heritage culture and the new majority culture for adolescents with immigrant background may be good for the person's psychological well-being (Sam, 2000). The need for high dual identification and its importance for the psychological well-being is in line with Phinney's (1991) assertion that a strong sense of ethnic identity devoid of positive identification with the larger society may trigger psychological conflicts. In ability to find significant differences among Chileans in Norway opting for Integration, Marginalization, Separation and Assimilation may be due to the smallness of sample size.

There may be several reasons to why majority identity does not show consistent relationship with self-esteem, ethnic identity and perceived discrimination. To begin with, both Norway and Sweden have a resettlement policy for immigrants that does not emphasise that ethnic minorities and immigrants should identify with the majority culture in order to be accepted. At the same time, high majority identification alone may be unrealistic for many ethnic minority adolescents because of their visible external features (Sam, 1992). For White majority members, majority identity may be related to their self-esteem, but this does not seem to be the case for ethnic minorities (Phinney et

al., 1997). That majority identity score were consistently lower than their mean scores for ethnic identity, and with the exception of Vietnamese and Turks in Norway, majority identity was not related to self-esteem. For Chileans in Sweden, high majority identity is even detrimental to self-esteem.

Although the study could not demonstrate moderator/mediator roles for perceived discrimination and majority identity, the issue may be far from resolved. It is still possible that these two factors have a higher order role, where both mechanisms may be taking place at the same time. That is, a combination of moderator and mediator effect in the relationship between ethnic identity and self-esteem. The possibility of a combined moderator/mediator effect was not examined in this study.

Two other factors which previous studies have speculated on with respect to the relationship between ethnic identity and self-esteem, but could not be examined in this study are the roles of sense of efficacy and the degree of ethnic identity development. For brevity, gender was also not included as a factor in the analyses, although there may be reasons to believe that boys and girls differ in their self-concept (Alsaker, 1990). These issues require some examination in our effort to unravel the relationship between ethnic identity and self-esteem.

Summary and Conclusion

The present study indicates that adolescents with ethnic minority status do not necessarily report of lower self-esteem than their peers belonging to the majority group. While ethnic identity is positively related to self-esteem, and perceived discrimination negatively related self-esteem, it appears that ethnic identity neither moderates nor mediate the relationship between perceived discrimination and self-esteem. Similarly, majority identity does not appear to have a mediating or moderating role in the relationship. Reported self-esteem appears to arise against a background of one's ethnicity, degree of perceived discrimination and a combination of the person's dual identification with his/her own ethnic group and the majority host group. Importantly, poor self-esteem may arise as a result of low identification with both groups, and high self-esteem may arise from high identification with both groups. To booster the self-esteem of ethnic minority adolescents, it may be important for professionals who work with them to help them develop dual positive identification with their own group and the majority group of the society of settlement.

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Relationship and Self-Driven Influences on Goal Characteristics: Components of a Cybernetic Model

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Research on goal-driven responses to problematic events has identified multiple characteristics of goal orientations (Samp & Solomon, 1998; 1999). What remains unclear is what drives the generation of goal characteristics after problematic events. This investigation reviews prior research and theory to suggest that the mechanisms driving the generation of goals in the problematic events context can be explained by an expanded model of cybernetic processes that recognizes the influence of both relationship and self processes on the production of goal characteristics. As an empirical examination of the model advanced, a four-stage study on dating partners was conducted. First, dating partners' self and relationship perceptions were solicited. Second, dating partners were presented with a hypothetical problematic event and then were instructed to have a conversation about the event. After the conversation, general retrospective accounts and cued-recall measures of goals were solicited. The results of this investigation suggest that relationship and self-related processes exert a complex motivational force on goal characteristics.

Dating relationships evolve as partners negotiate expectations and understandings that define standards for appropriate relational behavior (Montgomery, 1993; Wilmot, 1981). Ideally, individuals act in line with these shared understandings; yet inevitably one or both dating partners will act in a manner that violates expectations. Jones et al. (1995) implied that the most personally damaging events are those that explicitly harm or disappoint a significant other. It may be just as threatening for a person to retroactively perceive that he or she has done something that has changed the way that a relational partner thinks of that individual. Samp and Solomon (1998; 1999) labeled this type of situation a problematic event. Problematic events typically reflect uncharacteristic personal failures such as self-presentational errors (Schlenker, 1980), embarrassing behavior (Metts & Cupach, 1989; Miller, 1992), mistakes, accidents, or faux pas (Harris, 1984; McLaughlin, Cody, & O'Hair, 1983), infidelity (Mongeau, Hale, & Alles, 1994), or regrettable messages such as lies, blunders, or inappropriate disclosure (Knapp, Stafford, & Daly, 1986). More generally, any situation in which an offender thinks that his or her actions have negatively impacted the way a relational partner thinks of the offender is a problematic event.

Although problematic events may exist only in the eyes of those who commit the behavior, Samp and Solomon (1999) observed that offenders frequently possess goals that guide the way in which they will communicate after encountering such a situation. Further, the authors observed that although problematic events are embedded in relationships, offenders appeared to pursue goals that are focused on the self and guided towards self-repair. Samp and Solomon's (1999) investigation did not examine what drives the selection and enactment of particular goal characteristics in this context; however, the authors speculated that goals after problematic events are guided by the offender's interpretation of and reaction to the situation. A similar position is stated by theorists who argue that goal-directed behavior is guided by introspective processes related to the self (e.g., Bandura, 1989). Given the suggestion from Samp and Solomon's (1999) investigation in conjunction with prior theory on self processes, this investigation will examine self-related

processes as the mechanisms that influence goal orientations generated after problematic events. In particular, this investigation proposes and examines a framework that explains the production of communication goals as due to several facets of the self as bound by dating relationships.

The Influence of the Self on Goal Generation: The Cybernetic Cycle

The self is an introspective, yet reflexive cognitive structure that contains all of the information that defines an individual and informs behavior. A variety of scholars suggest that the concepts and information relevant to the self have an instrumental influence on decisions to pursue particular goals (e.g., Bandura, 1989). Motivation theorists explain this process by suggesting that the genesis of purposive and goal-directed behavior lies within a person's desire to regulate the self (e.g., Vallacher & Wegner, 1987). Further, self-regulation is implicated in a cybernetic cycle of behavior that involves the continual comparison of current behaviors to expected self-standards for behavior. Self-standards are both a product of how individuals conceive of who they are (Burke, 1980), and how others expect them to be in a particular domain (Higgins, 1987). Any behavior that deviates from a self-standard poses a threat to both the assumptions inherent to the self-standard and how an individual conceives of his or her self in that situation (Butler, Hokanson, & Flynn, 1994). In response to the self-threat, models of the cybernetic cycle assume that individuals generate goals for behavior that will reduce the discrepancy between a person's current actions and the way the individual would like to behave. The cybernetic cycle shows that neither situational features nor pre-established self-standards in isolation drive goals; rather, people frame their actions in light of a comparison of current behaviors that are discrepant from expected standards. In this sense, the goals generated to reduce the discrepancy serve to rehabilitate the self.

The Cybernetic Cycle in Interpersonal Contexts

Research on cybernetic processes in dating relationships identified that individuals engage the cybernetic cycle when their dating partners have threatened their sense of self about a future identity (Kerpelman & Lamke, 1997); yet the operation of the cybernetic cycle when individuals are faced with their own self-threatening relational behavior has not been examined. It is likely that the way in which individuals think about their dating relationships influences how individuals attempt to rehabilitate the self after problematic events. Indeed, research suggests that significant others play an important role in creating, reinforcing, and sustaining conceptions and judgments about who an individual is (Aron & Aron, 1996; Baxter, 1992; Miller, Potts, Fung, Hoogstra, & Mintz, 1990). The knowledge provided by close relationships also moderates the manner in which people interpret and evaluate troublesome behaviors (Burnett, McGhee, & Clarke, 1987). For example, the increased intimacy of a close relationship may render threatening behaviors more hurtful than if the same behavior had occurred in another context (Vangelisti & Crumley, 1998). Moreover, McLaughlin, Loudon, Cashion, and Altendorf (1985) argued that the understandings that individuals have about their relationships guide and structure the information guiding goal-related message planning. The influence of significant others on individuals' sense of self in their relationships is particularly apparent in dating relationships (Kerpelman & Lamke, 1997). Although dating relationships are voluntary, this relationship is often identified as closer, more involved, and more intimate than relationships with friends, family, or co-workers (Berscheid, Snyder, & Omoto, 1989). Moreover, dating relationships involve a process of intense self and relational evaluation. Indeed, Swann, De La Ronde, and Hixton (1994, p. 857) likened dating courtships to extended qualifying exams, as "(d)ating partners first present their credentials to each other and await their partner's judgment while making a parallel assessment of their partner's qualities. As such, courtship relationships represent a perpetual quest for acceptance mixed with scrutiny of the partner." Accordingly, dating partners should play an important role in defining aspects of an individual's self relevant to that relationship. In turn, it should be expected that aspects of the self defined by a close relationship inform the production of goals in interpersonal contexts such as problematic events.

The perspectives reviewed provide evidence that the self influences the production of goals. Further, it was suggested that the way in which the self influences goals may be constrained by aspects of the self relevant to particular contexts such as dating relationships. Considering problematic events context, the assumptions inherent to a close relationship should influence the content of self-standards relevant to the relational context and the degree to which offenders consider their behaviors problematic. Thus, the interpersonal context in which problematic events occur should place constraints on the aspects of self that are salient to the production of goals. To further define the production of goals in the cybernetic cycle, the next section reviews the

multiple characteristics of goals that may comprise the goal orientations of problematic event offenders.

Goal Characteristics in the Cybernetic Cycle

The cybernetic cycle specifies that goal-directed behavior arises in response to threats to the self. In an initial investigation of the goals generated after problematic events, Samp and Solomon (1998) identified seven categories of goals that offenders may pursue after problematic events. Table 1 provides definitions and exemplars of each goal category.

In further research, Samp and Solomon (1999) identified that five characteristics of goals can define a person's goal orientation after problematic events; these characteristics are: primary goal status, goal intensity, goal complexity, goal strain, and goal challenge. Specifically, the authors argued that some goals maintain a *primary status* by framing what an interaction is about. In addition, although only one goal may frame a given interaction, a variety of goals may be more or less relevant to the exchange; thus, particular goals may be defined by their *intensity*, or the degree to which they are important. The authors also acknowledged that goals rarely operate in isolation and that people may pursue several goals simultaneously. The pursuit of multiple, rather than single goals produces a more complex task for individuals; therefore, goal *complexity* comprises a third characteristic of people's communicative goals. Whereas similarity among goals allows for relative ease in pursuing multiple goals, the attainment of some goals may be incompatible with the pursuit of others. Samp and Solomon (1999) argued that the heightened complexity of managing conflicting goals may create tension within the individual; in turn, an individual's goals for an interaction can also be characterized by the presence of conflict amongst concerns, or goal *strain*. Finally, the parameters imposed by particular situations may elicit a degree of challenge in attaining goals; Samp and Solomon (1999) suggested that problematic events considered severe by the offender should pose a greater challenge to realizing goals than those situations that are deemed less severe. The difficulty associated with goal pursuit constitutes goal *challenge*, a fifth characteristic of goals contributing to an individual's general goal orientation.

The cybernetic cycle suggests that goal-directed behavior is enacted to rehabilitate the self in the face of threat; thus, the five goal characteristics should be a product of the self-processes implicated in the cybernetic cycle. Further, because the dating relationship context influences the definition and relevance of self-constructs in this domain, it is likely that relational perceptions influence the characteristics of goals that are pursued after problematic events.

Table 1:
Samp & Solomon's (1998) Typology of Goals for Responses to Problematic Events

<p><i>Maintain the Relationship:</i> Messages that indicate the offender's desire to improve or maintain the relationship.</p> <ul style="list-style-type: none">• "Because we've been friends for so long, I didn't want to end our friendship over something stupid like this."• "I didn't want him to think that I was going to dump him."• "I just wanted to save our friendship. We have too good of a friendship to let it end over silly things that can easily be worked out." <p><i>Accept Fault for the Event:</i> Messages that indicate the offender's desire to accept fault for the event.</p> <ul style="list-style-type: none">• "I wanted to explain why the situation occurred and to have my friend see things as I did."• "I wanted him to know that I made a mistake."• "I wanted him to know that I had never acted like that before and that I would never be that stupid again. I wanted him to know that I had learned my lesson the hard way." <p><i>Manage Positive Face:</i> Messages that indicate the offender's desire to look good to the partner.</p> <ul style="list-style-type: none">• "I didn't want her to hate me. I knew she wouldn't deep down, but I didn't want her to think less of me at all."• "I think I was looking for some reassurance from my partner that I hadn't done anything bad."• "I did not want my friend to be mad at me and think that I was stupid." <p><i>Avoid Addressing the Event:</i> Messages that indicate the offender's desire to ignore, and/or deflect attention from the event.</p> <ul style="list-style-type: none">• "I really didn't care what he thought about it, nor did I want to discuss the event."• "I wasn't going to defend myself. She and I have an unspoken understanding that we don't rehash mistakes, so I decided not to talk about it."• "If we have a major argument, we're fine the next day, so why talk about it?" <p><i>Manage the Conversation:</i> Messages that indicate the offender's concern for the process of the conversation.</p> <ul style="list-style-type: none">• "I wanted the chance to talk to her because we weren't really talking about the situation. I wanted to make sure that we talked so we could work things out."• "I needed to talk to him right away and I wanted to make sure we talked about it."• "I knew that she would never confront the issue, so I needed to say something." <p><i>Manage Emotion:</i> Messages that indicate the offender's desire to express, release, and/or reveal emotions.</p> <ul style="list-style-type: none">• "I just had to vent. If I had held everything inside, I would have had a breakdown."• "I was upset and not emotionally stable. She did not understand my stress."• "I was so nervous and worked up after this incident. I needed to ease my pain." <p><i>Restore Negative Face:</i> Messages that indicate the offender's desire to assert independence and/or confidence.</p> <ul style="list-style-type: none">• "I was not going to do what he thought I should do. I wanted to stand up for myself."• "I wanted her to believe that I was in control of the situation. I usually have the ability to stand up for myself and speak my mind no matter what, and this was no different."• "I felt the need to redeem myself because I am a strong, self-sufficient person."

Extending the Cybernetic Cycle: Relationship and Self Influences on Goals

Given that both self and relationship forces should influence the generation of individuals' goal orientations after problematic events, it is advanced that five phenomena should influence the characteristics of goals that define offenders' goal orientations after problematic events. Two phenomena reflect general, relationship influences on the cybernetic cycle: the problematic event offender's (a) mental models of relational attachment, and (b) feelings of affection for partners. The other three are relevant to the self-constructs implicated by problematic events: the (c) importance of self-constructs, (d) magnitude of self-construct threat, and (e) number of self-constructs threatened by the situation.

Mental Models of Self and Other: Attachment Orientations

Attachment Theory (Bowlby, 1969; 1988; Hazan & Shaver, 1987) suggests that experiences with significant others influence working models of relationships in memory. Working models of attachment, like other cognitive representations, direct information processing resources (Baldwin, 1992), and facilitate the encoding and retrieval of information that is consistent with attachment expectations (Shaver, Collins, & Clark, 1996). Models of attachment also influence perceptions and behaviors in close relationships, particularly romantic pairings (Hazan & Zeifman, 1994).

Attachment orientations have been traditionally examined by grouping individuals into one of four attachment orientations: secure, anxious-ambivalent, fearful-avoidant, or dismissive-avoidant (see Fraley & Waller, 1998 for a review). However, research has identified substantial variation among individuals within each attachment style (e.g., Griffin & Bartholomew, 1994). Accordingly, more recent research has examined attachment types in terms of underlying dimensions (e.g., Collins & Read, 1990; Feeney, 1995). By defining attachment orientations as dimensions, the problems associated with categorizing similar, yet different individuals within groups is avoided. Further, the dimensional approach allows for a more statistically powerful continuous measure of attachment orientation.

Recently, theorists have argued that the mental models that people have of significant others are differentiated along two underlying dimensions (Feeney, 1995). One dimension reflects the degree to which individuals have comfort with closeness. This dimension reflects an other-focused judgment, such that persons who are comfortable with closeness have a positive model of others and believe that significant others are trustworthy. The second dimension reflects the degree to which persons experience anxiety over relationships. This dimension is framed by a self-focused judgment of whether one is worthy of support. Those who are anxious about their relationships have a negative model of self, feel unworthy of support, and worry about significant others' commitment.

Explanations for goal-based behavior assume that

individuals understand situations by activating related knowledge structures from memory (e.g., Berger, 1997; Wilson, 1995). This activated information generates expectations regarding an event, which drive both what information individuals consider salient to the situation and the goals that are pursued in that context. Attachment theorists argue that the information cued from memory is constrained by an individual's mental model of attachment: those concepts relevant to a person's mental model of relationships are privileged and accessed from memory over those concepts that may be relevant to a given situation, but not salient to a person's attachment style (Collins & Read, 1990). In this sense, it is likely that knowledge stores associated with particular attachment orientations should influence the information that is privileged in messages *and the primary status of* particular goals. Formally: *H1*: The attachment orientation of problematic event offenders will be associated with primary goal.

Feelings of Relationship Affection

Individuals vary in their desire for the self to merge with a significant other (McAdams, 1984; 1988). For those couples who are relatively uninvolved with one another, the degree to which the self is informed by their relationship may be minor. However, as a relationship evolves and partners' lives intersect, an individual's sense of self and his or her expectations for behavior become increasingly embedded in that relationship. The desire for the self to merge with a significant other reflects the degree of intimacy in a relationship (McAdams, 1984).

Perceptions of intimacy, as defined by feelings of positive affection for partners, exert a particularly powerful influence on thoughts, feelings, and behaviors in romantic pairings. Indeed, prior research observed that positive feelings for relational partners intensify individuals' desire to reinforce their wishes and expectations for intimate contact (Praeger, 1998). The cybernetic cycle specifies that goal-driven behavior arises under conditions where a discrepancy between a current behavior and a self-standard for behavior merits attention. For those persons who rely on significant others to establish and reinforce their self-conceptions, positive feelings of affection for partners should enhance desires to reinforce those aspects of self that are embedded in the relationship. In other words, the embeddedness of the self within relationships should influence the importance of motives that rehabilitate the self in the face of relationally-embedded threatening situations.

To the extent that feelings of affection for relational partners produce a drive to rehabilitate the self in relationships, that facet of intimacy should have implications for the intensity of goals pursued after problematic events. In particular, when a person's sense of self is deeply embedded in his or her relationship, that person should consider goals that will rehabilitate the self from the threat posed by a problematic event as important and worthy of pursuit. In the context of dating relationships, feelings of intense affection are commonly thought of as feelings of

loving; therefore, feelings of loving should exert an overarching influence on cybernetic processes by providing the mechanism by which certain concerns are valued. Simply stated: H2: Loving for relational partners will be associated with goal intensity.

While relationship dynamics should inform the general framework and intensity by which goals are pursued, the cybernetic cycle suggests that particular events have implications for the nature of the self-construct threats generated by the situation. Thus, whereas relational forces provide the framework by which motives are structured, the self-constructs implicated in a problematic event should also constrain the generation of goals.

The Features of Self-Constructs Implicated by Problematic Events

It is advanced that three specific features of self-constructs implicated by problematic events are relevant to understanding the operation of goal characteristics. The first feature concerns the importance of a self-construct to a problematic event offender, in general. The final two features concern the nature of the self-construct threats generated by problematic events: (a) the magnitude of self-construct threat, and (b) the number of self-constructs threatened by problematic events.

The Importance of the Self-Construct Threatened by Problematic Events

The self contains a considerable amount of information relevant to the features that define a person. However, prior research suggested that some information may be more important to defining the self than others (Markus, 1977), and it is the important information that is accessed from memory frequently (Higgins & King, 1981). Thus, those self-constructs that are substantial to self-definition are more likely to be chronically implicated in individuals' actions as they navigate the world (Little, 1993).

Whereas models of the cybernetic cycle assume that all threats to self-constructs will generate the motive to rehabilitate the self, it is likely that this motive will vary as a function of the general importance of these self-constructs. In particular, important self-constructs should be associated with a more intense desire to pursue intentions that bring the self back in line with the standards for that self-construct. Moreover, prior research suggests that those constructs that are central to self-definition are more likely to be threatened than those concepts that are peripheral to defining the self (Brown, Bilfulco, & Harris, 1987); thus, behaviors implicating important self-constructs should be more apt to engage goal-producing cybernetic processes than less important self-constructs.

The degree to which a relational self-construct is important should have implications for the intensity of specific message goals. In particular, the importance of a given self-construct should encourage individuals to maintain that aspect of self. Therefore, the importance of a self-construct should magnify the desire to pursue certain goals. Accordingly: H3: The importance of relational self-constructs

will be associated with goal intensity.

The Magnitude of Relational Self-Construct Threat Associated with Problematic Events

Whereas models of the cybernetic cycle assume that situations can be generally self-threatening, other research has identified that the magnitude of self-construct threats varies (Hammen & Goodman-Brown, 1990). Further, research not specific to the cybernetic cycle suggests that the magnitude of self-construct threat influences the way in which individuals attempt to rehabilitate the self in the face of threat such that severe threats to self constrain the potential options that individuals have to manage the threat (Folkman et al., 1986). Samp and Solomon (1999) argued that problematic events perceived as severe impose more of a challenge to goal attainment than those situations deemed minor. In the same way, it is likely that the increased magnitude of self-construct threat associated with a problematic event will make goal attainment more difficult than when dealing with minor challenges to self-constructs. Thus: H4: The magnitude of relational self-construct threats associated with problematic events will be associated with goal challenge.

The Number of Relational Self-Constructs Threatened by Problematic Events.

Models of the cybernetic cycle imply that only one aspect of the self is threatened by particular situations; however, prior research has implied that multiple self-threats may be elicited by single situations (Emmons, 1997; Vangelisti & Crumley, 1998). It is likely that problematic events that threaten multiple self-constructs should introduce additional complexity into the cybernetic cycle. In particular, every facet of the self threatened by a problematic event will activate knowledge stores relevant to each self-construct; in turn, multiple goals may be activated simultaneously, all driven towards self-rehabilitation. Therefore, the number of self-construct threats elicited should influence the number of goals that are activated in the attempt to regulate discrepant behavior. Formally: H5: The number of relational self-constructs threatened by problematic events will be positively associated with goal complexity.

In some instances, the multiple goals that are activated by a situation may be incompatible; Samp and Solomon (1999) defined this feature of goals as indicative of goal strain. Explanations of judgments about the self imply that not everyone may pursue incompatible goals. Research suggests that high self-esteem persons are more certain about the constructs that define who they are (Campbell, 1990), and are more inclined to accept risks and to pursue more complex goals (Von Bergen, Soper, & Rosenthal, 1996). These observations imply that high self-esteem individuals may engage a combination of goals that will facilitate the rehabilitation of the self, even if these goals are conflicting. On the other hand, people with lower levels of self-esteem are less certain about the constructs that define who they

are, generally avoid risks, and passively react to treats. The passive manner in which low self-esteem individuals react to self-construct threats suggests that they may be overwhelmed by the pursuit of numerous self-relevant goals. It is likely that low self-esteem individuals will shun the difficulty associated with multiple incompatible goals. Formally: H_6 : The association between the number of relational self-constructs threatened by problematic events and goal strain will be greater when problematic event offenders possess higher levels of self-esteem than when they have lower levels of self-esteem.

The model advanced links offenders' attachment orientation, loving for partners, self-construct importance, magnitude of self-constructs threatened, and number of self-constructs threatened to the multiple characteristics of goal orientations pursued after problematic events. The five influences on goal characteristics reflect two distinct elements within the cybernetic cycle. One element concerns the overarching influence that relational perceptions have on the selection of goals within relational contexts. The second element stresses the nature of the self-constructs implicated in the problematic event itself. In tandem, both elements highlight a variety of dispositional and situational forces influencing the pursuit of goals after problematic events.

Method

To examine how relationship and self-related processes influence goal characteristics after problematic events, this investigation solicited individuals' perceptions of their relationship and self. Then, dating partners were presented with a hypothetical problematic event and were instructed to have a conversation about the situation. Throughout this process, general retrospective accounts and cued-recall measures of goals were solicited.

Sample

One hundred and six couples in dating relationships participated in this study. Respondents were solicited from undergraduate communication courses at a large Midwestern university in the United States and received either extra course credit or payment for participation. The 212 respondents ranged from 18 to 31 years of age ($M = 20.54$, $SD = 1.91$). The length of time that couples had dated one another ranged from 1 to 70 months ($M = 14.22$, $SD = 14.39$, median = 9.00).

Although participation involved both dating partners, the focus of this study was on one person who was assigned to be the problematic event offender. This person was labeled as the actor; the other member of the couple was considered as the partner. Roles were randomly assigned to individuals and assignment was alternated to obtain an equal number of males and females in each position (actors: male $n = 53$ and female $n = 53$; partners: male $n = 52$ and female $n = 54$).

Procedure

Each couple completed a four stage procedure during a one-hour period. Upon arrival, the couple was separated and one person was designated as the actor and the other as the partner. Each person completed all individual tasks in a private room and partners were reunited for couple tasks.

Stage 1: Self and Relationship Attitudes Questionnaire

Actors and partners first completed a questionnaire. The survey packet contained measures of self and relationship perceptions.

Stage 2: Presentation of a Problematic Event

Next, actors and partner received a card describing one of the five hypothetical problematic events that were drawn from scenarios used in Samp and Solomon (1999) and from a separate sample of participants (Samp, 1999). The cards that the actors and partners received described the same hypothetical event; however, descriptions were worded such that the actor was identified as the person who committed the behavior, and the partner was described as present and aware of the behavior. Table 2 describes the events, as stated for actors. Couples were randomly assigned to a particular event and the assignment of events was structured to ensure an equal distribution of scenarios. The number of actors assigned to the five events were as follows: The Shove: $n = 21$ (male $n = 10$, female $n = 11$); The Kiss: $n = 22$ (male $n = 11$, female $n = 11$); A Public Announcement: $n = 21$ (male $n = 11$, female $n = 10$); The Designated Driver: $n = 21$ (male $n = 10$, female $n = 11$); and The Test Grade: $n = 21$ (male $n = 10$, female $n = 11$).

Table 2:
Hypothetical Problematic Event Scenarios

The Shove

You and your dating partner have been having a heated discussion about an issue that is important to you. It is clear to you that your dating partner does not understand your position. You are getting frustrated. Finally, you reach your breaking point, lose control, and end up shoving your dating partner.

The Kiss

You're dating partner's best friend is a smart, attractive, and fun person to hang out with. You and the best friend have been spending a lot of time together working on a class project. While pulling an all-nighter together to work on the project, you get caught up in the moment and kiss. Your dating partner then walks in on you.

A Public Announcement

You and your dating partner are at a party hosted by a mutual friend. After a few drinks, you start to tell the crowd some private information about your dating partner that you promised you would keep secret. Just as you are sharing the juicy details, your dating partner walks in the room.

The Designated Driver

Before going out for the evening, you and your dating partner agree that you will be the designated driver and will not drink. However, you break your agreement and end up getting very drunk. Your dating partner has to walk home alone.

The Test Grade

You and your dating partner are both taking PSYCH101 and study for exams together. After getting your last exam back, your dating partner tells you that he/she got an A and asks what you received. Although you got a C, you tell your dating partner that you received an A, as well. You then drop your exam booklet on the floor and your dating partner sees that you really got a C.

Actors and partners were asked to imagine that the event had actually occurred. Then, actors and partners were presented with a packet that included several questions about the event, including the perceived severity of the situation, and the degree to which the event would challenge several relational self-constructs relevant to the problematic event context.

Stage 3: Conversation About a Problematic Event

Next, actors and partners were individually asked to imagine that it was the day after the event described in the scenario occurred. Actors and partners were then instructed that they would be reunited as a couple to have a five minute conversation that role played how they would talk about the situation for the first time.

Couples were led to a separate room that was set up as a living room. Actors and partners were seated opposite one another and were separated by a coffee table. Individuals were fitted with small microphones attached to their lapels. Then, the researcher started an audio tape recorder and a timer, and left the room. After five minutes, the researcher returned and stopped the tape.

Stage 4: Post Conversation Questionnaires

Actors and partners were separated after the conversation. Then, both actors and partners were asked to write down why they said what they said during the conversation. Next, actors and partners completed measures to assess the goals that they pursued in their discussion; this served as a general

retrospective accounts of goals. After, partners were finished with the study and remained in their room. Actors completed an additional task that required them to listen to a tape of their conversation with their dating partner. At each speaking turn, actors were asked to indicate the degree to which they pursued the seven goals identified by Samp and Solomon (1998). This procedure allowed for the collection of a cued-recall account of goals that acknowledged the variability of goals throughout the conversation.

The four stages of this study included measures of relationship and self perceptions, threats to self-constructs, problematic event perceptions, and message goal characteristics. Although actors and participants completed some measures in common, all descriptive statistics and measurement analyses refer to the actors ($n = 106$), who were the focus of this investigation.

Measures of Relationship Perceptions

The first two hypotheses in this investigation concern individuals' mental models of their relationships and feelings of affection for partners.

Attachment Orientation

Feeney's (1995) measure of attachment assumes that two underlying dimensions define attachment orientations: comfort with closeness and anxiety about relationships. The dimensions were measured with fifteen items on a 5-point Likert scale. To determine if the two dimensions were evident in this study, the individual items comprising the attachment scale were submitted to a principle axis factor analysis with varimax rotation. Table 3 reports the items and factor loadings.

Thirteen items indicated primary factor loadings above .45 and three factors were suggested by the analysis. One factor was similar to Feeney's (1995) measure of anxiety over relationships ($M = 3.92$, $SD = 0.52$, $\alpha = .83$). Feeney's (1995) comfort with closeness factor was split into two separate factors. One factor contained items related to comfort with intimacy ($M = 4.46$, $SD = 0.84$, $\alpha = .94$). The second factor reflected comfort with dependence ($M = 3.79$, $SD = 0.52$, $\alpha = .86$). Although the results of this factor analysis deviate from Feeney's (1995) conceptualization of the measures, the factors identified in this investigation are in line with prior research (Collins & Read, 1990; Dillard et al., 1999).

Loving. Rubin's (1970) loving measure was used to assess affection for partners. Individuals responded to the items on a 5-point Likert scale ($M = 3.93$, $SD = 0.79$, $\alpha = .93$).

Table 3:
Attachment Orientation Items: Rotated Factor Solution

Items	Anxiety Over Relationships	Comfort With Intimacy	Comfort With Dependence
76. My dating partner is often reluctant to get as close as I would like.	<u>.71</u>	.00	-.13
77. I often worry that my dating partner doesn't really love me.	<u>.98</u>	.00	.00
78. I rarely worry about my dating partner leaving me. (r)	<u>.79</u>	.00	.00
81. Sometimes my dating partner is scared away by my wanting to be close to him/her.	<u>.58</u>	-.23	-.27
79. I often want to merge completely with my dating partner.	<u>.47</u>	.00	.00
74. I'm nervous whenever my dating partner gets too close to me. (r)	.00	<u>.91</u>	.26
75. My dating partner wants me to be more intimate than I feel comfortable being. (r)	.00	<u>.89</u>	.25
71. I don't like my dating partner getting too close to me. (r)	.00	<u>.86</u>	.15
72. I'm somewhat uncomfortable being too close to my dating partner. (r)	.00	<u>.84</u>	.00
68. I'm not very comfortable having to depend on my dating partner. (r)	-.18	.28	<u>.86</u>
73. I find it difficult to trust my dating partner completely. (r)	.00	.00	<u>.74</u>
69. I'm comfortable having my dating partner depend on me.	-.15	.28	<u>.67</u>
Items	Anxiety Over Relationships	Comfort With Intimacy	Comfort With Dependence
80. I find it difficult to depend on my dating partner. (r)	-.14	.17	.58
67. I find it relatively easy to get close to my dating partner.	.10	.00	.00
70. I rarely worry about being abandoned by my dating partner. (r)	.00	.13	-.18

Note. Item numbers reflect ordering in the questionnaire. (r) indicates a reverse-scored item.

Measures of Self-Perceptions

Self-esteem. Rosenberg's (1979) measure was used to assess self-esteem. Individuals responded to ten items on a 4-point Likert scale ($M = 3.37$, $SD = 0.44$, $\alpha = .86$).

Self-construct importance. Samp (1999) identified that five relational self-constructs are relevant and vulnerable to threat by problematic events. The final measure of self-perceptions examined the perceived importance of each relational self-construct. Respondents were presented with one item per each self-construct and were asked to rate how important each self-construct was to self-definition on a 5-point Likert scale; these ratings were as follows: emotion management ($M = 3.84$, $SD = 0.94$), social attractiveness ($M = 3.60$, $SD = 0.98$), social behavior ($M = 3.75$, $SD =$

1.07), friend relations ($M = 4.72$, $SD = 0.58$), and dating relations ($M = 4.86$, $SD = 0.35$).

Measures of Threatened Self-Constructs

Two aspects of self-construct threats that are of interest in this investigation are the magnitude of threat to each self-construct and the number of self-construct threatened by problematic events. Samp (1999) created and validated a measure of threats to the five self-constructs relevant and vulnerable to threat by problematic events; the items are in Table 4. In the second stage of this study, respondents reported the degree to which the problematic event would threaten each of the five relational self-constructs relevant to the problematic event context.

Table 4:
Subscales Measuring Relational Self-Constructs Relevant and Vulnerable to Threat

Self-Construct Vulnerable to Threat	<u>M</u>	(<u>SD</u>)	α
<i>Emotion Management</i>	3.42	(1.10)	.92
11. the way I manage my emotions			
15. how aware I am of my inner feelings			
28. how I emotionally react to situations			
45. my emotional well-being			
<i>Social Attractiveness</i>	1.57	(0.88)	.94
5. how I physically look			
22. my physical appearance			
39. how attractive I am compared to others			
40. how popular I am with members of the opposite sex			
<i>Social Behavior</i>	3.28	(0.89)	.80
16. how socially acceptable my behavior was			
30. how I am supposed to act for my age			
32. how people of my gender are supposed to behave			
49. my role as a person of my gender			
<i>Friend Relations</i>	2.91	(1.12)	.91
6. the quality of my friendships			
23. how appreciated I am by my friends			
41. the type of friends that I have			
<i>Dating Relations</i>	4.01	(0.94)	.92
17. my relationship with the person I am dating			
29. how I feel about my dating relationship			
46. the worth of my dating relationship			

Note. Numbering reflects ordering in the questionnaire.

This measure was also used to determine the number of relational self-constructs threatened by problematic events. Self-constructs that were threatened were defined as those that were rated above the scale midpoint (3.00); the number of self-constructs meeting this criterion were then summed for each respondent. The frequency and percentage of actors rating the relational self-constructs above the midpoint was as follows: emotion management: $\underline{n} = 66$ (62%); social attractiveness: $\underline{n} = 7$ (6%); social behavior: $\underline{n} = 60$ (56%); friend relations: $\underline{n} = 52$ (49%); and dating relations: $\underline{n} = 88$ (83%). Overall, actors reported approximately 2.58 ($\underline{SD} = 1.42$) threatened self-constructs.

Measures of Goal Characteristics

To assess the five characteristics of goals operationalized in this investigation, two types of judgments were solicited from actors. One judgment concerned actors' general retrospective assessment of the goals they pursued in the

conversation. The other judgment relied on a cued-recall measure computed from the goals pursued on average across conversational turns. Whereas the general retrospective accounts provided insight into the overall concerns addressed during the conversation, the cued-recall ratings captured the goals salient across particular moments of the conversation. Three of the goal characteristics were operationalized with both judgments.

Primary Goal

The intent that frames an interaction reflects the primary goal. The operationalization of this goal characteristic was based on actors' open-ended descriptions of why they said what they said during the conversation. Two independent coders categorized each description using the typology developed by Samp and Solomon (1998; See Table 1). Coders were instructed to categorize each description as indicative of one goal. If a description contained more than one goal,

coders were told to focus on the dominant goal in the narrative. One coder judged the entire sample of descriptions ($n = 106$), and a second coder evaluated a randomly selected subset ($n = 45$). Intercoder reliability was acceptable ($\kappa =$

.86), and disagreements were resolved by randomly selecting one coder's judgment. Table 5 summarizes each goal category.

Table 5:
Primary Goal: Frequencies, Proportions, and Reliabilities

Message Goals	Frequency	Proportion ^a	α
Maintain the Relationship	20	.19	.93
Accept Fault for the Event	33	.31	.95
Manage Positive Face	7	.07	.82
Avoid Addressing the Event	5	.05	.89
Manage the Conversation	25	.24	.94
Manage Emotion	10	.09	.99
Restore Negative Face	6	.05	.82

^aCell entries reflect the proportion of individuals who reported a particular goal.

Goal Intensity

The importance of each of the seven goals was examined in two ways. One measure of goal intensity utilized responses to Samp and Solomon's (1999) retrospective measure of goal intensity. After the conversation, actors completed twenty-eight items on a 5-point Likert scale to indicate the extent to which particular goals influenced their messages. Each goal category was assessed with four items, and responses within subscales were averaged. From this measure, the goals to accept fault for the event and to manage the conversation were reported as the most important.

The second measure of goal intensity was obtained through actors' cued-recall of the goals that they pursued at each conversational turn. On a 5-point Likert scale, actors indicated at each turn the extent to which they attempted to pursue each of the seven goals. Goal intensity reflected the average of the ratings for each goal across turns. In contrast with the retrospective measure of goal intensity, the mean cued-recall intensity score was highest for the goal to manage the relationship (see Table 6).

Goal Complexity

Two operationalizations were also used to assess goal complexity. One definition relied on participants' ratings on the retrospective goal intensity measure. Goal complexity was defined as the number of different goals an actor rated above the scale midpoint (3.00). The modal number of important goals was 4.00 ($M = 3.89$, $SD = 1.51$). The second operationalization of goal complexity utilized the cued-recall

ratings of goal importance. Again, goal complexity was defined as the number of goals that were rated on average higher than the scale midpoint; this time, the measure of goal complexity was defined as the average number of important goals across turns. On average, the modal number of goals rated as important across turns was 2.40 ($M = 2.24$, $SD = 1.05$). Table 7 summarizes the frequency of actors rating each of the seven goals above the scale midpoint on both measures.

Goal Strain

In previous analyses of the retrospective measures of goal intensity, Samp and Solomon (1998) observed that the seven goal subscales reduced to two factors that highlighted goal strain between social and anti-social concerns. The social goal category reflected the composite of the goals to maintain the relationship, accept fault for the event, and manage positive face. The anti-social goal factor included the goals to avoid addressing the event and to restore negative face.

To examine if the goal strain structure was replicated in these data, a principle axis factor analysis using varimax rotation was conducted on the retrospective measures of the seven goal subscales. As reported in Table 8, Factor 1 was defined by the three social goal subscales identified by Samp and Solomon (1998). However, the subscales indicating the goals to avoid addressing the event and restore negative face that previously defined the anti-social factor split into two factors.

Table 6:
Goal Intensity Measures: Descriptive Statistics and Reliabilities

Goal	Retrospective Measure		Cued-Recall Measure ^a		
	<u>M</u>	<u>SD</u>	<u>α</u>	<u>M</u>	<u>SD</u>
Maintain the Relationship	3.62	0.81	.75	2.96	1.22
Accept Fault for the Event	4.17	0.82	.78	2.61	1.15
Manage Positive Face	3.48	0.96	.79	2.74	1.05
Avoid Addressing the Event	2.46	0.95	.74	1.69	0.78
Manage the Conversation	4.17	0.72	.88	2.37	1.13
Manage Emotion	2.91	0.91	.82	2.86	0.93
Restore Negative Face	2.57	0.92	.76	2.49	0.86

^aThe cued-recall measure of goals reflects the average of actors' ratings of goals on each of their speaking turns. Because the number of speaking turns varied between actors (range: 4-47 turns), an estimate of the inter-item reliability of this measure was not feasible.

Table 7:
Goal Complexity Measures: Frequencies and Percentages of Participants Rating Goals as Important

Goal	Retrospective Measure	Cued-Recall Measure
Maintain the Relationship	73 (69%)	92 (87%)
Accept Fault for the Event	93 (88%)	92 (87%)
Manage Positive Face	64 (60%)	96 (91%)
Avoid Addressing the Event	25 (23%)	55 (52%)
Manage the Conversation	94 (89%)	77 (73%)
Manage Emotion	38 (35%)	94 (89%)
Restore Negative Face	25 (24%)	80 (75%)

Note. Cell entries are frequencies of respondents indicating a particular goal above the midpoint (3.00); parenthetical values are the percentage of respondents with respect to the total sample of actors ($N = 106$).

Table 8:
Rotated Factor Matrix for 7 Goal Subscales

Goal	Factor 1	Factor 2	Factor 3
Maintain the Relationship	.88	-.28	.00
Accept Fault for the Event	.53	.00	-.63
Manage Positive Face	.69	.00	.00
Manage the Conversation	.30	-.56	.00
Manage Emotion	.29	.00	.00
Avoid Addressing the Event	.23	.86	.11
Restore Negative Face	.28	.21	.67

Note. Cell entries are values after varimax rotation.

Given that an anti-social factor was not suggested by the exploratory factor analysis, a new operationalization of goal strain was created for this investigation. Goal strain was defined as the presence of any of the three social goals competing with either the importance of the goal to avoid addressing the event or to restore negative face. Thirty-four actors (32% of the sample) met the conditions for goal strain. The measure of goal strain was a dummy-coded variable distinguishing those who reported any instances of goal strain (= 1) versus those who did not (= 0).

Goal strain was also operationalized with the cued-recall ratings of intensity; this measure was defined by the proportion of speaking turns in which actors indicated any combination of goal strain. On average, 20 percent of actors' speaking turns met the criteria for goal strain ($SD = 0.29$).

Goal Challenge

Samp and Solomon (1999) argued perceptions of problematic event severity reflect the likelihood that the situation challenged goal attainment. After participants received the description of a hypothetical problematic event, they received a questionnaire that contained a revised version of Samp and Solomon's (1999) measures of event severity on a 5-point Likert scale. The average severity score was 3.46 ($SD = 1.05$, $\alpha = .94$).

Results

Preliminary and principle analyses involved tests, including χ^2 , t , F , β , ANOVA, ANCOVA, and MANOVA. Generally speaking, assuming a medium effect and $\alpha = .05$ (two-tailed), the power for χ^2 tests exceeded .60, and power for t -tests exceeded .68. Power for the tests of β exceeded .71 and F exceeded .92. Finally, for the tests of ANOVA, ANCOVA, and MANOVA, power exceeded .70. Before the hypotheses for this investigation could be considered, all interrelationships among variables were examined and scenario differences on the measures of self-construct threats

and characteristics of goals were considered. For all relevant analyses, interactions among the variables in the analysis were examined; however, because of the extremely large number of tests for each analysis, only significant associations are reported. Further, in analyses of variables that were entered as a block, the test of the block is reported, but only the significant associations for the individual variables are reported. When relevant to the test of a hypothesis, the results of the preliminary analyses will be discussed.

The Influence of Attachment Orientations

The first hypothesis proposed that problematic event offenders' attachment orientation is associated with primary goal. Because the three dimensions together constitute the attachment construct, they were represented as a block of variables. The measure of primary goal reflected coders' judgments of the post-discussion narratives of actors' conversational intentions.

The association between attachment orientation and primary goal was examined through a MANOVA, with the measures of attachment as the dependent variables and the seven category measure of primary goal as the independent variable; the assignment of variables as independent and dependent variables was switched for this analyses so that the three attachment dimensions could be considered simultaneously. The attachment measures were not significantly associated with primary goal, $F(18, 297) = 1.00$, n.s.; thus, the first hypothesis was not supported.

The Influence of Loving

The second hypothesis proposed that feelings of loving for relational partners are associated with the intensity of various goals. Preliminary analyses indicated that the measures of the intensity of the seven goals were interdependent. Accordingly, the influence of intimacy on goal intensity was evaluated through hierarchical regression

analyses where the measure of love was the dependent variable and the block of goal intensity measures was entered as independent variables. The assignment of independent and dependent variables was switched for this analysis in order to examine the goal intensity measures together in a single step of the analysis. Two regressions were conducted: one examined the association between loving and the retrospective measures of goal intensity, and the other analysis utilized the cued-recall measures of goal intensity. Analyses indicated that loving and the retrospective measures of goal intensity were not significantly associated, $R(7, 98) = .29$, $R^2 \Delta = .08$, n.s. Yet as reported in Table 9, loving was significantly associated with the cued-recall measures of goal intensity. The betas for the measures of goal intensity showed that loving was positively associated with the importance of the goal to maintain the relationship, and negatively associated with the importance of the goals to accept fault for the event, avoid addressing the event, and manage emotion. Considering that loving was associated with some of the cued-recall measures, but none of the retrospective measures of goal intensity, the second hypothesis received partial support.

The Influence of Self-Construct Importance

The third hypothesis advanced that self-construct importance is associated with goal intensity. Preliminary analyses indicated that the importance of various self-constructs are relatively independent; on the other hand, the measures of goal intensity are interdependent. Accordingly, the most parsimonious analysis necessitated reversing the dependent and independent variables to regress each self-construct importance measure onto the goal intensity measures. Five regressions were conducted; for each, the measures of the importance of one of the self-constructs was the dependent variable and the seven goal intensity measures were entered on the first step of the analysis as a block of independent variables. Analyses were performed for both the retrospective and cued-recall measures of goal intensity.

Table 10 reviews the analyses for the retrospective goal intensity measures. While none of the self-construct importance measures were significantly associated with the set of goal intensity measures, an examination of the betas showed three significant associations. The importance of the emotion management self-construct was positively associated with the intensity of the goals to manage positive face and manage emotion. Also, the importance of the dating relations self-construct was negatively associated with the intensity of the goal to avoid addressing the event.

Similar to the retrospective measures, the set of measures assessing self-construct importance was not significantly associated with the cued-recall measures of goal intensity. In contrast to the retrospective measures, none of the associations between self-construct importance and the intensity of particular goals was significant. Considering both measures of goal intensity, this hypothesis received limited support.

The Influence of the Magnitude of Self-Construct Threat

The fourth hypothesis suggested that the magnitude of self-construct threat elicited by problematic events is associated with goal challenge, as indicated by perceptions of event severity. Preliminary analyses revealed that the five hypothetical scenarios used in this investigation could be distinguished by both the magnitude of self-construct threat and ratings of severity, the influence of scenario type was considered. Further, preliminary analyses suggested that the measures of the magnitude of self-construct threat are associated with one another; therefore, this construct was examined as a block of variables in a hierarchical regression with perceptions of event severity as the dependent variable. First, a set of four effects codes representing scenario type were entered as covariates. The measures of the magnitude of self-construct threat were entered on the next step.

As reported in Table 11, the magnitude of self-construct threat had an overall significant effect on perceptions of event severity. Therefore, this hypothesis received support. The betas for measures of the magnitude of each self-construct threat indicated that only the magnitude of threat to the emotion management self-construct was positively associated with goal challenge.

The Influence of the Number of Self-Constructs Threatened

H5 suggested that the number of self-constructs threatened by problematic events is associated with goal complexity. Two hierarchical regression analyses examined this hypothesis: one analysis included the retrospective measure of goal complexity and the other regression included the cued-recall measure as the dependent variable. Because preliminary analyses indicated that the five hypothetical scenarios are distinguished by the number of self-constructs threatened by the situation, a set of four scenario type effects codes were entered on the first step for both analyses. The number of self-constructs threatened was entered on step two.

Table 12 summarizes the results of this analysis for both measures of goal complexity. For the retrospective measure, analyses indicated a positive association between the number of self-constructs threatened and goal complexity, $\beta = .36$, $p < .01$. On the other hand, the number of self-constructs threatened was not significantly associated with the cued-recall measure of this goal characteristic, $\beta = -.13$, n.s. Therefore, H5 received mixed support.

Table 9:
Summary of the Regression of Intimacy on the Cued-Recall Measures of Goal Intensity

Step 1: Goal Intensity Measures	
\underline{R}	.54***
$\underline{R}^2 \Delta$.30***
<i>Goals:</i>	
Maintain the Relationship	.39*
Accept Fault for the Event	-.29*
Manage Positive Face	-.25
Avoid Addressing the Event	-.26*
Manage the Conversation	-.12
Manage Emotion	-.21*
Restore Negative Face	.11

Note. Cell entries for goal intensity measures are β s. $df = (7, 98)$.
* $p < .05$. *** $p < .001$.

Table 10:
Summary of the Regression of Self-Construct Importance on the Retrospective Measures of Goal Intensity

	Emotion Management	Social Attractiveness	Social Behavior	Friend Relations	Dating Relations
\underline{R}	.35	.21	.17	.25	.33
$\underline{R}^2 \Delta$.12	.05	.03	.06	.11
<i>Goals:</i>					
Maintain the Relationship	-.08	-.16	.11	-.05	-.02
Accept Fault for the Event	-.03	.08	.06	-.06	.11
Manage Positive Face	.26*	-.04	-.01	.00	.03
Avoid Addressing the Event	-.14	-.08	-.14	-.05	-.30*
Manage the Conversation	-.12	.00	-.11	.10	.03
Manage Emotion	.28**	.11	.03	-.10	-.12
Restore Negative Face	-.11	-.05	.03	-.14	.07

Note. Cell entries for goal intensity variables are β s. $df = (7, 98)$.
* $p < .05$. ** $p < .01$.

Table 11:
Summary of the Regression of Goal Challenge on the Magnitude of Self-Construct Threat

	<u>R</u>	<u>R</u> ² Δ	Emotion Management	Social Attract.	Social Behavior	Friend Relations	Dating Relations
Step 1: Scenario Type	.63	.40***					
Step 2: Magnitude of Self-Construct Threat Measures	.80	.25***	.37***	.10	.12	.10	.16

Note. Cell entries for the measures of the magnitude of self-construct threat are βs. For the first step of the analysis, df = (4, 101); for the second step, df = (4, 97). ***p < .001.

Table 12:
Summary of the Regression of Goal Complexity on the Number of Self-Constructs Threatened

	Retrospective Measure	Cued-Recall Measure
Step 1: Scenario Type		
<u>R</u>	.21	.19
<u>R</u> ² Δ	.04	.04
Constructs Threatened		
<u>R</u>	.37**	.22
<u>R</u> ² Δ	.10**	.01

Note. For the first step of the analysis, df = (4, 101); for the second step, df = (1, 100). **p < .01.

Table 13:
Summary of the Regression of the Retrospective and Cued-Recall Measures of Goal Strain on the Number of Self-Constructs Threatened and Self-Esteem

	Retrospective Measure	Cued-Recall Measure
Step 1: Scenario Type		
<u>R</u>	.29	.24
<u>R</u> ² Δ	.08	.06
Step 2: Self-Esteem & Number of Self-Constructs Threatened		
<u>R</u>	.35	.28
<u>R</u> ² Δ	.04	.02
Step 3: Self-Esteem x Number of Self-Constructs Threatened		
<u>R</u>	.36	.32
<u>R</u> ² Δ	.00	.03
Two-Way Interactions:		
Scenario Type x Number of Self-Constructs Threatened;		
Scenario Type x Self-Esteem		
<u>R</u>	.35*	.41
<u>R</u> ² Δ	.04*	.06
Interaction:		
Self-Esteem x		
Number of Self-Constructs Threatened		
<u>R</u>	.54	.48
<u>R</u> ² Δ	.16	.06

Note. The degrees of freedom for each step were as follows: step one: df = (4, 101); step two: df = (2, 99); step three: df = (1, 98); step four: df = (8, 90); step five: df = (4, 86). *p < .05.

The Influence of Number of Self-Constructs Threatened and Self-Esteem

H6 advanced that self-esteem would moderate the association between the number of self-

constructs threatened and goal strain such that the association would be greater for those higher in self-esteem than those lower in self-esteem. Goal strain was assessed by both retrospective and cued recall measures; separate analyses were conducted for each.

Two hierarchical regressions were conducted to include both measures of goal strain as dependent variables. Preliminary analyses suggested that the number of self-constructs threatened varies according to scenario type; thus, a set of four effects codes was entered on the first step as covariates in both analyses. The measure of self-esteem and the number of self-constructs threatened were entered on the second step of the analysis. On the third step, the interaction between the self-esteem measure and the number of self-constructs threatened was entered.

As reported in Table 13, analyses did not indicate support for the influence of self-esteem and the number of self-constructs threatened on goal strain. H6 was not supported.

Discussion

This investigation advanced and examined a model of goals for problematic events that was grounded in prior theorizing on the cybernetic cycle and Samp and Solomon's (1998; 1999) investigations of goal-driven responses to problematic events. Specifically, this project was guided by the assumption that the divergence of a problematic event from a self-standard for relational behavior poses a threat to those constructs of self shaped by the offender's relationship. In turn, the goals generated after problematic events should be products of the offender's desire to rehabilitate the self in the face of threat. Utilizing this framework, this project examined the mechanisms driving goal characteristics in relational-embedded problematic events. To review and evaluate the model examined in investigation, the next section presents two axioms that capture key features regarding the nature of goals in the cybernetic processes engaged after problematic events.

Axiom 1: Threats to Self-Constructs Drive Goals

The current investigation advanced a more sophisticated conceptualization of the nature of self-construct threats and the goals elicited in the cybernetic cycle by specifying that the importance of self-constructs, the magnitude of self-construct threats, and the number of self-constructs threatened by problematic events are associated with goal characteristics.

Overall, the results of this investigation were in line with the assumption that threats to self-constructs are associated with goals. Analyses of the third hypothesis indicated limited support for the association between the importance of self-constructs and goal intensity. While self-construct importance

was not significantly associated with the cued-recall measures of goal intensity, three significant associations were observed for the retrospective measures. The importance of the emotion management self-construct was positively associated with the intensity of the goals to manage positive face and manage emotion. Moreover, the importance of the dating relations self-construct was negatively associated with the intensity of the goal to avoid addressing the event.

Although support for the association between self-construct importance and goal intensity was limited, the significant associations suggest two implications concerning the influence of self-constructs on the motivation to pursue particular goals. First, those individuals who define themselves according to the way in which they manage their emotions appear to be motivated to pursue goals that allow them to maintain this conception of self. Further, by managing the positive face of partners, problematic event offenders may attempt to circumvent the emotional instability associated with behavior that violates relational standards. Second, the importance of offenders' romantic relationships to self-definition appears to decrease the desire to avoid communicating about problematic events. Thus, although the five relational self constructs examined in this study were relevant to the context of problematic events, the construct of self related explicitly to the dating relationship context appears to magnify the importance of pursuing relational maintenance in the face of potentially relationally-threatening behaviors. The results of this investigation highlight the merits of considering the implications that particular aspects of the self have on goals.

Analyses associated with the fourth hypothesis identified that the magnitude of threat to relational self-constructs was significantly associated with goal challenge. In particular, analyses identified that the magnitude of self-construct threat associated with problematic events poses a general challenge to goal attainment, which is particularly magnified in circumstances that challenge the offenders' emotional stability. Thus, this investigation marked an extension to previous theorizing on the cybernetic cycle to acknowledge the operation of the magnitude of self-construct threat as an intensifier to goals.

Further support for the assumption that self-construct threats influence goals was observed in analyses on the number of self-constructs threatened by problematic events. Analyses of the fifth hypothesis identified a significant association between the number of self-constructs threatened and the retrospective measures of goal complexity. These results expand the cybernetic model to acknowledge the implications of multiple self-construct threats for the importance of sets of goals.

Examinations of the influence of self-construct importance, the magnitude of self-construct threat, and the number of self-constructs threatened on goals provided a more nuanced picture of the operation of the self in cybernetic processes. The variability in results across examinations of the three influences on goals suggest that the importance of self-constructs, the magnitude of self-construct threat, and the number of self-constructs threatened exert slightly

different patterns of influence on goals. Thus, considering multiple self-driven mechanisms provides greater insight into the operation of cybernetic processes on goals than an examination of generalized self-threats alone.

Axiom 2: Relationship Perceptions Drive Goals

The cybernetic cycle have been used to explain the motivational processes driving goal pursuit, but these processes have not been grounded in particular contexts. This investigation extended prior research on the cybernetic cycle to consider the how the interpersonal context surrounding a problematic event influences goal characteristics.

The results of the empirical examination of this assumption provided mixed results. Specifically, analyses of the first hypothesis did not find any significant associations between attachment orientations and primary goal. The failure to observe an influence of attachment orientations on the goal characteristic is surprising given research that has identified an association between attachment orientations and problem solving approaches (Mikulincer, 1995), and coping efforts in close relationships (Simpson et al., 1996). Although attachment orientations may influence behaviors in relationships, the results of this investigation suggest that attachment orientations do not influence the cybernetic processes relevant to goal characteristics.

Whereas analyses of attachment orientations were not significantly associated with goal characteristics, analyses associated with the second hypothesis highlighted the influence that feelings of loving had on the intensity of particular goals. Although not observed for the retrospective measures of goal intensity, loving was significantly associated with the intensity of the cued-recall measures of goals. In particular, loving was positively associated with the importance of the goal to maintain the relationship, and negatively associated with the importance of the goals to accept fault for the event, avoid addressing the event, and manage emotion. Two implications are suggested by these results. On average, loving appears to intensify the importance of some goals, yet not others. Moreover, feelings of loving influence the importance of relational concerns, yet downplay more personal concerns such as accepting fault for the event and managing one's emotions. This observation is in line with previous research that has identified the influence of intimacy on the pursuit of relational and pro-social goals (e.g., Fitzpatrick & Winke, 1979). Although loving was not significantly associated with the intensity of all of the goals, the significant results associated with tests of the second hypothesis underscore the motivational influence of relationships when confronted with a potential threat to the paring. In total, the results of this investigation highlight that to an extent, relational forces influence the operation of goal characteristics in relationally-embedded situations.

Conclusion

This investigation advanced and tested a cybernetic model of goals that specified that relationship processes, self processes, and the self-construct threats generated by problematic events influence the operation of goal characteristics after problematic events. While some of the associations merit re-evaluation, the results of this investigation extended previous theorizing on the cybernetic cycle and suggest that the self exerts a complex motivational force on goal characteristics. Moreover, the results of this investigation shed light on the contributing influences on an offender's communication goals after problematic events. Overall, this investigation provides evidence for the importance of considering the overarching influence that aspects of the self tied to personal relationships have on individuals' goal orientations.

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Evaluation of Effectiveness of a Self-Concept Enhancement Intervention for Students with LD and LD/ADHD

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Students with learning disabilities (LD) and LD students with comorbid attention deficit hypoactivity disorder (LD/ADHD) in grade 3 to 6 were assessed on measures of multidimensional self-concept (SDQ-1), academic attributional style and academic self-efficacy beliefs. The LD and the LD/ADHD students, whose academic self-concept scores fell in the lowest quartile participated in an eight-week academic self-concept enhancement intervention. The intervention was based on performance feed back and attributional retraining techniques, which has been successfully employed in previous studies (Craven, Marsh & Debus, 1991; Craven, 1996) to enhance academic self-concept of normally achieving students. Results indicated the intervention was equally effective in enhancing academic self-concept of students with LD and LD/ADHD. Some improvements in peer-relation self-concept were also found. A ten weeks follow-up assessment indicated the improvements in self-concept were fairly stable over time.

Students with learning disabilities (LD), due to prolonged failures in academic and social situations, usually present with an array of academic, motivational and self-perception problems (Mercer, 1997; Smith & Luckasson, 1995). The most common psychosocial problems of students with learning disabilities may include low self-esteem, poor peer-relations, negative self-concept, poor self-efficacy beliefs, maladaptive attributional style and even depression (Kistner, Haskett, White, & Robbins, 1987; Rogers & Saklofske, 1985; Magg & Behrens, 1989). Research, however, has clearly established that most of the students with learning disabilities hold lower self-concept about their academic skills, whereas their non-academic self-concept is almost equivalent to that of normally achieving peers (Chapman, 1988; Grainger & Frazer, 1999).

Attention Deficit/ Hyperactivity Disorder (ADHD) is a diagnostic label employed by the American Psychiatric Association in the Diagnostic and Statistical Manual of Mental Disorder DSM-III-R (1987) and DSM-IV (1994). Children with this disorder may fail to give close attention to details, their work is often messy and is performed carelessly. They may find it hard to persist with tasks until completion and often move on to other tasks before the completion of a previous task. They experience difficulty in following instructions and organising tasks and activities. These children are easily distracted, have poor concentration and frequently don't seem to be listening (Green & Chee, 1994). A considerable comorbidity (40% to 80%) has been reported between LD and ADHD and almost one-third of the students with LD are thought to have attention deficit hyperactivity disorder (ADHD) (Hallahan, 1989; Robin, 1992). Although results of many investigations have revealed a relationship between LD and ADHD (Cantwell & Baker, 1991; Shaywitz & Shaywitz, 1991) the nature of this relationship has not been well defined. It is still unclear whether school failures in children with LD/ADHD is a result of ADHD, learning disabilities, or a combination of both ADHD and LD or to other environmental factors. Given a high comorbidity between LD and ADHD it is possible that students with comorbid LD/ADHD would experience more severe social and emotional problems than either group alone. The risk factors associated either with LD or ADHD may increase markedly when there is co-occurrence of LD and ADHD and the interaction of learning

disability and ADHD may cause further decrements in the self-concept of these children.

A positive self-concept always plays a significant role in social and learning processes. Students with a positive self-concept usually are academically successful and socially well adjusted, whereas students who hold negative self-perceptions feel inadequate and give up when the task is difficult (Bandura, 1982; Chapman, 1988; Marsh & Craven, 1997). Children with LD and LD/ADHD have to experience repeated failures and they gradually develop an identity or self-image linked to failure. This negative self-image of LD children persists into adolescence and even into adulthood and does not appear to change over time (Chapman, 1988a; Magg & Behrens, 1989; Ritter, 1989). Recent studies have indicated that adolescents with learning disabilities are much more likely to be victims of depression and suicide than normally achieving students (Bender, Rosenkrans & Crane, 1999; Harter, 1993, 1998; Huntington & Bender, 1993). Thus it is very important to deal with the issue of self-concept for students with a handicapping condition such as LD and LD/ADHD.

Self-concept enhancement interventions help students feel good about themselves and their abilities. Therefore the development of positive self-concept is considered to be one of the most important goals of education (Marsh & Craven, 1997). Self-concept enhancement studies typically use two approaches to change self-concept, either direct enhancement or indirect enhancement approaches. The direct enhancement approach targets self-concept by providing praise and performance feedback. The indirect enhancement approach seeks to enhance self-concept indirectly by targeting a related construct, such as attributional style or the self-efficacy beliefs of the participants (Marsh & Craven, 1997). The individual's attributional style impacts on his/her self-concept such that individuals with a positive attributional style generally have a positive self-concept. Children with high self-concept attribute their success to internal and stable factors (ability & effort) and this may in turn contribute to further satisfaction with their performance and lead to higher self-concept and further striving for achievement. In contrast low self-concept children attribute their success to external and unstable factors and they do not feel any pride associated with their success (Buchanan & Seligman, 1995; McInerney, 1998;

Weiner, 1986). Attribution theory (Weiner, 1984, 1986), Self-worth theory (Covington, 1984) and Self-efficacy theory (Bandura, 1982; Schunk, 1995) all posit that a relationship exists between self-attributions, self-efficacy and self-concept. Researchers have also verified a consistent relationship between self-concept, self-attributions and achievement outcomes (Marsh, 1984a; Marsh, Cairns, Relich, Barnes, & Debus, 1984). These findings do seem to suggest that self-concept can be changed through changing attributional style.

Attributional retraining strategies attempt to teach participants desirable causal attributions about behavioural outcomes (ie. success and failure) and also they attempt to reduce undesirable or maladaptive causal attributions. According to Weiner's (1986) attribution theory individuals high in achievement motivation attribute their success to internal causes (ability and efforts) and their failure to external causes (task difficulty and luck). Ability is considered as a stable factor and effort and task difficulty as unstable factors. Weiner (1986) claimed that in self-concept enhancement programs the perceived causes of performance (attributions) must be changed in order to change self-concept. Self-efficacy theory (Bandura, 1978, 1997) also assumes that success attributed to ability and effort can enhance efficacy and when success is attributed to ability or effort, pride is experienced. This experience of pride enhances self-concept. The learned helplessness model (Abramson, Seligman & Teasdale, 1978) assumed that an internal global and stable attributional style for failure is associated with low self-concept while an internal stable and global attributional style for success enhances positive self-concept. All three models emphasize the importance of attributing success to ability and effort, and failure to lack of effort and task difficulty.

Marsh (1984) has demonstrated a negative relation between high self-concept scores and lack of effort attributions, and has recommended that strategy attributions in failure situations may be an important alternative to attributing failure to lack of effort. Students with LD usually have low ability, therefore it is not desirable to teach them to attribute failure to a lack of ability or effort. Attributing failure to incorrect strategies, rather than lack of ability or effort, seems more suitable for enhancing academic self-concept of students with learning disabilities.

Craven, Marsh and Debus (1991) and Craven, (1996) implemented a self-concept enhancement intervention for students with low academic self-concept, which was based on both direct and indirect enhancement approaches. The intervention employed a combination of performance feedback and attributional retraining. In order to enable students to generate an appropriate system of self-reinforcement that would assist the enhancement of academic self-concept by a direct means, ability attributional statements (Schunk, 1983, 1985) were coupled with performance feed back. Researchers named this type of feedback 'internally focused performance feedback'. Craven et al., (1991) and Craven (1996) explain that internally focused feedback encourages students to perceive that they are competent in specific subject areas which leads to the development of positive self-perception in those specific subject areas (e.g. reading and mathematics). The studies assumed the relationship between self-concept and self-attributions was

reciprocal, therefore, a change in attributions would be associated with changes in academic self-concept. The results indicated that intervention techniques focused on the enhancement of academic self-concept had substantial effects on academic self-concept (ie., reading self-concept or maths self-concept) but little effect on non-academic components (physical ability self-concept or physical appearance self-concept).

These studies provide some guidelines for developing successful self-concept enhancement intervention. According to Craven et al., (1991) and Marsh & Craven, (1997) a self-concept enhancement intervention would be more successful if: specific facets, rather than global aspects, of self-concept are targeted,

- a) the targeted areas of self-concept are logically related to the goals of the intervention,
- b) the instruments that specifically tap the constructs that are the targets of the intervention are used, and
- c) the measures of the actual processes thought to be responsible for self-concept change are included.

The Craven et al. (1991) and Craven (1996) studies indicate that a combination of direct and indirect self-concept enhancement approaches may result in a stronger and more successful intervention. These techniques have been found successful in enhancing the academic self-concept of normally achieving students. It might be possible that similar techniques would also be effective in enhancing the academic self-concept of students with learning disabilities. The current literature on self-concept enhancement has a number of studies that were conducted with normally achieving students, but there is a paucity of self-concept enhancement intervention studies for students with LD and comorbid LD/ADHD. Based on the guidelines for successful self-concept enhancement intervention the present investigation sought to assess the effectiveness of a self-concept enhancement intervention utilizing performance feed back and attributional retraining techniques for LD and LD/ADHD students.

The participants had disabilities in reading and mathematics and they had poor self-concept in reading and mathematics. The intervention was focussed on enhancing reading and mathematics self-concept. The intervention focussed on changing self-concept through changing attributional style and also enhancing the level of self-efficacy beliefs of LD and LD/ADHD children. It was expected that, due to the intervention, a positive change would occur in academic attributional style. This in turn would impact on academic self-concept and also academic self-efficacy beliefs. It was predicted that as a result of this intervention a significant positive change would occur in the targeted areas of self-concept (ie reading self-concept and maths self-concept), a smaller positive change might occur in the related areas of self-concept (school self-concept), however no significant change was anticipated for areas of self-concept unrelated to the intervention (non-academic self-concept). It was also expected that LD students, in comparison to LD/ADHD students, would experience more gains in the targeted areas of self-concept.

Method

Subjects

The total sample of 36 subjects comprising 18 subjects diagnosed as LD and 18 subjects diagnosed with comorbid LD/ADHD, age from 8 years to 11.6 years, in grade 3 to 6, drawn from nine public schools in the eastern suburbs of Sydney, Australia, participated in this study. These students were previously identified by a larger study conducted by the authors (Tabassam & Grainger, 2000). Students exhibited low academic self-concept which fell into the bottom quartile of the academic self-concept score measured by Self-Description Questionnaire SDQ-1 (Marsh, 1990). Each student in the LD and LD/ADHD groups demonstrated a full-scale intelligence score greater than 79 on Wechsler Intelligence Scale for children (WISC-III, 1991). The students with LD/ADHD also demonstrated a score greater than 1.5 standard deviation above the mean for their respective age and sex on the ADHD-Teacher Rating Scale and the ADHD-Parent Rating Scale (DuPaul, 1991). All participants with LD and LD/ADHD were students of regular classes and had been placed in a special education withdrawal class for reading and mathematics at their schools. They were previously diagnosed for reading and mathematics learning disability according to the Diagnostic and Statistical Manual of Mental Disorders- DSM-III-R (APA, 1987). Students with a learning disability due to physical or sensory handicap were excluded from the sample. No significant difference in socioeconomic status, age or intellectual ability was found between the two groups.

Description of Instrumentation

In order to assess self-concept of the participants the Self-Description Questionnaire SDQ-1 (Marsh, 1990) was used. This instrument has been previously used in self-concept enhancement intervention studies and demonstrates good reliability and validity. Attributional style of the participants was assessed by the Academic Attributional Style Questionnaire (AASQ). This instrument was developed and standardized by the authors in a previous study (Tabassam & Grainger, 1999). The AASQ measures the attributional style for academic successes and failures and it was patterned after the Children's Attributional Styles Questionnaire (CASQ) (Kaslow, Tannenbaum, & Seligman, 1978). The items of the AASQ consist of hypothetical events related to a child's success or failure in reading, mathematics and general class work. The 20-item AASQ comprised of two scales: a 10-item scale that measured negative attributional style and a 10-item scale that measured positive attributional style. Internal consistency for the total 20-item scale was .79.

Academic self-efficacy beliefs of the participants were assessed by the Academic Self-efficacy Beliefs Scale (ASES) (Tabassam & Grainger, 1999). It is a 14-item instrument designed to assess student's self-efficacy beliefs for achieving success in reading and mathematics. The ASES comprised two subscales, firstly a reading efficacy subscale and secondly a mathematics efficacy subscale with 7 items each. Scores for

reading efficacy, maths efficacy and for composite academic self-efficacy can be obtained. Reliability coefficients of .87 for the maths self-efficacy scale, .85 for the reading self-efficacy scale and .83 for the total 14-item scale were obtained.

Research Design

A pre post test, waitlist design was employed in order to test whether the intervention was effective. No intervention was given during the waitlist period. At Time1 the three measures (SDQ-1, AASQ and ASES) were administered to the 36 students. After an eight-week interval from first assessment (Time1) the second assessment (Time2) (waitlist control) was administered to note if any changes in self-concept, attributional style and self-efficacy had occurred during the wait list period. The intervention was then conducted for eight weeks and after the completion of the intervention the same assessment was readministered at Time3 to note if any changes had occurred during this interval. In order to assess whether the overall gains in the self-concept of the participants maintained over time, a fourth assessment (Time4) was conducted ten weeks from the third assessment.

The first 8-weeks interval (Time1- Time2) was control interval, the second 8-weeks interval (Time2- Time3) was experimental interval and the third 10-weeks interval was follow-up interval. It was predicted that the changes in self-concept scores, during the experimental interval, would be significantly larger than changes during the control interval and these changes would be maintained during follow-up interval. Further, it was expected that the changes would be larger for the targeted areas of self-concept (academic self-concept) than non-targeted areas (non-academic self-concept), and changes would be higher for LD group as compared to LD/ADHD group.

Intervention Strategies

The intervention employed in the present study to enhance the academic self-concept of students with LD and LD/ADHD was based on the Craven et al., (1991) and Craven, (1996) studies. The intervention used direct and indirect enhancement approaches with a combination of internally focused performance feedback (Craven et al., 1991) and attributional retraining techniques. Attributional retraining approach retrain LD and LD/ADHD students to attribute success (in reading and mathematics) to internal causes (their own ability and effort) and failure to external causes (task difficulty and to not having the right strategy to successfully complete the task). In the present study the attributional retraining and internally focused performance feedback was delivered for reading and mathematics tasks. These tasks were pre selected according to the grade and ability level of the students. The feedback was delivered to groups of four children (2 LD and 2 LD/ADHD) during 30-min sessions for eight weeks.

The second part of the intervention was designed to enhance the general self-concept of the participants. The intervention tried to help the student to feel 'OK' and encouraged them to recognise their skills and strengths. During the eight-week intervention program each participant completed some activities

designed by Reasoner (1982) to build self-esteem. Each child prepared ‘Me book’ which displayed child’s awards, stars and certificates. The child also reported about all of his/her family members, favorite pets, friends etc in this book. The book was a source of pride for the child.

Specifically designed work sheets (Reasoner, 1982) were also utilized to help the children recognize their accomplishments and personal worth. Six work sheets entitled: ‘I feel proud’, ‘Name poster’, ‘You are unique’, ‘Self-portrait’, ‘Some interesting things about me’, and ‘what I do well’ were utilized. It was expected that as a result of this part of intervention the participants would recognise their accomplishments and personal worth, which would indirectly enhance the level of their general self-concept.

Results

Table 1 presents the mean scores from 8 dimensions of self-concept over the four assessment periods for both groups. It appears that there are no changes during Time1-Time2 (the waitlist control period) but there appears to be changes at Time 3, which although relatively small do suggest that the intervention has had an impact. It also appears that once these changes have occurred they are maintained in the period between Time3-Time4. In order to test if these changes were significant a repeated measures MANOVA was computed for the dependent variables over the four assessment periods for both groups.

Table 1:
Means and Standard Deviations for SDQ-1 Scales Assessed at Pre Waitlist, Pre Intervention, Post Intervention and Follow-up for LD and LD/ADHD subjects

Sub-scales on SDQ-1	LD SUBJECTS (N = 18)				LD/ADHD SUBJECTS (N = 18)			
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
	Time 1 Pre waitlist	Time 2 Pre-intervention	Time 3 Post intervention	Time 4 10 weeks Follow-up	Time1 Pre waitlist	Time 2 Pre-intervention	Time 3 Post-intervention	Time4 10 weeks Follow-up
Reading	22.83 (5.15)	22.88 (5.38)	**25.38 (6.43)	24.66 (6.12)	21.33 (7.70)	21.05 (7.67)	**23.61 (8.67)	23.38 (8.97)
Math	21.27 (5.09)	21.00 (4.75)	**23.66 (5.16)	23.44 (5.59)	20.94 (6.49)	20.77 (6.47)	**22.72 (7.66)	22.50 (7.06)
School	25.00 (4.67)	24.55 (4.48)	**26.83 (4.90)	26.16 (4.68)	23.44 (8.40)	23.38 (8.47)	**25.33 (9.20)	25.33 (9.24)
Parent	34.05 (5.06)	34.27 (5.09)	33.88 (5.31)	33.27 (5.17)	33.05 (5.78)	33.55 (6.17)	33.83 (7.81)	33.72 (7.57)
Peer	29.66 (5.57)	29.55 (5.85)	*31.33 (5.02)	31.22 (5.05)	29.38 (8.49)	29.27 (8.41)	*31.22 (6.62)	31.50 (6.81)
Phy.Ability	32.16 (6.79)	32.05 (6.67)	32.44 (5.03)	32.61 (5.29)	29.61 (5.23)	30.00 (5.64)	29.83 (7.65)	29.16 (6.73)
Physical appearance	28.44 (6.17)	28.61 (6.37)	27.22 (5.10)	27.38 (5.31)	27.77 (8.24)	27.72 (8.16)	28.61 (7.25)	28.33 (6.82)
General self-concept	30.77 (5.24)	30.55 (4.48)	31.16 (6.33)	31.25 (6.23)	29.50 (6.80)	29.16 (7.27)	31.00 (8.15)	31.38 (7.91)

*P<.01, **P<.001

Intervention’s Effects on Self-Concept

Results revealed there has been a significant change in the overall self-concept scores ($F = 3.70, p < .001$). The univariate results derived from the multivariate analysis permit us to identify the specific facets of self-concept where this change has occurred. The univariate F-value was larger for reading self-concept ($F = 15.19, p < .001$), mathematics self concept ($F = 15.73, p < .001$) and school self-concept ($F = 10.58, p < .001$).

No significant difference was observed for physical ability self-concept, physical appearance self-concept and parent relation self-concept. However, a small but significant effect was also observed for peer relation self-concept ($F = 5.98, p < .01$).

Repeated measures contrasts for three intervals indicated significant intervention’s effects during the experimental interval (Time2-Time3). No significant effects were found during the control interval (Time1-Time2).

During the experimental interval the effect sizes (eta squared) for each of the significant dimensions of self-concept were noted as: reading self-concept .41, maths self-concept .35, school self-concept .31 and a small effect size of .13 for peer-relations self-concept. The effect size for overall academic self-concept was

.51, for non-academic self-concept .08, and for general self-concept .03. Thus in support of the predictions larger effect sizes were found for the targeted areas of self-concept (i.e., academic self-concept) and very small effects sizes were found for the non-targeted areas (i.e., non-academic self-concept).

When comparing the LD group with the LD/ADHD group, no significant differences for the effects of the intervention were found between the two groups. This indicates that the intervention was equally effective for LD and LD/ADHD students. During the follow-up interval the groups maintained their enhanced level of self-concept, therefore no significant changes to program durability were noted at this stage.

Intervention’s Effects on Academic Attributions and Academic Self-Efficacy Beliefs

Table 2 presents the mean scores from academic attributional style and academic self-efficacy beliefs over the four assessment periods for both groups. Means given in table 2 indicate there are no changes during Time1-Time2 (the waitlist control period) but there appears to be changes during Time2-Time 3, which do suggest that the intervention has had an impact. It also appears that the changes are maintained

in the period between Time3-Time4 (follow-up period). In order to test if these changes were significant repeated measures MANOVA were computed for academic attributional style and academic self-efficacy beliefs over all four assessment periods for both groups.

Results revealed a significant change in the academic attributional style of the participants ($F = 22.08, p < .001$). The univariate analyses indicated a significant changes have occurred for positive attributions ($F = 40.65, p < .001$) and for negative attribution ($F = 47.64, p < .001$). Repeated

measures contrasts for the three intervals indicated significant intervention effects during the experimental period. Effect sizes (eta squared) of .55 for positive attributional change and .69 for negative attributional change were found. However no significant effects were found during the control interval and follow-up interval. This indicated that both groups have maintained their enhanced level of positive attributions and reduced level of negative attributions during the follow-up interval.

Table 2:
Means and Standard Deviations for Academic Attributional Styles and Academic Self-Efficacy Beliefs at Pre Waitlist, Pre intervention, Post Intervention and Follow-up for LD and LD/ADHD Subjects

Academic Attributions and Academic Self-efficacy Beliefs	LD subjects (N = 18)				LD/ADHD subjects (N = 18)			
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
	Time 1	Time 2	Time 3	Time 4	Time1	Time 2	Time 3	Time4
Positive Attributions.	.33 (1.90)	.44 (1.97)	**6.42 (2.00)	6.77 (1.86)	5.16 (1.79)	5.33 (1.78)	**6.50 (1.81)	6.21 (1.92)
^Negative Attributions	6.33 (2.27)	6.61 (2.20)	**4.94 (1.58)	5.16 (1.72)	6.61 (1.75)	6.88 (1.71)	**4.77 (1.55)	5.05 (1.73)
Reading efficacy beliefs	20.05 (4.20)	20.33 (4.18)	**22.22 (3.73)	22.50 (3.69)	20.50 (4.69)	20.50 (4.55)	*21.83 (4.23)	22.33 (4.41)
Maths efficacy Beliefs	19.61 (4.04)	19.55 (4.00)	*20.66 (4.13)	20.72 (4.32)	19.00 (4.04)	19.22 (4.15)	*20.21 (4.16)	20.22 (4.26)

* $P < .01$, ** $P < .001$. ^ Negative attributions show a decrease in scores at t3 which should be noted as a positive trend whereas all the other scales show increase in scores at t3 as indicative of a positive change

Another MANOVA for the repeated measures was computed for the two subscales of academic self-efficacy beliefs (reading self-efficacy and maths self-efficacy) over the four assessment periods for both groups. Results revealed an overall significant change in self-efficacy scores ($F = 18.61, p < .001$). The univariate analyses indicated a significant change for reading self-efficacy beliefs ($F = 46.15, p < .001$) and for maths self-efficacy beliefs ($F = 43.86, p < .001$). Results also indicated significant effects for the intervention during the experimental interval, while no significant effects were found during control and follow-up intervals. Effect sizes (eta squared) of .57 for reading self-efficacy beliefs and of .56 for maths self-efficacy beliefs were found.

The participants in LD and LD/ADHD groups were equated for the levels of self-concept at Time 2 (pre-intervention), and the two groups did not differ significantly on self-concept measures at T2. The two groups LD and LD/ADHD were also compared on self-concept measures at time 3 (post intervention) and no significant difference were found between the two groups at T3. The results suggested the intervention was equally effective for LD and LD/ADHD students.

Discussion

This study was designed to test the effectiveness of a self-concept enhancement intervention with LD and LD/ADHD students. The participants had reading and maths disabilities and they reported significantly poorer academic self-concept, negative academic attributional style and poorer academic self-efficacy beliefs when compared to normally achieving peers. The intervention was employed to enhance academic self-concept through internally focussed performance feedback (Craven et al., 1991) and attributional retraining. The results showed significant effects for the intervention for academic self-concept. Effect sizes were significant for the targeted areas of self-concept (reading and maths) and no significant effect was found for the non-targeted area (non-academic self-concept). This provided support for the logic of targeting specific dimensions of self-concept instead of targeting global self-concept. Results also provided some support for the stability of the intervention's effects over time. No statistically significant changes in the scores of self-concept, attributional style and self-efficacy beliefs were observed during the follow-up interval, which indicates that the intervention's effects were stable over the ten-week follow-up.

It was assumed that the second part of the intervention based on Reasoner (1982) activities would enhance the general self-concept of the participants. The results of this study failed to

show a significant effect for these activities in enhancing general self-concept. Instead some positive changes were found on peer relation self-concept. It is difficult to determine why peer relation self-concept increased whilst other aspects of non-academic self-concept did not. Perhaps as students feel more positive about their academic selves, this may flow across to peer relations, or perhaps changes in peer-relation self-concept might have occurred as a result of Reasoner's (1982) activities used in this intervention. But this change was quite negligible (η^2 of .13) and therefore it is reasonable to not place too much weight on changes in peer-relation self-concept.

The results of this study provide support for the effectiveness of internally focused performance feedback approach utilized by Craven et al., (1991) and also for attributional retraining techniques in enhancing academic self-concept. No significant differences of self-concept between LD and LD/ADHD groups were found at time 3 (post intervention). This indicates that these techniques are equally effective in enhancing academic self-concept of students with LD and LD/ADHD.

The results also support the effectiveness of a cognitive model in changing maladaptive attributions. It was expected that a positive change would occur in academic attributional style, which in turn would impact on academic self-concept and also on academic self-efficacy beliefs. The results indicated a significant positive change occurred in academic attributional style and academic self-efficacy beliefs during experimental interval. Thus a mediating process of academic attributional change seems to be a plausible explanation which has led to a positive change in the academic self-perceptions of the participants. These results provide further support to the argument presented by Marsh, (1984a) and Marsh et al., (1984) in relation to a reciprocal relationship between self-concept and self-attributions.

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Evaluative Threat and Strategy Activation of Defensive Pessimists and Strategic Optimists on Cognitive and Instrumental Tasks

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Defensive pessimists (DPs) are individuals who acknowledge a history of success in achievement contexts, yet typically enter new achievement situations feeling anxious and out of control. Strategic optimists (SOs), on the other hand, set high expectations prior to an achievement situation and avoid reflecting extensively on upcoming tasks, preferring to distract themselves by thinking of things other than impending obligations. Two studies tested the assumption that the strategy use of DPs and SOs is triggered in a situation of high evaluative threat, resulting in superior performance relative to a situation of low evaluative threat. In each of the studies, this assumption was confirmed, with performance effects more pronounced on an instrumental task (Study 2) as opposed to a cognitive task (Study 1). Findings support the interpretation that the strategy use of DPs and SOs is activated or otherwise on the basis of anticipated attributions for poor performance.

Defensive pessimists are individuals who acknowledge a history of success in past achievement contexts, yet typically enter new achievement situations feeling anxious and out of control (Cantor & Norem, 1989; Norem & Cantor, 1986b; Norem & Illingworth, 1993; Thompson & le Fevre, 1999). Their outlook is defensive in the sense that their pessimism serves to protect them against damage to self-worth should they not perform as well as they expect.

In response to their negative appraisals, defensive pessimists set defensively low expectations for their performance, expectations which are inconsistent with their past performance, and ruminate over worst-case scenarios (Norem & Cantor, 1986a). Somewhat paradoxically, reviewing all the things that could go wrong appears to help defensive pessimists contain the otherwise interfering effects of anxiety upon performance, allowing them to be task-focussed rather than distracted by excessive anxiety (e.g. Spencer & Norem, 1996).

Diametrically opposed to defensive pessimists in their reaction to achievement situations are strategic optimists. These individuals set high expectations prior to an achievement situation and avoid reflecting extensively on upcoming tasks, preferring to distract themselves by thinking of things other than impending obligations (Spencer & Norem, 1996). In this sense, their optimism is strategic, harnessed to optimising good performance outcomes.

Strategy use appears to be activated by the anticipation of the esteem-threatening implications of poor performance and hence, the level of evaluative threat. Norem and Cantor (1986a) suggest that strategy use is most likely when there is fear of failure and a strong desire for success. As individual ability varies across different domains, it is also likely that strategy use in one domain does not necessarily imply strategy use in another. In fact, Norem and Cantor (1986b) found that answers to questions about strategy use in academic domains were only moderately correlated with those in social domains. Similarly, Cantor et al., (1987) found that students had different cognitive strategies for coping with tasks in an academic achievement domain in comparison to a social domain.

A related issue is whether strategy use facilitates performance or whether its primary function is merely to protect the individual against the interfering effects of anxiety. If the latter is the case, interfering with strategy use in situations of evaluative threat

should actually impair performance. Evidence in this respect has been gathered by a number of researchers (e.g. (Norem & Cantor, 1986b; Norem & Illingworth 1993; Showers, 1992; Spencer & Norem, 1996). Against these findings, evidence of performance facilitation following (presumed) strategy activation is hard to find. Prompted by a suggestion in findings by Norem and Cantor (1986a) that performance facilitation is more likely to be seen on an instrumental task (where good performance depends on manual dexterity) as opposed to a cognitive task (where good performance depends on mental quickness), this investigation sought evidence for performance facilitation by manipulating the level of evaluative threat. This was done in two studies in which task type was varied. The specific aims of the investigation were to (1) clarify differential strategy activation in situations of high versus low evaluative threat, (2) gather evidence for performance facilitation in relation to level of evaluative threat, (3) determine evidence for strategy activation in situations of high and low evaluative threat, (4) assess evidence for a lower threshold of strategy activation for defensive pessimists relative to strategic optimists, again relative to level of evaluative threat, and (5) examine the association between strategy use and anxiety.

In Study 1, level of evaluative threat was manipulated by exposing participants defensive participants and strategic optimists) to either humiliating or face-saving failure. Performance in solving a set of anagrams was then assessed. In Study 2, two time-limited tasks were used in order to optimise performance pressure. These were the Stroop color-word test (a cognitive task), and an electrical tracing task (an instrumental task),

In line with the above aims, greater strategy activation for defensive pessimists and strategic optimists in a situation of high evaluative threat relative to one of low evaluative threat. Based on evidence reported above of impaired performance when strategy use is interfered with, it was also expected better that performance would be evident for defensive pessimists and strategic optimists in the high evaluative threat condition relative to the low evaluative threat condition. These predictions were made for each of the studies, but more tentatively advanced in relation to the anagrams (Study 1) and the Stroop task (Study 2). Across repeat assessments of state anxiety, elevated anxiety was expected following the evaluative threat manipulations, with

lower anxiety levels expected following assumed strategy activation.

Study 1

Method

Experimental Design

N = 30 defensive pessimists and N = 28 strategic optimists were randomly assigned to one of two experimental conditions (humiliating failure, failure involving face-saving) with approximately equal numbers of males and females in each experimental condition. This rendered the experiment a 2 (strategy: defensive pessimism, strategic optimism) x 2 (performance feedback: humiliating failure, face-saving failure) x 2 (gender: male, female) design.

Participants

Participants were drawn from a sample of N = 511 students who completed the Norem and Cantor (1986b) Optimism-Pessimism Prescreening Questionnaire (OPPQ).

Procedure

Selection of defensive pessimists and strategic optimists. N = 511 undergraduate students were screened using the OPPQ, which was used to allocate participants to experimental conditions. This scale comprises nine items, four of which describe an optimistic orientation, and four a pessimistic orientation. The remaining item, Item 3: *I've generally done pretty well in academic situations in the past* is used to identify genuinely defensive pessimists from those whose pessimism might be seen as realistic on the basis of their past poor performance.

An "optimism-pessimism" score is computed for each participant by subtracting the sum of their endorsements of the four pessimistic items (Items 1, 4, 6, and 8) from the sum of their endorsements of the four optimistic items (Items 2, 5, 7, and 9). These scores were then rank ordered and trichotomised, with participants in the bottom (pessimism) and top (optimism) thirds of the distribution deemed eligible for experimental participation if they strongly endorsed Item 3 (nine or above on an 11-point scale).

Experimental Procedure. Individuals were then randomly assigned to experimental conditions by a person other than the experimenter. As a consequence, the experimenter was blind to each participant's strategy group membership.

On arrival at the laboratory, participants were informed that the intention of the experiment was to discover whether peoples' ability to discover one type of code was related to their ability to discover another type of code. Students were further advised that they would be given two tasks to complete, a simultaneous discrimination task followed by 20 solvable anagrams, along with other items which assessed their perceptions of their performance and reactions to the two sets of cognitive problems.

All participants completed the first of two parallel forms of

the STAI (Spielberger et al., 1983) before commencing the simultaneous discrimination task. The instructions given to students for each of the cognitive tasks closely resembled those given by Thompson, Davidson & Barber (1995). Students in each of the failure conditions (failure, failure followed by face-saving) completed the four 10-trial discrimination problems, all of which were made unsolvable on the basis of bogus feedback given by the experimenter. Participants in the face-saving failure condition were informed that the demands of the task made correct solution very difficult (see Thompson et al., 1995), and that as a consequence, they should not interpret poor performance as a reflection of their ability in any way.

Instruments

Individual difference measures. Subjects were screened using the Optimism-Pessimism Pre-screening Questionnaire (Norem & Cantor 1986b), comprising nine items formatted on an 11-point scale with end-point designations ranging from 'Not at all true of me' to 'Very true of me'. Norem and Illingworth (1993) report an internal consistency of .84 and test-retest reliability of .73. The range of possible scores on the eight optimism-pessimism items was from +40 to -40.

Odd- and even-numbered items from the Spielberger et al., (1983) State-Trait Anxiety Inventory (STAI) were used to create parallel forms as a means of assessing the impact of failure on individuals' anxiety states before and after failure pretreatment. Spielberger et al., (1983) report a median internal consistency (KR-20) of .93 for the full scale form of the STAI, while KR-20s for the first and second administrations were .89, and .88, respectively.

Sarason's (1978) Cognitive Interference Scale was used to provide a means of registering anxiety in the form of worrisome, intrusive thoughts while working on the anagrams. The Russell (1982) Causal Dimension Scale was used to assess attributions following humiliating and face-saving failure. This scale comprises nine items, with three items assessing each of three attributional dimensions: internality, stability and controllability. Russell (1982) reports co-efficient alphas of .867, .837, and .730, for internality, stability, and controllability dimensions, respectively.

Strategic Optimism-Defensive Pessimism Prototypical Thinking Questionnaire. Finally, a set of 12 statements drawn from prototypical thoughts of DP/SO strategy users reported by Norem and Cantor (1986b) were adapted for the present study. These items were used to gain evidence of actual strategy use in situations of high and low evaluative threat for DPs and SOs. Five items represent a DP orientation while six items represent a SO orientation. Examples of prototypical thoughts for DPs are I felt nervous and I anticipated doing poorly, while examples of prototypical thoughts for SOs thoughts are I felt prepared and I felt relaxed. Each of these items were found to discriminate between strategic optimist and defensive pessimist groups at $p < .05$.

Cognitive tasks. The pre-treatment task consisted of a modification of the Levine (1966) simultaneous discrimination task used by Hiroto and Seligman (1975). The criterion task, used to assess performance following failure on the unsolvable

problems, consisted of 20 single-solution anagrams each with a median solution time of 30 s, as determined by Tresselt and Mayzner (1966). All anagrams were disarranged in the sequence 5-3-1-2-4 and were individually printed on index cards 15 cm x 10 cm and presented to participants on a datepad.

Results

Performance Measures

Performance in solving the anagrams was assessed in terms of mean latency: the mean time taken to solve the 20 anagrams, and in terms of the number of unsolved anagrams. A 2 (strategy type: DP, SO) x 2 (failure type: humiliating, failure involving face-saving) ANOVA with mean latency as the dependent measure revealed a marginally significant main effect for performance feedback, with performance being poorer following failure involving face-saving than that following humiliating failure: $F(1, 54) = 3.801, p = .056$.

State Anxiety and Cognitive Interference

State Anxiety. The critical prediction in relation to STAI scores was for a significant three-way interaction between groups (strategy type: DP, SO; failure type: humiliating, face-saving) repeated measures (STAI-1, STAI-2) analysis of variance. A trend towards significance was evident: $F(1, 53) = 2.809, p = .09$, as well as a significant increase in anxiety after failure irrespective of strategy type and experimental condition: $F(1, 53) = 5.142, p = .027$, with both defensive pessimists and strategic optimists reporting increased in anxiety following failure, irrespective of experimental condition.

For STAI-1 scores, a 2 (strategy type: SO, DP) x 2 (failure type: humiliating, face-saving failure) x 2 (gender: male, female) ANOVA revealed a significant interaction between strategy use and gender: $F(1, 49) = 4.97, p = .030$. This arose by virtue of the fact that female defensive pessimists reported lower anxiety scores ($M = 20.68, SD = 6.46$) than male defensive pessimists ($M = 21.36, SD = 3.04$). On the other hand, female strategic optimists reported higher anxiety levels ($M = 19.00, SD = 4.89$) than male strategic optimists ($M = 17.08, SD = 3.33$). A main effect for strategy type was also evident, with defensive pessimists having higher anxiety levels on the STAI-1 than strategic optimists: $F(1, 55) = 19.476, p = 0.001$.

For STAI-2 scores, a 2 (strategy type: SO, DP) x 2 (failure type: humiliating, face-saving failure) x 2 (gender: male, female) ANOVA again revealed a significant interaction between strategy and gender: $F(1, 49) = 12.764, p = .001$. The direction of the means here paralleled that for the STAI-1, with female defensive pessimists reporting lower state anxiety ($M = 21.47, SD = 7.18$) than male defensive pessimists ($M = 23.82, SD = 3.60$). On the other hand, female strategic optimists reported higher levels of state anxiety ($M = 19.88, SD = 4.92$) than male strategic optimists ($M = 17.54, SD = 4.33$).

While there was no main effect for gender, significant main effects emerged for both strategy and condition for the STAI-2. Significantly less anxiety was reported in the failure involving face-saving condition relative to failure which did not allow

face-saving: $F(1, 49) = 10.832, p = .002$. Finally, defensive pessimists reported greater anxiety than strategic optimists irrespective of condition: $F(1, 49) = 5.875, p = .019$.

Cognitive Interference. While there was neither a significant interaction nor main effects for a 2 (strategy type: SO, DP) x 2 (failure type: humiliating, face-saving failure) for score totals on the Cognitive Interference Scale, this scale has an item appended which makes a global assessment of cognitive interference which is not totalled in the overall score for this scale. For this item, a 2 (gender: male, female) x 2 (strategy type: SO, DP) x 2 (failure type: humiliating, face-saving failure) ANOVA revealed an interaction between performance feedback and gender: $F(1, 49) = 5.167, p = .027$, with males reported that their minds wandered more following humiliating failure than following failure which involved face-saving, while females reported that their minds wandered more following failure which involved face-saving than following humiliating failure. There was also a main effect for performance feedback: $F(1, 49) = 4.341, p = .042$, with participants reporting that their minds wandered more following humiliating failure than following failure which involved face-saving.

Attributional Behaviour

Subscale scores of the Russell (1982) Causal Dimension Scale (controllability, internality and stability) were analysed separately. A two-way ANOVA for strategy type and experimental condition revealed a significant main effect for performance feedback and strategy for controllability, with experimental participants in the failure condition reported lower levels of control than participants in the failure involving face-saving condition: $F(1, 53) = 4.538, p = .038$. Defensive pessimists also reported significantly lower levels of control relative to strategic optimists: $F(1, 53) = 7.229, p = .010$. However, the expected interaction failed to materialise: $F(1, 53) = 1.47, p > .20$.

For internality, the interaction term approached significance at: $F(1, 53) = 3.653, p = .061$. While defensive pessimists internalised the cause of their failure following humiliating failure to a greater degree than following failure involving face-saving, strategic optimists internalised the cause of their failure following face-saving failure to a greater degree than that following humiliating failure. A significant main effect was also found for performance feedback, with greater internality evident following humiliating failure than following failure involving face-saving: $F(1, 53) = 6.743, p = .012$.

Study 2

Overview

A separate group of students ($N=528$) were classified as either defensive pessimists (DPs) and strategic optimists (SOs) following the same procedures as those in Study 1. Participants were randomly assigned to either humiliating or face-saving failure conditions in which they completed a Stroop and electrical tracing task in a situation of high or low evaluative threat, with the order of these tasks counterbalanced across participants. This

rendered the study a 2 (strategy type: DP vs. SO) x 2 (evaluative threat: high vs. low) between-subjects factorial design. The major dependent measures included performance on the Stroop and electrical tracing tasks, attributions for performance, assessments of prototypical thinking whilst working on these tasks, and perceptions of control and anxiety.

Participants

Participants (N = 60; N = 19 males, N = 31 females) were undergraduate students at the University of Tasmania selected on the basis of their scores on the Optimism-Pessimism Prescreening Questionnaire (OPPQ; Norem & Cantor, 1986b).

Materials

The nine-item OPPQ (Norem & Cantor, 1986a) was again used to identify SOs and DPs, and the Strategic Optimism-Defensive Pessimism Prototypical Thinking Questionnaire employed to identify prototypical thinking on the part of DPs and SOs. The state form of the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) was used to assess anxiety at three different points in the experimental sequence. The Russell (1982) Causal Dimension Scale was again used to assess participants' causal explanations for performance on the Stroop and electrical tracing task.

Pre-performance expectations and post-performance reactions. Two items assessed pre-performance expectations: how well the individual expected to perform, and the extent to which participants expected to be in control of their performance. Post-performance items assessed perceptions of control, motivation to do well, confidence of success, confidence in ability, satisfaction with performance, assessments of performance as a total success versus total failure, and estimations of whether the number of mistakes made was more or less than average compared with other people. Responses were registered on 7-point Likert scales with end-point designations tailored to the requirements of each item.

Performance Tasks

Stroop Task

A computerised version of the Stroop Color Naming Task (Stroop, 1938) was used. The Stroop procedure involves naming the ink colors in which words or groups of letters are written. For the present study, participants were required to respond to either: (1) the color of the ink that the word was written in, or (2) the text of the word. Four stimulus words and colours were used: red, blue, green, and yellow.

Each participant was given a practice session of 12 stimulus presentations. The experimental session consisted of 40 presentations in four blocks of 10 presentations with ten second breaks between blocks. Each presentation consisted of an initial 500ms duration cue statement appearing on the screen which indicated the criterion on which the participant was to respond (color of the ink or word text). The stimulus word then appeared for 3000ms during which time the participant was required to

respond by pressing a numeric key corresponding to the correct color or word indicated by a panel of four numbered colors on the screen. Response errors were made more salient by an "uh-oh" sound generated by the computer.

Electrical Tracing Task

A framework consisting of a rigid cable attached to the ends of a 17x30cm wooden base was used. The framework and a tracing wand were wired to a 9-volt battery and a buzzer located under the base. The task consisted of threading the looped head of the wand along the metal framework from right to left and back again without touching the wire frame. Touches of the wand to the wire framework shorted the electric current, resulting in auditory feedback. The time taken to complete the task and number of times the wire touched the wire framework (recorded as errors) were recorded by the experimenter for each participant.

Procedure

Potential participants (N = 528) were screened using the OPPQ and selected and allocated to experimental conditions, primed concerning the purpose of the study, and expectations incumbent on them as per Study 1. Participants then completed the STAI questionnaires after which they were fitted with a finger cuff, ostensibly to monitor heart rate. Participants then received further information about the experiment carrying either the high or low evaluative threat manipulations which essentially paralleled those used in Study 1. Participants then completed items assessing expectations of performance outcome and control, and a repeat assessment of the STAI.

Upon completion of the Stroop and electrical tracing tasks, participants were directed to recall their thoughts while they were working on the tasks and to complete the SO-DP Prototypical Thinking Questionnaire. Finally, participants completed the items described above assessing pre-performance expectations and post-performance reactions, as well as the Russell (1982) Causal Dimension Scale.

Results

Performance Effects and Evidence of Strategy Use

Performance on the Stroop task was assessed in terms of (1) mean reaction time and (2) total errors. Errors were totalled from errors due to failure to respond, and errors due to mistakes. Performance on the wire-frame electrical tracing task was measured in terms of (1) total time to trace the wire frame from one end to the other and back again, and (2) the number of errors indicated by the buzzer sounding when the tracing wand shorted the electrical current running through the wire.

For the electrical tracing task, a 2 (strategy group: DP vs. SO) x 2 (evaluative threat: high vs. low) between-subjects multivariate analysis of variance (MANOVA) for the fore-mentioned dependent measures failed to reveal a significant interaction: Wilks' Lambda = .932, F(4, 53) = .966, p = .434. Nevertheless, separate ANOVAs for strategy group (DP vs. SO) x evaluative threat (high vs. low) revealed a significant main

effect for evaluative threat for tracing time, with participants performing faster in the high evaluative threat condition ($M = 95.73, SD = 29.61$) relative to the low evaluative threat condition ($M = 80.47, SD = 30.14$): $F(1, 56) = 4.048, p = .049$. However, as the surrounding MANOVA was nonsignificant, caution is advised in assuming the generalisability of this finding. For the Stroop task, there were neither main effects for evaluative threat for reaction time nor number of error. Nor were main effects for strategy type for these dependent measures. Evidence for prototypical thinking (and thereby strategy activation) was assessed by for each participant by subtracting the sum of their endorsements of the SO items from the sum of their endorsements of the DP items. A main effect for strategy group was evident: $F(1, 56) = 13.134, p = .0003$, with greater evidence of prototypical thinking characteristic of DPs than SOs. However, there was also a trend towards a significant interaction at $F(1, 56) = 3.238, p = .0774$, brought about by the fact that DPs in the low evaluative threat condition reported greater prototypical thinking in the high evaluative threat condition relative to the low evaluative threat condition. For SOs, prototypical thinking was less differentiated across evaluative threat situations.

Anxiety Levels

State anxiety was assessed at three times during the experimental procedure: (1) prior to experimental instructions, (2) after experimental instructions (which included the high and low evaluative threat manipulations) and (3) following a rest period of 2-3 minutes and (presumed) strategy activation. Elevated anxiety was expected on the second administration of the STAI relative to the first, while lower anxiety levels were expected on the third administration of the STAI, following assumed strategy activation.

A repeated measures ANOVA revealed a significant main effect for strategy type: $F(1, 112) = 7.768, p = .0072$, with DPs reporting significantly higher state anxiety than SOs. There was also a trend towards a significant main effect for STAI measures across occasions: $F(2, 112) = 2.726, p = .069$. Finally, there was a trend towards a significant interaction between evaluative threat and strategy type at $F(2, 112) = 3.210, p = .079$.

Pre-Performance Expectations, Post-Performance Reactions

Prior to the Stroop and electrical tracing tasks, participants completed single-item measures assessing (1) how well they expected to perform, and (2) the extent to which they expected to be in control of the outcome of their performance. Following task performance, participants completed items which elicited retrospective assessments of control, confidence of success, motivation, confidence in ability, satisfaction with performance, estimates of performance success versus failure, and mistakes relative to other people.

A main effect for strategy group emerged for pre-performance expectations, with SOs having significantly higher expectations of their performance than DPs: $F(1, 56) = 8.23, p = .006$. There was also a trend for SOs to report greater control

over their performance than DPs both before: $F(1, 56) = 3.68, p = .060$ and after completing the Stroop and electrical tracing tasks: $F(1, 56) = 3.63, p = .062$.

While there were no significant differences between the two groups in terms of either motivation or satisfaction with performance, SOs reported significantly greater confidence of success: $F(1, 56) = 10.57, p = .002$, greater confidence in their ability: $F(1, 56) = 9.99, p = .003$, and were more likely to rate their performance as a success relative to DPs: $F(1, 56) = 5.85, p = .019$. A significant interaction for strategy group x evaluative threat was also evident for number of mistakes: $F(1, 56) = 4.924, p = .031$. While assessments of the number of mistakes for SOs were little differentiated across high versus low evaluative threat situations, DPs assessed that they had made more mistakes in the high evaluative threat condition relative to the low evaluative threat condition.

Attributions

Correlations between each of the dimensions of Russell's (1982) Causal Dimension Scale (internality, stability and controllability) were examined in order to test the assumption that these dimensions are orthogonal. As none of the dimensions were found to be significantly correlated, separate two-way ANOVAs for strategy group x evaluative threat were performed for each dimension.

While there were no significant differences between groups in assessments of the internality or stability of attributions, there was a significant main effect for strategy group for controllability: $F(1, 56) = 6.20, p = .016$. Consistent with the single-item pre- and post-performance assessments of control indicated above, SOs were more likely to attribute their performance to controllable factors than DPs.

Discussion

The high and low evaluative threat manipulations were designed to promote or obviate strategy use on cognitive and instrumental time-limited tasks. One of the aims of the investigation was to test the assumption that in a situation of high evaluative threat, DPs and SOs would perform better than in a situation of low evaluative threat when working on these tasks. The reasoning implicit in this assumption was that strategy use is most likely to be invoked in a situation of high evaluative threat, one involving threat to self-esteem. Conversely, in a situation of low evaluative threat, strategy use is less likely.

Evidence of actual strategy use was also supported in a number of ways. In Study 1, there is evidence, albeit not particularly clear cut, of performance facilitation in the high evaluative threat condition relative to the low evaluative threat condition ($p = .056$). In Study 2 different performance outcomes for DPs and SOs were evident on the tracing puzzle task in the high evaluative threat condition relative to the low evaluative threat condition. Both strategy groups were significantly faster on the electrical tracing task in the high evaluative threat condition relative to the low evaluative threat condition. There was also a tendency for DPs to make fewer errors on the tracing task in a situation of high evaluative threat relative to a situation

of low evaluative threat ($p = .096$). However, neither group showed significant differences in performance on the Stroop task between situations of high and low evaluative threat.

The assumption of greater strategy activation in a situation of high evaluative threat is also supported in a trend towards a significant interaction between evaluative threat and strategy type for repeated measures of the STAI in Study 1 ($p = .09$), and in Study 2 ($p = .07$). In Study 2, it is also supported in a trend towards greater prototypical for DPs and SOs in the high evaluative threat condition relative to the low evaluative threat condition. In the case of STAI measures, strategy groups were maximally differentiated in situations of high evaluative threat relative to situations of low evaluative threat.

There is also a suggestion in the data from Study 2 that DPs have a lower threshold for activating strategy use than SOs. This is indicated in the greater differentiation in prototypical thinking between situations of high and low evaluative threat for DPs relative to SOs, and consistent with DP's lower reported confidence in their ability, lower confidence of achieving success, lower performance expectations, and lower perceived control. It is likewise consistent with the finding from the present study that DPs experienced significantly higher levels of anxiety than SOs regardless of experimental condition. These outcomes accord with previous findings of high levels of anxiety on the part of defensive pessimists in achievement situations (e.g. Norem & Cantor, 1986b; Norem & Illingworth, 1993).

While there was no evidence of performance effects on the Stroop task, in Study 2 it may be that instrumental tasks — particularly those on which individuals have little prior experience — more sensitively to register performance effects than cognitive tasks when level of evaluative threat is manipulated. Indication that this may be so is given by Norem and Cantor (1986b). Allocating DPs and SOs to either an encouragement or a no-encouragement condition in a fully crossed design they found that encouraged defensive pessimists performed significantly worse than non-encouraged defensive pessimists and encouraged optimists when a tracing-puzzle task was used. However when anagrams were used as the criterion task, there were neither significant main effects nor a significant interaction between strategy type and experimental condition. While then in the present study the Stroop task seemed well-suited to register the effects of anxiety upon performance, it appears that the effect of strategy activation upon performance in situations of high relative to low evaluative threat is more elusive for cognitive than for instrumental tasks.

These results accord with the interpretation that the strategy uses of defensive pessimism and strategic optimism are activated or otherwise depending on the level of evaluative threat. As such, strategy use is not cross-situationally stable, but is activated or otherwise as the need arises. Whether strategy activation promotes gains in performance remains moot, however the indication from the present study and that by Norem and Cantor (1986a) is that performance facilitation is most likely to be seen on instrumental as opposed to cognitive tasks. Beyond this, evidence of performance facilitation is hard to find. Rather, the understanding is that defensive pessimism and strategic optimism function primarily to circumvent the interfering effects of anxiety upon performance in response to evaluative threat and low anticipated control.

About the Author

Dr Ted Thompson coordinates post-graduate programs in educational and developmental psychology within the School of Psychology at the University of Tasmania. His primary research interest is in self-sabotaging behaviours in achievement situations, including self-worth protection, impostor fears and self-handicapping, with publications in these areas appearing in a variety of international journals. He has recently written a book, *Underachieving to protect self-worth: Theory, research and interventions* (published 1999).

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The Roles of Parental Messages: The Achievement Environment of the Home and Evaluative Feedback in the Development of Failure-Avoidant Patterns of Behaviour

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This paper examines the role of the achievement environment of the home, parenting style, and evaluative feedback in relation to the development of failure-avoidant patterns of behaviour. These are behaviours geared to minimise risk of failure and avoid the negative implications of poor performance in terms of damage to self-worth. Self-worth protection, self-handicapping, the impostor phenomenon, procrastination, and defensive pessimism fit this category. While the empirical literature is nascent, there are arresting parallels in high family endorsements of the goal value of success, frequently in the absence of explicit advice concerning the means by which this goal might be realised, parental over-control, and selective validation of achievements. These elements are held to be germane to the maintenance of these phenomena. These include effort fears (a conviction that ability is best revealed when one achieves despite low effort), rejection of success, low self-concepts of ability, and marked anxiety when poor performance is judged potentially diagnostic of low ability.

This paper examines failure-avoidant patterns of behaviour. These are behaviours geared to avoid the negative implications of failure in terms of damage to self-worth. Self-worth protection, self-handicapping, the impostor phenomenon, procrastination, and defensive pessimism fit this category. This paper identifies aspects of personality and attributional behaviour generic to these phenomena, as well as unproductive beliefs about self as agency, about achievement and about the cause of achievement outcomes. An account of the development and maintenance of failure-avoidant patterns of behaviour is provided which identifies parental messages about achievement, including an endorsement of the goal value of success and selective validation of achievement success. Aspects of parenting also appear to be implicated in the development of failure-avoidant patterns of behaviour. These include high levels of parental control and overprotection.

The propositions which form the foundation of the argument developed below are as follows:

1. Low and uncertain self-esteem predispose individuals towards failure-avoidant patterns of behaviour in achievement situations which involve evaluative threat. These are situations which are potentially diagnostic of low ability, presaging low ability and loss of self-worth in the event of poor performance.
2. Failure-avoidant patterns of behaviour are exacerbated by unproductive views that:
 3. ability is best revealed when success follows low effort and correspondingly that failure following high effort establishes low ability, (effort fears),
 4. ability is something fixed and immutable (an entity view of ability) so that failure conclusively establishes low ability,
 5. achievement is a mainstay of personal worth, and
 6. success is generally due to other people or circumstances
7. Failure-avoidant patterns of behaviour are linked with noncontingent success: to a performance history that cannot be readily deciphered in terms of the ingredients that have made for success.
8. Family messages about achievement, in particular the importance of achieving at a high level coupled with a conviction that ability is best revealed when success follows low effort are implicated in the development of failure-avoidant patterns of behaviour.
9. Noncontingent evaluative feedback is linked with uncertain self-images and uncertainty about the cause of achievement outcomes, in turn associated with self-handicapping and avoidance in situations of evaluative threat.
10. Parenting patterns including parental overcontrol and criticism, and parental endorsement of the goal value of success exacerbate evaluative threat, further fuelling an avoidant orientation.

Failure-Avoidant Strategies

Self-worth protection describes a strategy whereby certain students intentionally withdraw effort so that they are able to avoid the negative effects of poor performance in terms of damage to self-worth. This strategy is associated with a curious inconsistency in students' academic performances. While on some occasions they perform well, and often extremely well, they perform poorly on others. It would be reasonable to assume that the level of objective difficulty of the task in question might be responsible for these varying performance outcomes. However, it turns out not to be so. Rather, the critical factor is the extent to which poor performance is expected to indicate low ability (Craske, 1985, 1988; Thompson, 1993; Thompson, Davidson & Barber, 1995).

On the face of it, self-handicapping describes a similar strategy. This term refers to the practice on the part of certain individuals to voluntarily adopt or claim a handicap when future outcomes are uncertain and when no external account for poor performance is available. Claiming emotional upset prior to an important test, or intentionally sustaining an injury in the critical weeks prior to an important golf tournament are cases in point. If defeat or poor performance does occur, it is difficult to be sure that the outcome was due to lack of ability or to the handicap.

Self-handicapping differs from self-worth protection in terms of an assumed augmenting advantage associated with the former, in terms of its application to whole of life contexts,

and in terms of mediating personality variables. If poor performance results, one can blame the handicap rather than low ability. The student is able to discount his or her own ability because of the handicap. If, however, success results irrespective of the claimed handicap — emotional distress or illness, for example — then the student's ability is judged to be even greater because he or she has succeeded despite the handicap.

Procrastination — a term needing little explanation — refers to a range of behaviours used to cope with conflict and indecision and avoid a conclusion that one is ineffectual and inadequate. Essentially, procrastination, like self-worth protection, is a species of self-handicapping, and has links with self-worth protection. Each involves self-sabotaging behaviours. However in the case of procrastination, links with perfectionism are evident in students' propensity to hold high standards for self-evaluation while being intolerant of their failure to meet these standards.

A strategy of a very different character is described by impostor fears. Individuals who harbour these fears suffer from a persistent and intense anxiety that others will discover that they are not truly intelligent and that they will eventually be found out for their unjust receipts. They regard their successes as ill-gotten, a product of luck rather than genuine ability. In academic situations these individuals perform well, albeit at considerable cost. Once an achievement task has been assigned they are plagued by bad dreams, worry, self-doubt, and anxiety, experiences which result in procrastination and immobility in the face of possible failure.

A further strategy is described by defensive pessimism. This term refers to a strategy whereby certain individuals entertain unrealistically low expectations and ruminate about worst-outcome scenarios in order to overcome the interfering effects of anxiety upon performance. When circumstances require, this strategy allows them to become task-focused rather than distracted by excessive anxiety. While this allows them to perform well, there are, as for impostor fears, long-term costs in terms of emotional wear and tear, burnout, diminished intrinsic motivation and ultimately, diminished achievement.

While these phenomena are empirically distinct, they are conceptually related, each involving avoidant behaviours motivated by the same need to protect a low or vulnerable self-esteem, each in their own way being manifestations of fear of failure, designed to manage the attributional implications of poor performance in terms of damage to self-worth. In the case of self-worth protection, procrastination and self-handicapping, the self-protective manoeuvres at the heart of these phenomena capitalise on attributional principles of discounting. In the case of self-handicapping, there is also an assumed augmenting advantage in augmenting ability if good performance should result despite the handicap.

Low and Uncertain Self-Esteem, Rejection of Success

There is substantial evidence that low and uncertain self-esteem and rejection of personal agency for success are common denominators associated with failure-avoidant patterns of behaviour, and that these aspects of personality are outcomes of noncontingent feedback. This is feedback that leaves the individual querulous as to whether his or her actions have been genuinely instrumental in his or her achievement successes. As

such, the individual is unable to fully internalise his or her success.

Rejection of Success and the Development of Failure-Avoidant Patterns of Behaviour

While rejection of success is amply documented in the case of self-worth protection, impostor fears and procrastination, the evidence is less clear in the case of self-handicapping and defensive pessimism. In the case of self-handicapping, the evidence is rather that high trait self-handicappers' attributions following success and failure outcomes are less differentiated in relation to low self-handicappers (e.g. Murray & Warden, 1992, Thompson & Richardson, 2000).

Interesting parallels are evident between self-worth protective students and procrastinators in terms of the manner in which they regard their success and failure outcomes. In a naturalistic study of cognitive, affective and behavioural differences between high and low procrastinators, Rothblum, Solomon, and Murkani (1986) found that high procrastinators attributed their good test performance more to external and temporary factors, whereas low procrastinators attributed their success on a test more to internal and stable factors. However, there were no differences between high and low procrastinators on any attributions following test failure. These findings parallel those from studies investigating the attributional behaviour of self-worth protective students by Craske (1988) and Thompson (1993a, Thompson et al., 1995) and provide evidence of a functional advantage of procrastination (and withdrawal of effort in the case of self-worth protection) in effectively insulating the individual against conclusions of low ability. On the other hand, rejection of success is consistent with these individuals' low self-esteem, and has been suggested as a significant factor in the maintenance of avoidance behaviours in situations of evaluative threat (Thompson, 1997).

Due to a perception shared by many students that success won through hard work cannot truly reflect high ability (e.g. Covington & Omelich, 1985), impostors fail to recognise their achievement as a legitimate outcome of ability or talent. When at the end of the day they are greeted by success, it is attributed to factors other than ability, to personal charm, luck, or perceptiveness (Clance, 1985). As a consequence of these attributions impostors experience guilt about their successes, believing that they will eventually be found out for their ill-gotten gains. Clance (1985) observes that repeat successes do nothing to weaken the experience of impostor feelings or strengthen their belief in their ability. She further notes that impostors are ingenious at negating external evidence of ability and at discrediting positive affirmations from others (Clance & O'Toole, 1988).

In a similar vein, Thompson & le Fevre (1999) found defensive pessimists have lower self-esteem than strategic optimists and experience greater anxiety in achievement situations. Consistent with their low self-esteem, they react with relief rather than congratulations following success: the strategy has worked, the goal has been attained, neither anxiety nor low expectations have realised their self-fulfilling prophesy effects on achievement.

Uncertain Self-Esteem and the Development of Failure-Avoidant Behaviours

There is equally compelling evidence that low and uncertain self-esteem is associated with failure-avoidant patterns of behaviour, together with indications that these aspects of personality are associated with the genesis and maintenance of these behaviours. Links between low global self-esteem and impostor fears are evident (Chrisman et al., 1995; Thompson, Davis & Davidson, 1998, Thompson, Foreman & Martin, in press; Topping & Kimmel, 1985). Cozzarelli and Major (1990) found impostor scores and trait self-esteem were significantly correlated at $r(106) = -.51, p < .001$, while Thompson (Thompson et al., 1998; Thompson, Foreman & Martin, in press) found that impostors report lower global self-esteem than non-impostors.

Links between self-worth protection and low academic self-esteem have also been noted, as well as links with uncertain global self-esteem (Covington & Omelich, 1985; Thompson, 1993, Thompson, Davidson & Barber, 1995), along with links between self-handicapping and uncertain self-images. In Jones and Berglas' (1978) view, uncertainty about one's skill or ability motivates self-handicapping behaviour, individuals with uncertain self-esteem being particularly concerned to protect a desired but tenuous self-image. Evidence in this regard comes from a variety of sources (e.g. Covington, 1984b; Jones & Berglas, 1978; Ferrari, 1991a, 1991b; Kernis, Grannemann & Barclay, 1992; Rhodewalt & Davison, 1986; Thompson, 1993, Thompson, Davidson & Barber, 1995). The tenuous self-esteem of self-worth protective students, high trait self-handicappers and trait procrastinators reflected in their uncertain self-appraisals makes them vulnerable to the adverse effects of noncontingent success and failure feedback.

Low Global Self-Esteem and the Development of Failure-Avoidant Behaviours

Snyder and Higgins (1988) argue a greater propensity on the part of low self-esteem individuals to self-handicap relative to high self-esteem individuals. These writers point out that low self-esteem individuals more frequently encounter situations in which they are uncertain of their ability. As a consequence, they more frequently find contexts which invite self-protective behaviours. This observation is consistent with the suggestion of an association between self-protective motivations and low self-esteem noted by a number of researchers (e.g. Baumeister, Tice & Hutton, 1989). Likewise, Rhodewalt and Davison (1986) observe that low self-esteem individuals are likely to self-handicap when they are uncertain about how to avoid a self-relevant, undesired outcome.

Baumgardner and Levy (1988) offer a way of understanding the self-protective versus self-enhancement orientations of high versus low self-esteem groups. They suggest there is a significant difference in the way in which high and low self-esteem groups perceive the ability of persons who expend effort, but fail. In the case of high self-esteem persons, the intention to expend effort implies high ability regardless of performance. On the other hand, intentional low effort signals low ability.

However, low self-esteem individuals appear to view individuals who try hard but fail as less able than individuals who try hard and succeed. That is, low self-esteem persons seem unwilling to conclude that an individual who tries hard and fails can nonetheless be quite capable.

For this reason, Baumgardner and Levy (1988) suggest that self-handicapping in the form of strategic withdrawal of effort may be "an attractive lure" to low self-esteem persons (p. 436). Low self-esteem persons may thus be operating under the mistaken impression that strategic withdrawal of effort is an effective self-presentational strategy, at least insofar as it mitigates perceptions of low ability in the face of failure.

Links Between Noncontingent Evaluative Feedback, Uncertain Self-Images and Self-Handicapping

Noncontingent feedback has two effects. First, it promotes uncertain self-images. Second, it engenders attributional uncertainty: individuals become uncertain as to how to attribute the cause of their achievement outcome. These two effects go together. Individuals who are uncertain as to how to attribute the cause of their achievement outcomes — whether to internal factors such as effort, strategy or ability, or to external factors such as good fortune or task ease — doubt their personal capacity to bring about particular outcomes.

The connection between uncertain self-images and attributional uncertainty has been established by a number of studies examining self-handicapping behaviour (e.g. Berglas & Jones, 1978; Higgins & Harris, 1988; Rhodewalt & Davison, 1986). These studies have shown that attributional uncertainty and uncertain self-images can be created in two ways. One is through exposure to noncontingent performance feedback, the other is by manipulating the uncertainty of the outcome. The two forms of uncertainty are of course linked and interdependent. The manipulation of uncertainty concerning future performance outcomes challenges the certainty of self-perceptions, often in the form of perceived competence to achieve a certain outcome, while persons with uncertain self-images doubt their ability to perform well. The creation of uncertainty in either sense is associated with the adoption of the failure-avoidant strategies.

Links With Unproductive Views about the Nature of Ability, Causes of Achievement Outcomes and Self as Agency Family Messages about Achievement

Arresting parallels are evident in accounts of the development of failure-avoidant patterns of behaviour. For example, Pauline Clance (Clance & Imes, 1978; Clance, 1985) maintains that impostor fears develop in the context of a number of family messages about achievement. Based on clinical insights, Clance identifies four messages about achievement which contribute to the development of impostor fears: (1) as children, impostors believe that their abilities are outstanding for their family, race, or gender (2), the feedback these children receive from significant others outside that family — for example peers and teachers — is inconsistent with family messages, (3) these children rarely receive praise for their accomplishments, and (4), family

members emphasise that intelligence is best revealed when one achieves success despite low effort.

The importance of each of these messages to the development of impostor fears has been supported in empirical findings (e.g. Bussotti, 1990; King & Cooley, 1995; Campbell, cited in Bussotti, 1990; King & Cooley, 1995). By way of illustration, King and Cooley (1995) used the Achievement Orientation subscale of the Family Environment Scale (Moos & Moos, 1986) to investigate links between impostor fears among college students and family emphases on achievement and competition. Items on this subscale assess the extent to which family members believe in competition, feel it is important to get ahead in life, and strive to succeed. They found scores on the Achievement Orientation subscale significantly correlated with impostor fears, suggesting that an emphasis on achievement and ability proven through competitive effort may be key elements in the genesis and maintenance of impostor fears.

Further empirical support for the role of family messages in the development of impostor fears is given by Bussotti (1990). This researcher found negative correlations between impostor scores and two subscales of the FES: Cohesion, measuring cohesion among family members, and Expressiveness, measuring expression of feeling with the family. On the other hand, positive correlations were evident between impostor fears and Conflict and Control subscales. These assessed expression of anger (Conflict) and the application of rules in governing family behaviour (Control). Together these subscales accounted for 12% of the variance in impostor scores, suggesting that impostors are likely to have experienced an unsupportive, conflictual family background where communications and behaviours are rule-governed and restrictive. In a recent study, Sonnack & Towell (in press) found high levels of parental control and overprotection associated with impostor fears. In many ways, the account of the development of impostor fears which can be pieced together from the literature parallels the account of the development of self-handicapping and self-worth protection which accents the role of irregular, unsystematic evaluative feedback for positive achievement outcomes. On the one hand, a theme of selective validation nominates bases of personal valuation which are irrelevant to achievement, continuing a theme evident in accounts of the development of self-handicapping and self-worth protection. On the other hand, nomination of unproductive beliefs to do with the nature of ability and the signifying role of effort in relation to ability following poor performance mirror similar emphases in accounts of the genesis of procrastination and self-handicapping.

Family achievement orientation and strategy use. A three-year longitudinal study by Norem and Cantor (1990) examining the achievement careers of defensive pessimists and strategic optimists revealed interesting findings in relation to family achievement orientation. Again using the Moos and Moos (1974) Family Environment Scale, both strategic optimists and defensive pessimists perceived their families as more achievement-oriented than the national norm for the scale. However, in contrast to the strategic optimists, defensive pessimists perceived their families as providing significantly less structure for the realisation of achievement goals. In other words, while the goal value of success was clearly endorsed, it

was endorsed in the absence of explicit advice concerning the means by which this goal might be realised.

While Norem and Cantor's (1990) data are suggestive rather than definitive, it appears that while defensive pessimists are as highly motivated to achieve as strategic optimists, they experience more frustrations in working towards their goals in the absence of clear understandings about strategy and process. These researchers speculate that part of the purpose of the defensive pessimism strategy is to provide a means to reduce risk of failure and thereby, achieve control academically.

Parental control, criticism and procrastination An entirely consistent theme is evident in studies linking parental overcontrol with dysfunctional procrastination in both decisional and avoidant forms (Ferrari & Olivette, 1993, 1994). In the former of these studies, positive associations were found between late adolescent females' perceptions of their parents as authoritarian, and strong indecisional tendencies, with stern inflexibility and overcontrol found to have greatest influence on daughters who develop chronic tendencies towards indecision.

In their 1994 study, the influence of parenting style on daughters' procrastination was assessed using Diana Baumrind's (1967, 1971) classification of parenting styles as authoritative, authoritarian and permissive. Using protocols which represented these three parenting styles, Ferrari and Olivette (1994) found fathers with an authoritarian parenting style were likely to raise daughters with both decisional and avoidant procrastination tendencies. Authoritative fathers, on the other hand, were unlikely to raise daughters who were procrastinators, as was the case for permissive mothers. In fact, mothers' parenting styles were unrelated to procrastination scores reported by daughters.

Yet other research has linked procrastination with unrealistic parental expectations. Using the Multidimensional Perfectionism Scale developed by Frost, Heimberg, Holt, Mattia and Neubauer (1993), comprising subscales assessing both personal and social perfectionism, significant negative associations were found between frequency of procrastination but positive associations with high parental expectations and parental criticism. Essentially similar findings have been reported by Voicu (1993; cited in Flett, Hewitt and Martin (1995) examining the association between procrastination and socially imposed standards of perfectionism from parental figures.

Accounts of the development of self-handicapping behaviour and self-worth protection reveal further parallels, accenting noncontingent evaluative feedback in the maintenance and development of self-handicapping. A consistent theme running through studies of self-handicapping behaviour is that people are more likely to claim or adopt a handicap after being exposed to noncontingent evaluative feedback: to a performance history which cannot be readily deciphered in terms of the ingredients which have made for success (e.g. Berglas & Jones, 1978; Higgins & Harris, 1988). Berglas and Jones (1978) suggest that the strategic orientation of self-handicappers stems from a "capricious, chaotic reinforcement history"... [and claim that] "it is not that their histories are pocked with repeated failure; they have been amply rewarded, but in ways and on occasions that leave them deeply uncertain about what the reward was for" (p. 407). The assumption by Berglas in this and later publications (Berglas, 1986; 1990) is that the performance

pressures implicit in such feedback assume causal status in relation to the genesis of self-handicapping behaviour. In general terms, it is unlikely that exposure to noncontingent feedback alone can account for the origin failure-avoidant patterns of behaviour in situations of evaluative threat.

Doubtless, not all individuals exposed to noncontingent feedback manifest self-worth protective behaviours in achievement situations. Nevertheless, exposure to noncontingent success or failure is held to be a significant factor which, in conjunction with the low and uncertain self-esteem associated with self-worth protective students, establish a set of conditions conducive to the development of self-handicapping. An essentially similar account of the development of self-worth protection is provided by Thompson (1994, 1999) which identifies sources of noncontingent evaluative feedback in classrooms, which, in association with low and uncertain self-evaluations, are held to exacerbate failure-avoidant patterns of behaviour.

Unproductive Views About Ability, the Signifying Role of Effort in Relation to Ability and Ability as a Criterion of Self-Worth

Finally, there is evidence to suggest that self-worth protective students (Thompson, 1996), self-handicappers (e.g. Jones & Berglas, 1978; 1990), procrastinators (e.g. Ellis & Knaus, 1977; Ferrari, 1991d) and impostors (e.g. Clance & O'Toole, 1988; Langford, 1990; Langford & Clance, 1993) view ability as a static, immutable entity which is either confirmed or disconfirmed from one occasion to the next, with mistakes indicating personal failure and inadequacy. This view of ability, known as the entity view, is contrasted with the incremental view whereby ability is seen as malleable, dependent upon the acquisition of new skills and capacities (Dweck, 1986). As the entity view of intelligence is linked to an all-or-none perception of the consequences of failure, failure is made all the more aversive as a consequence.

Effort fears further fuel failure-avoidant patterns of behaviour. Due to a perception held by individuals that failure following high effort is particularly likely to reveal low ability (e.g. Covington & Omelich, 1985), and a corresponding belief that success which is achieved with little effort is best likely to reveal ability, investing effort into achievement enterprises is aversive, fuelling avoidant responses in situations of evaluative threat.

Finally, for or self-worth protective students, there is generally an unremitting and exaggerated concern over the adequacy of one's performance (e.g. Thompson, 1996). The assumption is that such concerns are premised on the perceived importance of achievement as a criterion of personal worth (Beery, 1975; Covington & Omelich, 1979a, 1979b; Nicholls, 1976, 1984). This emphasis is held to derive from a tendency in society to equate an ability to achieve competitively with human value (Gardner, 1961). This theme is echoed in views of self-handicapping behaviour and procrastination. In a similar vein, Berglas and Jones (1978) suggest that self-handicapping is associated with a dispositional overconcern with competence, which they refer to as a "competence complex" (p. 204). In a

similar vein, Ellis and Knaus (1977) regard procrastination as supported in part by irrational beliefs which equate self-worth with demonstrated competence in particular areas of performance. Collectively, these unproductive views about the nature of ability, the signifying role of effort in relation to ability, and an emphasis on ability as a criterion of self-worth exacerbate failure-avoidant patterns of behaviour.

In conjunction with noncontingent evaluative feedback and parental messages about achievement identified above, these beliefs exacerbate failure-avoidant patterns of behaviour. Potentially, this information may be significant in designing intervention programs to assist these individuals to more fully realise their achievement potential.

About the Author

Dr Ted Thompson coordinates post-graduate programs in educational and developmental psychology within the School of Psychology at the University of Tasmania. His primary research interest is in self-sabotaging behaviours in achievement situations, including self-worth protection, impostor fears and self-handicapping, with publications in these areas appearing in a variety of international journals. He has recently written a book, *Underachieving to protect self-worth: Theory, research and interventions* (published 1999).

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Self-Concepts of Primary Students with Mild Intellectual Disabilities: Issues of Measurement and Educational Placement

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The educational placement of students with mild intellectual disabilities remains controversial. Arguments for educational placement are often based upon the anticipated impact upon self-concept. Labeling theory suggests that special class placement fosters negative self-concepts, while according to Social Comparison theory, special class placement facilitates positive self-concepts. Evidence to evaluate these theories is hard to gather due to the difficulty in validly and reliably measuring their self-concepts, and the reliance upon measures of general self-concept. The current study evaluates the Self-Description Questionnaire I (SDQI) as a valid and reliable measure for these students and evaluates the impact of educational placement upon self-concept. 211 students with mild intellectual disability, placed in either regular classes or support units, were individually administered the SDQI. Confirmatory factor analysis and estimates of reliability reveal that the SDQI is a suitable measure of self-concept for these students. Students in regular classes had significantly lower self-concepts for all three academic scales (Reading, Math, School) and for one nonacademic scale (Peers) and for General Self-concept but did not differ from students in special classes for the remaining three nonacademic self-concepts (Parents, Physical Ability, Physical Appearance). Results support Social Comparison theory and the need to consider multiple dimensions of self-concept.

The movement towards the inclusion of students with disabilities in regular classrooms is a contentious issue which has generated much debate. Few topics in the field elicit such a broad range of emotions and opinions. Although the debate continues, the reality is that education systems throughout Australia and the world are moving towards the placement of children with special needs in regular classrooms (Dempsey & Foreman, 1997).

Arguments for educational placement of students with mild intellectual disability are often based upon the anticipated impact upon self-concept. It is generally agreed that special class placement affects the self-concepts of students with mild intellectual disability. However, authors discussing the nature of the affect have assumed two widely divergent positions. Labeling theory suggests that placing these students in special classes with other students with mild intellectual disability will lead to lower self-concepts, while Social Comparison theory contends that this very same placement will enhance the self-concepts of students with mild intellectual disability.

Social Comparison vs. Labeling Theory

Opponents of special class placement typically argue that the identification, isolation and segregation of these students tends to foster a negative self-concept (known as Labeling theory). Labeling theory was very influential in the 1950's and 1960's and was one of the arguments used against segregation (Dixon & Gow, 1993). As a consequence, in the past decade, there has been a strong movement towards the inclusion of students with disabilities into more heterogeneous educational and social environments, based upon the belief that the inclusion of students with disabilities will enhance their self-concept as they become more involved with the school's mainstream activities (Szivov-Bach, 1993).

However, reference to well-established research findings are often absent from education policy rationales (Idol, 1997). Research does not support the assumption that placing students with disabilities in classes with non-disabled students results in enhanced self-concept (Chapman, 1988; Renick & Harter, 1989; Silon & Harter, 1985; Strang, Smith, & Rogers, 1978). Rather, it

indicates that when students with disabilities are placed with other students experiencing similar difficulty their self-concept is enhanced.

Proponents of special class placement argue that the environment of the special class, which is generally less competitive and consists of students with similar difficulties, reduces the anxieties and frustrations of students with mild intellectual disabilities, and as a consequence, fosters the development of a positive self-concept. The role of social-comparison (Festinger, 1954) processes in determining self-concepts has been a particular focus in self-concept research as exemplified by Marsh and his colleagues and the development of the Big Fish Little Pond Effect (BFLPE). BFLPE research has focused on students at the top end of the ability spectrum, showing that attending academically selective schools has a significant negative effect on academic self-concept and little systematic effect on nonacademic self-concept (Marsh, Chessor, Craven & Roche, 1995; Marsh & Craven, 1997). Marsh and Johnston (1993) expanded the theoretical basis of BFLPE to include the effects of special placement on children with learning difficulties, but provided no empirical tests of their predictions. According to their expansion of the BFLPE, the academic self-concepts of students with disabilities should increase when placed in segregated educational environments whereas students placed in regular class settings should have lower academic self-concepts. According to BFLPE, when these students make social comparisons, their reference group experience similar difficulties thus they evaluate themselves more favourably.

Measurement of Self-Concept in Students with Mild Intellectual Disability

Sound empirical investigation of the impact of educational placement upon self-concepts for this population have been scant and among the studies that have been conducted, weak methodologies have been employed. The two major limitations of past research include the predominant use of a unidimensional measure of self-concept, and the use of measures that have not been validated for this population.

Self-Concept as a Multidimensional Construct

Historically, special education research has treated self-concept as a unidimensional, global construct represented by a single score (e.g. Beltempo & Achille, 1990; Coleman, 1983; Strang, Smith & Rogers, 1978). In 1985, Silon and Harter assessed the factor structure of the Perceived Competence Scale for Children for students with mild intellectual disability concluded that “retarded children do not make distinctions about specific competence domains but rather simply make judgments about one’s competence at activities in general, regardless of the nature. Thus they think one is either competent or not” (p.223). Recent self-concept research and theory, however, informs us that self-concept is indeed a multidimensional construct and children make clear distinctions between specific domains of their lives when evaluating themselves (Marsh, Craven & Debus, 1991). Utilising a unidimensional measure of self-concept does not take account of the fact that children may evaluate themselves differently in different domains of their lives. The aspect of self-concept measured is likely to contribute to different levels of self-concepts found in various studies (Morrison & Polloway, 1995).

Durrant, Cunningham & Voelker (1990) further highlight the need to employ a multidimensional measure with their findings that: cognitive self-concept is found to be related to a student’s academic scores, general self-concept is found to be related to a student’s IQ score, and social self-concept is found to be related to a student’s behavioural scores. A total score that indiscriminately confounds academic and various nonacademic components of self-concept will fail to capture the impact upon different aspects of the self-concept. Given the possible differential impact upon academic and nonacademic self concept, as suggested by BFLPE, a multidimensional instrument needs to be employed.

A Valid and Reliable Measure of Self-Concept for Students with Mild Intellectual Disability

Failure to pursue sound research with this population is due, in part, to problems associated with measuring the self-concepts of students with mild intellectual disability. Evidence to validate either Labeling theory or Social Comparison theory is difficult to gather due to the difficulty in validly measuring the self-concepts of this population. Byrne (1996) in her definitive review of self-concept measurement instruments bemoaned this problem and noted that “a search of the literature revealed such instrumentation to be disappointingly sparse and serves to highlight this critical void in the availability of self-concept measures for special populations” (p. 221).

Given this critical void, studies that have sought to examine self-concepts among this group have simply used measures standardised on groups of children with IQs within the average range, assuming these instruments would be appropriate (e.g. Cardona, 1997; Chiu, 1990; Coleman, 1985). However, this assumption is unfounded. The factorial structure is not well understood for children with mild intellectual disabilities, and it may be that the very structure of self-concept may differ for this group for reasons having to do with either their cognitive-developmental level, or the unique environment that such children experience (Harter, 1990). As a result, any interpretation

of existing findings for this population is ‘murky’ at best, given the inadequacies of instrumentation.

A New Adaptive Interview Procedure (Marsh, Craven & Debus, 1991, 1998)

The Australian Self Description Questionnaire (SDQI) (Marsh, 1988) is internationally regarded as the strongest multidimensional self-concept instrument for school-aged students (Boyle, 1994; Byrne, 1996; Hattie, 1992). Recent advances in self-concept theory and research have resulted in the successful measurement of self-concept for children younger than previously thought possible. The development of the SDQI individualised administration, SDQI-IA, has meant that the self-concept of children as young as 5 years of age has been successfully measured (Marsh, Craven & Debus, 1991; Marsh & Craven, 1997). Given these recent findings the SDQI-IA may be suitable for measuring the multidimensional self-concept of primary students with a mild intellectual disability.

The Present Investigation

The current study will, firstly, evaluate the SDQI-IA as a valid and reliable measure of self-concept for students with mild intellectual disability. Secondly, it will determine whether the self-concept of this population is multi-dimensional, as it is for their peers. Thirdly, this study will administer the SDQI-IA to assess the impact of educational placement, sex and age upon the self-concepts of students with mild intellectual disability. It is predicted that responses on the SDQI-IA for this sample will reveal the 8 factors that the SDQI was designed to measure, and that students in Support Units will report significantly higher academic and general self-concepts than will their counterparts in Regular Class.

Method

Participants

A total of 211 students (120 boys and 91 girls) enrolled in Grades 2–6 participated. These students had been identified as having a mild intellectual disability according to the NSW Department of Education and Training criteria. That is, these students had an IQ quotient falling within the range of 56 to 75, as assessed on an approved individually administered test of intelligence, and had impairment in adaptive functioning (NSW Department of Education and Training, 1998). The sample was drawn from 25 NSW Department of Education and Training primary schools, across 9 school districts, that agreed to participate in the study. The age of the participants ranged from 7 years 5 months to 13 years (with a mean age of 10 years and 3 months, S.D. of 1.48).

The sample was culturally heterogeneous, as measured by the students’ main language spoken at home. For 65.8% of participants English was the main language spoken at home, 13.6% Arabic, 6.6% Samoan, and 14% spoke 12 “other” non-English languages. The suburbs that schools were located in all fell within 1 standard deviation either below or above the average Index of Relative Disadvantage. The Index of Relative Disadvantage is a measure of socio-economic status which encompasses such indicators as income, educational

qualifications and occupations (Australian Bureau of Statistics, 1998).

On the basis of the students' current educational placement, two separate groups of students were identified: 98 students were enrolled full-time in a regular class (58 males, 40 females), and 113 students were enrolled full-time in an IM Support Unit (62 males, 51 females).

Measures

Self-Concept

The Self Description Questionnaire I - Individual Administration (SDQI-IA) assesses three areas of academic self-concept (Reading, Mathematics, and General School self-concept scales), four areas of nonacademic self-concept (Physical Ability, Physical Appearance, Peer Relationships, and Parent Relationships self-concept scales), and General Self self-concept. Three total scores can also be measured on the basis of these scales: Academic self-concept (the average of Reading, Mathematics, and General School self-concept scales), Nonacademic self-concept (the average of Physical Ability, Physical Appearance, Peer Relationships, and Parent Relationships self-concept scales), and Total self-concept (the average of Academic and Nonacademic self-concept scales). 64 items are presented as declarative statements and the respondent is asked to determine how this statement describes them (measured on a likert-type scale ranging from 1 to 5).

Student Information

Student information gathered from the teacher included: sex, date of birth, language spoken at home, grade, year they were diagnosed as having a mild intellectual disability, whether the student had other disabilities, and information regarding the student's current educational placement.

Procedure

The SDQI-IA was administered by the first author, a PhD student psychologist and a third year university student in a primary teacher education program, all of whom had experience working with young children. Training for the research assistants consisted of a 2-hour session in which procedures for administering the instrument were explained, and a 30 minute administration practice session took place with the first author responding to the questionnaire. Written instructions were distributed to research assistants. Both research assistants subsequently tested children from each of the age groups and educational placements. Parent/guardian written consent was obtained for all students participating in the study, as was verbal student consent at the time of administration.

The testing was conducted individually, and students were interviewed in a location on the school grounds chosen to ensure that responses from other children would not be heard. The administration took approximately 30 minutes for each student. Administration procedures outlined by Marsh, Craven & Debus (1991) and Marsh & Craven (1997) were followed. Each testing session began with a brief set of instructions assuring students of the confidentiality of their responses and encouraging students to

indicate any difficulties they experienced in responding to an item. Six example items were then read to the student. After reading each example item the interviewer asked the student whether he or she understood the sentence. If the student did not understand the sentence, the interviewer explained the sentence further, ascertained whether the student understood the sentence, reread the sentence, and requested a response. After ascertaining that the student understood the example item, the interviewer initially asked the student to respond "yes" or "no" to the sentence to indicate whether the sentence was a true or false description of the student. If the student initially responded "yes" the interviewer then asked the student whether he or she meant "yes always" or "yes sometimes". If the student responded "no" the interviewer then asked the student whether he or she meant "no always" or "no sometimes". The second response probe was stated for every response even when it was answered in the initial responses (e.g., the student said "yes always" instead of "yes"), thus providing a check on the accuracy of the student's initial response. After the student successfully responded to example items and any questions were answered, the interviewer then read aloud each of the 64 positively worded SDQI-IA items and acquired a response in the same manner. Halfway through the administration of the SDQI-IA items the interviewer asked the student to do some physical activities for a brief period before the interviewer proceeded to administer the remaining 32 items.

If the student indicated that he or she understood the sentence but could not decide whether to respond yes or no, the interviewer recorded a response of 3 halfway between the responses of "no sometimes", and "yes sometimes". Because this occurred infrequently and because students were not told of this option, this middle category was used very infrequently. The response options create a 5 point response scale: 1 = "no always", 2 = "no sometimes", 3 = student understands sentence but does not state yes or no, 4 = "yes sometimes", and 5 = "yes always".

Demographic and educational information about each student was gathered from their teacher on the same day of testing. Teachers completed a questionnaire during a school break time in private with the researcher present.

Statistical Analysis

Confirmatory factor analysis models (CFAs) were conducted with LISREL 8 (Joreskog & Sorbom, 1993) using maximum likelihood estimation. A detailed presentation of the conduct of CFA is beyond the scope of the present investigation and is available elsewhere (e.g., Bollen, 1989; Byrne, 1998; Joreskog & Sorbom, 1993; Schumacker & Lomax, 1996). Following Marsh, Balla, and Hau (1996), and Marsh, Balla, and McDonald (1988) we emphasize the Tucker-Lewis index (TLI), the relative noncentrality index (RNI), and root mean square error of approximation (RMSEA) to evaluate goodness of fit, but also present the χ^2 test statistic and an evaluation of parameter estimates. The TLI and RNI vary along a 0-to-1 continuum in which values greater than .90 are typically taken to reflect a good fit to the data. For RMSEAs, values of less than .05 and .08 are taken to reflect provide a close fit and a reasonable fit, respectively (see Joreskog & Sorbom, 1993; Marsh et al., 1996; Schumacker & Lomax, 1996). The RNI contains no penalty for

a lack of parsimony so that the addition of new parameters leads to an improved fit that may reflect capitalization on chance, whereas the TLI and RMSEA contain a penalty for a lack of parsimony. Preliminary analyses were conducted on items from each scale.

As in other SDQ research and recommended in the test manual (e.g., Marsh, 1988; 1990; Marsh & Hocevar, 1985), factor analyses were conducted on item-pair scores (or parcels) in which the first two items in each scale are averaged to form the first item pair, the next two items are used to form the second pair, and so forth. Analysis of parcels is desirable (see Marsh & O’Neill, 1984) because the responses to parcels tend to be more reliable, to be more normally distributed, to have less idiosyncratic variance than do individual items, and require many fewer measured variables, particularly when the sample size moderate as in the present investigation. Thus, for example, because it is sometimes recommended that there be at least five times as many subjects as variables in factor analyses, this guideline was satisfied by using item pairs instead of individual items.

Age, sex, and the educational placement are all represented as single-item constructs assumed to be measured without error. For present purposes, age, sex and educational placement were

included in the CFA analysis as single-item constructs to ascertain their relationship with students’ self-concepts.

Results

Reliability Estimates

Estimates of reliability were computed for each of the 7 domain-specific subscales, the general self-concept scale, the total academic, total nonacademic, and total self-concept. Cronbach’s alpha coefficients were calculated for the total sample, and for a younger (Grade 2-4), and older (Grade 5-6) cohort (see Table 1).

For the total sample, reliability estimates for the subscales are generally high with a mean alpha of .85, and an alpha range of .70 to .93. For the younger cohort (Grade 2-4), the mean alpha was .86, with an alpha range of .68 to .95. For the older cohort (Grade 5-6), the mean alpha coefficient was .83, with a range of .68 to .92. The General-Self subscale had the lowest internal consistency estimates among all subscales (.70 for the total sample) which is consistent with past research. Overall, the internal consistency estimates are good, indicating that all subscales are reliable.

Table 1:
Coefficient Alpha Estimates of Reliability, for the Younger and Older Cohorts and the Total Sample

<i>Subscale Scores</i>	Grade 2-4	Grade 5-6	Total Sample
Physical Ability	.85	.78	.82
Physical Appearance	.92	.90	.91
Peer Relationships	.88	.87	.88
Parent Relationships	.77	.87	.83
Reading	.92	.84	.89
Mathematics	.95	.92	.93
General-School	.87	.80	.85
General-Self	.68	.72	.70
Total Scores			
Total Nonacademic	.90	.91	.91
Total Academic	.94	.91	.93
Total Self	.94	.93	.94

Factor Structure

The confirmatory factor analysis clearly identified all eight factors that the SDQI was designed to measure. The factor loadings for the 8 factor model are presented in Table 2. The factor loading for each variable is consistently high on the factor that it was designed to measure (average factor loading = 0.78). A chi square of 789.69 (df= 436) was obtained, with a TLI of .914, RNI of .924, and RMSEA of .05978. The RNI and TLI suggest that the model is a good fit for the data, while the RMSEA falls slightly above the .05 criteria for a close fit but well within the range of a reasonable fit.

Effects of Sex, Age and Educational Placement upon Self-Concept

Differences in self-concepts, according to participants’ sex, age and educational placement are presented in Table 3. There is one statistically significant sex difference, with girls having a lower Physical Ability self-concept than boys. There is one statistically significant age difference with older students reporting a lower Physical Appearance self-concept. The two educational placements differ significantly on several dimensions of self-concept. Students in regular classes had significantly lower self-concepts for all three academic scales (Reading, Math, School) and for one but did not differ from students in support units for the remaining three nonacademic self-concepts (Parents, Physical Ability, Physical Appearance).

Table 2:
Factor Loadings for the 8 Factor Model

	PHYS	APPR	PEER	PRNT	READ	MATH	SCHL	GENL
Phys1	.69							
Phys2	.60							
Phys3	.85							
Phys4	.85							
Appr1		.89						
Appr2		.93						
Appr3		.73						
Appr4		.81						
Peer1			.82					
Peer2			.62					
Peer3			.89					
Peer4			.78					
Prnt1				.66				
Prnt2				.69				
Prnt3				.69				
Prnt4				.83				
Read1					.83			
Read2					.89			
Read3					.87			
Read4					.83			
Math1						.87		
Math2						.91		
Math3						.89		
Math4						.95		
Schl1							.76	
Schl2							.72	
Schl3							.72	
Schl4							.82	
Gen1								.42
Gen2								.68
Gen3								.70
Gen4								.69

PHYS=Physical Ability APPR=Physical Appearance PEER=Peer Relationships PRNT=Parent Relationships
READ=Reading MATH=Mathematics SCHL=General School GENL=General Self-Concept

Table 3:
Factor Correlations Among Self-Concepts, Sex, Age and Educational Placement

Factor	Phys	Appr	Peer	Parent	Read	Math	School	General	Sex	Age	Setting
Phys	1.00										
Appr	.28	1.00									
Peer	.42	.27	1.00								
Parent	.31	.38	.27	1.00							
Read	.25	.29	.47	.30	1.00						
Math	.33	.11	.27	.14	.30	1.00					
School	.36	.44	.50	.31	.70	.65	1.00				
General	.50	.57	.65	.53	.63	.47	.79	1.00			
Sex	-.26*	.07	-.01	-.03	-.00	-.10	-.00	-.06	1.00		
Age	-.06	-.19*	.14	-.04	.05	.10	-.04	-.01	-.02	1.00	
Setting	.08	.01	-.19*	-.06	-.17*	-.27**	-.19*	-.17*	-.04	-.45**	1.00

Discussion

The present study reports on the first application of the individualised interview format of the SDQI for students with mild intellectual disability. The SDQI-IA is the first measure to be deemed a reliable and valid measure of the self-concepts of this population. This finding has significant implications for

educational practice, research and self-concept theory and measurement. The SDQI-IA may now be employed in future research and by practitioners and educators working with these students in order to both gauge their self-concept, and measure the impact of interventions designed to enhance their self-concepts.

The present study is the first to provide support for a

multidimensional factor structure of the self-concepts of students with mild intellectual disability, which to date, has been rejected (e.g. Silon and Harter, 1985). The results of this study clearly illustrate that students with mild intellectual disability embody a self-concept which is multi-dimensional and domain-specific. This finding has significant ramifications for all professionals working with these students and should influence their beliefs about mild intellectual disability and the nature of their interactions with these students. It is especially important to consider various domains of the self-concept as this study has clearly demonstrated that educational placement has a different impact upon academic self-concept and nonacademic self-concept.

The students in regular class and special classes differed significantly on several dimensions of self-concept. Students in regular classes had significantly lower self-concepts for all three academic scales (Reading, Math, School) and for one nonacademic scale (Peers) and for General Self-concept but did not differ from students in support units for the remaining three nonacademic self-concepts (Parents, Physical Ability, Physical Appearance). These results support the BFLPE's prediction that special class placement enhances the self-concepts of students with mild intellectual disability. At the same time these findings contradict the Labeling theory upon which current special education philosophy is currently based. The authors are not suggesting that the inclusion movement should be abandoned but rather that the impact upon the students' self-concepts is recognised and addressed. The challenge for special educators is to recognise that the placement of students with mild intellectual disabilities into regular classes is likely to result in lower academic self-concepts, general self-concept and peer relations self-concept. Appropriate strategies are needed to counter this negative effect of inclusion rather than accepting the largely unsupported inference from Labeling theory that the effects of inclusion on self-concept are positive.

It should be noted that the current findings are based upon a cross-sectional design in which two intact groups are directly compared. Although potential counter-explanations based on the nonequivalence of groups is always worrisome, the direction of such a bias is likely to run counter to predictions of social comparison theory. Hence, to the extent that there are preexisting differences between the two groups, students in regular classes are likely to be more able than those in special settings. Our results are likely to be conservative and underestimate the negative effects associated with placing children with mild intellectual disabilities in regular classes. Nevertheless, a stronger methodology is a within-subjects, longitudinal design in which students are followed as they move educational placements.

About the Authors

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Reliability of Young Children's Self-Concept about Cognitive Functioning

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This study addresses the dynamics of children's self-concept about their cognitive functioning. The participants were children aged five to eight years ($N = 135$). Children completed a test of cognitive functioning (SYSTEMS, Ouvrier, Hendy, Bornholt & Black, 1999) and the ASK-KIDS self-concept inventory about cognitive functioning (Bornholt, 1996) on three occasions (Time A baseline, Time B after two weeks, four weeks or twelve weeks, Time C one month later). Test-retest reliability for children's self-concepts was related to the test-retest interval (correlations were stronger for an interval of two weeks than for four weeks and twelve weeks intervals). Results were similar for stability coefficients of self-concepts that used ranked data. Findings confirmed that children's self-concepts about cognitive functioning vary over time, suggest satisfactory test-retest intervals of two to four weeks, that prior cognitive functioning relates to subsequent self-concepts and that for low ability children self-concept and cognitive functioning are more associated than for high ability children. A wealth of research on self-concepts is readily applied to child, adolescent and adult populations (see Hattie, 1992; Byrne, 1984). According to Hattie's faceted definition (1992, p.37), the meaning self-concept is open to interpretation, as self-verification, self-consistency, self-complexity and self-enhancement. In the field of educational studies, self-concepts generally relate to learning and describe perceived competence in particular domains. This means that self-concepts are considered to be important outcomes for education, and that self-concepts are also key mediating variables in terms of motivations and choices of learning tasks (Marsh, 1990; Bornholt, 1999).

Research on the structure of the self-concept also reveals several approaches. For instance, a factor analytic approach by Shavelson, Huber and Stanton (1976) argues that self-concept is multifaceted, hierarchical and increasingly distinct with age (Marsh, Craven & Debus, 1991). Research by Harter (1985) focuses on self-worth and uni-dimensional global self-esteem in relation to self-concepts across physical, social and academic domains. Eccles and colleagues (Eccles, Wigfield, Harold & Blumfield, 1993; Watt & Bornholt, 1994; Bornholt, in press) propose models of self-concepts within activities such as reading, drawing, sport, body image and so on. Useful models of self-concepts include related yet discrete aspects of self-knowledge in the ASK-KIDS Inventory (Bornholt, 1996), cognitive and affective aspects of expected success and task values that contribute to children's task choices and participation in activities (Bornholt, 1996). In brief, most educational studies take a multi-dimensional approach that defines self-concepts for academic domains such as reading and number activities (Byrne, 1996). But less attention is paid to self-concepts of cognitive functioning, generally (see Stankov & Crawford, 1997; Bornholt, Black, Ouvrier & Hendy, 1999). In a previous study, Bouffard, Markovits, Vezeau, Boisvert and Dumas (1998) related self-concept and cognitive functioning. They investigated whether children exaggerated appraisals of cognitive capability and found more accurate self-conceptions with children of higher cognitive functioning levels. Even so, specific investigation is required as to the type of relationship between self-concepts and cognitive functioning. The relationship may be direct (with cognitive functioning directly related to self-concept at the time of testing) or indirect as proposed by Skaalvik and Hagtvet (1990) (with prior cognitive functioning effecting subsequent self-concept). This second model is supported by research conducted by Marsh and Yeung (1997) and will be investigated in the present study.

The complexity of social cognitions about self and others may suggest that investigations of self-concepts are appropriate only for older children. According to Anastasi (1988) the

formation and ability to form self-concepts increases with age. However, recent studies (Marsh, Craven & Debus, 1991; Eccles et al., 1993; Bornholt, 1996) show that self-concepts can be differentiated by younger children from the age of five years. The main issue addressed here is the consistency over time in young children's self-concepts. Tracking the dynamics of self-concepts indicate processes of growth, maintenance (or decline) in self-concepts that relate closely to children's cognitive development. The present study investigated two indicators of children's developing self-concepts about cognitive functioning: test-retest reliability and stability. Test-retest reliability is defined as the extent to which test material can be relied on to measure a characteristic consistently over time with the same test material (Anastasi, 1988). Stability is defined as a quality of a person being firmly similar over time (Gergen, 1982).

As a general guideline, Anastasi (1988) argues that four weeks or less is an appropriate re-testing interval for children. In a recent study, Otter, Mellenbergh and de Gloppe (1995) found that test-retest intervals of 5 to 6 weeks for 9 and 14 year old children were long enough to account for minimal effects of memory. Such guidelines consider children's rapid cognitive and physical growth, and it remains to be seen whether similar assumptions apply to children's perceptions of their competence. It could be argued that growth curves are not necessarily linear and may reflect an optimized function where self-concepts reflect children's personal and social identity in addition to performance (Bornholt, 1999). The question is what are appropriate test-retest time intervals for children's self-concepts about their cognitive functioning. Is the same retest interval appropriate across age groups? How much time should lapse between testings? (Crocker & Algina, 1986, p133).

In summary, the present study considers that children's self-knowledge is a key factor in how they approach activities (Bornholt, 1999). Although previous research shows the importance of domain specific self-concepts about academic activities (such as number and reading activities), self-concepts

of activities used in formal assessment by school counsellors and health professionals are under-researched. Because cognitive development is a major focus for child development, teaching and learning processes, the present study considers children's self-concepts about their competence at cognitive activities. The present study adds the cognitive dimension to self-concepts and examines the relationship between cognitive functioning and self-concept, differential change or stability in cognitive self-concepts, appropriate retesting intervals for 5 to 8 year old children and investigates cognitive ability level as related to awareness of self-concept.

Method

Design

The study examined children's self-concepts about their cognitive functioning on three occasions (Time A, Time B and Time C) with the retest intervals established for specific purposes. Assessment at Time A established a baseline indicator for children in two age groups (the younger group included 5 & 6 year olds and the older group included 7 & 8 year olds). Time B varied the test re-test interval for three groups of children to identify appropriate developmental testing intervals for children (B1 two weeks later, B2 four weeks later and B3 twelve weeks later) prior to testing children were allocated to one of these groups. The Time B intervals were 'long enough to allow effects of memory or practice to fade but not so long as to allow maturational or historical changes to occur in the examinees' 'true score' (Crocker & Algina, 1986, p. 133).

Participants

The participants were Sydney school children (N=135) aged between 5 to 8 years (up to 8 months within their age group at Time A). Children at Time A were also involved in the New Children's Hospital project on cognitive development (NHMRC Project No. 980508). Participants were grouped as younger (5 and 6 year olds, $n = 64$) and older (7 and 8 year olds, $n = 71$). Equal numbers of boys (50%) to girls (50%) were included. Table 1 shows the number of children tested at each time (A, B and C). Missing data for one child's cognitive functioning score at Time C was estimated using regression analysis. All participants spoke fluent English, with no known neurological conditions or communication impairment. The re-tested sample of children had a 100% power analysis (Bach & Sharpe, 1989), based on a half standard deviation difference between test scores (see Hattie, 1992), and statistical significance of 0.05. The time intervals groups (B1 = two weeks, B2 = four weeks and B3 = twelve weeks) with samples sizes of 45, 48 and 42, had a sample power of 87% with a half standard deviation difference between test scores, significant at 0.05.

Table 1:
Number of children tested at each test-retest interval and for the three groups at Time B

Group	Test-retest Interval	N
A	Base-line	135
B1	Two weeks following Time A	45
B2	Four weeks following Time A	48
B3	Twelve weeks following Time A	42
C	One month following Time B	135

Materials

SYSTEMS School-Years Screening Test for the Evaluation of Mental Status (Ouvrier, Hendy, Bornholt & Black, 2000) is a cognitive screening test developed at the New Children's Hospital. The 46-item test takes up to ten minutes in a one-to-one interview situation. Each item is scored (1) correct or (0) incorrect and total scores are summed with 46 as the maximum (Ouvrier et al., 1999). SYSTEMS is internally consistent for five, six, seven and eight years olds (alpha 0.77, 0.83, 0.80 and 0.64 respectively). For groups of school children, scores correlated strongly ($r = 0.88$) with Stanford Binet Intelligence Test, were unbiased by gender ($F = 0.75$, ns) and socio-economic indicators for areas (SEIFA, ABS, 1990) ($F = 0.16$, ns), and inter-rater reliability was high ($r = 0.94$) (Ouvrier et al., 1999).

ASK-KIDS (Aspects of Self Knowledge) Inventory for Children (Bornholt, 1996) includes children's perceptions of competence at reading and number activities as well as social and physical aspects. ASK-KIDS was based on the ASK-ME Inventory about Mathematics and English (Bornholt, Goodnow & Cooney, 1994; Bornholt, 2000) and self-concept measures by Eccles and colleagues (Eccles et al., 1993) that were designed for adolescents. ASK-KIDS was extended to indicate the child's perception of competence on the SYSTEMS screening test (Bornholt et al., 1999). An interview elicits children's self-concepts about cognitive functioning. For example, following the cognitive screening test children were asked 'How good are you at these activities?', 'How naturally talented are you at these activities? with the prompt 'just natural... clever', and 'How difficult are these activities for you'? The items relate to a child's perception of performance, natural talent, being effortful, task difficulty and future performance. ASK-KIDS was administered to each child in a ten minute, interview situation following administration of the SYSTEMS.

Procedures

The study was approved by the New Children's Hospital Ethics Committee (Number 93017), the University of Sydney Ethics Committee (Number 97/9/18) and the NSW Department of Education and Training (Number 97038). Following sample selection and permission procedures, children were tested in a one-to-one interview situation at their schools during class time in an office, quiet room or area. Standard testing procedures for interviewing each child

on every occasion relied on evenly paced items, without feedback to the child about correct or incorrect responses.

Administration of the Cognitive Screening Test

The instructions begin with a preamble ‘Hi, my name is _____. I am here today to ask a few questions and do some other activities. I’d like you to answer as best as you can. If you can’t answer any just let me know’. The test was then administered in a one-to-one interview. The child’s work sheet was given to the child for the last four items. An item was repeated only if the child did not hear the question. Test scores are summed.

Self-Concept administration and scoring. Administration of the ASK-KIDS Inventory begin with the following introduction: ‘Now I’m going to ask you some questions about what you think. There are no right or wrong answers,

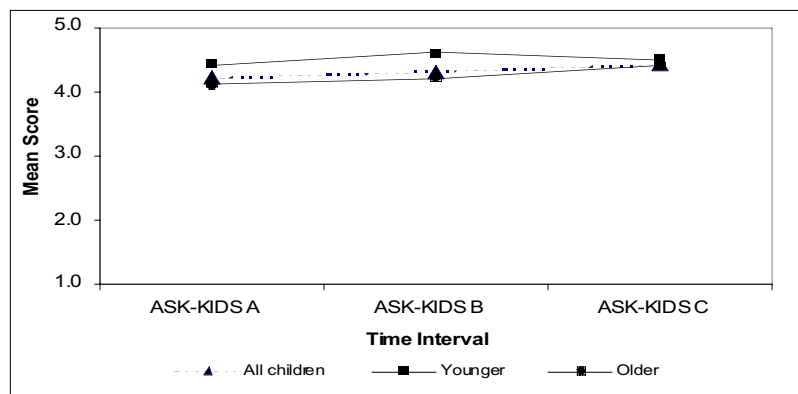
just what you think’. Each item was read to the child and the child responded by circling their answer on a five point dot rating scale specifically designed for children. For total scores on ASK-KIDS about cognitive activities the five items were added (good at, talent, effort, task & next year) where effort items were reversed for some children for whom perceived talent and effort are in an inverse rather than consistent relation (Bornholt et al., 1999).

Results

Cognitive Functioning and Self-Concept Profiles Over Time

Descriptive results of cognitive functioning showed a slight increase in average scores (30, 32 & 33 respectively) over the three time intervals.

Figure 1: ASK-KIDS About Cognitive Activities for Younger and Older Children on Three Occasions Mean Comparisons



Results were divided into Time B intervals, the Time B1 (two weeks following Time A) and Time B3 (twelve weeks following Time A) had equal means ($\bar{m} = 32$) and Time B2 (four weeks following Time A) had a slightly lower mean ($\bar{m} = 31$). The effect size of cognitive functioning for Time A to Time B and Time B to Time C were -.27 and -.13 respectively.

Children’s self-concepts about cognitive activities showed a trend of increasing only slightly over time ($F(2,262) = 3.89, p < .05$). The mean of ASK-KIDS scores are shown in Figure 1. Over all time intervals, it appears that the older children (aged 7 and 8) were identified as having a slightly lower mean self-concept than the younger children (aged 5 and 6). Effect size of self-concepts cognitive functioning for Time A to Time B and Time B to Time C were -.14 and -.15 respectively. T-tests were computed comparing cognitive functioning over the time intervals. Time A and Time B t-test statistic produced a difference between the two means ($t = -7.73, n = 134, p = .000$).

For Time B and Time C a significant result was obtained ($t = -4.83, n = 134, p = .000$).

In determining the significance of the reported means of self-concepts t-test analyses were computed. As shown in Table 2, the t-test results revealed differences between the means for Time B to Time C and for older children from Time B to C. All

other reported time interval comparisons did not show significant differences between the means.

Table 2: T-test Results for ASK-KIDS at Various Time Interval Combinations

Self-Concept Time Intervals	t	df	p
A – B	-.672	134	.503
Younger A – B	.152	63	.879
Older A – B	-1.069	70	.289
A – B1	-1.192	44	.239
A – B2	-.999	47	.323
A – B3	.841	41	.405
B – C	-2.279	132	.024*
Younger B – C	-1.120	63	.267
Older B – C	-2.074	68	.042*
B1 – C	-.642	44	.524
B2 – C	-1.333	46	.189
B3 – C	-2.001	40	.052

* = Significant result

Multivariate Analysis of Variance with repeated measures for test-retest intervals showed that children’s self-concepts about cognitive activities were similar for younger and older children at Time A, Time B and Time C. There was no interaction effect

between age group and test-retest interval ($F(2,262) = .84$, ns). The main effects of test-retest interval ($F(4, 260) = 3.89$, $p < .05$) and age group ($F(1, 131) = 4.49$, $p < .05$) and were significant at the .05 level.

Relating Self-Concepts and Cognitive Functioning

When self-concept scores and cognitive functioning scores were partially correlated, with age as a covariate, rather low correlations were computed. The highest and only significant correlation of $r = .22$ was for self-concept and cognitive functioning at Time C, see Figure 2.

Interestingly, correlations were significant although not as strong for cognitive functioning Time A and self-concept Time B $r = .19$, $p < .05$ and cognitive functioning Time B and self-concept Time C $r = .22$, $p < .05$.

Cognitive functioning scores were used to determine ability levels of children. Moderate correlations between cognitive functioning and self-concept were found for low cognitive ability children only. At Time C correlations between cognitive functioning and self-concept for younger and older low ability children were $r = .43$ and $r = .47$

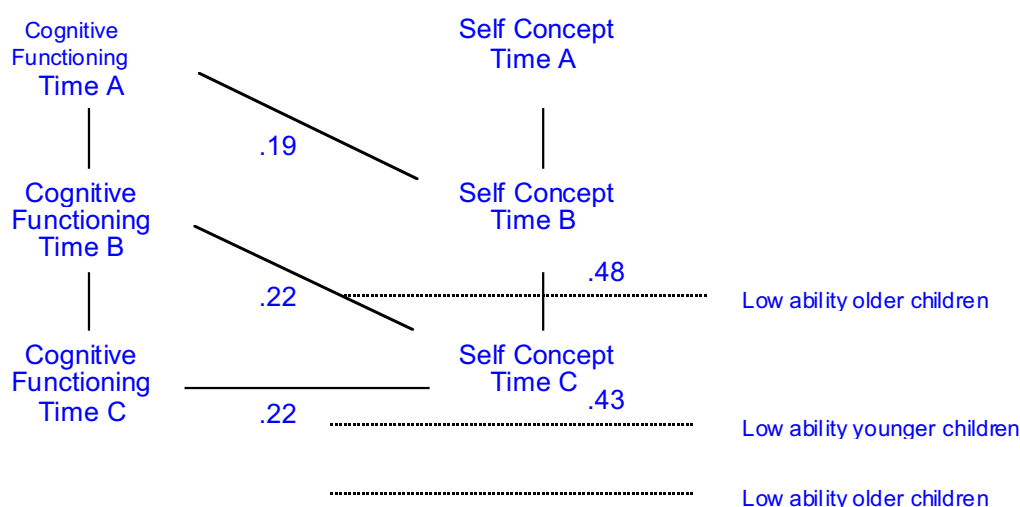
respectively. The Pearson product-moment correlation between Time B cognitive functioning and Time C self-concept was moderate for older children with low cognitive ability ($r = .48$).

ASK-KIDS Test-retest Reliability and Self-Concept Stability

Test-retest reliability for self-concepts was related to the test-retest interval. Associations were moderate between Time A and Time B (partial correlation that control for age $r = 0.32$, $p < .01$). Associations were stronger between Time A and B1 two weeks ($r = .51$, $p < .01$) than B2 four weeks ($r = .20$, $p < .05$) and B3 twelve weeks ($r = .21$, ns). From Time B to Time C the partial correlation was $r = .39$, $p < .01$.

Results were similar for stability coefficients of self-concepts that used ranked data with Time A to Time B $r = .38$, $p < .01$. The Time A to the Time B intervals correlations were B1 $r = 0.66$, $p < .01$, B2 $r = 0.30$, $p < .05$, B3 $r = .24$, ns. The correlation between Time B with Time C was $r = .38$, $p < .01$.

Figure 2: Significant Correlations Between Cognitive Functioning and Self-Concept



Discussion

Children's self-concepts of formal cognitive assessments used by school counsellors and health professionals are under-researched. The relationship between self-concepts and actual cognitive functioning has not been highly examined. Knowledge of a relationship between self-concepts and cognitive functioning would assist with assessments by providing a practitioner with information about the way a child may approach activities.

Some researchers have previously been interested in children's accuracy of self-concept with cognitive functioning based on ability levels. Bouffard et al.'s (1998) research found

that children with high ability had related self-concepts.

Contrary results were found in the current study. Younger and older children at the low cognitive ability level showed a higher relationship between self-concept and cognitive functioning than the high ability children. The stability of self-concept is another issue seldomly investigated. The current study showed that stability and test retest reliability were maintained over time for up to four weeks from initial testing. These results are in support of Anastasis' (1988) argument of four weeks or less as an appropriate re-testing interval for children.

Finally, the research findings of Marsh, Craven & Debus, 1991; Eccles et al., 1993 and Bornholt, 1996, argue that

younger children can provide assessment of their self-concept. The current study revealed, although slightly higher for younger children, that younger and older children reported similar self-concepts about cognitive functioning over time.

The overall findings confirmed that children's self-concepts about their cognitive functioning is complex and dynamic rather than fixed, and suggest satisfactory test-retest intervals of two to four weeks for at least two retesting sessions. Acceptable measures of stability were found for these intervals. In addition, the ASK-KIDS inventory (Bornholt, 1996) was found to be a reliable test for measuring self-concept of cognitive functioning at these intervals. Support was found for self-concepts differentiating by age (Marsh, Craven & Debus, 1991; Eccles et al., 1993 and Bornholt, 1996) and for initial achievement effecting subsequent self-concept (Shaalvik & Hagtvet, 1990, Marsh & Yeung, 1997).

In addition, the present study posited that for low cognitive functioning ability children self-concept is more related to cognitive functioning than high cognitive functioning ability children. This relationship was also found between prior cognitive functioning and subsequent self-concept for older children with low cognitive ability level.

These research conclusions may be of assistance for cognitive practitioners and self-concept interventionists by providing a framework within which to follow for retesting of self-concepts and a model for understanding the complex relationship between cognitive functioning and subsequent self-concept. Further research in this area would be required to confirm and extend these findings

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Self-Concept as an Antecedent of Adolescent Coping Strategies

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The relationship between self-concept, coping, and stress has been evaluated extensively, and it has often been claimed that those with a positive concept of self have more effective coping strategies. This study compares this relationship, using structural equation modelling, across four groups: no stress, chronically stressed, acutely stressed, and chronic and acute stressed. The chronically stressed adolescents rely on parental and family resources whereas acutely stressed adolescents appear to rely more on personal resources. For the non-stressed and for those adolescent who suffer both from chronic stress and acute, a high level of parental support and a strong social sense of self are implicated in avoiding negative psychological well-being. When adolescents are stressed then personal and social self-concepts take on great weighting in their significance or usefulness than attending to physical self-concepts.

While many models have attempted to explain individual differences in adolescent coping strategies and stress, Folkman and Lazarus (1984) have been at the forefront with their relational model of stress, appraisal, and coping. According to Lazarus and Folkman, stress is perceived as neither a stimulus nor response but as the relationship between the person and his or her environment. Thus, stress is regarded as “a complex rubric like emotion, motivation or cognition rather than a simple variable” (p. 776). Their

appraisal model is a cognitive approach centered on the individual’s appraisal of the stressor, as this appraisal is the critical mediator of the experiences and effects of stress. As a consequence, stress is seen by Lazarus and Folkman (1984, p. 19) as “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being.” Figure 1 illustrates the relational approach to stress.

Figure 1: Illustrative System Variables for the Stress and Emotion Process

Causal Antecedent	Mediating Process	Immediate Effect	Long-term Effect
<p><u>Person Variables</u></p>	<p>Values, Commitments, General beliefs, such as self-esteem, mastery sense of control Interpersonal Trust Existential Beliefs</p>	<p>Primary Appraisal Secondary Appraisal</p>	<p>Affect Psychological Physiological well-being, goals, changes Somatic health/illness Social functioning</p>
<p><u>Environmental Variables</u></p>	<p>Demands Resources (e.g., social support network) Constraints Temporal Aspects</p>	<p>Coping (including use of social support) Problem-Focused Emotion-Focused</p>	<p>Quality of encounter Outcome</p>

This complex model involves input from causal antecedents of a personal and environmental nature that affect the cognitive appraisal and decisions about coping skills which are made when the individual is exposed to a stressor. These personal and environmental factors determine the individual’s vulnerability to negative effects on personal well-being when exposed to a stressor, and influence the short-term and long-term affective responses to stress (Lazarus, DeLongis, Folkman, & Gruen, 1985). Lazarus and Folkman suggested that there was a causal relationship between personal and environmental variables and the mediating process and outcomes of stress. The mediating processes of appraisal and coping in turn determine the immediate and long-term effects. Immediate effects refer to “the person’s judgment of the extent to which the encounter was resolved successfully” (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986, p. 993). Long-term effects result from the

overall judgment of the process. For example, even though there might not have been a resolution to the stressor, the individual might feel positive about the process because of the way he or she managed the process. Alternatively, even though the problem is resolved the individual might feel negatively about the process and its outcome because the problem was dealt with in a manner that the individual thought was inappropriate (Folkman, Lazarus, Dunkel-Schetter, et al. 1986). Lazarus, DeLongis, et al. (1985) acknowledged, however, that the beginning and end of the model were difficult to determine because of its recursive nature. For example, an adolescent who has low academic self-esteem and lives in an educationally non-supportive environment might appraise an upcoming examination as very negative and his or her ability to cope with it as very poor. This situation is likely to result in negative psychological outcomes for the adolescent. A primary

concern of the present research is the applicability of the relational model of stress and coping to different adolescent populations.

The Applicability of the Relational Model of Stress to Adolescents

There has been much research support for the Lazarus and Folkman model, although most of this literature has focused on adults. Whether the model also explains adjustment for children and adolescents is unclear. Some researchers have suggested that the model may require modification before it is applicable to all age groups (Compas, Malcarne, & Banez, 1992; Moos & Swindle, 1990). The viability of the model for explaining adolescent outcomes is a necessary first step before resources are committed to developing intervention and preventive programs for adolescents.

It is necessary to examine both risk and resilience factors to understand adolescent adaptation (Garmezy, 1994). Most adolescents appear to cope successfully with the social, cognitive, and emotional demands that they confront during their teen years. In a longitudinal study, Seiffge-Krenke (1990) reported that approximately 80% of adolescents appeared to adapt successfully (cf. Bosma & Jackson, 1990). The remaining 20% is still a noteworthy percentage of adolescents who do not successfully adapt.

Garmezy (1983) reviewed literature related to adolescent stress and found three broad factors that account for vulnerability to psychopathology: (a) dispositional and constitutional characteristics including temperament, self-esteem, control, and autonomy; (b) the presence of a supportive family environment, including parental warmth, cohesiveness, order and organization; and (c) a social support system of peers. Compas (1987) argued that although there was considerable evidence that both minor and major events were related to psychological and behavioural problems in adolescents, there were considerable differences between individuals in their vulnerability to different types of stress. Compas, Phares, et al. (1989) suggested five sources of individual differences in vulnerability to stress among children and adolescents: (a) developmental factors; (b) gender; (c) daily stressors; (d) stress and symptoms in lives of significant others; and (e) individual differences in self-perceptions.

While there has been much progress in determining factors that moderate the effects of adolescent stress, it has been difficult to identify the critical variables that influence the process and impact of stress. Further, little is known about the relative weighting of these variables and the nature of their interactions (De Maio-Esteves, 1990). Compas, Phares, et al. (1989) maintained that three major features must be considered when adapting any model derived from adults to explain an adolescent's ability to cope with stress: (1) adaptive coping is dependent on the relationship between the adolescent and the environment (e.g., the adolescent's dependence on adults for social support and adults' availability); (2) the adolescent's psychological and biological preparedness to respond to stress (e.g., temperament; Lerner, et al. 1985); and (3) the adolescent's cognitive and social development (e.g., self-perception, self-

efficacy; Bandura, 1981; Harter, 1983). Other features that may vary when identifying the determinants of appraisal or coping include the weighting that the adolescent places on each dimension of the model, the nature of the stressor (i.e., the type, severity, and temporal qualities), whether contextual or environmental demands need to be included, and possibly the most important, whether the stressor is chronic or acute. There are many personal factors that can influence the choice of coping strategies. A major factor, and the focus of this article, is self-concept.

Self-Concept

Self-concept is a multidimensional structure relating to the individual's conceptions or appraisals about his or her self (see Hattie, 1992; Marsh & Shavelson, 1985). The major first-order dimensions for adolescent self-concepts can include verbal, mathematical, family, peers, physical ability, and physical appearance. These dimensions can be grouped into second-order dimensions of academic, social, and physical self-concepts. It is not clear that there is much value or support for grouping these second-order dimensions into a third-order "general" self-concept (see Hattie & Marsh, 1996). While there has been much debate about the philosophical differences between self-concept and self-esteem, no researcher has been able to operationalize the differences, hence, the terms are used interchangeably in this article.

The relationship between self-concept and stress has been evaluated extensively, and it has often been claimed that those with a positive concept of self have more effective coping strategies (Holahan & Moos, 1987; Nelms, 1989). DeLongis, et al. (1988) found that people with low psychosocial resources such as self-esteem were vulnerable to illness and mood disturbances when their stress levels increased, even if they generally had little stress in their lives. Youngs, Rathge, Mullis, and Mullis (1990) reported a negative relationship between adolescent self-esteem and stress, illustrating that as the number of life events experiences increased, the level of self-esteem decreased.

Boldero, Fryenberg, and Fallon (1993) conducted an extensive study of the relationship between self-concept and coping strategies used by adolescents. The Adolescent Coping Scale (Frydenberg & Lewis, 1993) and the Self-Description Questionnaire (Marsh, Parker & Barnes, 1985) were administered to 208 adolescents. Findings indicated that 16 out of the 18 coping strategies were positively and statistically significantly related to self-concept. Emotional self-concept, for example, was predictive of a number of non-productive coping strategies such as not-coping and self-blame. High physical self-concept was related to recourse to social action and physical recreation. Social self-concept, same sex self-concept and opposite sex self-concept were predictive of a number of coping strategies. Lower parent self-concept was predictive of non-productive coping strategies such as ignoring problem, tension reduction, and not coping. They concluded that if overall self-concept is high then the adolescent tends to use more productive means of coping such as seeking social support and employing problem solving skills. They also

pointed out that the relationship between coping and self-concept is domain specific, as competencies of adolescents within a specific dimension influence behaviour in that dimension. Clearly, social self-concept is among the more important antecedents of successful coping.

Medvedova (1995) examined the adaptability of coping process and personal resources such as self-esteem. Coping process was correlated with measures of personal resources and personality traits (e.g., self-concept, anxiety, anger, and intellectual potential). A battery of scales were administered to 229 adolescents between the ages of 14 and 18 years, including the Tennessee Self-Concept Scale (Fitts, 1964), the State-Trait Anxiety Inventory, and the State-Trait Anger Scale (Spielberger, 1955). The results indicated that coping strategies were significantly and positively related to activity self-concept, social self-concept, and family self-concept. Vercuyse and Chandler (1992) also found support for a relationship between self-concept and coping behaviour. They administered the Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1964), a stress response scale, and a coping response inventory to 39 adolescents who had relocated with their families. These itinerant adolescents used a variety of coping strategies, and they were significantly related to self-concept rather than to factors such as history of previous relocation.

Social self, according to William James (1890), is the recognition one gets from one's partner and friends. Cooley (1902) placed the social self at the center of his model of the person and considered that the "looking glass self" is how a person sees his or her self from the reflection of their social interactions. Since Cooley's time, many others have argued that the social self is significant in the relationship between self-concept and coping. For example, Jackson and Bosma (1990) perceived coping "not so much as a process which is essentially

cognitive but rather as making use of the resources offered by one or more parts of a social environment in order to work towards the best response to a problem. Seen in these terms coping is essentially an interpersonal process" (p. 207). Given this view of coping and the view that self-concept is the product of social context, these constructs are theoretically entwined, according to Youniss and Smollers (1990). They suggested that coping should be placed within the context of the individual's relationships, such as friends and family who are actively employed to help deal with difficulties the adolescent may face. Support for this notion can be derived from research that has illustrated significant relationships between self-concept and social support (Levitt, Guacc-Franco, & Levitt, 1994; VanTassel-Baska, Olszewski, & Kulieke, 1994). Social self-concept and strategies of coping appear to be inextricably entwined.

The Present Study

The relational model of stress and coping by Lazarus and Folkman (1984) forms the foundation of the present study. A variety of antecedents and coping strategies have been identified as having a significant influence on the adolescent's response to various stressors. Further, the applicability of the relational model to chronic, acute, chronic and acute, and non-stressed adolescents may point to different weightings of the antecedents and coping strategies (Clinton, 1997). Figure 2 presents an overview of the variables identified in the review that may be most applicable to these sub-groups of adolescents.

The aim of this study is to determine the relationship between Self-concept and coping strategies as defined by Carver & Scheier (1989). Further to examine whether that relationship varies for groups of adolescents experiencing either acute or chronic stress or no stress at all.

Figure 2: Suggested Model Relating Antecedents, Coping Strategies, and Outcomes

Antecedents	Coping Strategies	Outcomes
<i>Personal Factors</i>		
Self-concept	Problem-focused	Internalizing outcomes
Self-efficacy	(e.g., active, planning)	(e.g., depression, affective disorders)
<i>Situational variables</i>		
<i>Nature of the stressor: (e.g.,</i>	<i>Emotion-focused</i>	<i>Externalizing outcomes</i>
	<i>chronic and acute stressors)</i>	<i>(e.g., venting, (e.g., problem</i>
	Social support	disengagement) behaviours)
	Family influences	

This model will be assessed using four groups of adolescents: non-stressed, chronically stressed (those with asthma), acutely stressed (experiencing more than 3 life events), and chronically and acutely stressed. Given the differential effects of chronic versus acute stressors (e.g., severity and chronicity), it is hypothesized that the contributions of the various facets within the relational model will vary according to the nature of the stressor. Of most interest to the present study is whether adolescents, who are cognitively and socially at a different developmental level from adults, use similar mediational and appraisal processes relating stressors to coping and emotional outcomes.

Method

The TBW Telethon Institute for Child Health Research carried out a large-scale epidemiological survey, *The West Australian Child Health Survey*, of the health and well-being of Western Australian children and adolescents between July 1993 and December 1993. The survey included home interviews, self-reports by the primary care-giver and the child, and a school survey completed by the principal and teacher of the target child. A variety of instruments was used in the total study, although not all were used in the present study. A random sample of 1,776 homes was identified across metropolitan and country regions

of the state of Western Australia. The response rate of households was 82%, and all 1,963 children aged 4 to 16 years who attended school and took part in the survey were followed-up with school principal and classroom teacher surveys. The response rate from schools was 96%.

Four groups of adolescents were selected from the 786 children aged 12 to 16 years who participated in the Western Australian Child Health Survey (Zubrick et al. 1995, 1997). One group was chronically stressed, the second acutely stressed, the third chronically and acutely stressed, and the fourth not stressed. All groups completed measures of self-concept, styles of coping, self-efficacy, and behaviour and mental health. The four groups were similar in age (chi-square = 16.61, df=16, p=.411) and sex (chi-square = .46, df=4, p=.977); 23% of the sample were 12, 23% were 13, 20% were 14, 20% were 15, and 14% were 16. There were almost equal numbers of males (49%) as females (51%).

The *acutely stressed group* included those adolescents who experienced short-term but not chronic stress as described by the primary care-giver (in most cases the parent). The primary care-giver was asked to complete a family life stress questionnaire (Works, Cowen, Parker, & Wyman, 1990) that described the frequency of stressful events experienced by the family. As recommended in the manual (also see Hoeltje, 1993), adolescents found to have experienced greater than the mean frequency in life events were included in this group. The sample size for this group was 238.

The Chronically Stressed Group

Chronic stress is continuous as opposed to discrete, is insidious by nature, the onset is often unclear, and its duration open-ended. A common definition of chronic stress is that used by the National Health Interview Survey in which all conditions lasting longer than 3 months are defined as chronic (Wilder, 1992). The chronically stressed group in the present study consisted of those adolescents who were diagnosed with asthma and no other illness (and no other acute stressors). Other than stresses related to asthma, this group also reported low levels of stressful events in their lives (less than 3) in the six months prior to testing.

The criteria used to select the adolescent with asthma sample consisted of a statement by the primary care-giver that the adolescent had asthma in conjunction with a statement by the adolescent that he or she had asthma. Any participant who had another health disorder, other than allergies, or who was described as significantly stressed by short-term demanding life events as measured by the Life Events scale was eliminated from this group. There were 70 adolescents in this group.

Those in the *acutely and chronically stressed group* met the criteria for being in both groups. There were 70 adolescents in this group.

The *non-stressed group* consisted of those participants who had experienced less than three demanding life events in the past six months according to the Life Events Scale (Works et al. 1990), were not described as having asthma by themselves or their primary care-giver, and who did not experience any other major health disorder. There were 408 participants in this group.

Instruments

The COPE, designed by Carver, Scheier, and Weintraub (1989), is a multidimensional coping inventory based on the Lazarus and Folkman relational model of stress and coping. There are 12 sub-scales in the COPE. *Active coping* occurs when the individual becomes actively involved in problem solving. Carver and Scheier (1990) claimed that this scale aimed at capturing the core of Lazarus and Folkman's (1984) problem-focused coping. *Planning* is the thinking dimension of problem-solving, as it involves thinking rather than actively undertaking the coping. This thinking occurs during the secondary appraisal stage, after the threat is first realized and available resources have been considered. *Suppression of competing activities* deals with stressful situations that require an enormous amount of cognitive load, and individuals often suppress other activities to make sure that their active planning receives its full attention. *Restraint coping* requires the person under threat to wait for the appropriate moment to take action when dealing with stress. Seeking social support is an influential means of coping, and individuals seek social support for two main reasons. First, like restraint coping, *seeking social support for emotional reasons* can be a most appropriate means of coping, although used in the wrong circumstances it can be dysfunctional (see Billings & Moos, 1984; Costanza, Delega, & Winstead, 1988). Second, *seeking social support for instrumental reasons* can be used to gain information.

Venting emotion is the tendency to focus on the emotion attached to the stressful event and to continually express the emotion. This can be beneficial when, for example, it is an expression of mourning and serves as an important step in dealing with bereavement. Continual focus on an emotion also may be an obstacle to coping. *Mental and behavioural disengagement* can be a dysfunctional coping skill. Mental disengagement involves not thinking about the stress at all, whereas behavioural disengagement involves a complete lack of action that can impede active coping (Billings & Moos, 1984). *Positive reinterpretation and growth* are tendencies to manage distressing emotions. Such active coping applies more broadly, in that it encourages individuals to affirm their ability to deal with stress and increase their sense of self-efficacy. *Denial* involves the refusal to believe that the stressor exists or is real. *Acceptance* is the opposite, in that the individual must realize that there is a stressful situation that has to be confronted. Once acceptance is realized then the individual can engage in active coping. For some people *turning to religion* is an extremely significant aspect of their life when dealing with stress. This means of coping is based on the view that prayer, use of church facilities, and faith in God will provide the necessary support.

The COPE was normed on undergraduates who were asked to indicate how they generally "feel and what they generally do" when they are under a good deal of stress. It uses a 4-point Likert scale ranging from "I usually do this a lot" to "I don't usually do this at all." The "general" or trait format asks students to respond to how they generally feel, cope with, and handle stress. The "specific" format asks

students to remember an event that was particularly stressful and to describe the way that they coped with it. The “general” format was used in Study 1, and the “specific” format was used in Study 2. The COPE also has been used with specific stressful situations such as measuring the coping strategies of women diagnosed with breast cancer (Carver, Pozo, Harris, Noriega, Scheier, Robinson, Ketcham, Moffat, & Clark, 1993).

The COPE is psychometrically sound, with test-retest reliabilities ranging between .48 to .86 and Cronbach alphas ranging between .45 to .92. Factor analyses by Carver, Scheier, and Weintraub (1989) have demonstrated that the items load on the appropriate factors, and the intercorrelations between the scales are quite low. A second-order factor analysis by Carver et al. (1989) found four factors: active coping, planning and suppression of competing activities; seeking social support and focus on emotions; denial, behavioural, and mental disengagement; and acceptance and restraint coping. Turning to religion did not load on any of the four factors.

Self-Concept

The Self-Description Questionnaire II (SDQ-II; Marsh, 1990) is a 102-item questionnaire that assesses 11 sub-scales of academic, non-academic, and general self-concept. The SDQ-II is one of three instruments designed by Marsh to measure self-concept: SDQ-I is designed for preadolescents; SDQ-II for adolescents; and the SDQ-III for young adults. Each of the 11 SDQ-II scales is represented by 8 or 10 items, half of which are negatively worded. Internal consistency for the total self-concept score was .94, and for the 11 scales the alphas varied from .83 for emotional stability to .91 for physical appearance. The scales were developed from a multi-dimensional hierarchical model of self-concept developed by Shavelson, Hubner, and Stanton (1977). The specific self-concept dimensions are: physical abilities; physical appearance; other-sex relationship - boys; other-sex relationship - girls; same-sex relationship - boys; same-sex relationship - girls; parents; general school; general self; mathematics; and verbal self-concept.

Statistical Analysis

Structural equation modelling was used throughout this study. Structural models are reasonably complex and thus it is necessary to ensure that the most efficient measurement model is developed for use in testing the structural models. Given that there are a large number of items, it is necessary to use exploratory factor analysis to choose the best subset of items for each dimension, provided that the estimates of reliability remain sufficiently large, preferably greater than .70. Each dimension was constructed to meet the statistical requirement that there are at least three items. An exploratory factor analysis, specifying one factor identified the three items with the highest loading on the specific dimension. Once the dimensionality and reliability (coefficient alpha) of each dimension are established, a measurement model specifying the pattern of loadings for all scales within each section is specified.

For the self-concept measures, a second-order factor model was specified, with the various first-order self-concept scales

expected to form into three higher-order factors: social, academic, and social self-concepts.

All items in the present study use Likert scales, and it could be claimed that, at best, they are ordinal measures. If this is the case, then an often recommended alternative estimation procedure is to use weighted least squares (WLS) based on polychoric correlations. It is important to note, however, that the critical assumption is not the level of measurement but the assumption of multivariate normality. The estimates from the ML procedure are quite robust against violations to this assumption (Chou & Bentler, 1990), and the ML estimators have several important and valuable properties which make them most desirable. They are asymptotically unbiased, consistent, and asymptotically efficient. Hoyle and Pantner (1995) argued that “because ML is so widely available and is the most widely researched estimator among those otherwise available (e.g., ordinary least squares, generalized least square, asymptotic distribution-free), we recommend that authors routinely report results from ML estimation” (p. 164). They encouraged researchers to assess the distributional assumptions, and where there were questions about the appropriateness of ML, then the results of alternative estimations may need to be reported in summary form for comparison.

The alternative method often recommended for Likert scales, the WLS procedure, determines factor loadings (and other related parameters) so that the weighted sum of squared deviations of the observed and fitted covariances are minimized (see Browne, 1984). The WLS method does not assume multivariate normality, although there are problems with the procedure such as, that the chi-square statistics are incorrect for small samples (Browne, 1984), the weights are estimated from the data and are therefore subject to sampling fluctuations that may affect the parameter estimates, and the sample size required to use WLS needs to be extremely large. Simulation results by Bentler and Chou (1993) suggests minimum sample sizes between 2,000 and 5,000 for dependable results using WLS. The WLS procedure depends on polychoric correlations, which are in fact not correlations between a pair of score values, but instead are estimates of the correlation between two latent variables, where each latent variable is assumed to have a bivariate normal distribution. While Joreskog and Sorbom (1988b) claimed that the polychoric correlation is “almost always the best correlation in each of the simulated samples” (p. I-9), this advantage decreases as the number of categories increases. The estimation methods also can be problematic, because of the difficulties of accurately estimating the polychoric correlation when there are zero observed frequencies for any category (e.g., if no respondent uses the 1 = “Strongly disagree” category for any one item).

It is well known that when the number of categories in the Likert scale is 4 or 5 or greater, where there is no skew or high kurtosis, and sample size is sufficiently large relative to the number of items being estimated (see West, Finch, & Curran, 1995), then the maximum likelihood methods based on covariances are more defensible than using weighted least squares based on polychoric correlations. Chou, Bentler, and Satorra (1991) and Hu, Bentler, and Kano (1992) caution against using different methods of estimation to correct the problems of non-normality. As Bentler and Chou (1993) have argued, “it

has not been verified that these theoretically more appropriate methods (e.g., WLS) generally work better in practice” (p. 170), and they recommended the use of continuous methods when a variable has four or more categories, and where there is evidence of normality. Further, as noted above, given the extremely large sample size necessary to dependably estimate the weights in WLS, the method is indefensible in the present study where the large number of variables relative to the number of respondents precludes accurate estimates of the weights.

A procedure for ensuring that the maximum likelihood method is appropriate is to inspect the degree of departure from normality. For all items used in the analyses there was no evidence of non-normality (e.g., significant skewness or kurtosis). Further, as advised by Hoyle and Pantner (1995), after completing all structural models the final solutions were re-analyzed using weighted least squares based on polychoric correlations. There were no interpretative differences between the two methods and the fit statistics were similar (see Bollen, 1988, p. 444-445 for reasons why this is expected on theoretical grounds). Thus, the method used in all subsequent analyses is maximum-likelihood based on (Pearson-based) covariance matrices.

A series of analyses for each of the four groups was completed to determine the most defensible model that relates self with coping, and family dimensions with coping. It is critical to note that this step-wise procedure commenced with a model, as dictated by the Folkman and Lazarus relational model, that presupposes that all paths between the antecedents to coping, and from coping to outcomes were free to be estimated. The major principle for deleting these paths in the “gamma” matrix relating the self or family dimensions with the coping dimensions, was the size of the structural parameter relative to its standard error. The modification indices relating to the gammas and not to the measurement models were used. Although it is not uncommon practice to make such changes in both the measurement and structural parts of the model (and some go further by making unjustifiable changes in the error matrices), this would be capitalizing on any error in the measurement model rather than emphasizing interpretation.

As the major purpose of the present study is to develop various models and then compare these models, the difference in chi-square (with differences in respective degrees of freedom) is the major method for assessing models. That the chi-square statistics can be sensitive to sample size is not a concern when such comparisons are made. As has been widely noted, most currently available fit statistics are inappropriately affected by sample size. The fit statistic least affected by sample size is the Root Mean Square Error of Approximation (RMSEA). The RMSEA provides the error per degree of freedom of the fit of the population covariance matrix implied by the model. Unlike many other fit statistics in structural models, it does not make reference to the null or complete independence model, and it provides an index of how much discrepancy remains. The RMSEA has been shown to be among the most effective fit-statistics to evaluate the adequacy of the model, and it is not affected by sample size (Browne & Cudeck, 1993; Rigdon, 1996; Steiger & Lind, 1980). RMSEA has a minimum of 0 which implies perfect fit, and Browne and Cudeck (1993, p. 144)

claimed that “practical experience has made us feel that a value of the RMSEA of about .05 or less would indicate a close fit of the model in relation to the degrees of freedom ... We are also of the opinion that a value of about .08 or less ... would indicate a reasonable error of approximation and would not want to employ a model with a RMSEA greater than .1.” Of most importance, however, is the interpretation of the various models from a substantive viewpoint.

Results

Coping

Eight coping scales, developed from Carver, Scheier and Weintraub (1989), were used in this study. An inspection of the factor structure, reliabilities, and correlations among the factors, led to choosing the three best items for each of the eight scales.

A factor analysis of these eight scales encountered many difficulties. First, there are two supposedly distinct scales assessing social support. One of these, Seeking Social Support for Instrumental Reasons was expected to relate to problem-focused coping, and the other, Seeking Social Support for Emotional Reasons was expected to relate to emotion-focused coping. When a six-factor model was specified using active/planning, accepting, venting, disengagement, and the two social support scales, the correlation between the latter two scales was .943. A two-factor solution using just the items on these two sub-scales supported the conclusion that there was only one factor underlying the items, as the correlation between the two factors was .77. So, only the five best items across these two factors were chosen for subsequent analyses.

A second problem related to the Accepting Scale and Suppression of Competing Activities. Only two items clearly loaded on each of these scale and with low to zero loadings on the other scales. In initial runs of the structural model, it became apparent that these two scales caused many problems. Almost certainly this was because there were only two items and, as is well known mathematically, three items are required to meaningfully define a factor. As no other items provided satisfactory fit, it was decided to delete the Accepting and Suppression of Competing Activities scales.

The estimates of reliability for the factors were: active/planning .88, venting .60, disengagement .74, and social .72. A four-factor model provided an appropriate measurement model for the coping questionnaire. The chi-square for this model was 447.96 (df=150), and the goodness-of-fit index was .94, adjusted goodness-of-fit index was .92, and the RMSEA was .050. Table 1 presents the solution. (In this table as in all that follow, some items have been recoded to ensure that they are scaled in the same direction.)

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Table 1:
Factor Loading and Intercorrelations Between the Factors for the COPE Dimensions

	Active	Social	Venting	Disengage-ment	U ²
1. I try to come up with a strategy about what to do	.75		0	0	10
2. I make a plan of action	.61		0	0	24
3. I think about how I might handle the situation	.60		0	0	19
4. I take additional action to try to get rid of the problem	.42		0	0	36
5. I try to get advice from someone about what to do	0	.79	0	0	10
6. I talk to someone to find out more about the situation	0	.72	0	0	15
7. I discuss my feelings with someone	0	.74	0	0	22
8. I try to get emotional support from friends or relatives	0	.67	0	0	.31
9. I ask people who had similar experiences what they did	0	.65	0	0	.38
10. I get upset and let my emotions out	0	0	.79	0	.10
11. I let my feelings out	0	0	.63	0	.27
12. I feel a lot of emotional distress and I find myself expressing those feelings a lot	0	0	5	50.	25
13. I say to myself this is not real	0	0	0	.55	.08
14. I act as though it hasn't happened	0	0	0	.50	.28
15. I refuse to believe that it has happened	0	0	0	.47	.12
16. I reduce the amount of effort I put into problem solving	0	0	0	.40	.19
17. I admit to myself that I can't deal with it and quit	0	0	0	.40	.19
18. I give up the attempt to get what I wanted	0	0	0	.34	.30
19. I go to the movies or watch TV to think about it less	0	0	0	.33	.30
<i>Correlations between the factors</i>					
Active	1.00				
Social	.63	1.00			
Venting	.20	.59	1.00		
Disengagement	-.13	.03	.30	1.00	

A second problem related to the Accepting Scale and Suppression of Competing Activities. Only two items clearly loaded on each of these scale and with low to zero loadings on the other scales. In initial runs of the structural model, it became apparent that these two scales caused many problems. Almost certainly this was because there were only two items and, as is well known mathematically, three items are required to meaningfully define a factor. As no other items provided satisfactory fit, it was decided to delete the Accepting and Suppression of Competing Activities scales.

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Self-Concept

Given the rigorous item development that led to the creation of the SDQ, it was expected and confirmed that the factor structure would be remarkably clear and consistent with the

multi-faceted theory of self-concept (see Marsh & Shavelson, 1985). As reported in the methodology section, the SDQ-II was constructed specifically for adolescents and has 11 sub-scales of self-concept designed to measure those facets of self-concept that are in accordance with Shavelson, et al's. (1976) model of self-concept. Not all the scales, however, were relevant to this research and thus only six subscales were chosen.

It was hypothesized that there would be six first-order factors: Physical appearance, Physical ability, Mathematics, Reading, Parents, and Peer Relations.

The best subset of items per factor in terms of reliability and in terms of maximizing the difference in item content were chosen. The estimates of reliability for the six first-order factors, based on the best three items per scale, were .88, .79, .67, .80, .74, and .64, respectively. Moreover, it was hypothesized that there would be three second-order factors: Physical self-concept, Academic self-concept, and Social self-concept.

Table 2 presents the second-order measurement model. The chi-square for this second-order model was 809.18 (df=215), and the goodness-of-fit index was .91, adjusted goodness-of-fit index was .90 and the RMSEA was .059. Given the rigorous item development that led to the creation of the SDQ, it was expected and confirmed that the factor structure would be remarkably clear and consistent with the multi-faceted theory of self-concept (see Marsh & Shavelson, 1985). As reported

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Table 2:
First- and Second-Order Factor Loadings for the Self-Concept Dimensions

	Phys Appear	Phys Abil	Math	Read- ing	Parent	Peer Rels	U ²
1. Most of my friends are better looking than I am		.78	0	0	0	0	.59
2. I am good looking		.92	0	0	0	0	.33
3. I hate the way I look		.93	0	0	0	0	.47
4. Other people think that I am good looking		.73	0	0	0	0	.60
5. Mathematics is one of my best subjects		0	1.22	0	0	0	.20
6. I have always done well in mathematics		0	1.10	0	0	0	.29
7. I often need help with mathematics		0	.97	0	0	0	.47
8. I hate mathematics		0	1.09	0	0	0	.41
9. I enjoy things like gym, sports and dance		0	0	.93	0	0	.41
10. I am lazy when it comes to things like sports and hard physical exercise		0	0	.83	0	0	.50
11. I'm better than most of my friends a things like gym, sports and dance		0	0	.84	0	0	.54
12. I try to get out of sports and physical education classes when I can		0	0	.83	0	0	.57
13. Look forward to English classes		0	0	0	.91	0	.59
14. I hate reading		0	0	0	.57	0	.84
15. I get good marks in English		0	0	0	1.08	0	.29
16. My parents are usually unhappy or disappointed with what I do		0	0	0	0	.74	.62
17. I get along well with my parents		0	0	0	0	.80	.35
18. It is difficult for me to talk to my parents		0	0	0	0	.82	.68
19. My parents treat me fairly		0	0	0	0	.76	.57
20. I enjoy spending time with friends of the same sex		0	0	0	0	0	.59
21. I do not get along well with girls/boys		0	0	0	0	0	.51
22. I have good friends who are members of my own sex		0	0	0	0	0	.57
23. I make friends easily with members of my own sex		0	0	0	0	0	.87
Second-order Factor loadings	Physical		Academic		Social		
Physical Appearance	.76		0		0		
Physical Ability	.67		0		0		
Mathematics	0		.46		0		
Reading	0		.67		0		
Parents	0		0		.73		
Peer Relations	0		0		.59		
<i>Relating Self-Concept to Coping</i>							

It was hypothesized that there would be six first-order factors: Physical appearance, Physical ability, Mathematics, Reading, Parents, and Peer Relations. The best subset of items per factor in terms of reliability and in terms of maximizing the difference in item content were chosen.

The estimates of reliability for the six first-order factors, based on the best three items per scale, were .88, .79, .67, .80, .74, and .64, respectively. Moreover, it was hypothesized that there would be three second-order factors: Physical self-concept, Academic self-concept, and Social self-concept.

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Structural Models for Each Group

No Acute or Chronic Stress

The following steps outline the procedure used to develop the relationship between the self and coping strategies. The first step is to fit the completely saturated model, as this best

represents the relational model as proposed by Lazarus and Folkman. This model allows unconstrained paths between the four self-concept dimensions (efficacy, appearance, academic, and social) and the four coping dimensions (active, social, venting, and disengagement). The paths that were the lowest and non-significant were between self-concept appearance and emotional coping. The interest, at this point, is less on the overall fit (as the saturated model must provide the best fit), but on the statistical significance of the paths between the self-concept dimensions and the four coping dimensions. After an inspection of the paths given these new constraints, there were non-significant paths between efficacy and social and venting. And so on, until there were no non-significant paths remaining. Table 3 details the fit statistics for each of the models for the adolescents with no chronic stress and no significant life events. These results clearly indicate that personal resources have a significant influencing role in the use of coping strategies.

The final structural model is presented in Figure 3. This final model is very similar to that reported in the stress and coping literature, when normal samples (i.e., those with no life-event or stress-related concerns) are used. In particular, the

Lazarus (1990) model of stress and coping that suggests that personal resources such as self-concept will influence coping style. Lazarus refers to them as causal antecedents. Where there are significant paths, then high self-efficacy, academic self-concept, and social self-concept relates positively to the problem-focused coping strategies of active/planning and social support, and relates negatively to the emotion-focused coping strategies of venting and disengagement. This provides defense of the problem- and emotion-focused coping model, but as will be seen below, only when non-stressed samples of adolescents are used.

Acute Stress

The goodness-of-fit information for the adolescents with no asthma but with significant life-events is presented in Table 4. The final model is depicted in Figure 4.

For these adolescents, the academic and appearance self-concept dimensions have no influences on the choice of coping strategies. High self-efficacy and social self-concept both positively influence active coping, and high social self-concept only relates to social coping. For these adolescents, the self-concept variables are not related to any emotion-focused coping strategies such as venting and disengagement.

Chronic Stress

The goodness-of-fit information for the adolescents with asthma but with no significant life-events is presented in Table 5. The final model is depicted in Figure 4 For these adolescents, there are relationships between social self-concept and active and social coping strategies. Adolescents with asthma tend to use active and social coping strategies only when they have high social self-concept.

Acute and Chronic Stress

The goodness-of-fit information for the adolescents with asthma and with significant life-events is presented in Table 6.

The final model is depicted in Figure 5. Like those adolescents with only chronic stress and adolescents with only acute stress, there are relationships between social self-concept and active coping for those adolescents with both chronic and acute stress. The model for this group is exactly the same as that for those with only acute stress. Adolescents with acute stress, regardless of whether they also have chronic stress, have relationships between self-efficacy and social self-concepts and social and active coping strategies.

Comments on Coping Strategies and the Self-System.

The most important discovery from the analyses relating to self-concept was the importance of social self-concept as a predictor of active and social coping. For all adolescents, regardless of the presence or not of stressors, social self-concept was a predictor of these active coping strategies. Moreover, those adolescents high in social self-concept do not use disengagement as a means of coping. Disengagement implies avoidance, which is contrary to being socially confident. Adolescents who have high social self-concept rely on a two-way relationship; they have had much experience of having their peers and parents as part of their life and helping them solve problems.

For all but the chronically stressed group, high self-efficacy was an important predictor of active coping. Self-efficacy was significantly and positively related to active coping for both chronic and acutely stressed group, and negatively related to disengagement for the non-stressed group. It was not related to any of the coping variables for the asthma group. An individual’s self-efficacy depends on a perception of effectiveness and control in one’s life. Hence, those high in self-efficacy will, according to Bandura (1986), actively seek solutions to problems as well as persist at resolving the problem. Thus those who are high in self-efficacy appear to cope with stress by actively finding solutions to the stressful events facing them. The same individuals do not deny or avoid the issues confronting them. Self-efficacy also was not related to social coping.

Table 3:
Fit Statistics Between the Self-Concept and Coping Dimensions for Adolescents with no Acute and no Chronic Stress

Steps	Chi-square	df	RMSEA
Complete saturated model	3107.45	1107	.067
Constrain Appearance on venting & disengagement	3345.30	1109	.075
Constrain Efficacy on social & venting	3363.40	1111	.076
Drop Appearance	2303.81	695	.075
Constrain Social on venting	2306.17	694	.076
Constrain Academic on social	2303.80	693	.070

Table 4:
Fit Statistics for the Model Relating Self-Concept and Coping Dimensions for Adolescents with Acute Stress

Steps	Chi-square	df	RMSEA
Complete saturated model	2415.07	1107	.070
Constrain Appearance on venting & disengagement	2858.20	1109	.081
Constrain Efficacy on social, venting & disengagement	2877.53	1112	.088
Drop Appearance	1951.42	692	.088
Drop Academic	1279.82	462	.086
Constrain Social on venting & disengagement	1279.81	460	.087
Drop venting & disengagement	539.98	205	.083

Table 5:

Fit Statistics for the Model Relating Self-Concept and Coping Dimensions for Adolescents with Chronic Stress

Steps	Chi-square	df	RMSEA
Complete saturated model	2242.69	1107	.122
Constrain Appearance on venting & disengagement	1533.64	1114	.174
Constrain Efficacy on social, on venting/disengagement	1536.61	1020	.186
Drop Appearance	1790.33	696	.151
Constrain Academic on social	1790.33	695	.151
Constrain Academic on venting & disengagement	1790.09	693	.151
Drop venting & disengagement	486.77	205	.141

Table 6:

Fit Statistics for the Model Relating the Self-Concept and Coping Dimensions for adolescents with Acute and Chronic Stress

Steps	Chi-square	df	RMSEA
Completed saturated model	1433.43	1107	.065
Constrain Appearance on venting & disengagement	1370.21	1109	.057
Constrain Efficacy on active and social	1378.16	1012	.072
Drop Appearance	1802.53	699	.151
Constrain Efficacy on disengagement, Social on venting & disengagement	1802.53	696	.152
Constrain Academic on social, venting & disengagement	1802.29	693	.152
Drop venting	467.16	248	.113
Drop disengagement	416.79	205	.102

Figure 3: Standardized Structural Parameters for the Relations Between Self-Concept Dimensions and Coping for those with no Acute and no Chronic Stress

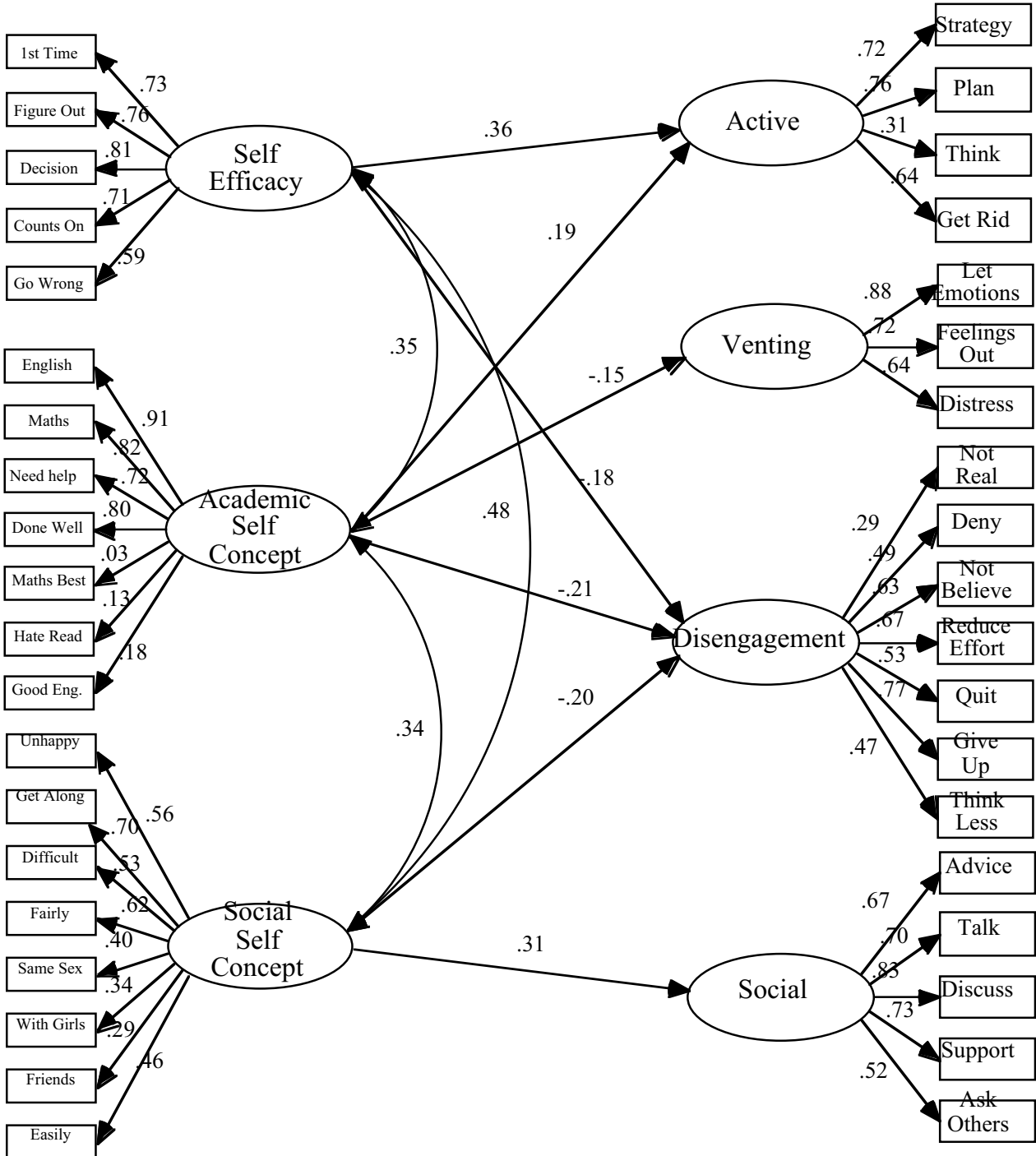


Figure 4: Standardized Structural Parameters for the Relation Between Self-Concept Dimensions and Coping for Those with Acute Stress.

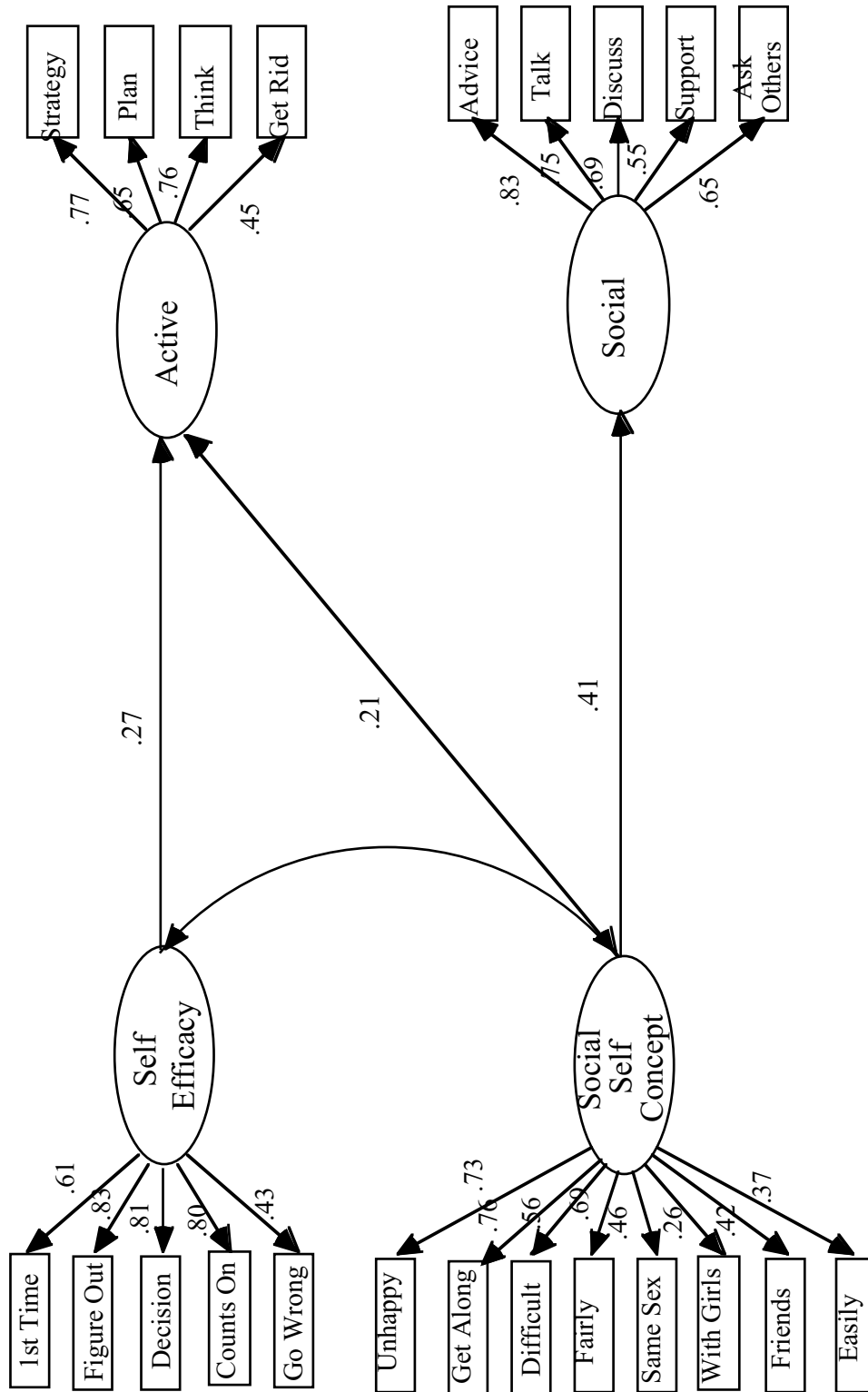


Figure 5: Standardized Structural Parameters for the Relation Between Self-Concept Dimensions and Coping for those with Chronic Stress

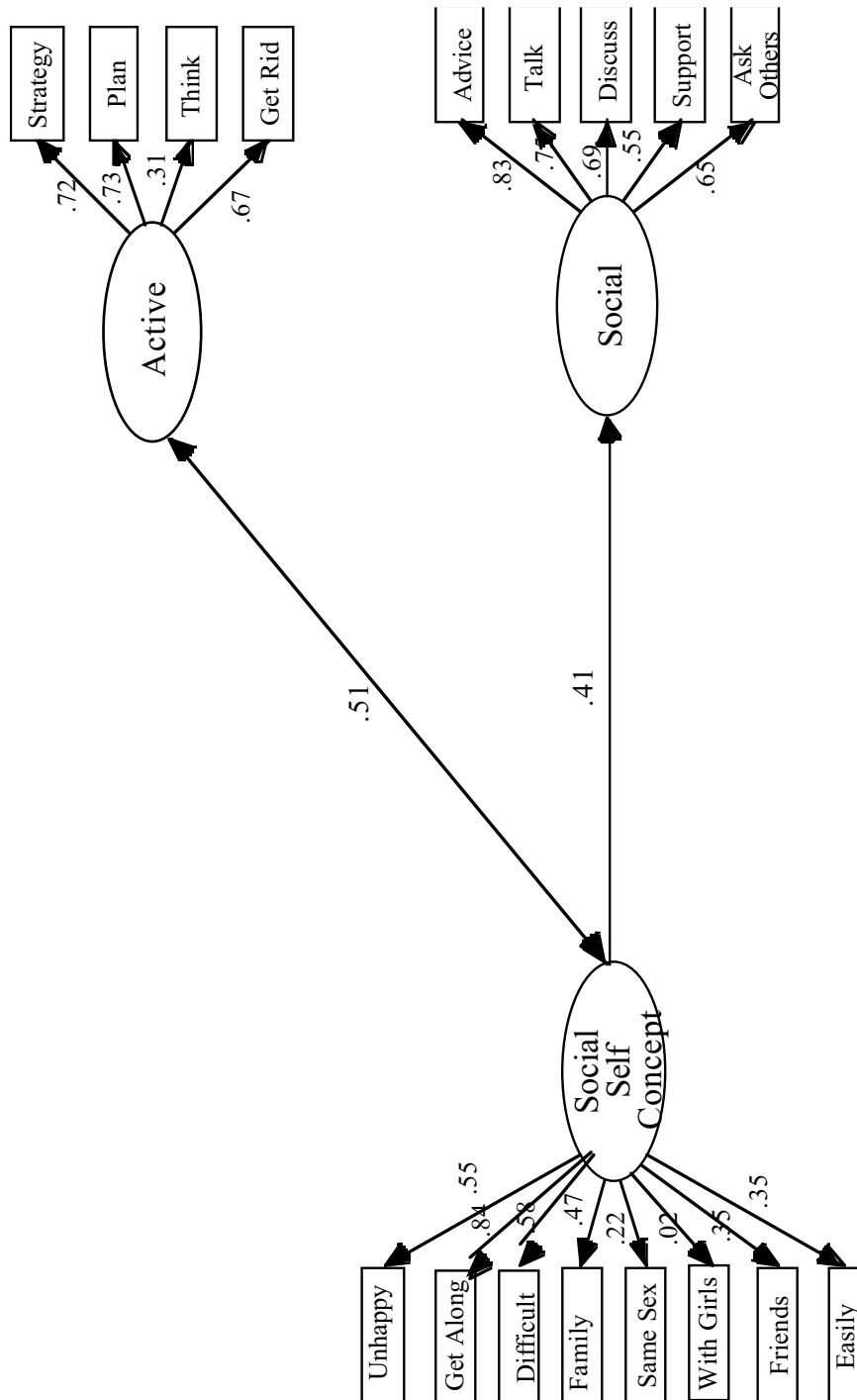
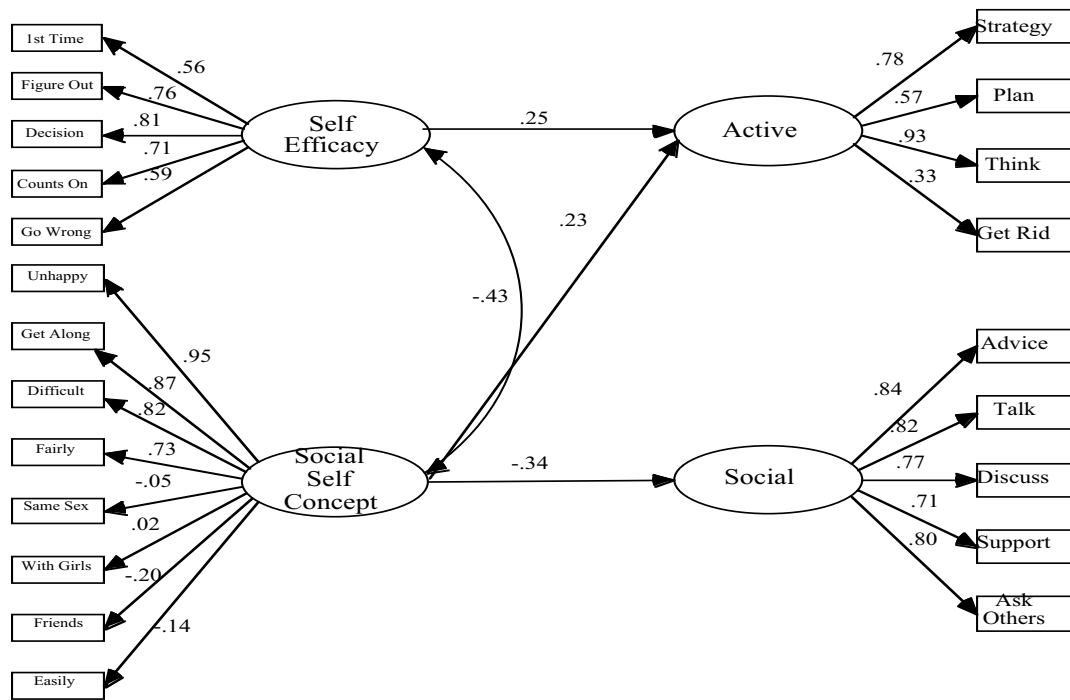


Figure 6: Standardized Structural Parameters for the Relation Between Self-Concept Dimensions and Coping for those with Acute and Chronic Stress



It needs to be recalled that the items on the self-efficacy scale related more to making decisions effectively and self-reliance. Thus the scale relates more to a sense of a self-sufficiency and such items would not necessarily relate to the use of seeking social-support as a means of coping. They would, however, relate to an individual’s use of planning strategies to cope with stress. This was the case for all but the chronically stressed group, where self-efficacy, self-sufficiency, control, or using planning strategies are less predictable. Chronic stressors, by nature, are intense and often unpredictable. Asthma is a chronic disease where the course of the illness is not easy to predict. Each attack can vary in severity and consequences, hence the outcomes from those attacks often also vary. It is difficult to perceive how an individual can *control* an event when the event is unpredictable.

For the non-stressed group, the majority of self dimensions related to all coping strategies. Physical appearance self-concept however, was not related, for this group or any of the other groups. The concepts that adolescents have about their physical appearances are unrelated to the types of coping strategies they use. Academic self-concept only plays a part in the non-stressed population, in that it is positively related to active coping and negatively to disengagement and venting. As the non-stressed adolescents have few, if any, stressors in their life related to health or life events, then the next major source of stress could relate to academic situations. It is via their experiences in school that they learn to cope. The other groups have many other stresses, and they have learned to use a variety of coping skills. Those adolescents who are chronically stressed probably have less concern with academic achievement

because it is more critical for them to maintain some sense of stability in their lives.

Conclusions

Many researchers have claimed that self-concept is an influential factor in the stress and coping process (Youniss & Smollar, 1989). Such a claim, however, ignores the large corpus of research demonstrating that self-concept is a multidimensional construct. Rather than referring to “self-concepts” it is necessary to consider the various second-order dimensions such as academic, social, or physical self-concept, or the various first-order dimensions underlying these second-order concepts. As study 1 demonstrated, the conclusions varied according to these second-order self-concepts, and thus any conclusion about general self-concept is not meaningful. Social self-concept and academic self-concept were found to be predictive of coping in the stress and coping process, whereas physical self-concept was not involved — even though it is reasonable to expect that adolescents with asthma may have invoked their conceptions of their physical abilities. It appears that when adolescents are stressed, personal and social self-concepts take on great weighting in their significance or usefulness than physical self-concepts.

A positive sense of social and academic self was related positively to the problem-focused coping strategies and negatively to the emotion-focused coping strategies, thus adding support to the notion that disengagement and venting are primarily maladaptive coping mechanisms for adolescents. Academic self-concept was only significant for the non-stressed group, providing some credence to the view that school is a significant factor in the determination of self-

concept of adolescents in the absence of non-normative stressors. Academic stressors are considered a general concern for the general population of adolescents (Frydenberg et al. 1996)

An important modification to the Lazarus and Folkman model is to recognize the importance of self-concept as a multidimensional and hierarchical model. As has been argued in many sources (e.g., Hattie & Marsh, 1996) "general" self-concept may be a less powerful notion as it assumes that all facets of self-concept are equally predictive. As this study has demonstrated, different facets of self-concept are more important depending on the presence or otherwise of perceived stressors.

Social Self-Concept

For all but chronically stressed adolescents, social self-concept was a predictor of coping strategies. Moreover, those adolescents high in social self-concept do not use disengagement as a means of coping. Disengagement implies avoidance, which is contrary to being socially confident. Adolescents who have high social self-concept rely on social interaction; they have had much experience of communicating with their peers and parents and including them in their efforts at problem solving, and thus the adolescents in turn derive many benefits from this social support (Boldero, et al. 1993).

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Locus of Control and Self-Esteem in Running Away Girls

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The objective of this study was exploring the correlation between Locus of control and self-esteem in running away girls who lived in welfare houses and centers. self-esteem (Couper Smith self-esteem questionnaire) and Locus of control (Rutter Locus of control questionnaire) were examined in running away girls, and then they were compared with two other groups who didn't have any background of running away but one of these groups were living in these centers. 46 running away girls (are between 14 to 21 years) were examined and data was collected by above questionnaires. Data showed that two groups were different in locus of control but not in self-esteem. Although locus of control and self-esteem were related to each other. There was no direct relationship between running away group and the other group.

Studies show that running away teenagers who are out of their houses more than three months often have unhealthy and inefficient family, physical abuse, are neglected and have lack of parental supervision. They usually have background of anti-social behavior and unsuccessful school performances. They are also at risk for depression, substantial abuse and other problems of mental health (Rice, 1992).

The study of Jaff and Dezsery (1985) on 137 teenagers (boys and girls) has reported problems such as being out of home late, drug abuse, snatching and absenteeism from school. (Rice, 1992). Many researches show relations between health problems and mental disorder with self-esteem and Locus of control. For example, Mac Donald(1990) stated that low self-esteem and being unable to express feelings and lack of communication skills are related to drug abuse. Mitic (1987) reported substantial abuse in people who had stress in periods of their lives. Castro (1987) has studied negative effects of peers and social conformity as two factors that have relation with stress and coping mechanism. Kumer and Turner (1990) stated that low self-esteem is related to drug abuse and alcoholism. Singh and Mostapha (1990) studied the relation between low self-esteem and sexual promiscuity. Dukes and Lorch (1989) reported suicidal attempts. Rutter (1996) and Strickland (1989) studied concepts of low self-esteem and Locus of control in people also.

Locus of control is defined as a total belief controlling events in people's lives and it can be external or internal. The internal one's believe that they can control their life's events and the other group believes on other people and other event controlling their lives. Locus of control is effected by some factors. For example by becoming older, feeling of having control increases in people and when uncontrolled events happened, people change, they become more external (wolf & Robertshow 1982). Cheney & Bleker (1982) wrote women's locus of control changes when they get under physical abuse by their husbands also in women who get divorced. Researches show that, about 20 percent of teenagers who running away from their homes have short-term crisis's like divorce of their parents or one of their parents death or illness and 44 percent of them had harder problems and finally 36 percent of them were under sexual or physical abuse.

The running away from home is related to many factors. In this study following hypothesises were tested.

1. Self-esteem in running away girls has significant difference with two other groups.

2. Locus of control in running away girls has significant difference with the controlled group girls.

3. High self-esteem in girls has significant difference in Locus of control with low self-esteem girls

4. Both groups of girls who live in welfare centers (running away girls and non-running away girls) have significant difference in self-esteem with control group.

Method

46 run away girls (mean age = 17.4) participated in the study. They were compared with 18 girls as control group(mean age = 18.2). They were not run away girls but they had other problems. In order to compare both groups, a group that contains 30 girls from public population was selected. The data of research were aggregated with Couper Smith self-esteem questionnaire. Locus of control questionnaire contained 29 questions that had 2 choices (A & B). It was asked from the subjects to choose one of choices that were the reasons for the events. 5 questions out 29 were omitted from the final grading. Question that was asked identified that subjects believed in internal or external Locus of control. Couper-Smith Self-esteem test contains 58 items that 8 of them are lie detector. 50 items show different aspects of people's self-esteem. That contains of social self, general self and relation with peers and parents.

Items that show high self-esteem have no.1 score and the one's which showed low self-esteem have no, 0. This questionnaire evaluates 2 aspects of self-esteem: Mental and overt behavior. Correlation coefficient of this questionnaire with self-esteem questionnaire was 0.59. in this research the test reliability with test-retest method were 93%.

Results

The self-esteem scores were under final analysing by calculating mean of standard divination with using T-test. As you can see that in the table1 amount of (T) is 95% (both group that live in the center). With consideration to degree of freedom (df = (42-8)+2) there wasn't any difference between two groups.

Table 1:
Self-Esteem Comparative Between Two Groups

Df	T	S	X	Groups
Df = (98 - 24) + 2	95%	8.79	22.89	Run away groups
		8.730	22.11	Non run-away group

But there was a significant difference between normal group and two other groups (Main = 35). As it is shown in table 2 both of groups (non-running away and running away) are different. It means that the running away girls had internal Locus of control (t = 5.0628). Also the normal group had internal Locus of control (t = 7.01).

Table2:
Locus of Control Comparative

SE of Mean	SD	M	N	Variable
1.559	6.615	1.8889	18	Locus of Run away girls
0.921	6.244	-3.1739	46	Locus of Non running-away girls

We compared groups on Locus of control and self-esteem. But there wasn't any difference between two variables (Table3).

Table3:
Locus of control and Self-Esteem

SE of Mean	SD	M	N	Variable
??	??	??	??	Locus 1
9.659	9.949	-0.7143	14	Low Self-esteem
1.319	5.88	-1.5500	20	High Self-esteem

Main Difference = 0.8357

Discussion

As it was shown for the first hypothesis, that says main score running away and non-running away girls have significant difference, Data proved the hypotheses Pereti and purham (1994) stated significant difference between running away girls and non-running away girls in their research. Difference between this research and their study could cause by past life of them

Both group's finding had similar social class and economic class and had similar family and cultural precedents and traumatism. As it is shown both groups are very similar in self-esteem score and are far from normal group Singh and Mustapha (1994) reported low self-esteem in alcoholics also reported low self-esteem in criminal. Oukes and Lorch reported sexual promiscuity in girls who have low self-esteem and psychologists state self-esteem as a important factor for mental health and they believe it as factor that make people's opinion of their experiences. As it is shown in second table two groups have significant difference (t = 5.0628). This difference is causes by these runaway girls had internal locus of control and non-runaway girls had external control may be one of the reasons that caused running away of home is this locus of control. Because by running away from home

they want to control their fates them selves and have desired changes Plotnick and Keddle (1992). Stated that when events, which are out of control, happen people position change. Third hypothesis didn't prove and there wasn't significant difference between self-esteem and locus of control. It means that people with high self-esteem not always have internal locus of control. Self-esteem and locus of control didn't have significant relation in this research. But in normal group it was showed that girls with high self-esteem had internal locus of control. We should attend that all the findings were based on limitation on numbers of control group and they had similarity in psychological characteristic and social, economical and family precedents may be a study with a large number of groups as needed.

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Stigma Theory and Social Comparison Theory: What Can They Tell us About the Self-Concept of Adults with Mild Intellectual Disabilities

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This paper explores the self-concept of adults with mild intellectual disabilities who are being moved to the community. It reports two case studies of women who were institutionalised for long periods of time but who are now living in the community. Goffman's theory of stigma and deviance as well as social comparison theory and the topology of self-concept developed by Zetlin and Turner underpin the study. The methodology was ethnographic and the data consisted of in-depth interviews with the participants before the move into the community and shorter interviews subsequently. Interviews were conducted with significant others in their lives, and observations were made by the researcher. The research occurred over a three year period. Analysis of the data has shown that the participants had been denied significant socialisation experiences previously in their lives, however they had both developed coping strategies which were indicative of their self-esteem. The study suggested that there is an association between social coping strategies of deinstitutionalised adults with mild intellectual disabilities (Zetlin and Turner, 1984) and the development of consistent self-images. However, even after moving into the community, the women were still employing the same techniques to protect their self-concept that they had employed during their long history of institutionalisation. Their self-concept though was enhanced by the move to the community, lending support to Goffman's stigma theory rather than to social comparison theory.

Introduction

The picture of the development of the self-concept of people with intellectual disabilities has proved inconclusive. There has been an overall impression that, in general, their self-concept has been depressed in comparison to the rest of the population. This finding has not been universally replicated. However, the inconsistency may be explained by competing theoretical explanations for the development of identity and the self for people with intellectual disabilities: social comparison theory and the stigma paradigm. Another area of concern has been the use of measures not designed for this specific population. Instead some authors have suggested that qualitative methods of analysis would shed more light on the processes of self development in adults with intellectual disabilities. The aim of this paper is to describe the self-concept of two women with mild intellectual disabilities. It examines whether or not they developed the depressed self-concept often thought to characterise people with intellectual disabilities, or were able to repudiate partially society's negative imputation of difference by employing coping strategies that helped protect their self-concept.

Theoretical Orientations

There are two major theoretical orientations that are used by researchers to study the development of self-identity in people with intellectual disabilities. These are Goffman's theory of stigma (Goffman, 1963) and Mead's social comparison theory (Mead, 1934).

Goffman's Theory of Stigma

Social deviance is the dominant paradigm through which sociologists have studied disability since the publication of Erving Goffman's (1963) classic, "Stigma: Notes on the Management of Spoiled Identity" (Susman, 1994). Goffman highlights the parallels between the social position of those with physical disabilities and that of other socially marginal groups.

Susman (1994) defines social deviance as the perception of negative difference and stigma as evocation of adverse responses. Stigma refers to any persistent trait of an individual or group that evokes negative or punitive responses. Goffman's contribution was to combine these two concepts (stigma and deviance). He argued that stigma is best explained by reference to the notion of deviance, i.e. deviation from prevalent or valued norms. Devalued groups are blamed for their flaws and viewed by society as culprits in their condition. Goffman's theory is, in summary, that society's adverse responses to people with disabilities, unfavourable images of them, and their own negative self-evaluations are explained by negative difference (deviance). Importantly, Goffman saw that deviance is not an inherent property of the individual. A person is not deviant until they are perceived as negatively different.

Research Using Goffman's Theoretical Orientation

Murphy (1987) found the four most far reaching changes in the consciousness of the disabled as a result of the stigma of deviance are: lowered self-esteem; the invasion and occupation of thoughts by physical deficits; a strong undercurrent of anger; and the acquisition of a new, total and undesirable identity (p.108).

The work of Edgerton (1967) employed participant observation for studying the lives of people with an intellectual disability who had moved out of an institution into the community. The main concern was to identify reactions to stigma based on the concepts of Goffman (1963). In his study Edgerton argued that people with an intellectual disability 'denied' their disability and tried to pass for normal. Becker (1981) felt that coping strategies to deal with stigma develop as part of a normalisation process and that this can be seen as a positive trait even though it leads to the internalisation of a socially devalued identity.

Zetlin and Turner (1984) produced a more extensive typology of how the participants coped with the stigma and related the 'type' of response to the features of participants'

background and circumstances. The extended typology of coping strategies which they developed is still used for analysis of qualitative research (Angrosino, 1997). In their typology, people with disabilities cope socially by using strategies that they then use to define their self-image. Some (blame attributors) acknowledge their disability but blame significant others for their failures, while others (acceptors) took all of the blame onto themselves. A third group (deniers) refused to accept their "handicap" and went to great lengths to prove their competence while a fourth group (tactical dependents) sought out and perhaps even manipulated benefactors who compensated for what they could not do.

To summarise, the stigma paradigm is the most influential in the field. Edgerton's work pointed to the use of coping strategies to handle stigma. He described the concept of denial. Zetlin and Turner expanded the description of coping strategies and linked coping strategies to the development of consistent self-images by which the person with disabilities manages a stigmatised identity.

Social Comparison Theory

The second theoretical orientation is that of social comparison theory. At present this is the most commonly adopted approach to the study of the self. According to this theory, one's self-concept is largely determined by the ways in which one is treated by significant others. The theory derives its basic assumptions from Mead (1934). On the basis of this theory it would be hypothesised that people with intellectual disabilities who have been segregated from their childhood and institutionalised must have developed a view of themselves that is essentially different from those who live in conventional social environments such as with their families.

Some writers have combined these two theoretical orientations and view stigma as an external societal process and social comparison as the individual's response to a stigmatised identity. Becker (1981) describes this process as a formal confrontation between the deviant subject and the representative of the community. Some judgement is made concerning the nature of the deviancy and there is an act of social placement assigning the deviant to a special role which redefines his position in society. The outcome of the process is two fold, both aspects of which may be subsumed under what has been termed the self-fulfilling prophecy. On the societal level, in contrast to the ceremony by which an individual is ushered into a deviant position, there is no comparable public ceremony which marks the person's movement back out of the role and, in the eyes of others, he remains a deviant.

On an individual level, the interaction sequence follows a pattern described by Mead (1934): social label; awareness of societal reaction; performance of social label; revision of self-label; and performance of role implied by social label. As the result of some crisis, a person is labelled as deviant. In the past they were excluded from participating in conventional groups and using ordinary means to carry out the routines of every day life. This exclusion causes a drastic and often irreversible change in their public identity which is eventually assumed as a self-image. The deviant's behaviour then, becomes congruent with

the others' definition of the deviant (e.g. people in institutions develop institutionalised behaviours such as over-dependency, passivity, wariness of new experiences and people, and depressed self-concept).

The Self-Concept of People with Intellectual Disabilities

Social comparison and stigma paradigm have been used extensively with some studies trying to combine the two. Gibbons (1985) found hierarchies of stigma occurred for people with intellectual disabilities, that is, they engaged in derogation or downward comparison of other stigmatised group members. Zetlin and Turner (1985) confirmed this pattern. This leads to an interesting anomaly in the predictions that could be made about the effect of integrated placement on the self-esteem of people with intellectual disabilities by these two theories. From stigma theory, integrated placement, such as community living, competitive employment and integration into regular classrooms at school might raise self-esteem as the individuals receive positive appraisals about their "normality". Conversely, social comparison theory would predict that self-esteem may decrease because of unfavourable comparisons with regular reference groups.

Early reviewers throw little light on this anomaly because many early studies were theoretically and methodologically flawed. Since the 70s many researchers have felt that traditional self-esteem inventories did not address the concerns of stigmatised groups (Zetlin, Heriot and Turner, 1985) and abandoned the use of standardised measures. This led to self-esteem being assessed using qualitative paradigms and, at times, idiosyncratic conceptualisations and measures (Marsh, 1984).

Zetlin and Turner (1985) concluded that most attempts to measure self-concept in adults with mild intellectual disabilities were hampered by using instruments in which the language was too difficult for their subjects to comprehend. In fact, they recommended abandoning using standardised global self-esteem instruments as they did not identify the domains that were of importance to people with intellectual disabilities.

Zetlin et al. (1985) administered the Coopersmith Self Esteem Inventory (SEI) verbally to adults with mild to severe intellectual disabilities. They found that responses were ambiguous and not readily scorable with instances of acquiescence, personal agendas and lack of item comprehension. However, Griffin, Rosenberg, Cheyney and Greenberg (1996) piloted the Coopersmith SEI on a group of people with mild intellectual disability and found that SEI was valid for this population. Whilst this pilot could not in any way be seen as definitive it does demonstrate that verbal people with mild intellectual disabilities can complete self-report measures.

Alternatively, Sternlicht and Deutsch (1972) suggested that for most people with mild intellectual disabilities their conceptualisation of their disability is so emotionally laden that they are incapable of accepting and admitting to their limitations. These authors felt that people with intellectual disability need to protect themselves from negative evaluations. Self-report measures must, therefore, be interpreted with this in mind.

Edgerton (1967) has concluded that attributions of inferiority

were rejected because of a denial mechanism. This early research pointed out that unsuccessful people may become defensive and deny negative statements about themselves and report unrealistically high self-concepts.

An alternative interpretation of the “higher” self-concepts view comes from the work of Edgerton and Sabagh (1962). These investigators used ethnographic methods instead of a normed scale. They reported that labelling and placement in an institution lead to “aggrandizement of the self” for higher-ability individuals with intellectual disability, as they could compare themselves with a lower-ability peer group. Marsh and Shavelson (1985) have utilised standardised self-concept scales and found a similar phenomenon which they have termed the “big-fish-little-pond-effect”. These results are consistent with the social comparison theoretical framework.

Studies Examining Social Comparison and Stigma

Social comparison and stigma seem central to an understanding of how self-concept develops in people with intellectual disability. However, there have been relatively few studies that have assessed these constructs in adults with mild intellectual disability. Two studies that have produced interesting results that relate to integrated placement are those of Jahoda, Markova and Cattermole (1988) and Szivos-Bach (1993).

Jahoda et al. (1988) examined the relationship between stigma and self-concept. In a widely cited study that combined qualitative and quantitative methods, they interviewed 12 adults with mild intellectual disabilities, their mothers and staff members of adult training centres. All participants were aware of the stigma attached to them, although only 3 conceived of themselves as “essentially different” from “nonhandicapped” people. However, the majority of mothers viewed their children as essentially different from “nonhandicapped people”. Participation in recreational activities and level of autonomy were not related to acceptance of a handicapped identity. Jahoda et al. felt that this rejection was not a denial as Edgerton had claimed, but an acknowledgment that they were not less-worthy people.

Szivos-Bach (1993) used a modification of the Coopersmith SEI to assess social comparisons. Her findings supported Goffman’s hierarchies of stigma, i.e. the tendency of a member of a disadvantaged group to derogate a more disadvantaged member of that group. The students with the greatest awareness of stigma had the lowest self-esteem and also felt themselves to be the most negatively different from others. They were also much more likely to express negative attitudes towards people with intellectual disabilities. However, the stigma/social comparison questionnaire she used did not discriminate between the type of placement of her students. None of her students were fully integrated. She found overall that stigma, social comparison and self-esteem interact, but the way that stigma and social comparison interact in different settings seems to be quite complex. For example, students in the segregated setting did not like to be compared with other students from their group, but students also felt isolated and different in the integrated setting. Szivos-Bach (1993) concluded that instead of increasing or decreasing stigmatisation and, concomitantly, self-esteem,

different settings and different social comparison groups may just contribute different patterns of stigmatisation via social comparisons.

The research to date does not clearly support one paradigm over another. Stigma and social comparison theory can be used to predict opposing outcomes. Most researchers have thrown doubt on the validity of most studies which have examined self-esteem in adults with mild intellectual disabilities either because of poor instrumentation or alternatively, because of the denial mechanism described by Edgerton. There are questions over the validity of testing using standardised instruments for this population and the results that have been gained do not really tease out the relationship between placement effects. Szivos-Bach’s work has found that new placement may not decrease stigma at all.

Method

Research Context

This research was undertaken in “Aurora Village”, an institution which was a residential service run for men and women with mild intellectual disability. Aurora Village is managed by a major religious charitable organisation and is run on the Christian ethos that all people should be valued as worthwhile human beings. Residents were treated largely with dignity, sympathy and understanding. No residents were ever chastised harshly, no physical punishment, exclusion or supervised time out was tolerated. At the beginning of the project, however, it was still a fairly paternalistic institution where staff and group routines predominated over individual needs.

Participants

The case studies presented here are of two women with mild intellectual disability who are long-term residents of Aurora Village. Allison and Ruby were transferred first to transitional housing (i.e. they were living together in a suburban house close to the village). After these first interviews were completed they moved to living individually in the community. Both of these women have experienced the rejection of society usually precipitated by a crisis that has branded them as needing institutionalisation. In these two cases the crises were an unplanned pregnancy and a psychiatric breakdown. Once institutionalised these women were not moved back into the community for very long periods of time, because of policies that were in place at the time.

Research Questions

What is the nature of the participants’ self-concept? How was it developed?

Have participants developed coping strategies that are consistent with their self-images?

What is the nature of the coping strategies participants have used in the past and have these changed now that they have moved to the community?

Procedure

Qualitative data were gathered using a semi-structured interview schedule with the emphasis on the participants' perspectives. Interviews were held in the participants' homes.

Informed consent was obtained from each participant prior to the interview and assurance given of confidentiality. Interviews were audio-taped with the participants' permission and transcribed in full. The researcher made reflective memos and recorded observations directly following each interview.

A modified life history approach was used. The sequence of questions was not fixed and interviewers were encouraged to explore each issue fully, rephrasing questions as necessary to allow participants further opportunities to communicate and clarify their meanings. A generous amount of time was allowed for participants to respond to probes. The interviews averaged one and a half hours in length.

A variety of closed and open questions covered demographic information, vocational, family and social histories. Questions moved from factual information to interpretations by the participants' of their work, family and social lives. Attempts were made to build a complete picture of each individual and data were crosschecked with staff and records when necessary.

Data Analysis

The analysis of the interviews was intended to analyse and explore the participants' experiences from their own perspectives. The techniques used to analyse the first interview transcripts included common methods used in qualitative research, such as coding, categories and memo writing.

Case Study: Allison

Allison is the most capable of all of the residents in the village. She is one of the few residents with suable literacy and numeracy skills. She also was the most accomplished in terms of daily living skills. She was the acknowledged 'Queen Bee' of the Village before she moved to the community-based transitional house.

Physical Description

Allison is a large but pleasant, outgoing, occasionally overpowering, and active 57 year old woman. She always has a smile on her face. She is literate: she is the most literate client of this institution. Given that she had very little schooling, she is probably only in the borderline range of mild intellectual disability and suffers more from environmental deprivation, than an underlying cognitive disability. She feels lucky that she can read and write. She can carry on a reasonable discourse, appreciates jokes and is very sociable and quite confident.

Background History

Allison was born illegitimate and was given up by her mother for adoption. She was not adopted and she spent her childhood and adolescence in many foster homes.

I had so many foster homes I don't know anyone except my foster brother who lives out here somewhere. The only person I can remember is his mother.

Crisis Which Led to Institutionalisation

In one of the foster homes Allison was treated so badly that she suffered a nervous breakdown at 18 and was admitted to a psychiatric hospital for 11 years. She was moved to another psychiatric hospital for 5 years until 1972. Allison, then on the pension, lived in a series of boarding houses but had some difficulty with living skills, particularly budgeting. She used to put things on credit. The next major occurrence in her life was forming a friendship with 'Jeanette'. Jeanette is a member of a church organisation but the friendship she has with Allison is reciprocal and is one of the major emotional supports of Allison's life. Jeanette no longer lives near Allison but she stays in regular contact with her and takes her on family holidays. Allison has also re-established contact with her natural mother, and she now feels that she has some family identity.

Then I got the Salvation Army to help me find her and then I felt really good. I often wondered if I had relations.

Institutionalised Life: Analysis

In 1980, Allison came to live at Aurora Village because of her difficulties with money and the need for emotional support. She quickly established herself there as the 'Queen Bee' and was quite capable of overwhelming the other residents because of her abilities and strong, cheerful, personality. She is the only one of the two people described in these case studies who has a positive self-esteem as determined by workers and standardised tests. She accepts her disability and has integrated it into her personality. Allison has a very strong positive self-image and copes using strategies that minimise her handicap. She has integrated her diagnosis of intellectual disability and emotional difficulties into her self-image and has no need to deny it. In fact, she used it for strategic defensive purposes when necessary. For example, she would often secure discounts and free admission to social events on the basis of her disability.

Community Living: Analysis

Allison has been living in the community for 3 years now. She lives and cares for herself completely independently. She has formed a strong alliance with Ruby and they spend most days together. Allison has made friends through community contacts and she has now been taken off all mood control medication. She and Ruby have joined a new church and are enjoying very much being part of the fellowship. They both have a new interest: they are very enthusiastic supporters of a football club. Allison is now living the life of a 'normal' senior citizen in the community. Her literate abilities, her high self-

esteem and her good social skills have all combined to make her independent and successful in the community.

Case Study: Ruby

Ruby is also a very verbal and capable person but she has been institutionalised since early adulthood because she had a baby, which was subsequently adopted.

Physical Description

The only word that can be used to describe Ruby, who is 58, is round. She is short and very round. Her face is large and round and her eyes are bright blue and round. She talks in a loud harsh voice but she can talk quite coherently. She can understand questions that are directed to her and she has no difficulty formulating long replies. These replies are very factual and they consist of a lot of dates and descriptions of family events and illnesses.

Ruby is not considered to be a nice person by the other residents or the staff. She has in the past lost her temper easily and also she has been considered lazy, selfish and unmotivated to improve herself. She is not considered to be caring enough about her personal appearance by her personal care worker and it seems to reflect a lack of esteem and 'don't care attitude'. In fact she has told the staff in the past: "I don't care about anything".

Background History

Ruby was born at Tenterfield, New South Wales and is an only child. Her father died in a prisoner of war camp in Japan and her mother died from a heart attack when Ruby was 20. She then lived with her uncle and aunt, cared for her grandmother and worked in the Tenterfield hotel.

Ruby's family have kept in touch with her and occasionally she visits them for holidays. Ruby is literate but she doesn't choose to read as a leisure activity. She found school hard and didn't enjoy it because the lessons were too difficult. She did not remember school with any fondness and was intimidated by the other children.

Crisis Which Led to Institutionalisation

In 1962 Ruby gave birth to a son who was adopted. After this Ruby came into institutionalised care. The son is now over 30 years old and made contact with management but he refused to meet Ruby when he discovered that she was institutionalised and intellectually impaired. Ruby told me she howled and howled. She thought she could have looked after the baby. She wanted to keep him but 'aunt' and 'uncle' would not let her.

Institutionalised Life: Analysis

Ruby's institutional life has been unremarkable but she has developed a coping technique that Zetlin and Turner (1984) would describe as tactical dependency - they are spectators and

generally have a poor self-image as they do not try to convince others of their competence in case the support they need is withdrawn. She is open about her handicap, and seeks out benefactors in staff. Ruby has always relied on others to make major life decisions and does not really try to exhibit control over many aspects of her life. She was given no choice in her future after the baby's adoption and has been in care ever since. She said:

I was made pregnant... (They) said I didn't have to stay (at the institution) but where could I go?

She enjoys individual attention from the staff and in the past has sought out benefactors from them. She is keen to discuss her personal situation. She accepts staff feedback about her need to change her spending and eating habits readily but it does not seem to result in any change of behaviour. The staff feel that she has limited insight particularly into the controlling effect food has on her behaviour. However, they seem unaware that this is part of her coping strategy. She also has the same pattern with money. She spends it as soon as she gets it and on food that the staff disapprove of and have to talk to her about repeatedly. Ruby spends her money on lollies, ice-creams and soft drinks and finds it impossible to budget. She often has to borrow money from Allison because she runs out before next pension day.

She does not mix well with the other residents. She does not handle frustration well, and is easily upset. Ruby will often lose her temper and starts arguments herself again ensuring that the staff have to pay her more attention. Her personal care worker feels that she does not get along with any of the residents. They, of course, cannot meet any of her needs for attention and care.

The other major organising feature of Ruby's life is her hypochondriacal behaviour, which is also part of her tactical dependency. She constantly complains of not being well. Her relatives' and her own medical conditions and appointments are her prime areas of interest and conversation. Ruby suffers from the sick identity often found in people with intellectual disability.

In her interview, Ruby constantly referred to illnesses and funerals. She recounted illnesses at different times as her most significant experiences. She finished the interview with a long discussion of her gall bladder operation and wanted to show me the scars. She also recounted how she felt about her mother's death.

I had terrible trouble with Mum. She dropped dead of a heart attack when I was 20. I missed out on her watch. I was working at the time as a cleaner at Tenterfield hospital.

Whilst Ruby was in care she would call her personal care worker after hours complaining of asthma and colds. An occasion which I witnessed, Ruby was admitted to hospital for bronchitis and she asked the Nursing Unit Manager to leave the Vicks Vapour Rub on her bedside table. When she was unsupervised she proceeded to eat it and burn her oesophagus thereby extending her need to stay in hospital and confirming to herself and to her personal care worker that she was very ill.

After the move to transitional housing Ruby has developed a close, though sometimes fiery relationship with Allison (the 'Queen Bee') and between them they manage household tasks with some supervision. Ruby has started to assume control of her eating, her coughing has decreased and she has started to

save as well. Her technique for this was to ask Allison to save for her. She has had to let Allison care for her money on a week to week basis because she is incapable of keeping any money in her purse for a long time. She also has a lot of difficulty keeping her personal bank book without withdrawing the money to spend on food. She now sees her aim in life as:

Supporting Allison (and feels that) the best part of my life has been move to live with Allison.

Community Life: Analysis

The major organising feature of Ruby's life is now her friendship with Allison. She sees Allison as her best friend and her teacher, perhaps even as a surrogate mother figure. In the community, she has replaced one type of tactical dependency for another. That is, she has replaced the sick role and dependence on staff with dependency on Allison. She did not give up the sick role easily. She had to be warned by the ambulance service for making unnecessary nuisance calls.

Ruby has now been living in her own unit in the community for three years. She and Allison have established a life style that is not bounded to an identity as a person with an intellectual disability. They are extremely social, they are constantly busy, they have made real friends and they are looking after others around them. They are not dependent on their personal care worker for anything and they are now only on a monitoring case-list (i.e. they are only visited if they request assistance), or if any difficulties arise.

Ruby's self-esteem has definitely improved since her move to the community (backed up by standardised testing). This observation has been confirmed by her and her personal care worker. She is still totally dependent on Allison's emotional and practical support for her to maintain herself in the community but Ruby no longer has a need to be dependent on staff for attention. More importantly, she and Allison have a good quality of life. They are no longer dependent on the charitable organisation for protection or social support and they have not needed any interventions.

Even though Ruby is using the same coping strategies she has used all of her life (i.e. tactical dependency), the move to the community has definitely increased her self-esteem. The stigma of institutionalisation is over for Ruby. She has become more giving and has been able to offer assistance to older people living in her community.

Conclusions

These women have experienced very different family backgrounds and have different histories of institutionalisation. However, they have both been separated from society for long periods of time, suffered from segregation and isolation from normal contexts. Their lives have been lived mainly in structured and ordered contexts. They have been isolated from unstructured contexts where they would have to discover and negotiate the rules of social behaviour.

These women have a limited idea of conventional desirable lives. They have lived the vast majority of their lives at Aurora Village. Allison has moved from one institution to another including state psychiatric hospitals.

The core of their social experience has been limited to their families, their special schools and their institutionalisation following on from the crises in their lives. They have experienced rather restricted environments made of prohibitions promoting an attitude of dependence on others. Learning opportunities have been severely limited because of over-protection. They have had very limited access to general rules and norms of behaviour. They have had minimal real autonomy. They have never really been exposed to situations in which they could learn the normal social rules or at least learn how to deal with a variety of social behaviours and norms.

They have been involved in networks such as daily contact with paid carers that are not normally encountered. The content of their social interactions has been impoverished. Most of their interactions have been with people with intellectual disability or with paid carers and family members. They have all been socially deprived because of the control of their life's experiences by others. They have had few significant relationships outside of institutions and they all have small and socially isolated social networks. Hence, secondary socialisation outside of these contexts has been denied to them. Given this, it is easy to understand their lack of social competencies and depressed self-image, at the beginning of this research.

Only one of these people (Allison) had a positive self-image before the move to independent living. However, after the move Ruby definitely expressed more positive feelings about herself. Ruby had also stopped using the downward comparisons (that is, bolstering her own self-esteem by unfavourable views of others of the same group) which had made her so unpopular in the village. These findings suggest that once the stigma of institutionalisation was removed their self-image improved. This lends greater support to Goffman's stigma paradigm rather than social comparison theory. However, it is probably too much to claim that the stigma has been totally removed. Other factors could have had an equally strong influence such as living independently in the community context and the formation of friendships.

The coping strategies that the participants had employed to deal with their attribution of disability were quite diverse. These coping strategies had allowed the women to establish some image of their own identity. As outlined by Zetlin and Turner (1984) they were then able to convert these coping strategies into reasonable adaptations in the community. For example, Ruby is still a tactical dependent but this dependency is now based on a genuine friendship. Thus they could both be seen as having made successful adaptations, but they have made adaptations that were different and coherent with their previously internalised self-image. This suggests that there is a relationship between the social coping strategies of deinstitutionalised adults with mild intellectual disabilities, as suggested by Zetlin and Turner (1984) and the development of consistent self-images. People with strong

self-images such as Allison choose to cope by means of strategies that have allowed her to minimise the effects of the handicap. She has integrated her disability more or less comfortably into her self-image and therefore has no need to deny it. Ruby has coped by acknowledging her disability and enlisting the support of powerful others to achieve her goals. She is still using tactical dependency but it is employed now in more positive ways. These adaptive strategies are more than just momentary responses. They reflect the person's pre-existing internalised self-image and since the move to the community they have enhanced that self-image by facilitating social interactions and gaining independence.

The nature of these women's self-concept was negative because of a history of control, deprivation and enforced dependency. Each one of these people had developed an internalised self-image that was coherent with their understandings about their life histories. They were using different coping strategies to protect these self-images in different ways. All of the women, after the move to the community, employed the same coping strategies in the new context. However, their self-esteem was definitely enhanced by the move to the community, perhaps lending more support to Goffman's theory of Stigma rather than Social Comparison Theory.

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Representations of Self and of Self-with-Other Relating to Academic Self-Concept

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Using a view of the self as a hierarchically organised set of multiple interrelated selves, this study will investigate possible links between mental representations of self and of self-with-other and overall evaluations of academic self-concept. Self-perceptions of general academic skills and abilities will be measured using the General Academic scale of the Self Description Questionnaire III. Using interviews and a specially designed computer-interactive task, undergraduate students' mental representations of self in the context of student ('self as student') will be measured, as well as mental representations of interactions associated with the relationship functions of information seeking and information exchange ('self asking for help with studies', 'self discussing studies with others'). Through Hierarchical Class Analysis, the elaboration of these selves within the overall self-structure will be analysed, with the aim of investigating the extent to which these mental representations contribute to overall evaluations of the self.

Self-concept is a widely studied area of research in the social sciences, and a positive self-concept is viewed as a desirable outcome by all disciplines within psychology (Marsh & Hattie, 1996). However, the study of self-concept has been hindered by the failure of researchers to provide a theoretical definition of what they are measuring, because 'everybody knows what it is' (Marsh & Hattie, 1996, p. 56). In the past this led to the use of poor measurement tools which were not based on any particular theoretical model of self-concept (Hattie & Marsh, 1996), and which focused on the investigation of a unitary or 'global' self-concept. Shavelson, Hubner, and Stanton (1976) addressed these critical shortcomings in self-concept research by developing a definition of self-concept based on pre-existing definitions. Shavelson et al. (1976, p. 411) broadly defined self-concept as "...a person's perception of himself (sic)", based on experience with and interpretation of his or her environment. From this perspective, self-concept is a hypothetical construct that is useful for explaining and predicting how an individual behaves. It is viewed as both an outcome and a mediating variable that is useful for explaining other outcomes. Shavelson et al. (1976) identified seven features critical to defining the self-concept construct. They proposed that self-concept is organised/structured in that individuals categorise the large amount of information they have about themselves, and then relate these categories to one another. A second feature of self-concept is that it is multifaceted and hierarchical, with experiences in particular situations at the base of the hierarchy and general self-concept at the apex. Shavelson et al. (1976) also proposed that general self-concept is *stable*, but that further down the hierarchy self-concept becomes less stable as it becomes more dependent on specific situations. A fourth feature of self-concept is that it is *developmental*, becoming more multifaceted with age. Finally, Shavelson et al. (1976) proposed that there are both evaluative and descriptive aspects to self-concept, and that it can be differentiated from other constructs to which it is theoretically related.

The Shavelson et al. (1976) model of self-concept depicted a multidimensional and hierarchically ordered structure in which global perceptions of self (general self-concept) were at the apex, and actual behaviour at the base. This model posited that, moving from the top to the bottom of the hierarchy, the structure becomes increasingly differentiated. Global self-concept was shown as splitting into the two facets of *academic* and *non-academic* self-

concept, with these two facets in turn dividing into separate and more specific components. Specifically, academic self-concept was split into the school subject-related areas of English, Math, History, and Science. Non-academic self-concept was split into physical, emotional, and social self-concepts, which in turn were divided into sub areas of Peers, Significant Others, Emotional States, Physical Ability, and Physical Appearance. At the base of the hierarchy both academic and non-academic self-concepts were shown to divide further into evaluations of behaviour in specific situations (Shavelson et al., 1976). The Shavelson model was intended to provide a heuristic model of self-concept that might serve as a starting point for further construct validation work in the area. When it was first proposed in 1976 the model had not been empirically tested, and since its formulation a number of studies have addressed issues related to the structure and measurement of self-concept. This work has led to acceptance of the fact that not only is self-concept a multifaceted construct, but that at least one of its domain-specific facets, academic self-concept, is itself multidimensionally structured (Byrne, 1996).

The work of Marsh and colleagues involves the most extensive testing of the multidimensionality of academic self-concept structure, and has led to a revision of the academic portion of the hierarchy contained in the original Shavelson model (Byrne, 1996). In reviewing the original Shavelson et al. (1976) model, and in particular the work of Shavelson and Bolus (1982), Marsh and Shavelson (1985) suggested that the academic facets of self-concept might be further divided into the sub areas of math/science versus English. A reanalysis of research based on the Self Description Questionnaire I (Marsh, 1992a) revealed that math and English self-concepts were almost uncorrelated, which precluded their incorporation into a single higher-order academic self-concept factor as originally proposed by Shavelson et al. (1976). This finding led Marsh and Shavelson (1985) to propose a revised model of self-concept, known as the Marsh/Shavelson model, which posited three second-order factors (non-academic, Verbal/Academic, and Math/Academic) and a third-order general self-concept. Marsh and Shavelson's (1985) final hierarchical model was consistent with Shavelson's assumption that self-concept is hierarchically ordered, but they concluded that the form of this hierarchy was more complicated than previously proposed. Subsequent factor analyses of 12, 266 sets of responses to items comprising the Self Description

Questionnaires (SDQI, Marsh, 1992a; SDQII, 1992b; SDQIII, 1992c) consistently revealed a near zero correlation between math and English self-concepts, confirming the need for two separate higher-order academic factors (Marsh, 1990).

Self-with-Other Unit as a Unit of Analysis

The conceptualisation of self-concept from a social perspective proposes that the individual's sense of identity is formed in the context of a specific social world. From this perspective, self-concept is not viewed as a static, generalised, or average view of the self. Similarly, the concept of 'other' is not an average or generalised view of the other person, but a system of other schemas based on past social experiences. Knowledge of self and other are viewed as interdependent in that what is known about the self is also known about the other, and vice versa. Thus, from this perspective 'self-concept' summarises the idea that individuals have multiple schemas of the self and of other with different members of their social networks (Feiring & Tasker, 1996).

Feiring and Tasker (1996) propose that formation and reformation of the self-concept takes place within interactions with others, and in particular with significant others. Similarly, the concept of 'other' is also constructed and reconstructed through consideration of interactions. An important construct for this conceptualisation of self-concept is the 'self-with-other unit' outlined by Ogilvie and Ashmore (1991). This is a hypothetical construct, defined as a mental representation that includes the set of personal qualities that an individual believes characterises his/herself when with a particular other person (Ogilvie & Ashmore, 1991). Individuals are thought to have distinct self-with-other representations (SWORs) for each relationship, and these representations are influenced by past/current experiences in a particular relationship (Feiring & Tasker, 1996). These mental representations of self-with-other are assumed to serve a variety of functions for the individual; they summarise past experiences, guide present actions, and assist interpretation of the individual's own behaviour and that of others (Ogilvie & Ashmore, 1991). SWORs are believed to guide behaviour in situations that are similar in character. For example, self-with-family-member representations are thought to guide interactions involving attachment and affiliation (Feiring & Tasker, 1996).

Self-with-other representations are thought to differ in key ways: they vary in centrality, or degree of importance; they may be either positive or negative; and they may relate to the past, present, or future. The most distinct difference in SWORs is their centrality; central self-conceptions are usually well elaborated, and are hypothesised to have the strongest influence on information processing and behaviour (Feiring & Tasker, 1996). It is proposed that individuals develop groupings or constellations of SWORs that vary in centrality and evaluative tone, and that these constellations comprise self-concept (Feiring & Tasker, 1996). These constellations of similar SWORs are mentally organised into an overall self-with-other structure, which is hierarchically arranged (Ogilvie & Ashmore, 1991). Feiring and Tasker (1996) propose that SWORs are a conceptual

link between interactions and self-functioning. They have developed a model of self-concept which hypothesises links between interactions, relationships, internal representations of the self, and overall evaluations of the self. The Feiring and Tasker (1996) model contains four components: self/other interactions, self/other relationships, self/other representations, and global self-evaluations. The interactions component refers to interactions which define a particular relationship function, and the relationships component refers to relationships between self and other that are also defined in regard to a specific function. The self/other representations component refers to mental representations that are relevant to the interactions associated with these relationships and the functions they provide. Lastly, the global self-evaluations component refers to the self in relation to a particular relationship function, but not a particular person (Feiring & Tasker, 1996). One question arising from Feiring and Tasker's (1996) model is how to move conceptually from interactions to relationships, and from relationships to self-with-other representations. They suggest that characteristics which have been used to describe relationships should also provide important insights into SWORs. Specifically, relationships vary in their content or function, and may vary in duration or frequency. The frequency of interaction with a specific member of the individual's social network, and thus the frequency with which a particular SWOR is utilised, may vary across time. It is proposed that extended duration of a relationship, combined with high frequency of interaction, may be related to the salience of a particular self-with-other representation (Feiring & Tasker, 1996).

Measurement of Self-With-Other Representations

Ogilvie and Ashmore (1991) have developed a methodology for measuring SWORs that considers the entire network of significant others. Participants are asked to form images of themselves in interaction with family members, close friends, and other important people, and to rate how they experience themselves in the context of each important relationship. This methodology involves a computer-interactive task, using the specially designed Apollo program (Fleming, 1999), which enables information to be gathered about an individual's constructions of self within and across a variety of contexts. Ogilvie and Ashmore's (1991) methodology involves four separate data gathering sessions. Firstly, a face-to-face interview determines each participant's set of important others and personal vocabulary for thinking about others and self-with-others. The second session involves measurement of representations of self and of self-with-other using an interactive computer procedure. In this task, participants rate the extent to which the descriptive words (labelled 'features') obtained in the interview session describe 'self' in particular contexts, as well as the extent to which they describe 'self' when interacting with important others (self and others are labelled 'targets'). The Apollo (Fleming, 1999) program analyses these ratings using Hierarchical Class Analysis (HICLAS), producing a matrix of targets by features. Apollo then generates a diagram of this matrix, which contains a HICLAS-derived structure of a person's representations of self in context and of self-with-important-people. The

organisation of multiple selves within this overall self-structure can then be investigated. In the final session, the results of these multivariate structural analyses are presented to and discussed with participants (Ogilvie & Ashmore, 1991).

Analysis with HICLAS

Hierarchical Class Analysis utilises a set-theoretical model, and is based on a modified Boolean regression technique (Ogilvie & Ashmore, 1991). It has the unique ability to recover the contents of a two-way matrix in that the algorithm alternates between the rows and columns of a targets by descriptors matrix, locating the best fitting row and column classes and their hierarchical relations (Ogilvie & Ashmore, 1991). The matrix generated by HICLAS contains two set-theoretical structures; one represents relations among *targets* (selves and others) that are based on the features the targets do or do not share, while the second represents relations among *features* (descriptive words), classified according to the selves to which they are attributed (Robey, Cohen, & Gara, 1989). HICLAS divides depictions of target and feature structures into bottom classes and superordinate self-classes. A superordinate class is distinguished from a bottom class in that it spans two or more lower level classes, and therefore includes all the features attributed to the lower classes it subsumes. "In this sense, a superordinate self may be described as a more elaborated version of self than a lower level self" (Robey et al., 1989, p. 437). HICLAS also provides an index of the goodness-of-fit between the matrix data and the structural model. Goodness-of-fit values range from 0.00 to 1.00, the latter indicating that 100% of the individual's attributions of features to selves are accounted for by the structural model.

HICLAS therefore provides scope for idiographic analyses by recovering individual units from the overall self-structure and locating them within interlocking categories which are convergent and divergent, overlapping and non-overlapping, subset and superset (Ogilvie & Ashmore, 1991). Alternatively, cross-person comparison with HICLAS involves identification of 'shared' properties of self-with-other representational structures. Comparison between individuals using HICLAS involves the cognitive structural construct *elaboration*. This concept refers to the extent to which an overall 'cognitive structure' is organised in a relatively simple versus complex manner, and was identified by Rosenberg and colleagues (Rosenberg, 1988; Rosenberg & Gara, 1985) as a significant aspect of HICLAS structures. These researchers operationalised elaboration as a) the number of clusters of selves and features within the overall self-structure, and b) the percentage of selves/others located in superordinate clusters (Ogilvie & Ashmore, 1991).

The work of Robey and colleagues (1989) provides evidence for the validity of the construct of elaboration, as well a useful illustration of HICLAS. Through measurement of mental representations of self in context, Robey *et al.* (1989) examined the self-structures of three groups of participants: recently hospitalised schizophrenic patients, non-schizophrenic patients recently hospitalised for depression, and individuals with no

diagnosed psychiatric condition. Via a structured interview, an inventory of each person's selves in context was compiled. In a free-response format, each individual was asked to characterise each of these selves with attributes (features), expressed in single words or short phrases. Participants were then asked to consider each self with regard to every feature, answering the following question: "When I am with my mother (a self), do I experience myself as happy (a feature)?" This question was asked for each self for every feature. The individual's self-perceptions were then summarised in a two-way matrix of selves by features.

Analyses of the elaboration of overall self-structures were completed for all three groups of participants. The measure of elaboration of overall self-structure was operationalised as a) the percentage of selves located in superordinate classes; b) the number of classes of selves in the overall structure; and c) the number of feature classes in the overall structure (Robey et al., 1989). Comparison of group means for selves located in superordinate classes revealed that percentages for the schizophrenic group were significantly lower than for both the patient and non-patient comparison groups. The schizophrenic group was also found to have significantly fewer self-classes in their overall structures, but there was no significant variation among the groups concerning the number of feature classes in their overall self-structures. From these results it was concluded that structures representing a multiplicity of selves were less highly elaborated in schizophrenics than in both the non-schizophrenics and the non-psychiatric control group (Robey et al., 1989).

As well as examining the overall self-structure, Robey et al. (1989) investigated the degree of elaboration of self in context, specifically 'self as psychiatric patient'. The measure of elaboration of this identity was operationalised as the number of feature classes associated with this self (Robey et al., 1989). It was hypothesised that this identity serves an adaptive function in schizophrenia, and this hypothesis was tested by correlating the number of feature classes associated with 'self as psychiatric patient' with Global Assessment Scale (GAS) scores for the schizophrenic and the depressed patient groups. In the schizophrenic group it was found that the more elaborated the self, the more functional the patient, which led Robey et al. (1989) to conclude that the incorporation of a patient identity into an individual's self-definition appears to be advantageous.

The Present Study

The present study aims to examine Feiring and Tasker's (1996) proposal that representations of self and of self-with-other are a conceptual link between interactions and self-functioning. Their model of self-concept focuses on links between interactions associated with the relationship function of attachment and overall evaluations of family self-concept, but this model could be equally applied to academic self-concept. Thus the present study investigates possible links between interactions associated with the relationship functions of information seeking/information exchange and overall evaluations of academic self-concept. It is hoped that obtaining descriptive information about the nature of mental representations of self and of self-with-other in academic

contexts will enable investigation of the extent to which these representations contribute to overall evaluations of the self.

Academic self-concept will be measured in the present study using the Self Description Questionnaire (SDQ) III (Marsh, 1992), which conceptualises self-concept as a multifaceted, hierarchically ordered construct. The SDQIII has a strong theoretical basis, assessing the multiple academic dimensions of Math, Verbal, General Academic and Problem Solving self-concept. The most relevant of these to the present study is the General Academic scale, which measures self-perceptions of general academic skills and abilities, and interest in academic subjects in general (Marsh, 1992).

Through measurement of an individual's construction of internal representations of self and of self-with-other in specific contexts, the methodology developed by Ogilvie and Ashmore (1991) operationalises the model of self-concept proposed by Feiring and Tasker (1996). In addition, the methodology used by Robey *et al.* (1989) in their investigation of self-structure in schizophrenia enables assessment of overall self-structure, as well as the degree of elaboration of selves in given contexts. Data will be collected using both these assessment methods, and analysis using Hierarchical Class Analysis (HICLAS) will enable assessment of possible links between these mental representations and overall perceptions of academic self-concept.

The selves in context of interest in the present study are 'self as student', as well as 'self asking for help with studies' and 'self discussing studies with others'. The latter two constitute self-with-other representations of specific interactions associated with the relationship functions of information seeking and information exchange. These three selves will be assessed in terms of their elaboration as a self in context, as well as their elaboration within the overall self-structure. As in the Robey *et al.* (1989) study, elaboration of a self in context is operationalised in the present study as the number of feature classes associated with this self. Elaboration of a self within the overall self-structure is operationalised as the location of the self/other representation in a superordinate class which spans two or more lower level classes. Regarding elaboration of selves in context, it is predicted that the number of feature classes associated with the self representation 'me as a student', and with the self-with-other representations of 'me asking for help with my studies' and 'me discussing my studies with others', will be associated with scores on the General Academic scale of the SDQIII (Marsh, 1992). It is also predicted that location of these selves in superordinate classes within the overall self-structure will be associated with scores on the General Academic scale of the SDQIII.

Method

Participants

Participants will be undergraduate students aged 18 years and over. Student volunteers will be recruited through posters advertising the project on university campuses, and through announcements during lectures and tutorials.

Materials

Data will be collected using questionnaires and interviews, as well as the computer-interactive measurement task devised by Ogilvie and Ashmore (1991).

Demographic Questionnaire

This questionnaire was designed by the researcher for the purposes of this study. It requests information about participants' names, gender, age, and the course of study they are undertaking at University. It also asks participants to provide a self-rating of their academic performance in the past, present, and future.

Self Description Questionnaire III (SDQIII)

Marsh's (1992) SDQIII is a 136 item self-report measure of self-concept, designed for use by late adolescents and adults. The scale can be administered individually or in groups, and is designed to be self-explanatory, making it ideal for administration through the mail. The SDQIII assesses four areas of academic self-concept (*Math, Verbal, General Academic, and Problem Solving*) and eight areas of non-academic self-concept (*Physical ability, Physical Appearance, Opposite Sex Peer Relationships, Same Sex Peer Relationships, Honesty/Trustworthiness, Parent Relations, Spiritual Values/Religion, and Emotional Stability*). It also contains a *General Self* scale which measures overall self-concept. The General Academic scale is the most relevant to the present study, as it measures student self-perceptions of their academic skills, academic abilities, and interest in academic subjects in general.

The 13 scales of the SDQIII contain either 10 or 12 items, half of which are negatively worded. Participants are asked to respond to simple declarative sentences such as "I am good looking", "I worry a lot", "I have trouble with most academic subjects" with one of eight responses: 1) *definitely false*, 2) *false*, 3) *mostly false*, 4) *more false than true*, 5) *more true than false*, 6) *mostly true*, 7) *true*, 8) *definitely true*. Raw scores are calculated for the individual sub-scales and for the total scale. Theoretical raw scores for sub-scales containing 10 items range from 10 to 80, and from 12 to 96 for sub-scales containing 12 items. The Total Self raw score is the sum of responses to all 136 items, and represents an individual's overall self-concept. Theoretical scores for the Total Self scale range from 136 to 1088. Raw scores may also be converted to normative scores (mid-interval percentile ranks and standard scores). Norms are provided in the test manual based on the responses of 2, 436 Australian participants. High scores on each scale are interpreted to mean that the respondent has a positive self-perspective in that area, whereas low scores indicate a negative self-perspective (Marsh, 1992).

Procedure

In order to reduce the amount of time required from participants, they will be asked to complete the demographic questionnaire and the Self Description Questionnaire III (Marsh, 1992) prior to attending the first interview session.

In preparation for Session 1, participants will also be asked to compile a list of 20 important people who now play a significant role in their life, or who have been significant in the past. Participants will be directed to include parents, relatives, friends, enemies, and other acquaintances who have had a strong influence in positive or negative ways. They will also be asked to identify 5 important roles they are engaged in and 2 projects they are currently undertaking. *Projects* are defined as 'things you are working on', 'things occupying your attention', or 'tasks you have undertaken'. In the unlikely event that participants do not identify 'student' as a prominent role in their lives, this role will be added to their list by the researcher. This list of people, roles and projects comprises the targets to be rated using the computer-interactive procedure in Session 2, and participants will be asked to bring this list to the first interview session.

The purpose of the first interview session is for participants to formulate a list of words from their own vocabularies that they use to describe themselves when engaged in particular roles and projects, and when interacting with others. These descriptors comprise the list of *features* to be used for the computer-interactive rating task in session two. During Session 1 participants will provide information about the important people on their list, including who these people are, their relationship to the participants, and whether these people are important now, or were in the past. Details of roles and projects selected by the participant will also be recorded. The list of descriptive words (features) will be compiled by asking the participant to describe how they perceive themselves to be when with different people on their list. When describing themselves with others, participants will be asked "Does this person make you feel a particular way when you are with him/her?" Participants will also be asked to describe themselves when they are engaged in their chosen roles or projects.

The procedure aims to target self-with-other representations relating to specific interactions associated with the relationship functions of information exchange and information seeking. Therefore, participants will be asked which people in their social networks provide these functions, and to describe specific interactions with these people. Specifically, participants will be asked to describe themselves asking particular people for help with their studies and discussing their studies with a particular person. These 'selves' ("Me asking for help with my studies", "Me discussing my studies") will be included in the list of targets to be rated in the computer-interactive task.

In order to ensure that a wide range of positive and negative terms are included in the participant's list of features words, they will also be asked to describe themselves "As I usually am" (actual self), "Me at my best" (ideal self), and "Me at my worst" (undesired self). It is estimated that Session 1 will take between 60 and 90 minutes to complete. The end result of this session will be a list of features from the participant's own vocabulary, and a list of 32 targets (20 important people, 5 roles, including 'Me as student', 2 projects and 5 target selves (Me at my best/worst/as I usually am, Me asking for help with my studies/discussing my studies with another person). Prior to Session 2, the participant's list of features will be refined

by the researcher with the aim of reducing the total number of descriptors to 45. This will involve deleting duplicate words and synonyms, and ensuring that there is an even distribution of negative and positive words.

In Session 2 participants will rate each of the 32 targets on the 45 features generated in Session 1, using the specially designed computer program Apollo (Fleming, 1999). In the computer-interactive task, participants will be seated in front of a computer in a private room. They will be given instructions on how to interact with the computer, and will complete some practice examples to ensure that they are confident in undertaking the task. The name of a target self/other will appear (in random order) on the computer screen, followed by the list of features generated at Session 1. Participants will be instructed that when the target appearing on screen is the name of a person, their task is to rate *themselves* as they perceive themselves to be (or to have been) when *with* that person. They will be instructed to bring to mind an image, scene, or memory of themselves interacting with the person whose name appears on the screen. All 45 features for the target person will then be judged according to this same scene/image. Participants will be instructed to select "Yes" if the feature describes themselves when with that person, or "No" if the feature is not descriptive of them when they are with that person. When the target appearing on screen is a role, project or self in a particular context, participants will be instructed to create an image of themselves based on the target cue and to rate that image *directly*. For example, if the target on screen is "Me as a student", participants will be instructed to imagine themselves in that role and to directly assess this self in relation to each of the 45 features. Once again, participants will be told to select "Yes" if the feature describes themselves "as a student", or "No" if the feature is not descriptive of themselves in that role.

The estimated time taken to complete the ratings for Session 2 is between 70 and 90 minutes. As participants will be rating 32 targets by 45 features (a total of 1440 ratings), this procedure could be quite repetitive and tiring. To prevent fatigue, participants will be told to take a rest break after 35-40 minutes of the task. They may stretch, take a short walk, or have some refreshments, which will be provided. Once all the ratings of targets and features have been completed, participants will be informed that they may participate in a feedback session if they wish to do so. Data for each participant will then be analysed for each participant using the HICLAS diagram of the matrix of targets by features generated by the Apollo (Fleming, 1999) program. The optional feedback session will aim to provide results from the computer-interactive task in Session 2. This will involve the researcher displaying the diagram of participants' 'selves' generated by the Apollo (Fleming, 1999) program. The structure of this diagram will be explained, and the overall organisation of selves described. This is an open-ended session in which the participant will be invited to interpret the meaning of their particular self-structure. Results from the SDQIII measure will also be given to individual participants if requested.

About the Author

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Cognitive Strategies, Metacognitive Beliefs and Confidence: An Individual Differences Perspective

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Three studies were conducted to examine a link between the self-monitoring component of metacognition and response selection strategies. The relationship between self-monitoring, self-concept, and personality was also investigated. In all studies, participants were administered a newly developed General Knowledge/Reasoning test and asked to rate their confidence in the accuracy of their performance. Initially, two studies were conducted to replicate the categories of response selection strategies as identified by Allwood & Montgomery (1987). In the first study, participants were asked to think aloud while answering the 'General Knowledge/Reasoning' items. In the second study, participants were asked to confirm that the categories identified were appropriate to describe their cognitive processes during test-taking. Three strategies were identified ("knowing the correct answer", "reasoning", and "guessing"). In the third study, participants (N=113) answered a personality questionnaire, a selection of subscales from a general measure of Self-Concept, newly devised Memory and Reasoning competence profiles, and the General Knowledge/Reasoning test. Notable findings indicate a strong relationship between confidence ratings and response selection strategies. The Reasoning competence profile demonstrated good psychometric properties and had a genuine relationship with self-monitoring. It was concluded that to gain a greater understanding of self-monitoring, the link between cognition and various aspects of self-belief should be further explored.

Metacognition

Metacognition refers to "knowing about knowing" (Metcalfe & Shimamura, 1994). Its importance derives from the realization that information processing is a continuous human activity, which always takes place within a context, and thus cannot be exercised without some kind of overall co-ordination of the ingredient processes. There is, therefore, a dynamic interplay between one's understanding of a task, and the assessment of one's own competency.

The emphasis in this paper is on the self-monitoring (SM) component of metacognition, which is frequently regarded as part of a regulative aspect of cognition (Schraw, 1994). In a similar vein, Nelson and Narens (1992, 1994) regard SM as a bi-directional process that informs the "meta-level" about an "object-level". SM refers to an ability to watch, check and appraise or judge the quality of one's own cognitive work in the course of doing it (Schraw & Moshman, 1995). The focus herein is on cognitive activity that takes place as a person is working through a series of psychological test items.

Effective SM is recognized as an essential component for successful learning (Flavell, 1977), since it can guide the choice of strategies and their successful alterations during the course of learning. Effective test-taking also depends on accurate SM along with the skill to select correct responses to the questions (Schraw, 1997). In general, there seems to be an agreement that the selection skills depend largely on a presence of the relevant content knowledge and intellectual abilities (Schraw, 1997; Stanovich & West, 1999). However, there is little agreement on the factors that affect SM skills (Pallier, Wilkinson, Danthiir, Kleitman, Knezevic, Stankov, & Roberts, 2000; Stankov, 1999).

An empirical review of SM Confidence

The efficacy of the SM trait is assessed with the confidence score (see Keren, 1991; and Stankov & Crawford, 1996 for review). Immediately after responding to each multiple-choice item in a battery of tests, participants are asked to give a confidence rating indicating how sure they are that the chosen answer is correct. Confidence is usually expressed in terms of percentages. The starting point (i.e. the lowest) on a confidence rating scale usually depends on the number of alternatives (k) given to a question (i.e. 100/k). Thus, there are different starting points for questions with 2- and 5- alternative answers (50% and 20% respectively) on the confidence scale. The confidence ratings for each test item are averaged to give an overall confidence score for each test as a whole.

Bias

To assess the realism of confidence ratings (i.e. metacognitive accuracy), a bias score is often calculated by subtracting the percentage of correctly solved items (Accuracy) from the Confidence score (Av. Conf) (for review see Stankov, 1998; Stankov & Crawford, 1996, 1997). That is: Bias score = Av. Conf – Accuracy. If the average of confidence ratings is greater than the percentage of correctly solved items (i.e. a positive sign of difference), the task is said to show over-confidence bias. Conversely, a negative sign of difference indicates under-confidence bias. Confidence judgments are considered more realistic (i.e. better calibrated) as the bias score approaches zero.

Miscalibration

By and large, research does not report perfect calibration of accuracy and confidence (see Keren 1991 for a review). Interestingly, tasks tapping different cognitive domains tend

to produce different bias scores. Vocabulary and general knowledge tasks (the cognitive markers of Gc) often show over-confidence (Crawford & Stankov, 1996; Juslin, 1994; Kleitman & Stankov, 2000; Pallier et al., 2000; Stankov, 1998; Stankov & Crawford, 1996, 1997). In contrast, reasoning tasks (the markers of Gf) tend to show reasonably good calibration reflected by a bias score that is close to zero.

Confidence Trait

There is a considerable amount of empirical evidence showing consistent individual differences in confidence ratings. People who are over-confident on one task tend to be over-confident across other tasks as well (Kleitman & Stankov, 2000; Pallier et al., 2000; Schraw et al., 1995; Stankov, 1998; Stankov & Crawford, 1996, 1997). These studies suggest that correlations between confidence ratings from different cognitive tests are high enough to define a Confidence factor¹. The robustness of this Confidence factor is also supported by its high reliability (Chronbach's alpha coefficients are around and above 0.90).

Theoretical Debates

The area of SM has generated a number of heated debates in the literature. Some are concerned with normative models of SM (i.e. Bayesian and Relative Frequencies probabilistic models), others with the basic nature of the construct (i.e. the philosophy, psychology, neuropsychology and mathematics of the construct). There is also contention about the structure and the generality of the SM construct (i.e. the hierarchy of the different components, domain specificity vs domain independence), and causal factors that might lead to the miscalibration phenomenon. Last, but not least, there is disagreement regarding the variables and psychological constructs that affect SM. This paper is intended to shed some light on the latter debates, while providing some indirect evidence for the generality of the SM construct, and the factors that appear to affect miscalibration.

Relationship with other Constructs

A Confidence trait seems to emerge across a range of disparate cognitive tests (Kleitman & Stankov, 2000; Stankov, 1998, 1999; Stankov & Crawford, 1996, 1997). There are a number of constructs that are considered to be of interest in relation to SM. Namely, intelligence (Stankov, Stanovich), cognitive processes involved in test-taking activities (Allwood; Tversky), personality factors (Stankov; Roberts), and various aspects of self-concept (SC) (Schraw; Stankov). Despite extensive research, there only limited findings available on what variables affect SM.

Personality

There are statistically significant, but very modest, associations (reported correlation coefficients are usually less than 0.20) between Confidence and Openness; and Confidence and Extraversion (for more details see Pallier et al. 2000).

Intelligence/Accuracy

Although SM is argued to be an important construct for intellectual performance, the Confidence factor does not seem to be mediated by the Accuracy of performance on different cognitive tests. In a number of studies it has been reported that the relationships between confidence judgments given when undertaking different cognitive tests are reliably higher than the relationship between relevant accuracy scores. Furthermore, the relationship between confidence scores remains strong and significant when accuracy is partialled out (Crawford & Stankov, 1996; Kleitman & Stankov, 1998)

Cognitive Processes

Another area of investigation has attempted to link Confidence to cognitive processes involved in test-taking activities (Allwood & Montgomery, 1987; Rellinger, Borkowski, Turner, & Hale, 1995). Establishing a reliable link between these two domains is considered by some researchers to be essential for future development of metacognitive theory (Rellinger et al., 1995). Although the relationship between metacognitive knowledge and recall accuracy (Schneider, 1985), and between SM and reported response selection strategy (Allwood & Montgomery, 1987) has been investigated, critical aspects of these relationships have largely been neglected. For instance, although Allwood and Montgomery's study (1987) examined measures of reported response strategy, confidence, and performance, their research focus was to investigate the systematic relationship between accuracy and strategy only, as they "partialled" confidence out of this relationship. Thus, Allwood and Montgomery's (1987) study neglected to illustrate how response selection strategies are explicitly related to the SM trait.

While providing important guidance on categorizing cognitive processes involved in test-taking of the General Knowledge tasks, Allwood and Montgomery's (1987) study did not report the psychometric properties of the measures reflecting the strategies employed. The study proposed that four strategies are involved in the response retrieval processes – "Immediate Recognition" (the answer stood out once or suddenly as the correct one); "Inference" (the answer seemed probable due to other things that I thought of); "Intuition" (the answer felt probable, but I didn't have any other support for it), and "Guessing" (neither of the alternatives seemed appreciably more probable than the other). Participants were asked to think aloud while answering 80 two-alternatives multiple-choice General Knowledge questions. The strategies reported by the participants were grouped into the four

¹ The capital C will be used throughout the paper to distinguish between confidence ratings for each item and Confidence trait

general categories described above. In a subsequent study, participants had to indicate which strategy they used while performing the same test. Allwood and Montgomery (1987) concluded that immediate recognition was associated with a higher proportion of correct responses than with the other identified strategies. Confidence ratings were highest for the “Immediate Recognition” strategy, followed by the Confidence on the “Inference”, “Intuition” and “Guessing” strategies.

Self-Concept

There appears to be a potential association between SM and SC. As there is a differential pattern of over- and under-confidence present in General Knowledge/Vocabulary and Reasoning tasks respectively, it has been argued that acknowledging different SCs, as reflected in performance on the relevant tests, might prove helpful in understanding the SM trait (Stankov & Crawford, 1997). A measure that offers comprehensive assessment of Math and Verbal facets of academic self-concept is the Self-Description Questionnaire-II (SDQ-II) (Marsh, 1990), recently employed by Stankov and Crawford (1997). However, similar to the reported findings with personality dimensions, this supposition had only limited support: English SC was found to share a low correlation with Confidence rating measures on a vocabulary test. This result was analogous to that obtained for Mathematic SC and Raven’s Progressive Matrices score (Stankov & Crawford, 1997).

In light of Allwood and Montgomery’s studies (1987), it appears reasonable to assume that if people rely on different response strategies to solve different cognitive tasks, than perhaps assessing a person’s perceptions of him or herself in relation to the relevant cognitive processes involved might enhance our understanding of the SM trait.

To investigate this, a new questionnaire was developed by the authors according to the model of SC outlined by Marsh and his colleagues (Marsh, 1986, 1987; Marsh, Byrne & Shavelson, 1992; Marsh & Craven, 1997; Marsh & Shavelson, 1985). Marsh and Shavelson (1985), broadly define SC as a person’s perceptions of him or herself. These perceptions are formed through experience with and interpretations of one’s environment. They are especially influenced by evaluations by significant others, reinforcements, and attributions for one’s behaviours’ (p. 107). According to this model, SC has both descriptive (“I am depressed”) and evaluative (“I do well in Mathematics”) dimensions.

The questionnaire incorporated the Internal/External (E/I) Frame of Reference Model suggested by Marsh (Marsh, 1986, 1987; Marsh et al., 1992). The I/E model was designed to explain why verbal and math SCs are so distinct, as they are formed in relation to both external and internal comparisons, or frames of reference. According to the external comparisons principle, the development of SC is influenced by the process of social comparison. A person compares his/her ability in math and reading with the perceived ability of other students in these areas. According to the internal comparisons principle, a person also compares

self-perceived ability in math with his/her self-perceived ability in English.

Hence, the items that comprise the Memory and Reasoning Competence profiles were both evaluative (“I think I have a good memory”) and descriptive (“In an exam situation, if I *don’t* remember an answer to a question, I could still get it right if I reason”). The items also reinforced the External (“I can remember more material than the average person”) and Internal (“Compared to my other cognitive abilities (ie., attention, reasoning, etc), my memory is good”) comparisons. The new questionnaire consisted of 18 items, nine items per profile. Items were intermixed, and the order of their presentation was randomised. The respondent had to rate their opinion using a 5-point Likert scale ranging from Strongly Disagree to Strongly Agree.

The expectations were that people who have higher beliefs in their reasoning (or inference) and memory abilities would have higher Confidence ratings, compared to those people with low beliefs. Hence, it was postulated that the overall level of memory and reasoning competence would be associated with the overall level of Confidence.

This Paper

This paper presents the results of three studies that examine a link between the SM component of metacognition and categories of cognitive processes employed during test-taking. Our focus is on the relationship between the response strategy used to solve a cognitive task and a Confidence trait. A second intention of the study is to investigate a relation between SM and Memory and Reasoning profiles - possible dimensions of SC that might reflect the relevant response selection strategies.

Method

Study One

Participants

The sample for the first study comprised six Third Year Psychology students (two males). Their age ranged from 21 to 36 years (Mean = 28).

Tests

A total of 24 five-alternative multiple-choice items of a General Knowledge/Reasoning test developed by the first author were given to the participants. The questions were designed to elicit four response selection strategies described above. Four General Knowledge and three Vocabulary questions were included to elicit the “immediate recognition” strategy. The items covered content areas such as geography, history and lexical knowledge.

Five questions were designed to elicit the “guessing” response strategy. These items were taken from a number of Encyclopedias. They examined very specific topics such as knowledge of the classification system of rare biological

species (e.g., What do “moray eels”, “*aulopus purpurissatus*” and “*alabes dorsalis*” have in common? 1. They all belong to the osteichthyes class; 2. They all come from the family clupeidae; 3. They all come from the family gobioidae; 4. They all belong to the asteroidea class; 5. They all come from the ascididae family); or knowledge of some exotic mythological facts (e.g., In Melanesian mythology, what is the name of a wild woman, seducer and often slayer of men: 1. Abere; 2. Hoenir; 3. Bariaus; 4. Cardea; 5. Abderus). Thus, topics covered entailed a very specialized knowledge of biology, statistics, history and psychology.

The third category of questions was constructed to elicit reasoning (“inference”) responses. The subject matter of the questions did not contain any information or knowledge content that would be easily accessible from memory. However, hints were built within both the question and the alternatives provided so participants could “reason” in order to find a correct response to the question. The logic behind selection of the “reasoning” items and hints was similar to that of Wason’s Card Selection Task (Wason, 1966). Originally, Wason’s Card Selection Task (Wason, 1966) was viewed as a task of deductive inference, however, it has recently been considered as an example of cognitive search and decision-making (Green & Larking, 1996). Participants are given four cards and an implication rule (e.g. “If a card has a vowel on one side then it has an even number on the other side” or, in terms of logic, “if p, then q”) that applies to the cards. People are told that each card has a number on one side and a letter on the other side. Only one side of each card, however, can be seen. The task is to select the card or cards that would have to be turned over to decide if the rule holds. The cards mirror the four logical cases: A vowel (p), a consonant (not p), an even number (q), and an odd number (not q). The correct answer according to logic is to select p and not q cards, as they are necessary and sufficient to falsify the rule (Platt & Griggs, 1996). For a more extensive review of Wason’s Card Selection Task see Evans (1982), and Platt & Griggs (1996)

Following this logic, to get the correct answer to the “reasoning” questions, participants had to try to disprove the hypothesis they may have generated after reading and interpreting the question (i.e. The term “*dyschronaxis*” is used to denote: 1. A superior ability to judge tactile stimulus; 2. An impaired ability to maintain a line of thought; 3. An enhanced sense of smell; 4. An impaired ability to judge what time it is; 5. An impaired ability to walk). Even though the word “*dyschronaxis*” would be unfamiliar to the vast majority of people, it is possible to infer the correct meaning of this word by employing “lexical” reasoning – to partition the word into two parts – “dys” – meaning impairment and “chronaxis”- meaning time. Hence, the correct answer is (4), An impaired ability to judge what time it is².

There were a number of questions that were intended to generate the “intuition” response strategy. These questions

were similar to those of “reasoning” type, however, they did not have easily recognizable hints built into them (i.e. Which of the following mythological characters belongs to Aboriginal culture? 1. Koopoo; 2. Kojiki; 3. Imana; 4. Danavas; 5. Hymir). The correct answer to this question is 1. Koopoo. Although very few participants were expected to have extensive knowledge of Aboriginal culture, it was considered that articulation of the word might predispose selection of this alternative, and the response strategy used would mirror “intuition” as described above (Allwood & Montgomery, 1987).

Procedure.

Participants were asked to think aloud while answering the questions. They were also asked to provide a short label for each response strategy they reported. The reported strategies were then categorized by two independent raters. The raters identified only three categories that were named using the labels given by the participants. The identified strategies were:

1. “Knowledge” (equivalent “immediate recall”) (“As soon as I saw the question, I knew what the correct answer was, and then I selected it from the alternatives”);
2. “Reasoning” (equivalent to “inference”) (“I didn’t know what the correct answer was, but examined the question and the alternatives provided, and then eliminated some of them that were obviously wrong. Then I chose from the rest of the options the most likely one of being the correct answer” or “I didn’t know what the correct answer was, but after examining the question, I formed an opinion of what the correct answer might be and then selected it from the alternatives provided”);
3. “Guessing” or “No idea” (“I had no idea of what the correct answer might be, so I had to make a random guess among the alternatives provided”).

The fourth response strategy reported by Allwood and Montgomery (1987) – “intuition” - did not come out strongly in the participants’ responses and, hence, was not used in further investigation³.

Testing time was approximately one and a half hours.

Results

The identified response selection strategies that were used in further studies:

1. Memory recall of a correct answer (answer recognition) - “Knowing” (the certainty condition);

² A follow-up study revealed the correlation coefficient of 0.30 between performance on this test and Wason’s Card Selection Task

³ The “intuition” response selection strategy (the answer felt probable, but I didn’t have any other support for it) didn’t hold because when participants were asked to elaborate on this response low level inference processes would become evident. However, the range of the response strategies reported by the participants in this study could have been affected by the General Knowledge/Reasoning task employed in this study.

2. Reasoning towards the answer - “Reasoning” (the partial certainty condition);
3. Guessing – “No idea” (the absolute uncertainty condition).

Study Two

Participants

This study employed six Third Year Psychology students (two males), with a mean age 24.

Procedure

Participants were asked to complete the “General Knowledge/Reasoning” test, rate their Confidence level and select one response strategy out of the three provided next to the question. To indicate which response strategy they used to answer the questions, participants were given two sets with the instructions. The descriptions of the response strategies participants provided during the first pilot study were used to generate these instructions. Following task completion, participants were interviewed to determine if the provided response selection strategies and instructions to the test were adequate to describe the cognitive processes they thought were involved in the test. All six participants agreed on the adequacy of the “response selection strategy” options. Five out of the six preferred the first set of instructions, and these were used in the main study. Total testing time was one hour.

Study three

Participants

This study involved 133 First and Third Year Psychology students (40 males). Mean age was 20.47. Participants were tested in groups of twenty.

Tests

1. NEO-FFI (Costa & Mcrae, 1995): Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C) domains.
2. The “General Knowledge/Reasoning” test comprising 24 (five multiple choice) items described above. Item examples are available on request.
3. The Memory/Reasoning profile questionnaire consisted of 18 items; nine items assessed Memory and nine items assessed Reasoning competences. The items this questionnaire were generated on the basis of the Internal/ External frame of references Marsh (1986). The example of questions are available on request;
4. Five sub-scales from a Neemann and Harter’s (1986) measure of a general SC: Global Self-Worth profile; Intellectual Ability profile
5. Scholastic competence profile; Athletic profile; and Job competence profile (Neemann & Harter, 1986).

Procedure

Participants were asked to complete the questionnaires, followed by the General Knowledge/Reasoning test. For each question in the test, students had to select the answer, rate their Confidence level and indicate the selection strategy they employed to answer the question, as specified in the instructions.

Results

Table 1 summarises the descriptive statistics for the variables used in the study.

Table 1:
Descriptives of Confidence, Accuracy and Bias Scores in General and Across Different Response Selection Strategies.

Variables	N	Mean	Std. Deviation
Confidence	132	49.22	10.19
Accuracy	132	54.02	9.95
Bias	132	-4.80	11.26
Knowing Confidence	129	90.16	11.49
Reasoning Confidence	130	52.70	12.18
No Idea Confidence	131	24.83	5.41
Knowing Accuracy	128	94.79	10.11
Reasoning Accuracy	129	57.77	19.40
No Idea Accuracy	116	31.66	12.60
Bias Knowing	128	-4.55	12.30
Bias Reasoning	129	-5.28	22.52
Bias No Idea	116	-4.94	13.11

Inspection of Table 1 reveals that the percentage of correctly answered questions is only around 50%. However, considering the nature of the test (only 30% of the items were typical General Knowledge questions, with another 30% being the “inference” type, and 40% of the questions being more of the “guessing” nature), this outcome is expected. The overall confidence was slightly lower than accuracy, resulting in a small degree of underconfidence. People’s confidence and accuracy was much higher for the items with “knowing” response selection strategy. Not surprising, the smallest confidence and accuracy was evident for the items with “guessing” response selection strategy, while items with the “reasoning” strategy were in the middle. Bias score did not differ across different response selection strategies.

Both the “guessing” (41.3%) and “reasoning” (36.2%) were the most common response selection strategies employed by the participants. Guessing, however, was used somewhat more often. Again, considering the nature of the test, this result is expected. Table 2 summarizes the reliabilities of the tests used in the main study. The table also provides the correlations between the measures employed in the study. The range of reliabilities (Cronbah’s alpha) for the majority of measures is within an acceptable range (Anastasi & Urbina, 1997). Two personality dimensions, the Openness and the Agreeableness and the Job Competence profile had rather low reliabilities (0.65-0.68). Importantly,

the reliabilities of Confidence trait, and both Memory and Reasoning profiles are high (0.82 & 0.88 respectively), indicating that people were stable across different confidence estimates, and in their beliefs in memory and reasoning competence.

From the pattern of correlations, it seems that once again Openness is the only personality factor that has a significant correlation with Confidence. Intellectual and Scholastic

profiles correlated with both Confidence and Accuracy, while Job profile correlated with Confidence only. Strategies had a moderate correlation with Accuracy and a rather high correlation with Confidence. Importantly, the Reasoning profile had a medium correlation with Confidence, but only a very low (yet still significant) correlation with Accuracy. Memory profile did not show any significant correlation with either Confidence or Accuracy.

Table 2:
Reliabilities of the Measures and Correlations

	α	Conf	Strg	Reas. Prf	Memory Prf	Glob Prf	Schol. Prf	Intel. Prf	Athlet Prf	Job Prf	Neo_O	Neo_E	Neo_A	Neo_C	Neo_N
Accuracy	N/A	0.38	0.27	0.14	0.15	0.04	0.40	0.25	-0.14	0.16	0.04	-0.09	-0.15	0.18	-0.11
Confidence	0.86	1.00	0.67	0.36	0.18	0.14	0.41	0.38	-0.06	0.34	0.26	0.00	-0.12	0.12	-0.10
Strategy	0.76		1.00	0.20	0.17	0.08	0.26	0.26	0.07	0.20	0.21	-0.07	-0.15	0.04	-0.02
Reasoning Prf	0.88			1.00	0.15	0.09	0.36	0.41	0.12	0.31	0.30	0.14	-0.05	0.15	-0.10
Memory Prf	0.82				1.00	0.15	0.28	0.28	0.07	0.14	0.11	0.22	0.10	0.27	-0.10
Global Prf	0.85					1.00	0.36	0.32	0.11	0.40	0.03	0.33	-0.17	0.14	-0.61
Scholastic Prf	0.71						1.00	0.74	-0.03	0.50	0.08	0.05	-0.04	0.13	-0.27
Intel. Prf	0.83							1.00	0.11	0.44	0.22	0.13	-0.01	0.11	-0.26
Athlet Prf	0.80								1.00	0.12	-0.10	0.14	-0.05	-0.04	-0.08
Job Prf	0.68									1.00	0.15	0.20	0.18	0.19	-0.24
Neo_O	0.65										1.00	0.26	-0.15	0.28	0.15
Neo_E	0.80											1.00	0.38	0.31	0.03
Neo_A	0.66												1.00	0.32	-0.04
Neo_C	0.76													1.00	
Neo_N	0.78														1.00

Overall, the Reasoning profile shows a promising pattern of correlations. It has medium correlations with the Scholastic, Intellectual Ability and Job Competency profiles, and the Openness personality dimension (the dimension sometime is referred to as “Intellect”) while its correlation with Memory and Athletic profiles are very low and non-significant, indicating good convergent and discriminant validity of the measure. At the same time, Memory profile somewhat mimics the pattern of correlations of the Reasoning profile with the lower range of correlation coefficients. Interestingly, it has significant correlations not with Openness but with Extraversion and Consciousness dimensions.

Tables 3 and 4 summarize the results of the five blocks hierarchical multiple regression with Confidence as a dependent variable, and Accuracy, Strategy, Reasoning and Memory profiles; Competence profiles, and Personality variables as relevant blocks.

Table 3:
Model Summary.

Model	R	R Square	R Square Adjusted	R Square Change	Sig. F Change
1	.434	.188	.188	.188	0.000
2	.684	.468	.458	.280	0.000
3	.714	.509	.491	.042	0.012
4	.737	.543	.503	.033	0.193
5	.746	.557	.494	.014	0.674

Dependent Variable: Confidence

From Table 3 it appears that Accuracy, Strategy, Memory and Reasoning profiles offer significant contribution in explaining variability in the overall confidence level (i.e. change in R square is significant with $\alpha=0.05$ level). However, neither different self-competence profiles, nor personality variables contributed significantly towards the explanation of the variability of Confidence once Accuracy, Strategy and Reasoning Memory profiles were controlled for. Accuracy and Strategy each explain around 19% and 28% of variance of a general confidence level respectively. Reasoning and Memory profiles added an additional 4.2% to this analysis. These four variables explained roughly an impressive 50% of the variance in the Confidence trait (adjusted R square = 0.49).

Discussion

In line with expectations and previous findings in the literature (Allwood & Montgomery, 1987), there is consistency between confidence ratings and cognitive response strategies people employ to reduce the uncertainty in test-taking situations. That is, confidence for “knowing” strategy was the highest, followed by confidence for a “reasoning” strategy, with “guessing” having the smallest confidence in the performance accuracy. These findings are not surprising considering the effect of level of subjective uncertainty that is associated with each response strategy. That is, immediate answer recognition is associated with the

smallest degree of uncertainty, while not remembering the answer, but being able to infer it from the context is associated with partial uncertainty, and guessing with absolute uncertainty condition.

Table 4:
Coefficients

Coefficients				Correlations		
Model		Beta	Sig.	Zero-order	Partial	Part
1	Accuracy	0.431	0.000	.434	.434	.434
2	Accuracy	0.286	0.000	.434	.353	.275
	Strategy	0.549	0.000	.626	.587	.529
3	Accuracy	0.257	0.455	.434	.330	.245
	Strategy	0.516	0.000	.626	.573	.490
	Reasoning	0.203	0.004	.337	.271	.197
	Memory	0.034	0.627	.185	.047	.033

Table 4 suggests that Accuracy, Strategy and Reasoning profiles are the only three significant predictors of the Confidence trait⁴.

This study provided some important information on the psychometric properties of the strategy selection style of the individual. The reasonably high reliability of this variable suggests that there might be an individual “preference” in employing a particular response selection strategy. However, this aspect needs further investigation.

Also, replicating previous findings, both accuracy and response strategies were important predictors of Confidence. Furthermore, as in previous research, neither personality measures, nor usual SC measures that assess general beliefs about general Self-Worth or general beliefs for more specific areas such as Intellectual Ability, Scholastic, Job or Athletic domains, were predictive of the general level of confidence.

In contrast with previous findings, the Reasoning SC measure employed in this study revealed a genuine relationship with the general confidence level, even after controlling for accuracy, and strategies. From these findings it seems reasonable to suggest that it may be self-beliefs that reflect basic cognitive processes people employed during test-taking behaviour that is what really matters for the SM trait. In particular, personal belief in reasoning abilities seems to be the important mediator of confidence ratings.

By itself, the Reasoning competence profile seems to have good psychometric properties such as high reliability, good discriminant and convergent validities and, although more investigations are needed, this construct seems to be promising, at least for understanding the general confidence level during test-taking activities.

Some established SC constructs and their measures like Academic SCs (Marsh, 1990) (i.e. Math and Verbal Scales), and Intelligence, Scholastic and Job Competencies profiles

(Neemann & Harter, 1986) also might be important for the general level of Confidence, however, they seem to lose their predictive power once they are controlled for the accuracy of performance.

In conclusion, to understand SM, a link between cognition and different aspects of self-beliefs should be studied. The research should include well-established measures, as well as new measures that reflect cognitive processes involved in test-taking behaviour, specifically self-beliefs in reasoning competence.

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⁴ Please note that other multiple regression models were also tested, however, despite the order in a model, only these three variables were consistent significant predictors of the Confidence trait. The relevant statistics are available on request.

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A Study of Self-Enhancement Biases in Social Evaluations in Hong Kong

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This study investigated the relation between self-evaluations, appraisals of others and as subjects' same-sex best friend for Hong Kong Chinese people. Subjects rated 15 positive and 15 negative valenced trait adjectives according to how well the traits described the self, others and their best friends. Chinese individuals displayed a pronounced "self-others" bias as well as "others-same-sex best friend" bias, such that positive attributes were rated more descriptive of self than of others, also of friends than of others, whereas negative attributes were rated as less descriptive of self than of others, of best friends than of others. In contrast to C.R. Rogers' assertion that high self-esteem was associated with a comparable regard for others, the tendency for Chinese individuals to evaluate the self in more favourable terms than they evaluated people in general was pronounced among those with high self-esteem as well as those with low self-esteem. However, self-evaluations were more favourable than were evaluations of a same-sex best friend was not found in this study. Besides, the tendency for those high self-esteem individuals to appraise themselves and their friends more favourably than they assessed most other people was not restricted to only those individuals showing a high need for social approval. In summary, the "self-enhancement" bias in social evaluation was also prominent in Hong Kong Chinese people.

Introduction

Pioneers in researches on self (Cooley, 1902, James, 1910, Mead, 1934) all recognized that self is a socially constituted construct. These theorists posited that personal identity was dependent on social world and through comparison with others (Festinger, 1954) that self-appraisals could be evolved. The adoption of this relativistic aspect can be made compatible to various social psychological theories like Relative Deprivation theory, Reference Group Theory, Social Comparison Theory and Social Identity Theory. There are many researches that give support of the situation that self-esteem is established by a temporary conception that one is superior than others. The consideration that most people seek actively to maintain a positive self-conception (Campbell, 1984 ; Kaplan, 1975; Rosenberg, 1979) may imply that people usually appraise themselves in more favourable terms than they appraise others. Assuming that the perception that one is better than others may enhance feeling of self-worth there is further argument that self-enhancing "self-others bias" will be more characteristics of high self-esteem people than those of low self-esteem. The first argument that individuals maintain a self-others bias is when making comparison with most other people can be supported by many evidences. However, this tendency is more characteristic of those high self-esteem people will still be unresolved. Therefore whether high self-esteem individuals will be more prone to demonstrate the self-others bias is still a puzzle.

C.R. Rogers (1951) and Fromm (1947) had claimed that high self-regard individuals are more likely to have higher regards for others' while people with negative self-attitudes will derogate others in order to soothe their inadequacy feelings. This view suggests that the tendency to evaluate others less positively than the self will be prevalent among low self-esteem individuals.

The inclusion of evaluations of friends have some interesting implications. Will individuals possess themselves more positively than they appraise their friends? Taylor and Koivunmaki (1976) had postulated that "self-others" bias would be attenuated when a personal friend replaced the

position of others. Tesser and Campbell (1983) have shown that a close friend will support self-esteem. However, there is no consistent conclusion of the "self-friend" bias. Hence, a "self-friend" bias is still unclear and remains to be resolved.

Along the line of thinking of the above discussion, another interesting question arises whether individuals evaluate their friends more favourable than they evaluate most other people. Brewer (1979) and Brewer & Kramer (1985) have provided evidence of the ingroup-outgroup bias indicating that members of a particular social group evaluate ingroup members more favourable than outgroup members. So there is reasonable belief that this tendency make itself in better ratings for one's friends than for others. It is also speculated that this trend will be more prevalent among high self-esteem peoples. James (1910) and Heider (1958) all recognized that self-attitudes extend to others once the formation of personal relationship between self and others has been firmly established. Through close association with significant others, feelings of self-worth may also be aggrandized in believing one's friends would be better than most other people. So it is likely that matching to the strong self-others bias exhibited by high self-esteem people, they will also tend to over-assess their friends relative to the other people

Objectives of Study

In order to examine further the nature of relation between self-attitudes and appraisals of others, the present study is designed to examine the notion that positive self-attitudes are accompanied by a corresponding positive attitudes towards the others, as posited by Rogers (1951). Numerous theorists posited that not all individuals scoring high on self-esteem inventories are indeed "truly" high in self-esteem (Schneider and Turkat, 1975; Wylie, 1979). In this perspective, they argued that high scores on self-esteem scale may indicate either a positive self-conception or a need or motive to present the self in socially desirable way. Whereas people with "defensive" high self-esteem (i.e. high self-esteem with high need for social approval) demonstrate the largest difference between evaluation of self and the people

in general; individuals with “genuine” high self esteem (i.e. high self-esteem with low need for social approval) exhibit the greatest congruence between self-evaluation and appraisals of others. In this argument, the position held by Rogers will be restored. Therefore in order to explore the connection among self-esteem, need for approval and social evaluations, the present investigation suggests means of assessing an individual’s tendency to present the self in a social desirable manner.

The present research also aims to further clarify the relation between self-esteem and evaluations of friends. There is possibility that high-self-esteem persons may choose a more distant, less intimate object and this plausible confound may explain why high-self-esteem persons judge their friends more positively than do low self-esteem persons. Hence, subjects are explicitly instructed to appraise their “Same-sex best friend”, in addition to rating self and most other people in order to resolve this problem.

There are a number of null hypotheses set up for the present study : (1) There is no difference in self-evaluation and evaluation-of-others for both high and low self-esteem people. (2) There is no difference in evaluation-of-others and evaluation-of-same-sex best friend for both high and low self-esteem people (3) There is no “self-other” bias for both “defensive” high self-esteem people and “genuine” high self-esteem people.

Method of Study

54 subjects were chosen from one Tertiary Institute. They were full time students and their academic achievements was post AS level. They were quite smart students and their English standard was good. Therefore there was no doubt that they could complete the instruments and could be able to follow the instructions of the instruments closely. Since the subjects chosen were convenience samples, the design was not a randomized design and hence the statistical significance could not be interpreted strictly. At the start of the experimental session, subjects were informed that some of the questionnaires they would be completing were personal in nature and that they should respond to these questions openly and honestly. To facilitate honest responding, subjects were assured of confidentiality and were instructed not to place their names on any of the questionnaires. Subsequently, subjects completed the Self Description Questionnaire III (SDQIII, Marsh, 1990). This instrument provides a general assessment of self-esteem although the majority of the items concern perceived confidence and competence in many situations, both academic and social situations.

After competing the measure of self-concept, subjects were asked to indicate on 7-point bipolar scales how true of themselves, others, and same-sex best friend, for the 15 positively valenced and 15 negatively valenced trait adjectives were (1=“not at all true of me, [others], [same-sex best friend]”; 7= “very true of me, [others], [same-sex best friend]”). The adjectives were chosen from Anderson’s (1968) list of trait attributes. The 15 positive adjectives (e.g., “Sincere”, “Good-Natured”, “Intelligent”) were selected

from among the 75 most likeable traits in Anderson’s list; the 15 negative adjectives (e.g. “Cruel”, “Cold”, “Jealous”, “Impolite”) were selected from among the 75 least likeable traits in the list. After rating the targets, subjects filled out the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960). This widely used measure is a 33-item instrument designed to assess an individual’s tendency to respond to personal questions in a socially desirable manner.

Administration of the instruments were carried out in ordinary classrooms when they were free and with no obligation. The researcher himself administered all the instruments. All doubts were cleared before the assessments began. Sufficient time was given, where the subjects felt free to complete all items in the instruments. In case of questions and doubts, they were encouraged to ask questions. The whole assessment session lasted about 40 minutes on the average.

After the assessments, subjects were thanked by the administrator for their co-operation and eagerness in the tests. They were assured once again that the data collected were kept under strict confidentiality and if they were interested in knowing their performances in the instruments, they could approach the researcher after the scoring of the instruments have been completed.

Data Analysis

In order to check whether there were significant differences in rating scores for the three targets “Self”, “Others” and “Same-sex Best Friend” with respect to low and high Self-Esteem and low and high Social Desirability groups, a 2(Self-Esteem) x 2(Social Desirability) x3(Targets) mixed ANOVA with Target as a repeated measures factor would be employed to achieve this. Also, Post-hoc ONEWAY ANOVA were employed to check which “Target groups” are significantly different from each other in terms of rating of “Self”, “Others” and “Same-sex Best Friend”.

As can be observed from table 1, as anticipated, subjects would rate positive attributes as more characteristic of the self than of others. An examination of the data presented in the top half revealed strong support for this hypothesis. As predicted, subjects judged positively valenced adjectives to be considerably more true of the Self (M=5.025, SD=0.61) than of Others (M=4.625, SD=0.76). These data thus provide initial evidence that individuals exhibit a Self-Others bias when evaluating Self and Others.

Results

Table 1:
Mean Ratings of Positive and Negative Attributes for Self-Others and Same-Sex Best Friend as a Function of Self-Esteem

Self-Esteem	Low	High
Positive attributes		
Self	4.83	5.22
Others	4.54	4.71
Same-sex Best Friend	5.06	5.19
Difference (Self vs. Others)	0.29	0.51
Difference (Others vs. Friends)	-0.52	-0.48
Difference (Self vs. Friends)	-0.23	0.03
Negative attributes		
Self	3.37	3.19
Others	3.79	3.56
Same-sex Best Friend	3.28	3.11
Difference (Self vs. Others)	0.42	-0.37
Difference (Others vs. Friends)	0.51	0.45
Difference (Self vs. Friends)	0.09	0.08

As can be observed from Table 2, the value of $F(1,161)=4.01$, $p<0.05$, indicated that the main effect for the Factor A (Self-Esteem) was significant at 0.05 level, with respect to the Factor of Self. Hence, it could be concluded that there was significant difference in rating of self between the groups High-Self-Esteem and Low-Self-Esteem.

Table 2:
Simple Main Effect Anova Analysis on Factor Self-Esteem for Positive Traits

Source of Variance	SS	df	MS	F	Sig.
Self-Esteem					
Self	2.05	1	2.05	4.01	0.047
Others	0.41	1	0.41	0.80	0.373
Same-Sex Best Friend	0.24	1	0.24	0.47	0.494

Table 3:
Post-Hoc Analysis for Main Effect of the Factor Target Using Scheffe Method for Positive Traits

No. of people	27	27	27
Mean	5.22	4.71	5.19
Target	Self	Others	Same-Sex Best Friend

Self	_____	
Others	*	_____
Friends	n.s.	* _____

Note: *=sig. at 0.01 level ; n.s.= non-significant

From Table 3, there were significant difference between Self-Others comparison and Others-Same-sex best friend comparison. Hence, a substantial support of Self-Others bias was justified. Furthermore, although subjects generally described themselves more favorably than they described most other people, the self was not appraised more favorably

than were one's friends. This finding offered no support to the pervasiveness of the Self-Others bias. Finally, consistent with research on the ingroup-outgroup bias (e.g. Brewer & Kramer, 1985), evaluations of friends ($M=5.19$, $SD=0.57$) were more positive than were evaluations of others ($M=4.71$, $SD=0.77$).

Next, the complex analysis including the factor of social desirability was examined. Table 4 indicated the situation of mean ratings as a function of self-esteem as well as social desirability.

Table 4:
Mean Ratings of Positive Attributes for Self, Most Other People and a Same-Sex Best Friend as a Function of Self-Esteem and Social Desirability

	Low Self-Esteem		High Self-Esteem	
	Low	High	Low	High
	Social Desirability		Social Desirability	
Target	n=15	n=12	n=12	n=15
Self	4.68	5.02	4.83	5.17
Most other people	4.58	4.48	4.54	4.41
Best friend	5.14	4.96	5.06	5.08

Note: m = marginal mean

Table 5:
2(Self-Esteem)x2(Social Desirability)x3(Target) Mixed Anova Analysis with Target as a Repeated-Measures Factor for the Positive Attributes

Source of Variation	SS	df	MS	F	Sig.
Self-Esteem (A)	2.19	1	2.19	2.57	0.115
Social Desirability (B)	0.91	1	0.91	1.07	0.305
SE*SD (A*B)	0.71	1	0.71	0.83	0.366
Within Subjects (S*A*B)	42.59	50	0.85		
Target (C)	7.65	2	3.83	14.08	0.000
SE*Target (A*C)	0.51	2	0.26	0.95	0.392
SD*Target (B*C)	0.42	2	0.21	0.78	0.463
SE*SD*Target (A*B*C)	1.36	2	0.68	2.50	0.087
Target*Within Sub (S*A*B*C)	27.17	100	0.27		
Total	83.51	161			

Replicating the prior analysis procedures reported earlier, the ANOVA detected a highly significant Main Effect of Target's $F(2,161)=14.08$, $p<0.001$ (see Table 5). Inspection on Table 4 revealed that evaluations of self ($M=5.23$, $SD=0.5$) and Friends ($M=5.19$, $SD=0.57$) were substantially more favorable than were evaluations of Most Other People ($M=4.72$, $SD=0.77$). The Target Main Effect was not further qualified by a significant Self-Esteem x Target Interaction, $F(2,161)=0.95$, n.s., nor qualified by a significant Social

Desirability x Target Interaction, $F(2,161)=0.78$, n.s. The triple Self-Esteem x Social Desirability x Target interaction was not significant, $F(4,161)=2.50$, n.s., indicating that the effects of Self-Esteem on Target evaluations were not further qualified by subjects' standing on the measure of Social Desirability. Since there was main effect on Target, $F(2,161)=14.08$, $p<0.001$, a Post-hoc analysis was conducted to find out which target had significant difference in rating as compared with the other Target Groups.

A Scheffe method in finding which pairs of Target groups should have significant differences had revealed that the Self-Others and Others-Same-sex best friend bias were prominent.

Table 6:
Post-Hoc Analysis for Main Effect of the Factor Target Using Scheffe Method for Comparison for the Positive Traits

No. of people	54	4	54
Mean	5.03	4.62	5.13
Target	Self	Others	Same-sex Best Friend
Self	_____		
Others		*	_____
Friends		n.s.	* _____

Note: * = sig. at 0.01 level ; n.s.= non-significant

Hence, it could be concluded that when including the Factor Social Desirability, there was still significant simple Main Effect on the Factor Target, and through the results obtained from the Scheffe Method, the Self-Others and Others-Same-sex Best Friend bias were prominent. Once again, these results affirmed the previous findings.

However, since it was primarily among those with High Self-Esteem where the distinction between “defensive” versus “genuine” Self-Esteem would assume importance, a separate 2 x 3(Social Desirability x Target) ANOVA was performed using only subjects designated as High in Self-Esteem.

Table 7:
A 2(Social Desirability)x3(Target) Mixed Anova with Target as a Repeated-Measures Factor in HSE Group for the Positive Attributes

Source of Variance	SS	df	MS	F	Sig.
Social Desirability (A)	1.92	1	1.92	4.57	0.043
Within Subject (SxA)	10.53	25	0.42		
Target (B)	4.81	2	2.41	6.83	0.002
Interaction (AxB)	0.73	2	0.37	1.04	0.360
TargetxWithin S (SxAxB)	17.62	50	0.35		
Total	35.61	80			

This analysis revealed a significant Main Effect on Target, $F(2,80)=6.83$, $p<0.01$. However there was no Social Desirability x Target Interaction, $F(2,80)=1.04$, n.s. indicating that there was no support that the claim for those with “genuine” High Self-Esteem (i.e. high Self-Esteem with low

need for approval) showed greater congruence among evaluations of Self, Others and Same-sex best friend than those with “defensive” High Self-Esteem (i.e. high Self-Esteem with high need for approval). This was a very important result because no matter you had high need for approval or low need for approval (but with High Self-Esteem), the ratings for Self, Others and Same-sex best friend were different.

Discussion and Conclusion

The results of study can give concrete support to the stated hypotheses. Firstly, there is indeed significant difference in self-evaluation and evaluation of others for both high and low self-esteem people. In other words, when evaluating social objects, the self is accorded a more privileged status than the general people. The anticipation that the subjects rate both positive attributes as well as negative attributes as more characteristic of self than of others is hence justified. There is strong evidence that almost all the individuals in the present study exhibit a pervasive tendency to enhance the self in more positive and less negative terms than they portray most other people. This trend is especially dominant across a broad range of positive and negative personality traits. Therefore a strong bias for all individual to be “better” than the average person is substantially constituted. This study hence contributes to the importance that in the Chinese Culture, Chinese people usually exhibit a self-others bias in general. Therefore, the present study also adds one more documentation of the “self-others” bias, in addition to many other researches done in the US that have documented this kind of bias in the western society. In fact, the results are consistent with the opinions and findings of Brown (1986), Morse and Gergen (1970), Strang, Smith and Rogers (1978), Rogers, Smith and Coleman (1978), French (1986), Trope (1979), Sears (1983), Alicke (1985), Jones (1973), Rhodewalt and Agustsdottir (1986), and Epstein and Feist (1988). However, the evidence of the “self-others” bias is in great contradiction to Rogers (1951) and Rosenberg’s (1979) position that high self-esteem people is usually accompanied by a comparable regard for others. In other words, the present findings indicate that the positive evaluations of high self esteem people bestow upon themselves are not matched by correspondingly positive evaluations of others. In short, the high self-regard in which high self esteem persons hold themselves do not appear to extend to others. Interesting enough, on the reverse, as evidenced by the present finding, it is true that it is those with low self-esteem, not those with high self-esteem, who are more egalitarian in their evaluations of self and others. In other words, the perception that one is of “comparable” position with most other people is most characteristic of individuals with low, rather than high self-esteem individuals. Thus, the findings of the present research indicate very clearly that it disconfirms Rogers’ position concerning the relation between regard for self and regard for others. Instead, high self-esteem is often accompanied by an “enhanced” belief that the personal qualities of self are more superior to the persons in general.

The tendency for such self-enhancement bias is not only limited to those with “genuine” high self-esteem, but also applies to those with “defensive” high self-esteem, as evidenced by the finding in the present research. The result in the present study is in fact consistent to the findings of Brown (1986), Martin, Abramson and Alloy (1984), Lobitz and Post (1979), Kupier and MacDonald (1982), and Schneider and Turkat (1975). In other words, the evidence is that there is no support that the claim for those with “genuine” high self-esteem (high self-esteem with low need for social approval) show greater congruence among evaluations of self and others than those with “defensive” high self-esteem (high self-esteem with high need for social approval). This finding hence rejects the third hypothesis which claims that there is no “self-other” bias for both “defensive” high self-esteem people as well as “genuine” high self-esteem people as in previous stated hypothesis.

Also, perception of the self that most individuals hold is not as well-balanced as traditional models of mental health suggest. Rather than being attentive to both the favourable and unfavorable aspects of self, normal individuals seem to be very concerned of their strengths and assets and correspondingly less aware of their weaknesses and faults. This flattering self-portrayals are regarded somewhat illusory because most individuals perceive themselves as better than the average person and most individuals perceive themselves as better than others perceive them.

If normal individuals tend to have such illusory perceptions then what kind of people will have more balanced view of accepting both the good and the bad aspects of themselves? The answer is those low-self-esteem people. Evidences from some researches suggest that individuals who are low in self-esteem, moderately depressed, or both are more balanced in self-perceptions. These individuals tend to recall positive and negative self-relevant information with equal frequency (Kuiper and MacDonald, 1982) and display greater congruence between self-evaluations and evaluations of others (Brown, 1986) and the present study. In short, it indicates that it is not the well-adjusted individual but rather the individual who experiences subjective distress, who is more likely to process self-relevant information in a relatively unbiased and equilibrium fashion. The present finding is inconsistent with the traditional notion that realistic perceptions of self are characteristic of mental health. Therefore further research is deemed necessary to clarify the possibility that psychological health is positively associated with self-enhancement biases.

Through the analysis of the discovery of “others-friend” bias, the author has found another interesting point. It is of interest to note that, for the low-self-esteem people, they have more positive regards to their friends than to others when comparing with those high-self-esteem people. The reason may be due to the fact that those low in self-esteem, having poorer images, may seek to have more positive regards on their friends in order to reflect their friends’ positive images upon themselves. Through this process, it may help to restore the perceived negative and fractured images bestowed upon themselves. Therefore, it is suspected that the phenomenon

of “basking in the glory of others” (Cialdini, Borden, Thorn, Walker, Freeman and Sloan, 1976) may occur in the present study. This phenomenon refers to the increase of self-esteem by associating with others who are successful. Low self-esteem people often bask in reflected glory by showing off their connections to successful others. Although there is no strong evidence found in the present study, it is nevertheless compatible to the findings of Cialdini, et al. (1976), Cialdini and Nicholas (1989).

Hence, it is suggested that further study to prove that relative absence of self enhancing cognition will characterize the person with a negative self-concept is necessary. Also, it is meaningful to study whether Chinese psychological health is positively related with self-enhancement biases or not. Besides, what plausible factors may affect the self-other bias. Is friendship a possibility? As evidenced in the present study, it is found that low-self-esteem individuals even appraise friends higher than themselves. Hence, the size of self-other bias is greatly decreased when self-evaluations are compared to appraisals of same-sex best friends. Therefore, further study on how the other significant others, like: opposite-sex best friends, spouse, siblings and parents in the families, classmates and teachers in the schools, colleagues and boss in the companies, ... etc. can be conducted in future research.

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Some Support for Self-Verification Theory in the Relationship between Self-Esteem and Responses to Personal Evaluative Feedback: A Meta-Analysis

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From self-enhancement theory it is predicted that those with high or low self-esteem prefer/accept positive feedback, while from self-consistency theory it is predicted that those with high self-esteem prefer positive feedback, but those with low self-esteem prefer negative feedback. Though at first concluded that evidence was substantially more in favour of self-enhancement, it appears that dependent variable measures of affective and cognitive processes tend to support the self-enhancement, and self-consistency, hypotheses respectively. Via a meta-analysis of related studies spanning 27 years from 1971-1997, the controversy regarding the relationship between self-esteem and personal feedback was investigated. Studies from 71 papers taken from 26 journals, yielded 58 cases for which effect sizes between high and low self-esteem groups ($n = \text{minimum } 2018$ subjects) were calculated and an additional 42 cases used for interaction description ($n = \text{minimum } 697$ subjects); 38 different types of dependent variables were a priori classified as affective (4), cognitive (19) or unclear (15). The trend in results supported the cognitive-affective independence hypothesis and the strong self-consistency view, that those with low self-esteem accept or believe negative feedback more than they do positive feedback. The greater use of cognitive, than affective, dependent measures observed, however, may underlie any high frequency of self-consistency effects found in studies, rather than greater empirical support for self-consistency/self-verification than for self-enhancement.

Self-Enhancement Theory

In self-enhancement theory, a central assumption is that there is motivation to increase feelings of personal worth (to increase self-esteem) (Epstein, 1973; Jones, 1973) or to think favourably of oneself (Shrauger, 1975). This is referred to as the weak (Swann, Griffin, Predmore & Gaines, 1987) or simple (Swann, Pelham and Krull, 1989) form of self-enhancement theory. There is also an assumption within this theory that, because those with negative self-concepts are relatively lower in self-esteem than those with positive self-concepts (Swann et al., 1987), the former have a higher need [and motivation] to enhance their self-evaluation than the latter (Jones, 1973; Shrauger, 1975). This stronger form of self-enhancement theory is referred to by Swann et al. (1989) as compensatory or defensive self-enhancement. It has been concluded that the weak (Swann et al., 1987), or simple (Swann et al., 1989) form of self-enhancement theory – that both those with high and low self-esteem prefer/accept favourable feedback - is more applicable to empirical observations than a strong one (Swann et al., 1987).

Self-Consistency Theory

The theory of self-consistency was presented by Lecky (1945), who proposed that all psychological phenomena are “illustrations of the single principle of unity or self-consistency” (p.152). This central principle in self-consistency is based on the notion that experience needs to be organised into an internally unified or “integrated whole” (p.222), on which the individual can base behaviour (Lecky, 1945). The individual’s self-valuation, self-concepts both positive and negative, is at the centre of this system as the nucleus and the rest of the system or individual’s values revolve around the nucleus. The more important the ideas, the closer they are to the nucleus and the closer they are, the more intensively they are maintained (Lecky, 1945). Internal standards thus are fixed, and inconsistent external values are rejected except in the more

extreme case of a reorganisation of the value system.

The prediction that those with positive self-concepts, compared to those with negative self-concepts, will respond more favourably to positive feedback and less favourably to negative feedback is called the modest consistency effect (Shrauger, 1975). The strong consistency effect is the prediction that because negative feedback is confirming for those with negative self-perceptions, they will respond more favourably to negative than to positive feedback (Shrauger, 1975). This prediction is much more controversial than that of the modest consistency effect and stands in direct opposition to self-enhancement theory (Shrauger, 1975).

Self-Verification Theory

Self-verification theory proposed by Swann and Read (1981) and Swann (1983) is a variant of the theory of self-consistency (Swann et al., 1987) and is similar to the latter (e.g., Aronson, 1968, cited in Swann, Wenzlaff, Krull and Pelham, 1992a) in that there is an assumed motivation for preserving the self-concept and that this is achieved via endeavours to obtain self-verifying feedback (Swann, 1983; Swann & Read, 1981).

Self-Enhancement and Self-Verification

Cognitive and Affective Responses to Feedback

From both self-consistency/self-verification and self-enhancement theory it is predicted that those with positive self-concepts strive to maintain these positive self-views, albeit for different reasons, and so similar responses to feedback are predicted for them (Swann et al., 1987), namely that they prefer/accept feedback to be positive, and their affective responses reflect this. On the other hand, divergent predictions are made from the two theories regarding those with negative self-concepts (Shrauger, 1975; Swann et al., 1987). From self-verification theory it is predicted that these people prefer

negative feedback because of its predictability [no cognitive re-organization is required], and from self-enhancement theory it is predicted that they prefer positive feedback because “they want to think well of themselves” (Swann et al., 1987, p.882). Jones (1973) contrasted the two theories, derived from them predictions relevant to the relationship between self-evaluations and evaluations from others, and after reviewing studies where a test between the two theoretical positions was possible, concluded that evidence was substantially more in favour of self-enhancement.

Swann et al. (1987) on the other hand, claim that past investigations have not led to the favouring of one theory over the other, but rather, as highlighted in the review of literature by Shrauger (1975), measures of cognitive processes tend to favour the theory of self-consistency while measures of affective processes tend to favour the theory of self-enhancement. Thus Shrauger (1975) proposed that cognitive and affective responses were independent, and this implied that the reactions to unfavourable feedback, by those with negative self-concepts, would be somewhat ambivalent (Swann et al., 1987). That is, cognitively they may value the feedback [they may believe it, accept it], but affectively they would not feel good about it [they would not like it] (Campbell, 1990; Swann et al., 1987). Swann et al. (1987) directly investigated, and found strong support for, the cognitive-affective independence hypothesis, as did Sweeney and Wells (1990).

Self-Enhancement Versus Self-Verification

Given the results of the study by Swann et al. (1987), Swann et al. (1989) suggest that there is, for all people, a simultaneous motivation, and a striving, for satisfaction of both self-enhancement and self-verification, regarding evaluative feedback from others. Further, people will endeavour to satisfy both, wherever possible. Swann et al.’s (1989) investigation found support for this proposal. Later, however, Swann (1990) found evidence in support of his proposal that when there is conflict between these two motivations for those with low self-esteem, and when self-concepts are firmly held, self-verification will be favoured over self-enhancement. Further support for this proposal has come from Swann et al. (1992a), Pelham (1991, cited in Swann et al., 1992a), Swann and Ely (1984, cited in Swann et al., 1992a), Robinson and Smith-Lovin (1992) and Swann, Wenzlaff and Tatarodi (1992b).

Meta-Analysis

Few studies have been conducted to directly investigate the cognitive-affective independence hypothesis, most of these from Swann and his colleagues. Findings from different studies have been conflicting, for example with regard to reactions to positive feedback, when a relationship between self-esteem and feedback at times has (e.g., Marecek & Mettee, 1972, cited in Brown, 1998), and other times has not (e.g., Campbell, 1990; Shrauger & Lund, 1975) been observed. In most studies, Brown (1998) concludes, there is

little evidence that self-esteem and positive feedback are related. Thus a meta-analysis was conducted to determine level of support for the cognitive-affective independence hypothesis, across relevant studies, when dependent variable (DV) measures, and therefore subject responses, are a priori classified as cognitive or affective. The following predictions derived from the theories of self-enhancement and self-verification were investigated:

1. Affective Responses

Feedback effect: subjects will respond more positively following positive feedback than following negative feedback (simple self-enhancement theory - Swann et al. (1989)).

Possibly a self-esteem effect: subjects with low self-esteem (LSE) will respond more positively than subjects with high self-esteem (HSE), overall (compensatory or defensive self-enhancement – Jones (1973); Shrauger (1975); Swann et al. (1989)).

2. Cognitive Responses

Interaction effect: subjects with HSE, compared to subjects with LSE, will respond more positively to positive feedback and less positively to negative feedback (modest self-consistency effect - Shrauger (1975); subjects with LSE will respond more positively to negative feedback than to positive feedback (strong self-consistency effect - Shrauger (1975)).

Method

Search for Relevant Studies

A search of the literature for studies appropriate for the meta-analysis was conducted for the years 1971-1997, a period of 27 years, with 1971 chosen as the beginning because, in the review of studies of the relationship between self-esteem and feedback, Jones (1973) seemed to have taken into consideration the literature before this time. The search was done by use of CD-ROM, online facility and manually, for the databases of PsycLIT/PsycINFO, Social Sciences Citation Index (SSCI), Sociofile/Sociological Abstracts and Educational Resources Information Center (ERIC). Studies were also identified via relevant review articles and books, and reference lists from those studies which were deemed appropriate for inclusion.

The search concentrated on those studies published, written in English, and in which subjects utilised were reported to be adults of 18 years and older, or were said to be university students and were thus assumed to be adults of at least approximately 18 years. Given the difficulties associated with identifying and obtaining unpublished manuscripts and with translating foreign language studies, these two sources and doctoral dissertations, as well as studies using subjects under 18 years of age (children and adolescents) were not included in the search.

Studies were deemed appropriate for inclusion in the meta-analysis if the methodological design was suitable for

exploring the interaction between the independent variable (IV) of self-esteem or self-concept (high and low) and of personal feedback (positive and negative); the type of DV utilised in studies could vary. The literature search yielded 71 papers⁵ which contained one or more studies, from 26 journals.

Studies Used

Information necessary for the calculation of relevant effect sizes was extracted from studies, and where unavailable, attempts were made to contact the authors to obtain further information, but as responses were very poor this activity was not pursued. Information that could aid in describing the interaction effect, if not sufficient for effect size calculation, was also extracted. Other information extracted (results of which are not reported in the present study) was that suitable for exploring main effects for the IVs of self-esteem and feedback and for exploring potential moderator variables; the latter included the affective/cognitive classification, if any, given to the DVs by the author/s of the study, the type of self-esteem measure used, the status and the gender of the evaluator and of the experimenter, and the order in which dependent measures were taken as the order of presentation of affective/cognitive measures may be relevant (Swann et al., 1987).

A single unit of information was organised on the basis of one type of DV per case, each case containing the measure of self-esteem and of feedback. Table 1 contains details of number of cases used for effect size analyses, for interaction description only, and the number unable to be utilised for either of these purposes. In the latter instance, this was due to either the fact that (1) even though the two IVs of self-esteem and feedback were present in the study, it was not possible to observe an interaction effect because both levels of the IVs had not been included (thus, in the studies had been included only positive, or only negative feedback; feedback that was only consistent or only inconsistent with subject self-esteem; subjects of only high or only low self-esteem), or (2) no statistical information of results was available – possibly the relevant analyses had not been conducted due to lack of interest in the interaction between the IVs, or authors had failed to report relevant analyses.

Table 1:
Number of Cases Utilised/Not Utilised for Effect Size Analyses and Interaction Description

Cases Utilised		Cases Not Utilised	
Effect Size	58	No Information	62
Interaction Description	42	Not Applicable	16
		Not Used*	4
Total	100		82

*Cases not used because of mixed nature of results (discussed in Results section, below).

⁵ A list of these papers will be made available on request to Maria Neve Palmieri, email address m.palmieri@latrobe.edu.au.

Due to the unavailability of information in studies, for the cases utilised it was not possible to accurately ascertain the overall sample size, number of males and females, or number HSE and LSE subjects. For effect size cases, the minimum number of subjects used was 1004 HSE and 1014 LSE, a total of 2018; where HSE and LSE was not specified, total sample size of mixed males and females used was an additional 1413 subjects. For interaction description cases (subjects not already accounted for), minimum number of subjects used was 368 HSE and 329 LSE, a total of 697; where HSE and LSE was not specified, total sample size of mixed males and females used was an additional 1195 subjects. As authors at times included in their studies IVs other than those of interest in the present study, the abovementioned total sample sizes may have included subject groups other than HSE and LSE. Also, in some studies the HSE and LSE subjects were administered more than one category of affective, cognitive or unclear DV.

Overall, 25 different measures had been used in studies to ascertain level of subject self-esteem, including, at times, two types of measures used together.

Measures

The DVs that had been employed in the cases utilised were a priori classified as either affectively-based, cognitively-based, or unclear. This was done by reference to:

(1) The six categories/types of feedback responses outlined by Shrauger (1975), when it was proposed that cognitive and affective responses to feedback are independent - (a) Cognitive (i) reception and retention of evaluations, (ii) assessment of the evaluation source, (iii) attribution of responsibility, (iv) changes in self-evaluation; (b) Affective (i) satisfaction with feedback, verbal report measures of affective reactions, (ii) performance change measures, (iii) attraction to evaluator; and,

(2) Studies generally investigating the affective and cognitive bases of attitudes (e.g., Eagly, Mladinic & Otto, 1994), particularly those in which the results give support to the distinction between affect and cognition in attitude structures (e.g., Breckler & Wiggins 1989; Trafimow & Sheeran, 1998). The affective component of attitude is said to refer to the emotional responses and feelings that are engendered by a specific attitude object (affects; feelings toward attitude object) (Fleming, 1967; Izard, 1977; both cited in Breckler & Wiggins, 1989). The cognitive component of attitude, in contrast, is said to refer to the location of an attitude object on one or more dimensions of judgment (beliefs; evaluation of object of thought) (McGuire, 1985, cited in Breckler & Wiggins, 1989).

This resulted in 38 different types of DVs, 27 for effect size cases and 11 additional ones for interaction description cases. There were 4 affective, 19 cognitive and 15 unclear DVs and these are presented in Appendix 1. Subject reactions to feedback were classified as positive if in the studies in which DV measures were reported a higher/lower score denoted acceptance of the feedback – that is, for the cognitive

variables the subjects believed/accepted the feedback and for the affective variables the subjects showed more positive affect.

Results

A summary of information extracted from studies, and of further information generated in order to calculate an effect size between the HSE and LSE groups within the positive and the negative feedback conditions, is presented in Table 2. Studies contributed one or more DV measures, based on the type of DV and its classification of affective or cognitive. In some studies more than one measure for the same DV had been used such that overall results per DV consisted of 1-5

parts (where at least some information was available concerning direction of results). Thus results were combined and aggregated: (1) for one effect size per DV (or case) if within each of the two feedback conditions, direction of results (a) was the same for each part of the DV, and (b) differed, but 2 of 3, 3 of 4 or 4 of 5 parts were in the same direction; and, (2) for interaction description if within each of the two feedback conditions direction of results for the different parts was the same per DV. Four cases, three with cognitive, and one with affective, DVs, had parts of results that were mixed in direction to a greater degree than described in (b) above, and thus were eliminated from analyses/descriptions.

Table 2:
Information Extracted from Studies and Generated for the Present Study

Effect Size	Results Information					
	Direction within f/back conditions	M, HSE & LSE within f/back conditions	SD, HSE & LSE within f/back conditions	Overall F	Overall t	p
58 cases						
11	√	√	√	√		√
34 6(2-5)	√	√	Overall SD calculated	√		√
3 1(4)	√	√	Overall SD calculated for 3 cases	Calculated for 3 cases	√ (used t for 1 case)	√
1 2(4)	√	√	Overall SD calculated	Calculated		√

Number of cases with parts of DVs containing insufficient results information = 4(2-6).

Number of cases with number of HSE and LSE not specified = 17. Number of cases where total sample size was divided into HSE and LSE subjects = 42.

Interaction Description						
42 cases						
25 2(2-4)	√	√				
8 1(2)	√			√		√
4	√					√
2				√		√

Number of cases with parts of DVs containing insufficient information = 4(2-4).

Number of cases with number of HSE and LSE not specified = 22.

Overall F or t refers to the statistic for contrasted positive and negative feedback conditions; p refers to the related probability. Overall SD, where calculated, was for each part of the DV, and where number of subjects HSE and LSE was not specified, total sample size given in studies was divided equally into HSE and LSE groups. Different parts of DV results, where more than one, are shown in parentheses after cases listed.

Estimation of Effect Size

Cohen's d, an index of standard score units or z scores for the difference between the means of the groups compared (Rosenthal, Rosnow & Rubin, 2000), was used as the effect size estimate; this index uses the pooled sums of squares divided by sample size, as the standardizing quantity for the difference between means (Rosenthal et al., 2000). Thus, effect sizes were an estimate of the difference between the

two groups of HSE and LSE within positive and within negative feedback conditions; a positive value indicated a higher positive response by HSE than LSE and a negative value indicated a higher positive response by LSE than HSE.

Mean effect size was calculated for all 58 cases. However, given the presence of an outlier in each feedback condition (both outliers from the same study), mean effect size was also calculated excluding the outlier values. The minimum, maximum and mean effect sizes, together with statistical tests

t and r and the calculated 95% confidence interval of the difference between the two feedback conditions, including and excluding the outliers (the latter not included in further analyses), and for affective and cognitive DVs separately, are presented in Table 3.

Excluding outliers, the difference generally between the HSE and LSE groups was significantly greater in the positive, than in the negative, feedback condition; however, the difference between the two groups was not significantly greater in the positive or negative feedback condition for the affective or cognitive DVs alone. The negative correlations

between the effect sizes calculated in the positive and in the negative feedback condition were significant for the total and cognitive DVs, but not for the affective ones. Mean difference between the two groups overall and for affective and cognitive DVs, was greater in the positive than in the negative feedback condition, with HSE showing a higher positive reaction than LSE groups in the positive feedback condition, and LSE showing a higher positive reaction than HSE groups in the negative feedback condition.

In order to observe the frequency of a higher positive response by the HSE and LSE groups within the positive and

Table 3:
Minimum, Maximum and Mean Effect Sizes and Standard Deviations, Statistical Tests t and r and Confidence Intervals for Total, Affective and Cognitive DVs

DVs	Feedback Condition	n	Min _{ES}	Max _{ES}	M _{ES}	SD	t	df	r	95% CI
Total	Positive	58	-0.39	2.07	0.15	.83	0.61	57	-.730*	-.27-.51
	Negative	58	-1.28	4.76	0.03	.79				
Total, No Outliers	Positive	57	-0.17	2.07	0.22	.64	2.14 ^a	56	-.470*	.01-.52
	Negative	57	-1.28	1.61	-0.04	.48				
Affective	Positive	8	-1.08	2.07	0.35	1.04	0.84	7	-.300	-.71-1.5
	Negative	8	-1.19	0.76	-0.04	.57				
Cognitive	Positive	23	-1.70	1.36	0.17	.54	1.28	22	-.565**	-.14-.59
	Negative	23	-1.28	0.74	-0.06	.44				

ES refers to effect size – estimate of the difference between the HSE and the LSE groups; CI refers to confidence interval. * p < .001; ** p = .004; ^a p = .04

negative feedback conditions, cases were totalled according to the direction of reactions by the two groups and the results are presented, for the affective, cognitive and unclear DVs, in Table 4. It can be seen that for the affective DVs there is no difference between the two feedback conditions regarding the frequency of a higher positive response by the HSE or

LSE groups. However, for the cognitive and the unclear DVs, higher positive responses occurred more often for the HSE than the LSE groups within positive feedback, while higher positive responses occurred more often for the LSE than the HSE groups within negative feedback.

Table 4:
Frequency of a Higher Positive Response by the HSE and LSE Groups Within the Positive and Negative Feedback Conditions – Effect Size Cases

DVs	Positive Feedback Condition			Negative Feedback Condition			Total Per DV
	HSE>LSE	LSE>HSE	*HSE=LSE	HSE>LSE	LSE>HSE	*HSE=LSE	
Affective	4	4	0	4	4	0	8
Cognitive	18	4	1	9	14	0	23
Unclear	17	8	1	12	14	0	26
Total Per Condition	39	16	2	25	32	0	57

* No difference between HSE and LSE groups.

Discussion

The results for cases included in the effect size analyses offer some support for self-verification theory and the cognitive-independence hypothesis (Shrauger, 1975; Swann et al., 1987). That is, mean difference between the HSE and the LSE groups indicates that both groups tended to accept or believe feedback that was consistent, rather than inconsistent, with their level of self-esteem, overall and for

the cognitive DVs alone. This difference was overall significantly greater for positive than negative feedback. This result differs from results in most studies where, according to Brown (1998), there is little evidence of a relationship between self-esteem and positive feedback, but is similar to the self-verification results found by Swann et al. (1987) and some others (e.g., Sweeney and Wells, 1990). While the trend in results was similar for the affective DVs, this does not undermine the support for self-verification, given the

relatively small number of cases and lower, non-significant negative correlation, the latter indicating a much weaker relationship between HSE and LSE group differences for positive and negative feedback than is evident for overall and cognitive cases. Also, the total cases of 57 comprise 49 cases containing cognitive and unclear DVs, the unclear DVs possibly more similar to the cognitive than the affective DVs, given the similar trend followed by these cases to those with cognitive DVs; this point is discussed below regarding the results of the frequency of higher positive responses.

Interaction Description

In order to describe the interaction between self-esteem and feedback in the absence of information to calculate effect

sizes between the HSE and LSE groups, and in the event that differences between studies that did or did not report relevant information may be reflected in the results, cases here were separately totalled according to the direction of reactions by the two groups and the results are presented, for the affective, cognitive and unclear DVs, in Table 5. It can be seen that no particular trend emerged for the affective DVs; for the cognitive DVs, higher positive responses occurred more often for the HSE than the LSE groups within positive feedback, while higher positive responses occurred more often for the LSE than the HSE groups within negative feedback. For the unclear DVs, higher positive responses occurred more often for the LSE than the HSE groups in both positive and negative feedback conditions.

Table 5:
Frequency of a Higher Positive Response by the HSE and LSE groups Within the Positive and Negative Feedback Conditions – Interaction Description Cases

DV's	Positive Feedback Condition				Negative Feedback Condition				Total Per DV
	HSE >LSE	LSE >HSE	*HSE =LSE	Direction Unknown	HSE > LSE	LSE >HSE	*HSE =LSE	Direction Unknown	
Affective	3	1	0	0	2	2	0	0	4
Cognitive	11	9	1	1	9	11	2	0	22
Unclear	5	8	0	3	2	11	1	2	16
Total Per Condition	19	18	1	4	13	24	3	2	42

- = No difference between HSE and LSE groups. Direction Unknown refers to the unavailability of direction of reaction information in one of the feedback conditions.

For effect size cases the trend in the results for frequency of a higher positive response also gave support to the cognitive-affective independence hypothesis and to the more controversial strong self-consistency position (Shrauger, 1975). That is, the trend was that of an interaction effect between self-esteem and feedback with the cognitive DVs such that HSE groups showed acceptance or belief of positive feedback (HSE self-consistent) more often than did LSE groups, and LSE groups showed acceptance or belief of negative feedback (LSE self-consistent) more often than did HSE groups. Further, those in the LSE group accepted/ believed negative feedback more often than they did positive feedback. As well, while taking into account the much smaller number of cases with affective DVs than cognitive DVs, the trend of no interaction effect for affective DVs is one predicted by self-enhancement theory (Jones, 1973; Shrauger, 1975; Swann et al., 1987). A similar, although not as marked, trend to that of cases with cognitive DVs, emerged with the unclear DVs, suggesting that these DVs may be either relatively more cognitively- than affectively-based, or may consist more of cognitive than of affective ones. Two of the four categories within unclear DVs (not elaborated on in the present study) were those of motivation (e.g., amount of free-choice time spent doing more of a task for which feedback had earlier been received) and of attraction (e.g., attraction to, or liking for, an evaluator), and these together made up 17 of the 26 unclear DV cases. It is possible that with the unclear DVs more cognitive than affective subject responses

may have been elicited, as a result of their particular operationalisation which was either ambiguous or difficult to definitively categorise as affective or cognitive. As pointed out by Shrauger (1975) with regard to the DV of attraction in particular, subject responses will differ from affective to cognitive depending on the operationalisation of a DV. Thus, although results of studies using the DV of attraction were generally more supportive of self-enhancement, in those cases in which results supported self-consistency, subject reactions tended to be of the evaluative kind (Shrauger, 1975).

Support for the self-verification position emphasises some ambivalence in reactions to unfavourable feedback by those with LSE. Although those in this group may cognitively accept negative feedback for reasons of self-consistency, they may not like it (Campbell, 1990; Swann et al., 1987). This may at least in part explain the smaller difference found between the HSE and LSE groups for negative feedback compared to positive feedback, for the cognitive and unclear DVs, for both effect size analyses and for frequency of higher response results. That is, those in the LSE groups accepted negative feedback to a similar extent to those in the HSE groups, while those in the HSE groups accepted positive feedback to a much greater extent to those in the LSE groups, the latter perhaps indicating the congruence between affect and cognition when those with HSE both accept and like the positive feedback.

With regard to interaction description cases the trend in the results for frequency analyses for cognitive and affective

DVs is, in general, similar to the corresponding effect size cases. Thus this trend is supportive of the cognitive-affective independence hypothesis and the strong self-consistency position, and although, again, the [even] much smaller number of cases with affective DVs than cognitive DVs needs to be taken into consideration, there was no trend for an interaction effect. The trend with the unclear DVs here, however, differed from the corresponding effect size cases, with the LSE groups more often showing a greater preference than the HSE groups for both positive (LSE self-inconsistent) and negative (LSE-consistent) feedback. These unclear cases consisted of a similar number of DVs (3-5) in each of the four categories within the unclear group. Possibly, the more evenly distributed unclear DVs may reflect a greater balance of affectively- and cognitively-based DVs, resulting in a more even eliciting of affective or cognitive responses, which here led to the conflicting results. This difference in results between unclear DVs for effect size, and interaction description, cases, does not appear to be related to any differences between studies that did or did not report more comprehensive information with regard to results obtained in those studies.

A general observation of the results for the two groups of analyses of the interaction effect, is that authors of studies investigating the relationship between the self and personal feedback have used DV measures more clearly cognitively-based much more often than they have those more clearly affectively-based. Campbell (1990) has noted from such studies as conducted by Shrauger (1975) and Swann et al. (1987), that most studies show a “consistency interaction” (p.538). This high frequency of consistency effects may, then, be due to the greater use of cognitively-based DVs, given the relationship observed between self-esteem and feedback when cognitive DVs are used, than to any greater empirical support for self-consistency/self-verification theory than for self-enhancement theory. In turn, the higher use of cognitive, than affective, DVs, may be related to the current domination of a cognitive view of self-esteem in personality and social psychology (Brown, 1998).

Finally, this study has focussed on the categorisation of *dependent* measures of cognitive and affective responses to feedback. An equally important future task is to turn attention toward procedures used to operationalise positive and negative feedback (IV). It may well be that methods create a more ‘cognitive’, or a more ‘affective’ context, which will in turn influence the level and direction of responses to the self-relevant feedback.

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The Self-Concept and Verbal Academic Achievement of Primary and Secondary Student Teachers

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Theoretical models, based on cognitive-behavioural and perceptual psychology tenets, were proposed in an attempt to understand direct and indirect effects of self-concept, test anxiety, and family social status on the verbal academic achievement of 260 primary student teachers and 159 secondary student teachers. Confirmatory factor analyses supported the invariance of the congeneric measurement model; however, the variance of the verbal academic self-concept latent construct was not equivalent between the two groups of student teachers. Structural equation modelling of the relations between measured and latent variables indicated that verbal academic self-concept has a significant and positive direct effect on verbal academic achievement. The indirect effect of verbal academic self-concept, mediated by the worry component of test anxiety, was found to be significant for secondary student teachers but not for the primary student teachers. Results supported the proposition that an individual's self-concept has a major direct influence on the worry component of test anxiety and, in addition, a more dominant direct effect on verbal academic achievement than test worry. Family social status was found to have a significant influence on test anxiety (worry component) for secondary student teachers but not for the primary student teachers.

Introduction

The concern of this study is self-concept, its relation with significant correlates, and the structural relations of these variables to student teachers' verbal academic performance. The overriding theoretical orientation of this study is grounded in the perceptual psychology tradition and the cognitive-behaviourism tradition.

Perceptual psychology postulates that each person creates their own reality through their perceptions of what they believe to be real (Combs, Richards, & Richards, 1988; Combs & Gonzales, 1994; Kelly, 1955, 1963; Jourard, 1971). Furthermore, a person's behaviour is contingent on how an individual perceives and interprets his/her experiences. Purkey and Novak (1996) identified three assumptions of the perceptual psychology approach that are relevant to the present study:

1. Behaviour is based on perceptions. Individuals behave according to their subjective perception of the environment (internal and external).
2. Perceptions are learned. One's interpretation of the environment is learned and therefore can be unlearned given new information and new experiences. This particular assumption embraces the idea that a change in perception will bring about a change in behaviour.
3. Perceptions can be reflected upon. Being aware of one's past and present perception and being able to go beyond them allows for further development and understanding of oneself, others, and the world.

Thus, from the perspective of perceptual psychology it is clear that to understand an individual's behaviour we need to know how that individual perceives and interprets his/her life experiences. An individual's personal interpretation or frame of reference is more important than "objective reality" because an individual responds to their perception of reality and not to reality itself (Purkey & Schmidt, 1996; Seligman, 1991).

The cognitive-behavioural approach to human behaviour, which is also concerned with describing and understanding how

mental activities influence behaviour, is derived from cognitive-behaviourism as espoused by Mischel, Ellis, and Meichenbaum (Mischel, 1968, 1973, 1979; Ellis, 1962, 1970; Meichenbaum, 1974, 1977). The cognitive-behavioural approach emphasises the important effect of an individual's thoughts on his/her feelings and behaviours. That is, from the cognitive-behaviour point of view, the manner in which individuals process information explains differences in behaviour. Three major assumptions underlie the cognitive-behaviour approach:

1. Our thoughts shape our emotions and our actions;
2. Our beliefs and assumptions shape how we perceive and interpret events;
3. Our distorted thoughts can lead to a variety of dysfunctioning.

The cognitive-behavioural approach places a great deal of importance on an individual's perception of his or her internal and external environment. According to this perspective, it is a person's own definition of the situation at hand that is most significant in the development of an individual's self-concept.

Four measurement models are presented that will form the basis of this study's investigation of the impact of individuals' cognitive perceptions on their verbal academic performance. All four postulated models have sound empirical validation to support their use in this study. Additionally, structural modelling principles will be utilised to gain an understanding how the four proposed measurement models are ordered and interrelated in a lawful way and how the aggregate of the behaviours they model influences verbal academic achievement.

Method

Participants

The participants who voluntarily participated in this study comprised 448 Australian Catholic University (Victoria) undergraduate and graduate students. The selection criteria required participants to be enrolled in one of the two pre-

service teacher education programs offered at this university — the Bachelor of Teaching (Primary) and the Graduate Diploma of Education (Secondary). The sample consisted of 83 male students and 365 female students with a mean age of 21.37 years. The number of participants in the sample who were enrolled in the Bachelor of Teaching (Primary) course of study was 276: 34 male students and 242 female students, with a mean age of 19.41 years. The number of participants in the sample enrolled in the Graduate Diploma of Education (Secondary) was 172 students: 49 male students and 123 female students, with a mean age of 24.51 years.

Measures

Test Anxiety Inventory (TAI)

The development of the Test Anxiety Inventory - TAI (Spielberger, 1980) has been a most important contribution to the tools of the test anxiety researcher (Morris, Davis, & Hutchings, 1981). Spielberger, Gonzalez, Taylor, Algaze, & Anton (1978) and Spielberger (1972, 1980) developed the Test Anxiety Inventory using items from the Test Anxiety Scale (Sarason, 1978) and original items to measure global test anxiety and also the major components of test anxiety - Emotionality and Worry. As a result, the Test Anxiety Inventory yields Emotionality and Worry subscale scores as well as a Total test anxiety scale score.

Self-Description Questionnaire III (SDQIII)

The Self-Description Questionnaire III (SDQIII) was selected to measure the theoretical facets of the student teachers' self-concept as it is based on a strong empirical foundation and a good theoretical model, namely the highly regarded 1976 Shavelson self-concept model. Prior to the 1980s measures of self-concept were strongly criticised on the grounds that they lacked a clear theoretical basis and/or sound methodology. The SDQIII (including the SDQI and the SDQII) is unique in that its development represents an interplay between theory and empirical research. "One purpose of the instruments was to provide reliable, valid measures suitable for testing the Shavelson et al. model" (Marsh, 1990, p. 86).

Family Social Status (FSS)

Father's education, mother's education, and family occupational levels are the measurement indicators for the latent construct, Family Social Status. The measured indicator "family occupational level" was operationally defined as the higher Australian National University Occupational Status Scale (ANU3) score (Broom, 1993; Jones, 1989) of either the participant's father or mother. The reason for creating this variable, rather than using both parents' ANU3 Occupational Status Scale scores, was to reduce the extent of missing data since few participants' families had both the mother and father in full-time employment.

Verbal Academic Achievement (GPA)

In this study verbal academic achievement is operationally defined as the instructors' ratings of students in a number of tertiary subjects completed during the first semester of their teacher education program. Essentially, the tertiary subjects undertaken during this first semester of study are of verbal/English content as opposed to math/science content. As such, it is quite justifiable to assume the perception of such subjects will be related to the student's verbal academic self-concept domain as described in the Marsh's self-concept model (1987). First semester academic achievement was measured by calculating a grade-point-average (GPA). A grade of "A" was given a score of 5, "B" = 4, "C" = 3, "D" = 2 and "N" = 1. An arithmetic average was then calculated to obtain the GPA.

Procedure

Participants who met the selection criteria (enrolled in a teacher education course of study) and gave informed consent were asked to complete a set of measuring instruments during the first week of their academic program. The measuring instruments comprised the 20-item Test Anxiety Inventory (Spielberger, 1980), and the 136-item Self-Description Questionnaire III (Marsh, 1992). In addition, participants were asked to state their parent's occupation and educational level. At the end of the first academic semester, academic results of participants who had completed the set of questionnaires were obtained from the student administration office and recorded in the database. Following the inputting of the data, analysis was conducted using the Statistical Package for the Social Sciences (SPSS), Version 6.1.4 (SPSS, 1996) and the structural equation modelling program, EQS, Version 5.6 (Bentler, 1997).

Results

Primary Teachers' Structural Equation Modelling Analysis

In assessing whether the measurement model "fits", or adequately describes the sample data, examination of the overall model goodness-of-fit criteria, EQS standardised residuals output, and fit of individual parameters in the model was undertaken. The Yuan-Bentler Corrected AGLS chi-square goodness-of-fit measure was not significant, $\chi^2(60, n = 258) = 58.44, p = .53$, indicating that the original covariance matrix and the model-implied (reproduced) covariance matrix are not statistically different. The Corrected Comparative Fit Index (CFI) = 1.000 and the Root-Mean-Square-Error of Approximation (RMSEA) = 0.032, 90% confidence interval of the RMSEA ranges from 0.000 to 0.052. Both of these fit indices values indicated a good model fit to the original data (Hu & Bentler, 1999; Schumacker & Lomax, 1996; Hoyle, 1995). In assessing the fit of specific individual parameters, examination of the parameter estimates and their statistical significance is required. A review of the standardised solution revealed that the

parameter values are reasonable and theoretically consistent. In addition, all parameter estimates were statistically significant ($p < .05$ or higher) other than the parameter, Test Worry \rightarrow Verbal Academic GPA ($p > .05$). Two multivariate analyses of parameter estimates were also employed in the analysis and evaluation of the parameter estimates. The Lagrange multiplier (LM) statistic (Bentler, 1986; Schumacker & Lomax, 1996) identified no theoretically reasonable freeing of existing fixed parameters in the proposed model. The Wald test (Bentler, 1986; Wald, 1943) identified one parameter, Test Worry \rightarrow Verbal Academic GPA, as being redundant in the proposed model. Removing this parameter will not significantly misfit the proposed model, χ^2 -change (1) = 0.05, $p = .82$. It is, however, not recommended nor procedurally correct to reestimate a proposed model simply on the basis of statistical significance as this is akin to a posteriori “data snooping”.

The finding that the parameter, Test Worry \rightarrow Verbal Academic GPA, is not significant, however, has several implications for the structural model for primary student teachers. Firstly, the non-significant path from Test Worry to Verbal Academic Achievement means that there is only a direct effect of Verbal Academic Self-Concept on Verbal Academic Achievement. Secondly, there is no effect of Family Social Status given that only an indirect effect, mediated by Test Worry, was hypothesised. Two of the four indirect paths were significant and both are associated with the latent construct, Test Emotion.

An examination of Figure 1 revealed that the standardised path coefficients supported the hypothesised conceptual model in that each of the hypothesised paths was statistically significant (with the exception of the Test Worry Verbal Academic GPA parameter) and in the expected direction. Specifically, Family Social Status and Verbal Academic Self-Concept were positively related, and each of these constructs had a significant negative relation with Test Worry, which in turn had a significant and positive relation with Test Emotion. Verbal Academic Self-Concept had a significant and positive relation with Verbal Academic Achievement GPA.

In summary, the results of the structural equation modelling only partially supported the hypothesised structural model for primary student teachers (Figure 1). That is, the structural paths, with the exception of the Test Worry to Verbal Academic Achievement path, were psychometrically and theoretically sound. Additionally, these results supported the hypotheses that the effects of Verbal Academic Self-Concept and Family Social Status on Test Emotion were significantly mediated by Test Worry. The effects of Verbal Academic Self-Concept and Family Social Status on Verbal Academic GPA, however, were not significantly mediated by Test Worry

Secondary Teachers' Structural Equation Modelling Analysis

In assessing whether the sample data “fits”, or is adequately described by the measurement model, examination of the overall model goodness-of-fit criteria, EQS standardised residuals output, and fit of individual parameters in the model was undertaken. The Yuan-Bentler Corrected AGLS chi-square goodness-of-fit measure was not significant, χ^2 (60, $n = 159$) = 40.81, $p = .97$, indicating that the original covariance matrix and the model-implied (reproduced) covariance matrix were not statistically different. The Corrected Comparative Fit Index (CFI) = 1.000 and the Root-Mean-Square-Error of Approximation (RMSEA) = 0.000, 90% confidence interval of the RMSEA ranged from 0.000 to 0.041. The values for these fit indices indicated a good model fit to the original data (Hu & Bentler, 1999; Schumacker & Lomax, 1996; Hoyle, 1995). In assessing the fit of specific individual parameters, examination of the parameter estimates and their statistical significance is required. A review of the standardised solution revealed that the parameter values are reasonable and theoretically consistent. In addition, all parameter estimates were statistically significant ($p < .01$ or higher) other than two error variances (TAI Emotion1 and TAI Worry2, $p > .05$). Two multivariate analyses of parameter estimates were also employed in the analysis and evaluation of the parameter estimates. The Lagrange multiplier (LM) statistic (Bentler, 1986; Schumacker & Lomax, 1996), identified no theoretically reasonable freeing of existing fixed parameters in the proposed model. The Wald test (Bentler, 1986; Wald, 1943) identified no substantive redundant parameters. All four indirect effect paths were found to be significant.

An examination of Figure 2 revealed that the standardised path coefficients supported the hypothesised conceptual model in that each of the hypothesised paths was statistically significant and in the expected direction. Specifically, Family Social Status and Verbal Academic Self-Concept were positively related. Each of these constructs had a significant and negative relation with Test Worry, which in turn had a significant and positive relation with Test Emotion. Verbal Academic Self-Concept had a positive and significant relation with Verbal Academic Achievement GPA; while Test Worry had a significant and negative relation with Verbal Academic Achievement GPA.

In summary, the structural equation modelling results supported the hypothesised structural model for secondary student teachers (Figure 2). That is, the proposed structural paths were psychometrically and theoretically sound. Additionally, these results supported the hypotheses that the effects of Verbal Academic Self-Concept and Family Social Status on Test Emotion and the effects of Verbal Academic Self-Concept and Family Social Status on Verbal Academic Achievement were significantly mediated by Test Worry.

Figure 1: Primary Student Teachers' Verbal Academic Achievement Causal Structure: Measurement Components' Factor Loadings and Structural Components' Standardised Path Coefficients.

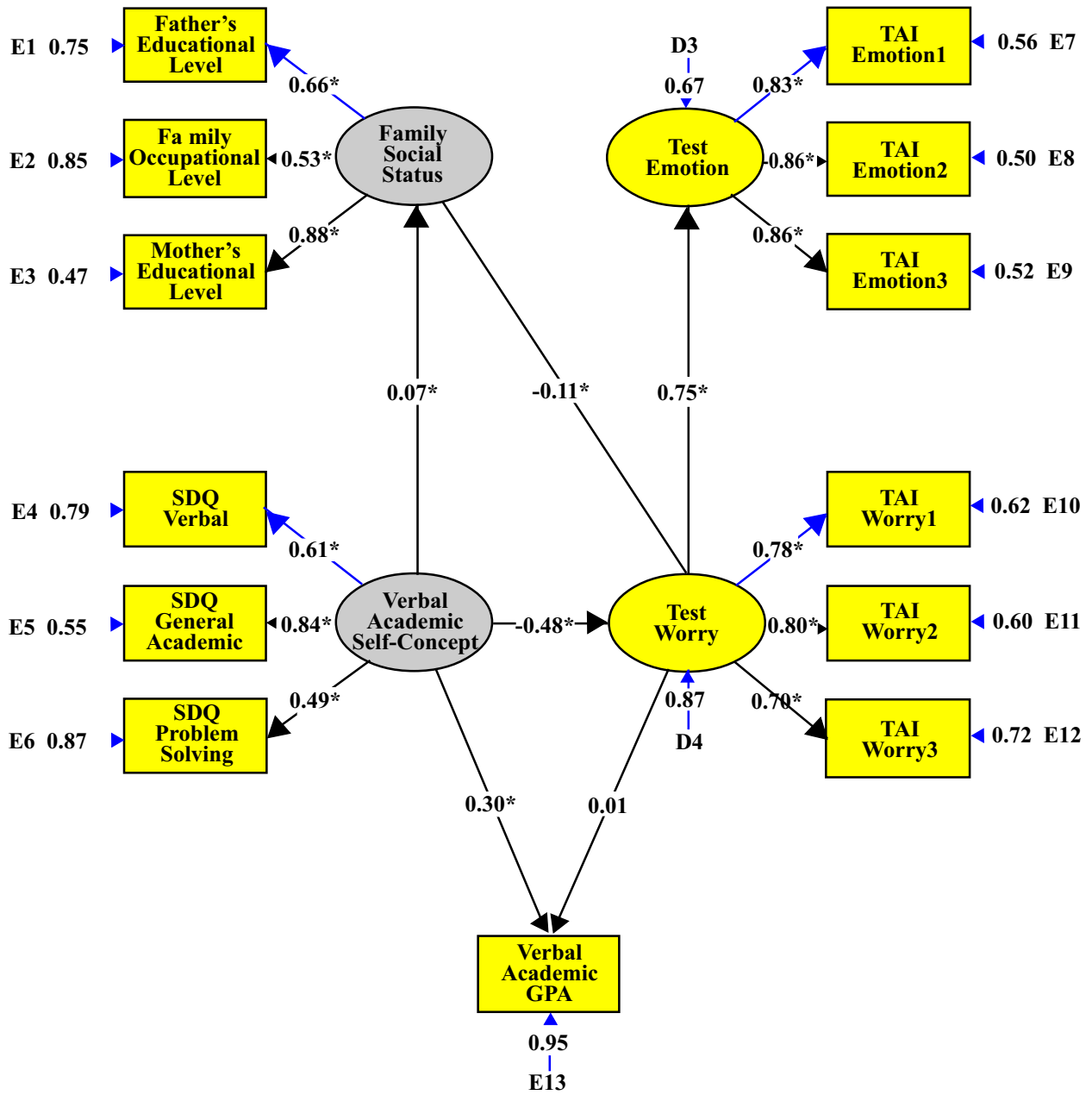
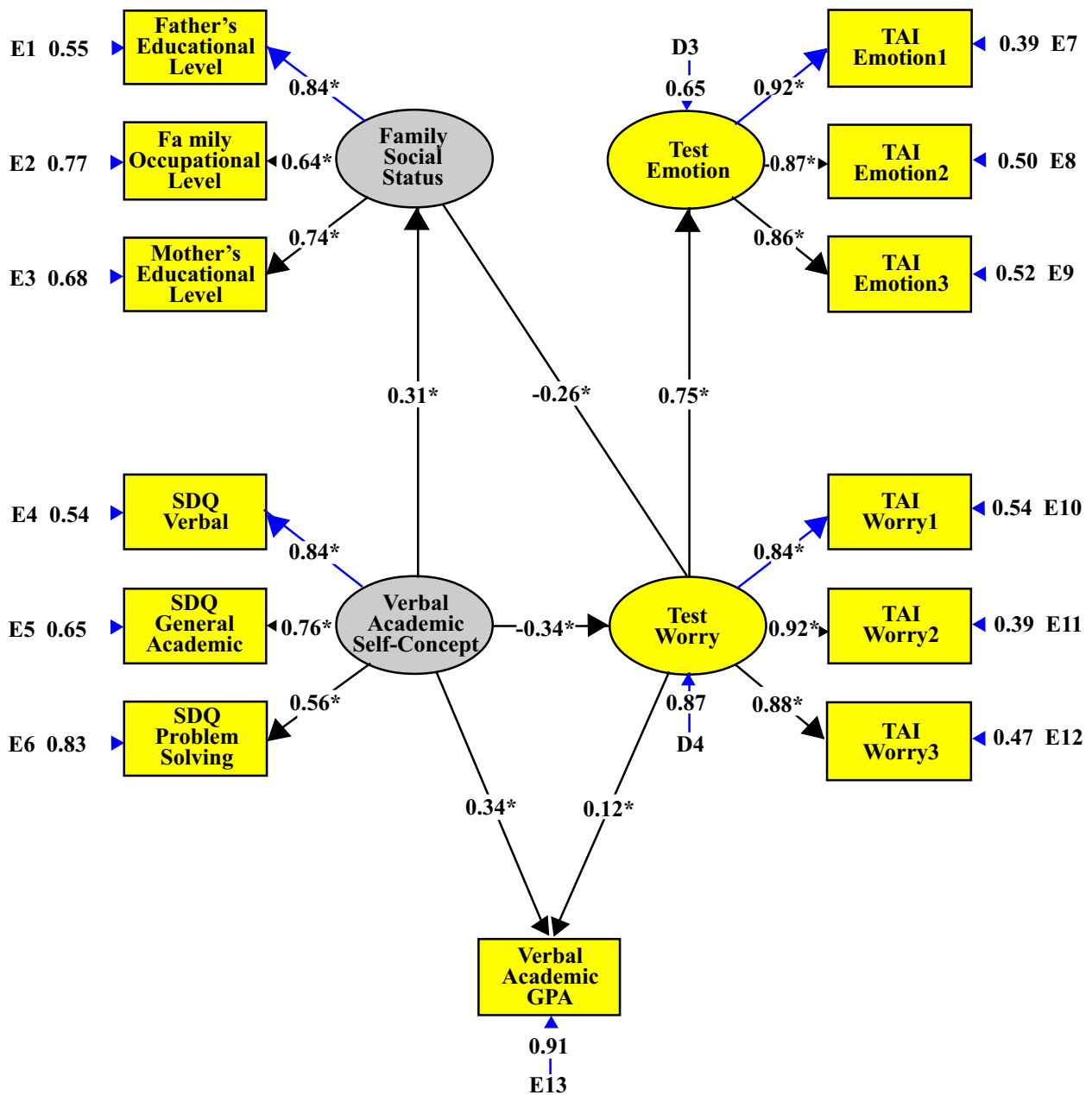


Figure 2: Secondary Student Teachers' Verbal Academic Achievement Causal Structure: Measurement Components' factor loadings and structural components' standardised path coefficients.



Student Teachers' Multi-Group Analyses Measurement (CFA) and Causal Structural (SEM) Models

Testing for Invariant Measurement Structure (CFA Model)

Measurements

As shown in Table 1, the simultaneous four-factor solution (Model 1) for each group yielded an excellent fit to the data, $\chi^2(96, n = 417) = 60.59, p = .99$. These results suggested that for both groups of student teachers, the data were well described by the four latent constructs.

This finding, however, does not necessarily imply that the actual factor loadings are the same across type of student teacher. The hypothesis of an invariant pattern of factor loadings was tested by placing equality constraints on the eight free factor loadings and then comparing this model (Model 2) with Model 1 in which only the number of factors was held invariant. The difference in chi-square values (Model 2 versus Model 1) was not significant (χ^2 -change (8) = 13.28, $p > .05$) indicating Model 2 was not significantly different from Model 1. Based on these results it can be accepted that the equality factor loading constraints were tenable.

Variations

As shown in Table 1, the simultaneous four-factor with invariant free factor loadings (Model 2) yielded an excellent fit to the data, $\chi^2(104, n = 417) = 73.87, p = .99$. Model 3 is the same model as Model 2 but was respecified with all latent variances constrained to be invariant. Testing the more restrictive model (Model 3) with the less restrictive model (Model 2) showed that the hypothesis of equal latent variances was not tenable. As shown in Table 1, the chi-square difference was significant, $\chi^2\text{-change}(4) = 10.72, p < .05$. To identify the specific differences in the latent construct variances between primary and secondary student teachers, separate models (Model 4) were reestimated with each latent construct variance made independently invariant. As presented in Model 4 (Table 1), the equality constraint was not tenable for one of the four latent variances. Specifically, significant differences were found in the variance of Verbal

Academic Self-Concept, $\chi^2\text{-change}(1) = 8.14, p < .01$, across the two groups of student teachers. The equality constraints for the variances of Family Social Status, Test Worry, and Test Emotion were found to be justifiable ($p > .05$). In the final analysis of variance equality across student teacher cohorts Model 4 was respecified in such a way that the three tenable variance constraints identified in Model 4 were simultaneously made invariant in Model 5. This more restrictive model (Model 5) was then compared with Model 2. Model 5 was found not to be significantly different from Model 2 and thus the three simultaneous variance constraints were tenable, $\chi^2\text{-change}(3) = 4.27, p > .05$. Reviewing the latent construct variances it was found that the Verbal Academic Self-Concept variance of the secondary student teachers' was significantly higher than the primary student teachers'. The variances of Family Social Status, Test Worry, and Test Emotion were found to be equivalent across the two student teacher cohorts.

Table 1:
Tests for the Invariance of the Measurement Model Between Primary and Secondary Student Teachers

Competing Models	χ^2	df	χ^2	df	χ^2 change	df
0 Null Model:		221061	132	-----	---	
<i>Measurements</i>						
1 Number of Factors Invariant ^a :	60.59		96	-----	---	
2 Model 1 and Pattern of Factor Loadings Invariant:	73.87		104	13.28	8	
<i>Variations</i>						
3 Model 2 With All Latent Construct Variances Made Invariant:	84.59		108	10.72*	4	
4 Model 2 With Latent Construct Variances Made Independently Invariant:						
Family Social Status	74.99		105	1.54	1	
Verbal Academic Self-Concept	81.59		105	8.14**	1	
Test Emotion	74.44		105	0.99	1	
Test Worry	76.26		105	2.81	1	
5 Model 2 With Tenable Equality Constraints Made Invariant ^b :	78.14		107	4.27	3	

a Values of first variable in each congeneric set are fixed for identification purposes (Byrne, 1994).
 b Family Social Status, Test Emotion, Test Worry constrained. * $p < .05$. ** $p < .01$.

Testing for Invariant Causal Structure (SEM Model)

Measurements

Examination of the goodness-of-fit index, RMSEA, CFI, and the standardised residual matrix for each group gave an indication of the apparent data fit to the proposed structural model for each group. Once the baseline models have been formulated (factor loadings were constrained to be equal while the factor variances are free) the equivalence of the

structural parameter estimates across the student teacher groups can proceed. A comparison of the corresponding parameter estimates was made by progressively applying equality constraints and examining the chi-square statistic for evidence of deterioration in the fit of the model. As shown in Table 2, the simultaneous structural model solution (Model 1) for each group yielded an excellent fit to the data, $\chi^2(128, n = 417) = 82.10, p = .99$. In Model 1 the number of factors and the factor loadings were invariant justified on the basis of the preceding single group analyses.

Table 2:
Tests for the Invariance of the Structural Model Between Primary and Secondary Student Teachers

Competing Models	χ^2	df	χ^2	df change
0 Null Model	256028	156	----	---
<i>Measurements:</i>				
1 Number of Factors and Pattern of Factor Loadings Invariant ^a :	82.10	128	----	---
2 Model 1 With All Structural Paths Invariant:	134.90	134	52.80***	6
3 Model 1 With All Structural Paths Made Independently Invariant:				
<i>Independent Factors' Structural Path:</i>				
Family Social Status → Verbal Academic Self-Concept	112.54	129	30.44***	1
<i>Dependent Factors' Regression Structural Paths:</i>				
Family Social Status → Test Worry	77.66	129	12.27***	1
Verbal Academic Self-Concept → Test Worry	87.26	129	5.16*	1
Verbal Academic Self-Concept → Verbal Academic GPA	82.14	129	0.04	1
Test Worry → Verbal Academic GPA	84.77	129	2.67	1
Test Worry → Test Emotion	83.00	129	0.90	1
4 Model 3 With Tenable Equality Constraints Made Invariant ^b :	95.36	131	13.26**	3
5 Model 4 With Tenable Equality Constraints Made Invariant ^c :	82.99	130	0.89	2
a	Values of first variable in each congeneric set are fixed for identification purposes.			
b	Verbal Academic Self-Concept → Verbal Academic GPA, Test Worry → Verbal Academic GPA, and Test Worry → Test Emotion constrained.			
c	Verbal Academic Self-Concept → Verbal Academic GPA and Test Worry → Test Emotion constrained.			

* p < .05. ** p < .01. *** p < .001.

The results of the simultaneous solution suggested that for both groups of student teachers, the data was well described by the posited measurement model. This finding, however, does not necessarily imply that the structural paths are equivalent across type of student teacher. The hypothesis of an invariant pattern of structural paths was tested by placing equality constraints on all structural paths and then comparing this model (Model 2) with Model 1 in which there were no constraints. The difference in chi-square values (Model 2 versus Model 1) was significant (χ^2 -change (6) = 52.80, $p < .001$). Testing the more restrictive model (Model 2) against the less restrictive model (Model 1) showed that the hypotheses of equal path coefficients were not tenable.

Structural paths

To identify the specific differences in the structural parameters between primary and secondary student teachers, separate models (Model 3) were reestimated with each structural path parameter made independently invariant. As shown in Table 2, equality constraints are tenable for three of the six path coefficients. In the final analysis of the equality of structural paths Model 3 was respecified in such a way that the three identified tenable path constraints were simultaneously made invariant in Model 4. This more restrictive model (Model 4) was then compared with Model 1. Model 4 was found to be significantly different from Model 1 and thus the three simultaneous parameter constraints were not tenable, χ^2 -change (3) = 13.26, $p < .01$. Results of univariate and multivariate LM χ^2 tests and related probability values associated with each equality constraint suggested that all but one path, Test Worry \rightarrow Verbal Academic GPA, were tenable across the two student teacher groups. Based on this information a new model was respecified (Model 5) which was the same as Model 4 but the Worry \rightarrow Verbal Academic GPA equality constraint was released. Model 5 was found to be significantly different from Model 4, χ^2 -change (1) = 12.37, $p < .001$, yet was not significantly different from Model 1, χ^2 -change (2) = 0.89, $p > .05$. These results lend support to the notion that the two simultaneous structural path constraints were tenable.

The secondary student teachers' structural paths were consistently higher than the primary student teachers' (with the exception of the Verbal Academic Self-Concept \rightarrow Test Worry path). Only two structural paths were found to be equivalent: Verbal Academic Self-Concept \rightarrow Test Worry and Test Worry \rightarrow Test Emotion. These results did not support the invariance of the structural component of the proposed causal model across the two cohorts of student teachers.

Discussion

The Self-Concept and Verbal Academic Achievement

Results of this study are consistent with the perceptual psychology (Combs, Richards, & Richards, 1988; Combs & Gonzales, 1994; Purkey & Novak, 1996) and cognitive-behavioural (Mischel, 1968, 1973, 1979; Ellis, 1962, 1970;

Meichenbaum, 1974, 1977) tenets that perception and self-beliefs influence behaviour.

Findings from this study support the hypothesis that Verbal Academic Self-Concept is significantly and positively related to Verbal Academic Achievement.

The Verbal Academic Self-Concept of primary and secondary student teachers has a significant direct effect on Verbal Academic Achievement. The direct relationship between Verbal Academic Self-Concept and Verbal Academic Achievement is invariant across the two cohorts of student teachers indicating that this influence is similar for both student teacher groups.

The direct influence of Self-Concept on Verbal Academic Achievement is much more important than the indirect relationship through Test Worry when it is present (there was insignificant regression of Verbal Academic Achievement on Test Worry for primary student teachers).

The strength and direction of the relationship between Verbal Academic Self-Concept and Verbal Academic Achievement identified in this study is consistent with previous research findings such as Lent, Brown, and Larkin (1984, 1986), Brookover, Erikson, and Joiner (1967), and Marsh (1987). While these findings suggest that a positive self-concept is necessary for academic achievement it would be inappropriate to assume a positive self-concept is totally sufficient in achieving at a high academic standard (that the possession of a high self-concept causes high academic achievement). Further research is required to understand the interaction of a number of personality and sociological factors influencing behaviour in an academic setting, e.g. motivation, locus of control, emotional states, family, and school environment to name just a few. While it is accepted that many factors influence behaviour in an academic setting the results of this study support the notion that the possession of a high academic self-concept is necessary to achieve at a high academic standard. (Hamachek, 1995)

Test Anxiety and Verbal Academic Achievement

The hypothesised causal model posited that the cognitive perceptions (Verbal Academic Self-Concept and the Worry component of test anxiety) within a person would have a significant influence on academic outcomes (Newbegin & Owens, 1996; Higbee & Dwinell, 1996). Additionally, the causal model proposed that the affective component of test anxiety (Test Emotion) would not have any direct or indirect influence on academic performance. This particular structural aspect of the causal model is supported by previous research findings (Hembree, 1988; Kleine, 1990). The omission of emotional influence is based on previous findings that Test Worry, the cognitive side of test anxiety, as opposed to emotionality (Test Emotion), awareness of bodily arousal and tension, interferes and/or detracts from the task at hand. While the test anxiety component of emotion is strongly and positively related to the worry component there is general agreement, supported by empirical research, that Test Emotion is not the debilitating influence on academic performance. It is generally accepted that worry has a

negative relation with performance as a result of its cognitive interference or cognitive distractibility effects.

The Self-Concept and Test Anxiety

Analysis of the results of this study supported the viewpoint that the latent construct, Test Worry, does not have as strong of an effect on Verbal Academic Achievement as does Verbal Academic Self-Concept. For both cohorts of student teachers, Verbal Academic Self-Concept is significantly and negatively related to Test Worry.

The causal structure of the proposed model lends considerable support to the hypothesis that Verbal Academic Self-Concept has a significant direct effect on Test Worry. Additionally, based on the proposed structural model, results of this study supported the idea that the relationship between Verbal Academic Self-Concept and Verbal Academic Achievement is stronger than the relationship between Verbal Academic Achievement and Test Worry. These results suggest that one's academic self-description influences an individual's level of cognitive interference, namely the Test Worry component of test anxiety.

The significant negative relation between Verbal Academic Self-Concept and Test Worry is an important finding not only for future research but also for practitioners in applied settings. While it is generally accepted that test anxiety has two major components, Emotion and Worry (Liebert & Morris, 1967; Spielberger, 1980; Schwarzer, 1996), previous research has not linked the worry component of test anxiety to the person's self-concept in specific academic domains. Psychological interventions, designed to alleviate high test anxiety and improve academic performance, may be enhanced if the emphasis of the intervention is focused on developing an individual's positive perception of themselves in specific academic domains. Based on this study's findings increasing one's self-perception in specific academic domains is likely to reduce the worry component (the debilitating influence on academic performance) of test anxiety.

Family Social Status

Partial support was provided for the hypothesis that Family Social Status has an indirect influence on Verbal Academic Achievement. Specifically, the influence of Family Social Status, mediated by Test Worry, on Verbal Academic Achievement was supported for secondary student teachers but not for primary student teachers. Test Worry was found to have a nonsignificant influence on Verbal Academic Achievement for primary student teachers. As such, since there was no hypothesised direct influence of Family Social Status on Verbal Academic Achievement and results indicated that there is nonsignificant Test Worry influence on Verbal Academic Achievement, Family Social Status is not significant in influencing Verbal Academic Achievement for primary student teachers.

Additionally, Family Social Status' direct influence on Test Worry and the covariance between Family Social Status

and Verbal Academic Self-Concept were found to be variant across the two student teacher cohorts.

Thus, on the whole, the results show that the Family Social Status associations between a number of variables are significantly lower for primary student teachers than for secondary teachers. These results suggest that the influence of Family Social Status is different on individuals depending on their age, stage of life, or perhaps, the demands of the particular teacher education program.

Conclusions

Recently, educational psychology researchers have called for the development of educational programs that not only increase academic competencies of students but also confidence in their ability in specific academic domains (Pajares, Miller, & Johnson, 1999). Pajares et al. (1999) believe that what is not being fully explored and studied at the present time in educational program reforms is the idea that while aptitude and actual competence are necessary, they are not sufficient conditions required to increase academic performance.

In support of this idea this study has shown that the self-concept needs to be taken into account to provide a more comprehensive understanding of the dynamics and development of competency and achievement of student teachers.

The results of this study have important theoretical and practical implications for self-concept research and teacher education programs. The most obvious theoretical implication is that this study gives support to the hypothesis that student teachers' self-concept, particularly the latent facet Verbal Academic Self-Concept, has a significant positive relation with Verbal Academic Achievement and a significant negative relation with the Worry component of test anxiety.

Following this implication it would appear that further research is required to advance understanding of the complex influence academic self-concept has on the instructional behaviours of teachers in the classroom. While much emphasis has been placed on pupil academic achievement and their self-concept, there is a paucity of research on the influence of the teachers' academic self-concept on pupil's academic performance. Future self-concept research studying the interaction of teachers' self-beliefs and how they integrate themselves into the teaching work environment will undoubtedly provide a rich source of ideals towards improving quality of teaching.

Additionally, research focusing on the development of teachers' self-concept during pre-service teacher training is essential in the development of quality educational programs that purport to enhance quality teaching. Educational proposals that recommend that to improve the quality of teaching, teacher training institutions need to increase the entry requirements (i.e. Year 12 results) may be just cries in the wind. Until such proposals take into account the need for teacher training methods and interventions designed to enhance the academic self-concept of not only pre-service teachers but in addition, in-service teachers, the goal of

improving the quality of teaching and the quality of learning will not be forthcoming.

This study highlights the need for a balance of academic and personal development (non-cognitive development) units in teacher education programs — pre-service and in-service. The education of teachers should be viewed developmentally, both from the perspective of the development of relevant knowledge and skills, and from the perspective of the concept of self as a teacher.

The emphasis of this study has been to discover the complex influence self-concept and other important corollaries have on academic achievement. While it has been demonstrated that self-reported self-concept does indeed influence academic achievement of student teachers further research is required to determine if this influence extends to the actual practice of teaching.

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