

**An Investigation of the Relationship between Emotional Intelligence and Specific  
Learning Difficulties (SLDs)**

**Lana D. McLean**

**Swinburne University of Technology**

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*Dedicated to my mother Rita Masluk, my stepfather Karl Masluk, my father Eugene Elston, my husband Alex McLean, my mother-in-law Lila McLean, my sons Brandon and Rian McLean, their wives respectively Stephanie Su and Shin and my grand-daughter Ruby for their commitment to tolerance and equality, and for their love, support and empathy that has inspired and motivated me in all of my endeavours.*

*“Make a habit of two things: to help; or at least to do no harm”*

*Hippocrates, 4<sup>th</sup> Century B.C.*

## **Declaration**

I declare that this thesis does not contain any material that has not been submitted previously for the award of any other academic degree or diploma. To the best of my knowledge it contains no material written or published by another person except where due reference is made in the text of the thesis.

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## Abstract

Specific learning difficulties (SLDs) interfere with an individual's ability to function satisfactorily both academically and socially. Effective assessment and treatment strategies are urgently required to improve life outcomes for affected individuals. Research has demonstrated the important role emotions play in how a person functions and interacts with others and in processing information. Study One of this thesis examined whether there is a significant correlation between Emotional Intelligence (EI) and Specific Learning Difficulties (SLDs). Personality, Depression and Anxiety Scale (DASS), EI and interpersonal problems were predictor variables and total number of dyslexia, dyscalculia, dyspraxia and ADD symptoms were the dependant variables. A total of 836 participants aged 12 to 65 volunteered to anonymously complete the self-report questionnaire through a free Apple Iphone application titled "Dyslexia Detector" designed by the candidate and Rian McLean from [www.underbeak.com](http://www.underbeak.com). Participants aged 12 to 17 were directed to complete the Adolescent Self-Report Version along with the 20-Item Mini IPP; DASS 21 and the Clinical Tool for Dyslexia. Participants aged 18 to 65 were directed to complete SUEIT - Swinburne University Emotional Intelligence Test – Self Report along with 20 - Item Mini IPP; DASS 21 and the Clinical Tool for Dyslexia. The results included a significant correlation between EI and SLDs specifically supporting the hypothesis that there is a relationship between Emotional Recognition and Expression and SLDs; a relationship between Understanding Others Emotions and SLDs and a relationship between Emotional Management and Control and SLDs. In relation to the research question posed, the results demonstrated that the group with 3 or more symptoms of SLDs differ on the level of Emotions Direct Cognition with the group with less than 3 symptoms of SLDs in that the group with 3 or more symptoms of SLDs were higher on Emotions Direct Cognition and higher on SLD than the group with less than 3 symptoms of SLDs. The results also suggest that individuals with 3 or more symptoms of dyslexia incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of dyslexia.

Furthermore, the results suggest that individuals with 3 or more symptoms of dyscalculia incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of dyscalculia. Moreover the results suggest that individuals with 3 or more symptoms of dyspraxia incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of dyspraxia. Also results suggest that individuals with 3 or more symptoms of A.D.D incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of A.D.D.

Study Two, examined whether academic intervention involving the reteaching of numeracy and literacy symbols and simple word recognition would increase EI. A total of 40 participants aged 12 to 65 undertook eight one hour intervention sessions on a one-on-one basis. Their EI was examined for change against the self-report questionnaires, the Adolescent Self-Report Version (SUEIT) (for participants aged 12 to 17); - the Swinburne University Emotional Intelligence Test – Self Report (for participants aged 18 to 65); the 20 -Item Mini IPP; the DASS 21 and the Clinical Tool for Dyslexia, which were completed before and after the intervention. The results indicate that short term academic intervention alone cannot treat nor ameliorate SLDs and similarly would have no impact on increasing EI. The results did not support the hypothesis that there would be a significant improvement in EI, specifically Emotional Recognition and Expression Understanding Others Emotions and Emotional Management and Control after the intervention. The limitations of this study and the empirical evidence of the correlation between EI and SLDs were considered in the recommendations for future research. The findings in the two studies reported in this thesis contribute to the growing interest of professionals in the field of education, mental health and in society as a whole to help find treatments for SLDs.

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## **Glossary of Abbreviations**

ADHD	Attention Deficit Hyperactivity Disorder
ADD	Attention Deficit Disorder
ANOVA	Analysis of Variance
BASC	Behaviour Assessment System for Children
BA-EI	Bar-On Emotional Quotient Inventory
BRIEF	Behaviour Rating Inventory of Executive Function
BRIEF-P	Behaviour Rating Inventory of Executive Function- Parent
CBCL	Child Behaviour Checklist
CFA	confirmatory factor analysis
DASS	Depression and Anxiety Scale
E	Emotional
EARS	Emotional Accuracy Research Scale
EC	Emotional Control
EDC	Emotions Direct Cognition
EM	Emotional Management
ERE	Emotional Recognition and Expression (
EF	Executive unction
EI	Emotional Intelligence
EQ	Emotional Quotient
EQ-i:	Bar-On Emotional Quotient Inventory
GAMA	General Adult Mental Ability Scale
HSQ	Home Situations Questionnaire
ID	Intellectual disability
IQ	Intelligence quotient
LD	Learning Disability
LEAS	Level of Emotional Awareness Scale
MEIS	Multifactor Emotional Intelligence Test
MSCEIT	Mayer-Salovey-Caruso Emotional Intelligence Scale
OSPAN	Operation Span Task
PD	Personality disorder
PE	Predominant emotional

PFA	Psychological First Aid
PUF	Omega-3 polyunsaturated fatty acids
SEL	Social-emotional learning
SES	Socio-economic status
SLD	Specific Learning Difficulties
SSRI	Selective Serotonin Reuptake Inhibitor
SWAN	Strengths and Weaknesses of ADHD symptoms and Normal rating scale
UE	Understanding Emotions
ULD	Undiagnosed learning disability
WDI	Wechsler's Deterioration Index
WAIS	Wechsler Adult Intelligence Scale
WISC	Wechsler's Intelligence Scale for Children
WPPSI	Wechsler Preschool and Primary Scale of Intelligence
WRAT	Wide Range Achievement Test
WSDS	Workplace Social Desirability Scale

## **Glossary of Appendices**

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# CHAPTER 1: Overview

The social and emotional consequences of specific learning difficulties (SLD) impact on individuals with SLD in complex and compounding ways and are far greater than academic challenges. Lyon (1996) found that approximately 5% of all public school students are identified as having a learning disability (LD) and the longer children with disability in basic reading skills, at any level of severity go without identification and intervention, the more difficult the task of remediation and the lower the rate of success. However he also reported that while early intervention is necessary, it should not be assumed to be sufficient to address the multiple manifestations of learning disability. Scientific observation and research has progressed dramatically in recognizing the correlation between emotions and a person's ability to perform across all life skills and also recognizes that emotions play a significant role in the experience of a learning difficulty. Emotional Intelligence (EI) demonstrated to be a significant psychological construct by Stough et al (2009) has the capacity to be an effective tool to develop individuals social and personal skills specifically as Bar-on et al (2006) reported in educational achievement and Goleman et al (1998) reported in interpersonal relationships.

The purpose of this present thesis is to empirically test whether EI has a significant correlation to SLDs which include dyslexia, dyscalculia, dyspraxia and ADD. The main aim of the present thesis, in Study One is to investigate correlation between EI, specifically Emotions Direct Cognition; Emotional Recognition and Expression; Understanding Others Emotions and Emotional Management and Control and SLDs, specifically dyslexia, dyspraxia, dyscalculia and ADD. Emotions have been regarded as difficult to treat and even though alternative causes have provided opportunities for treatment of SLDs, Lyon's (1996) reported that emotions are one of the manifestations of a learning difficulty. Research has reported the significance of emotions in academic performance. Newsome et al (2000) concluded that emotional intelligence may be more effective in predicting academic achievement and this finding was supported by Van Rooy and Viswesvaran (2004) who concluded that EI should be considered a valuable predictor of performance. Similar research conducted



by Parker et al (2004) also reported an overall correlation between social and emotional competency and academic success.

The first significant studies of the connection between social-emotional learning and SLDs along with an implication for intervention were based on Wallace and colleagues (2002) reported findings that factors such as the way in which emotion directs attention and influences have been deemed important in effective classrooms that include high school students with learning difficulties. Also a study by Downey et al (2008) examined the relationship between EI and the scholastic achievement in Australian adolescents across a wide range of educational subjects reported that academic success was found to be associated with higher levels of total EI. In addition Goleman and Boyatzis (2008) reviewed best practice in education and defined 'emotional competence' as a 'learned capability based on emotional intelligence that results in outstanding performance at work'.

A broader view is emerging as studies indicate a strong link between the experience of a SLD and emotions. Mugnaini et al (2009) reported that suitable social, health and school policies aimed at identifying and treating dyslexia as a cause of discomfort are required, and confirmed the clinical need to assess and contrast additional risk factors that may increase the probability of suffering in dyslexic students.

Treatment avenues for problems have also been investigated. Downey et al (2010) explored the mediating effect of emotional intelligence and coping strategies on problem behaviours. They reported that the relationships between Emotional Management and Control and engagement in internalizing and externalizing behaviours were found to be mediated by the use of non-productive coping strategies. Further research has also examined resilience factors and situational impairment. Naglieri et al (2010) reported on the relationship between social emotional factors related to resilience and the relationships between impairment with intelligence. They found that the lower protective factor the higher the degree of impaired behaviour, which suggests that children with greater reported behavioural and situational problems may in fact be less resilient. Building on these findings, educators in a recent study in Scotland examined the development of intrapersonal intelligence in pupils experiencing social, emotional and behavioural difficulties.

Research into EI and bullying behaviours has also reported significant links between EI and bullying behaviour. Lomas et al (2012) examined for the first time the relationship between emotional intelligence (EI) of adolescents, bullying behaviours and victimization in order to better understand bullying behaviours. The authors reported that the EI dimensions of emotions Direct Cognition and Emotional Management and Control significantly predicted the propensity of adolescents to be subjected to peer-victimization. Also, the EI dimension of Understanding the Emotions of Others was found to be negatively related with bullying behaviours. They concluded that anti-bullying programs in schools could be improved by addressing deficits in the EI in adolescence who bully others as well as those who are at a greater risk of being subjected to peer-victimization. Lomas et al (2012) also concluded that measures of EI may be utilized to identify students who showed less developed EI competencies, which may allow for more targeted, accurate or timely intervention to protect students from the potential harmful consequences that are associated with exposure to bullying.

Systematic research on the social and emotional consequences of SLDs has escalated as indications from personal accounts that, both adults and children with a SLD, experience many difficulties in living in modern societies. The purpose of this present thesis is to empirically test whether EI has a significant correlation to SLDs which include dyslexia, dyscalculia, dyspraxia and ADD. The thesis is an overview of the main research findings in SLDs and EI and was organized in two studies. Study One investigated the correlation between EI and SLDs as well as constructs of personality and mental health with 836 participants. Study Two investigated whether an academic intervention targeting the development of numeracy and literacy skills would improve EI along with the constructs of personality and mental health.

## **1.2 Arrangement of Chapters**

Chapter 2 presents an overview of the definitions, main research, the limitations and areas requiring further research in SLDs. Chapter 3 presents an overview of the various definitions, conceptualizations, theories, measures and models of the emergence of EI as a separate intelligence as well as a summary of the main research, the limitations and areas requiring further research. Chapter 4 includes the aims,

Hypotheses, implementation and instruments of Study One of this thesis. Chapter 5 includes the statistical analysis and sample descriptives for Study One. Chapter 6 includes the aims, hypotheses, study methodology, study instruments, study implementation and study design. Chapter 7 includes the results of Study Two and Chapter 8 includes discussion, conclusions, key findings, limitations and recommendations for further study in this area of research.

## **CHAPTER 2: Literature Review- Specific Learning Difficulties (SLDs)**

### 2.1 Definitions

The most frequently recognized characteristics of dyslexia include severe reading, spelling and writing delays, and reversals of symbols. Other symptoms of the dyslexic syndrome include time and space confusion, disorganization, and difficulty with comprehension. Reid (2009) also observed a problem with a definition of dyslexia because it provides a definitive and descriptive response to what, for many, can be an area of emotional stress and personal conflict. In providing a definition, Reid acknowledged that because dyslexia is multifaceted a single universally accepted definition is difficult to reach. He defines dyslexia as a processing difference, often characterized by difficulties in literacy acquisition affecting reading, writing and spelling. Also, that dyslexia can have an impact on cognitive processes such as memory, the speed of processing, time management, co-ordination and automaticity. Reid also observed that there may be visual and phonological difficulties, and there usually are some discrepancies in educational performances. He also reported that because there will be individual differences and individual variation it is, therefore, important to consider learning styles and the learning and work context when planning intervention and accommodation. Dunoon (2010) also observed that there are differing views on a definition or an experience they relate when describing or explaining dyslexia. She concluded that it is difficult to tell whether a child has a learning difficulty because the symptoms of being dyslexic only become outwardly evident when a child is learning, remembering or demonstrating a cognitive or physical skill.

The Australian Psychological Society (2015) defines a specific learning disability as a disability that ‘can affect how individuals learn in a variety of ways including how they take in, remember, understand or express information. A specific learning disability is also defined as problems people encounter in learning that affect achievement and daily life skills. The most common forms of learning disability are in reading and spelling, but they may also be found in other areas of functioning

including spoken language and mathematics. Individuals can present with a specific difficulty in one or more areas and have average or above average performance in other areas. For example, a child who has a specific difficulty in reading and spelling may perform well in mathematics. However, for others there may be several overlapping areas of difficulty.’ The Oxford Dictionary (2015) defines a learning difficulty as

‘Difficulties in acquiring knowledge and skills to the normal level expected of those of the same age, especially because of mental disability or cognitive disorder.’

## 2.2 Research on SLDs

Systematic research on the social and emotional consequences of dyslexia has increased as indications from personal accounts that, both adults and children with a SLD, experience many difficulties in living in modern societies. This thesis provides an empirically evaluated relationship between emotional intelligence and SLDs, to elicit the social and emotional consequences of SLDs.

### 2.2.1 Etiologic factors of SLDs

The social and emotional consequences of SLDs are barriers for individuals with SLD that resonate far beyond their academic challenges. In the mid-1960’s, although recognizing that emotions played a significant role in the experience of a learning difficulty, researchers examined other causes for the existence of SLDs. Because emotions were seen to be difficult to treat, alternative causes provided better opportunities for treatment of SLDs, at this time. Etiologic factors were examined to explain SLDs in children. Gofman (1965) reported that it had been neurological scientists’ experience that many learning difficulties are not solely based on emotions but may result from organic or physiological dysfunctions that can easily miss detection.

### 2.2.2 Tests for the presence of SLDs

The emotional content of the SLD experience, however, continued to be of interest to researchers who recognized the significant relationship. In the 1970’s the research that

was carried out on SLDs revolved around finding ways to understand the emotional component of the SLD experience and examining the effectiveness of tools that had been established to diagnose SLDs. Rutter (1974) reported that researchers in the area of diseases in children found that it is likely that emotional factors play a greater part in learning inhibitions that arise later in childhood after initial success. However, which mechanisms are most important was unknown.

Research into the observed connection between SLDs and emotions also sought to determine which accredited tests of the presence of SLDs was most accurate. Controversy existed around whether the Weschler Intelligence Scale for Children (WISC), or the Wide Range Achievement Test (WRAT) was the best indicator of the presence of a SLD. Simonds (1974) reported the WRAT and the WISC were useful as screening tools to detect learning disabilities. Simonds (1974) also reported that the WISC and WRAT tests enable the educator and the clinician to screen for learning disorders and help in the analysis of the effects of emotional symptoms on the learning process. Simonds also reported that a greater number of children with emotional disorders were males and the male to female ratio was less than 2 to 1. He concluded that other diagnostic testing and an evaluation of the degree of emotional and learning disability and recognition of the interrelations between the two disorders are essential for effective remediation and treatment.

### 2.2.3 Ecological factors and SLDs

To further improve the accuracy of the diagnosis of SLDs, research in the 1980's considered ecological factors. Forness (1982) reported that evidence suggested that both physicians and educators often fail to consider situational and instructional factors that can lead to an incorrect diagnosis of the syndrome. He concluded a simple case review and interview procedure be used as a means of avoiding the problem of false-positive diagnoses of dyslexia. Along with situational and instructional factors, Colgan and Cilgan (1984) observed the relevance of diet and whether children with SLDs were affected by dietary influences including dietary changes and the use of nutrient supplements. In their research subjects were given an individually designed vitamin and mineral supplement and diets were also changed to reduce sugars and refined foods and toxic metals contamination. They reported that

the experimental group showed significantly greater improvements than the control group assessed at school, at home and in the clinic and that the experimental group also made significantly greater gains in reading skills.

#### 2.2.4 Inner emotional state and SLDs

Research in the 1990's continued to build on the recognition that emotions and ecological factors impacted on the experience of a SLD. There were further attempts to clarify how SLDs manifested in society and to evaluate the accuracy of tools used to diagnose a SLD. Clare and Clements (1990) undertook research to examine social cognition and impaired social interaction in people with severe learning difficulties. Their research found that social skills' training had focused on performance or overt behaviour, rather than on the other components of successful social functioning like motivation and goals, analysis of social information, and performance feedback. They observed that contrary to expectations, on the four individual tasks of effective role-taking differences between groups were not significant.

Researchers also evaluated aspects of dyspraxia and Smyth (1992) examined clumsiness as an impaired motor skill in children considered to be otherwise normal. He reported that impaired performance of motor skills, to a degree experienced by clumsy children, is unlikely to present a serious problem. However, he also found that significant associated and secondary emotional problems are common. Gordon (1993) investigated the link between SLDs and delinquency and reported that learning disorders of various types are relatively common. He also reported that the reaction of the affected children can lead to social problems and that a recognized link between learning disorders and delinquency provides considerable scope for prevention.

Research has revealed that SLDs are impacting on children worldwide in dramatic and damaging ways and that, more often than not, they have long-term negative consequences. Doctors, psychologists, psychiatrists, educationalists and many others have sought to understand this growing problem. Research and observations of children with SLDs in Japan had already made a significant number of observations about the consequences of SLDs. In the mid-1990's Lyon (1996) found that approximately 5% of all public school students had a learning disability (LD). Also,

the longer children with disability in basic reading skills, at any level of severity, go without identification and intervention, the more difficult the task of remediation and the lower the rate of success. His observations focused primarily on the deficits in basic reading skills, both because of their critical importance to academic success and because relatively more is known about these deficiencies. He reported that other academic, social, and behavioural manifestations of learning disability are also important and cannot be assumed to be adequately addressed by programs to improve basic reading skills. Lyon (1996) concluded that while early intervention is necessary, it should not be assumed to be sufficient to address the multiple manifestations of learning disability.

#### 2.2.5 Biological abnormalities and drug treatment for SLDs

The view that SLDs is treatable with drugs was also of interest to researchers. Frank (1996) proposed that SLDs were a biological condition because some biological abnormalities were reported in patients with learning difficulties. He observed that anatomical abnormalities included reversal of normally present brain asymmetries. Also, the presence of foci of cerebral micro dysgenesis [cortical malformation] and ectopias and an abnormal regional brain glucose metabolism had been observed in patients with reading difficulties. He also observed that neurophysiological abnormalities included abnormal cognitive event-related potentials and possible abnormalities of the magnocellular visual pathway. He concluded that treatment modalities for learning disabilities included cognitive-educational psychological and pharmacological measures. Frank further observed that although there are no medications directly affecting the learning ability of patients, central stimulants, clonidine [an antihypertensive] or antidepressants may enhance learning ability.

#### 2.2.6 Wechsler's Deterioration Index (WDI) and SLDs

SLD diagnosis and treatment had not prevented the rapid increase in the experience of SLDs, and, in fact, the number of children experiencing a SLD has increased significantly over time. Watkins (1996) reported that researchers again began to examine the effectiveness of the testing tools used and in particular, the WISC. He also reported that Wechsler's Deterioration Index (WDI) developed as an indicator of



cognitive impairment in adults, was applied to children. Neuropsychological deficits have often been hypothesized to account for learning difficulties during the development period. He concluded that group mean differences were not adequate, and that ipsative indicators must be definitively validated in experimental environments before they can be applied in practice.

### 2.2.7 Personality disorders and SLDs

Research around personality disorders provided relevant parallels to the experience of a SLD as both were considered to be an enduring pattern of experience and that deviates markedly from cultural expectations and causes distress or impairment. Johnson et al. (2000) in their study into an age-related change in personality disorder trait levels between early adolescence and adulthood investigated change in personality disorder (PD) traits between early adolescence and early adulthood. It traced PDs over time to produce findings that could generalize to individuals in the community with these disorders. They found that PD traits tend to decline steadily in prevalence during adolescence and early adulthood. However, adolescents with PDs often have elevated PD traits as young adults, and the stability of PD traits appears to be similar during adolescence and early childhood. Their research concluded that there are likely to be important differences in the developmental and course of specific PDs that merit further investigation.

The introduction of interventions to target the emotional elements of SLDs by way of counselling, including psychotherapy, were also trialled in an attempt to find a treatment for SLDs. O'Connor (2001) reported that there was a view that children experiencing a SLD would grow out of it and that this was the first time that psychotherapy was offered to learning disabled clients. He also reported feelings of shame, loss, rejection, powerful feelings of ambivalence and guilt were evoked within the countertransference in the closing stages of psychotherapy. He concluded that conducting psychotherapy with people with learning disabilities is not so different from conducting groups with any other client group.

### 2.2.8 Social-emotional learning and SLDs

The first significant studies of the connection between social-emotional learning and learning disabilities and the implications for intervention began in 2000. Wallace et al (2002) reported that understanding the way emotion directs attention and influences learning, and assistance on how to focus amidst the many distractions, are important in effective classrooms that include high school students with learning difficulties. Their study found that the majority of students with learning disabilities have difficulties with social relationships. They identified recognizing emotions in self and others, regulating and managing strong emotions (positive and negative), and recognizing strengths and areas of need as three important skills in overcoming difficulties in social relationships.

The skills of social-emotional learning (SEL) and the principles by which they are learned are demonstrably relevant to understanding students' academic difficulties and why these are so often accompanied by social difficulty. Elais (2004) also reported three essential SEL principles that serve as complements to the list of skill guide interventions (National Centre for Innovation and Education, 1999). He reported that caring relationships are the foundation of all lasting learning; emotions affect how, and what we learn and goal setting and problem solving provide focus, direction, and energy for learning. He concluded that the essence of these principles highlighted the importance of the learning environment. Also the need for educators both to establish caring relationships with the students and help students develop the skills they need to establish such relationships with others.

### 2.2.9 Integrated intervention and SLDs

In order to find a treatment for SLDs Lin, et al. (2005) reported on integrated interventions for one year consisting of cognitive training, behavioural intervention and comprehensive training of the senses. They reported that interventions integrating cognitive training of the senses produced a good and persistent effect on the cognitive and emotional systems of children with learning difficulties, resulting in improved visual, auditory and brain functions.

#### 2.2.10 Assessment tools, School and clinical psychologists and SLDs

The diagnosis of increasing numbers of children presenting with symptoms, now described as Attention Deficit Hyperactivity Disorder (ADHD), saw the implementation of new assessment tools. There was also an understanding that School and clinical psychologists play an important role in the assessment of a child's emotional and behavioural difficulties, including problems with attention. Jarratt, et al. (2005) reported that the use of the Behaviour Assessment System for Children (BASC) and Behaviour Rating Inventory of Executive Function (BRIEF) in ADHD assessment appeared promising. It also had the potential to generate additional areas in need of intervention.

The recognition that poor school performance and the impact of SLDs had wide-ranging and often long-term negative ramifications came to the attention of medical practitioners and others. Karande, et al. (2005) reported that education is one of the most important aspects of human resource development. He also reported that poor school performance not only results in the child having low self-esteem but also causes significant stress to parents. It is also important to find reasons for a child's poor school performance and come up with a treatment plan early so that the child can perform to their full potential.

#### 2.2.11 EI as a significant component of personal development and SLDs

A growing recognition of the importance of EI as a significant component of personal development and the observation that SLDs were becoming an increasing problem for children generated interest in research into the connection between EI and SLDs. Zimmerman, (2002) reported that this interest was based on the findings that deficits in reading abilities are often associated with a complex array of issues beyond academic achievement. These deficits included poor self-concept, lack of motivation, and difficulties with social interactions. Interventions targeting EI for students with reading disabilities recognised that the construct of EI provides a framework for understanding emotional processes in students with reading disabilities. Pellitteri, et al. (2006) also reported that the components of EI include the perception of emotions, emotional facilitation of thinking, emotional knowledge, and emotional regulation.

Every academic task and social interaction can be an opportunity to facilitate emotional awareness in students.

#### 2.2.12 Neuropsychologists and executive function and SLDs

As ADHD and reading disability became more widespread, clinical neuropsychologists began to examine the relationship between executive function (EF) and ADHD. Mahone, et al. (2007) undertook a study that examined the behaviour ratings of executive function among preschoolers with ADHD. They sought to establish whether, preschoolers with ADHD are likely to exhibit deficits in certain aspects of EF, particularly those related to inhibitory control. They reported group comparisons were consistently large, with highly significant results. The growing evidence of a relationship between an underlying cause and the experience of a SLD resulted in interest in observing specific character traits like resilience in children experiencing an undiagnosed SLD and the consequences.

Orenstein (2007) reported that shame was found to be an experience that is central to the psychological landscape of undiagnosed learning disability (ULD) sufferers. He also reported that the fundamental problem that is caused by UDL involves excruciatingly shameful humiliation, exposure, and despair. This occurs when people cannot live up to internal expectations, and they then must struggle not only with UDL but also with the emotional consequences. He concluded that this observation leads to the recognition that academic institutions need to face and deal with the emotional aspects of learning disabilities.

#### 2.2.13 Intellectual disability and SLDs

Interest in researching students with ADHD led to an interest in either establishing or eliminating a connection with intellectual disability. Research in America examined ADHD symptoms in children with mild intellectual disability. Simonoff, et al. (2007), investigated whether the nature of the correlates of ADHD symptoms were different in subjects with mild intellectual disability (ID) compared to subjects with average ability. Their study tested inhibition, working verbal fluency, intelligence, – specifically ADHD and ADD symptoms; social competence, emotion regulation and

internalizing problems. They concluded that both ADHD symptoms and impaired EF acted as early predictors of problem behaviours. They also concluded that prediction based on ADHD symptoms encompass a wider range of problems. There was a need for theoretical development and empirical studies that will further our understanding of the relatively large group of children with high levels of ADHD symptoms, but without EF impairment.

#### 2.2.14 Predictors of future al problems and SLDs

Further research investigated how effective ADHD and EF impairment were early predictors of future al problems. Wahlstadt et al (2008) investigated ADHD symptoms and EF impairments in terms of continuity and cross-domain associations, as well as their predictive relations to a range of socio-emotional problem behaviours. They reported that early ADHD symptoms and EF impairments acted as predictors of continuing problems within each domain and that prediction based on ADHD symptoms encompass a wider range of problems in early school age children.

#### 2.2.15 Cognition and attention and SLDs

Research broadened beyond individuals experiencing ADHD to include individuals experiencing severe dyslexia and to focus on, attention and cognition. Knivsberg et al. (2008) assessed students with phonological deficits and severely impaired reading abilities that had more behavioural/emotional problems than normal reading students, in spite of prolonged educational remediation. They reported that the dyslexia group showed significantly more problems in all areas than the controls. They recommended that further research was needed in this area and that the results clearly indicate that identifying additional behaviour /emotional problems may be imperative for students with severe reading problems.

#### 2.2.16 Neurobiological disorder and SLDs

While research continued to observe a relationship between emotions and SLDs, Silver, et al. (2008) reported there was still some resistance to formally recognizing that relationship by some in the field of neuropsychology. They believed that a

learning disability (LD) is a neurobiological disorder that presents as a serious difficulty with reading, arithmetic, and/or written expression that is unexpected, given the individual's intellectual ability, and that learning disability is not an emotional disorder nor is it caused by an emotional disorder. Hall (2008) and others concluded that severe SLDs require medical treatment. Also, complex or comorbid ADHD requires treatment with methylphenidate along with therapeutic work with the child and their family. This is required as early as possible to prevent, low self-esteem or serious problems that inhibit the child's ability to achieve their academic potential. However, a broader view emerged as studies indicated a strong relationship between the experience of a SLD and emotions with some identifying the internalizing correlates of dyslexia. Mugnaini et al. (2009) reported that suitable social; health and school policies aimed at identifying and treating dyslexia as a cause of discomfort are required. They concluded that there was a clinical need to assess and contrast additional risk factors that may increase the probability of this suffering in dyslexic students.

#### 2.2.17 Facial emotion recognition and SLDs

The relationship between the development of facial emotional recognition and SLDs was examined by Lee, et al. (2009). They evaluated the facial emotion recognition ability in local children in Hong Kong with ADHD and the effect of inattention and impulsivity on such ability. Unlike earlier research with Caucasian subjects in this area, their results determined that the difference in performance in facial emotional recognition was not statistically significant. An explanation for this finding was that the development of facial emotional recognition ability in children is affected by various environmental and personal factors specifically significant cultural differences.

#### 2.2.18 Difference in emotional intelligence between dyslexic and non-dyslexic people

Scientists also became interested in investigating the relationship between EI and SLDs. Narimani et al. (2009) reported that there is a relationship between EI and disorders. They also reported that there is an adverse relationship between EI and disorders in a way that there is a relationship between high EI and low disorders. The

higher the EI, the lower the disorder. They concluded that dyslexic children compared to nondyslexic children have more behavioural problems in all-micro scales and that one of which could be low emotional intelligence. Semrud-Clikeman et al. (2010) reported on similarities between intellectual disability and the experience of SLDs. Their study examined the executive functioning in children with Asperger's Syndrome, ADHD-Combined type, ADHD-Predominately Inattentive Type, and controls. They evaluated neuropsychological and rating measures of executive functions (EF) in the children and reported that the groups would differ on measures of initiation, inhibition, emotional control, and working memory.

#### 2.2.19 Resilience factors and SLDs

Further research examined resilience factors and situational impairment. Naglieri et al. (2010) reported on the relationship between social emotional factors related to resilience and the impairment with intelligence. They found that the lower protective factor, the higher the degree of impairment and that this suggests that children with greater reported behavioural and situational problems may, in fact, be less resilient.

#### 2.2.20 Imbalances of omega-3 polyunsaturated fatty acids (PUFAs) and SLDs

As many professionals had observed what was considered to be multi-factors impacting on the experience of SLD research also investigated the impact of biological factors on learning. Kirby et al. (2010) reported on children's learning and the association with cheek cell polyunsaturated fatty acid (PUFAs) levels. They reported that measures of reading, spelling and intelligence did not show any association with PUFAs levels. However, some associations were noted with the level of omega-3 fatty acids. There was some evidence that higher omega -3 levels were associated with decreased levels of attention, hyperactivity emotional and conduct difficulties and increased levels of prosocial behaviour.

### 2.2.21 Children's knowledge about the characteristics of reading disabilities and SLDs

A further study examined how knowledge about and preoccupation with reading disabilities impacted on the experience of a SLD. Shany et al. (2011) investigated the extent to which children's knowledge about reading disabilities, preoccupation with their own reading disability, and anxiety, predicted reading comprehension in fifth and sixth grade children with reading disabilities. They reported that participants provided rich and accurate information about reading disabilities and the academic and emotional implications of having a reading disability. Also, children's knowledge about the characteristics of reading disabilities was positively associated with reading comprehension. They also reported a preoccupation with their own disability was negatively associated with reading comprehension. Girls reported higher levels of preoccupation and anxiety than boys did and children's reading comprehension, trait anxiety, and perceptions of their mothers' worry about their reading disabilities predicted their preoccupation with their own disability. They concluded that children with the most adaptive profile in terms of reading comprehension and anxiety were those who had high levels of knowledge and low levels of preoccupation with their disability.

### 2.2.22 Intrapersonal intelligence and SLDs

Building on earlier findings, educators in a recent study in Scotland examined the development of intrapersonal intelligence in pupils experiencing social, emotional and behavioural difficulties. Mowat (2011) drew from the accounts of Secondary School students, (who participated in the intervention during its first four years of inception) and from a range of stakeholder accounts – parents, Support Group Leaders, class teachers and senior managers. Mowat focused specifically upon the extent to which pupils developed intrapersonal intelligence. He reported that the majority of pupils had, to at least an extent, developed a greater understanding of their behaviour and that these outcomes were still in evidence up to two years after the intervention.



### 2.2.23 Psychosocial intervention and SLDs

Miranda et al. (2011) conducted analyses on the effects of an intensive psychosocial intervention on the executive functioning (EF) in children with ADHD. They reported that the comparative analysis of the treated group of ADHD children and the untreated ADHD group showed significant differences that were especially important in visuospatial memory and planning in favour of the treated children. They concluded that psychosocial interventions with children with ADHD could have a positive effect on some executive functions. They also reported that one of the most outstanding contributions of the study is the attempt it makes to construct a bridge between the neuroscientific and the psychoeducational approaches. They concluded that future studies should more closely examine the relationships between performance on EF tasks and ability to cope in significant real-life situations.

### 2.2.24 Executive control and SLDs

The connection between problem behaviours and SLDs has led to further recent studies into the relationship between executive control (EC) and dimensions of problem behaviours in preschool children. Espy et al (2011) reported that EC referred to the higher order, top-down abilities that enable the execution of an action requiring the active maintenance of information in light of competition, delay, distraction or interference under changing contingencies. They reported poor modulatory management of negative emotionality such as anger, aggressive behaviour, and non-compliance and a strong, systematic relation between EC and problem behaviour in typically developing preschool children.

### 2.2.25 Electro cortical late positivity and SLDs

As the recognition of the relationship between the experience of a SLD and emotions continued to develop, research into specific groups with SLDs and specific emotional factors increased. Kochel et al. (2012) reported on affective inhibitory control in adults with attention deficit hyperactivity disorder and abnormalities in electro cortical late positivity. The specifically investigated males experiencing ADHD and based on the premise that, boys afflicted with ADHD are characterized by deficient

response inhibition and reduced electro cortical late positivity when presented with facial expressions of anger. They reported that there were no behavioural differences in inhibitory control between the ADHD and the control group, however, the patients showed reduced right parietal late positivity when instructed to inhibit a response to negative emotions, and there was reduced positivity correlated with lowered self-reported emotional intelligence in the ADHD group.

#### 2.2.26 Global personality characteristics and SLDs

The emergence of the Trait Emotional Intelligence construct shifted the interest in personality research to the investigation of the effect of global personality characteristics. Poulou (2013) reported on the role of trait EI and social-emotional and behavioural strengths on difficulties in adolescents' perceptions. Poulou also reported and the role of both personality traits and social and emotional skills, in the occurrence of emotional and behavioural strengths and difficulties. She concluded that the cultivation of emotional and social skills was important for positive relationships in a school environment.

#### 2.2.27 Internalizing problems and SLDs

Practitioners and others treating SLDs broadened their analysis to include research into the internalizing problems of adults with learning disabilities. Klassen et al (2013) reported on the relationship between internalizing problems and LD in adults. This was based on the abeyance hypothesis (internalizing problems decline in adulthood) and the continuance hypothesis (internalizing problems continue into adulthood). He reported that the Meta analysis provided support for the continuance hypothesis, with little change in the magnitude of internalizing problems of adults with LD in comparison to syntheses examining the same problems in children and adolescents with LD.

#### 2.2.28 Putative risk factors and SLDs

Continued attempts to discover treatments for SLDs, has examined ways to detect SLDs as early as possible. Mascheretti et al (2013) reported on putative risk factors in

developmental dyslexia and that although dyslexia runs in families, several putative risk factors that cannot be immediately identified as genetic predict reading disability. They concluded that published studies analysed one or a few risk factors at a time, with relatively inconsistent results. They reported that factors like younger parental age at child's birth, lower parental education, and risk of miscarriage significantly increased the odds of belonging to the dyslexic group. They concluded that these findings support reading disabilities as a multifactorial disorder and may bear some importance for the prevention and early detection of children at heightened risk of dyslexia.

### 2.2.29 Strategies to remediate the experience of SLDs

As it is generally accepted that SLDs are multidimensional, involve emotions, and that the experience of a SLD can have significant and long-term negative consequences, research has also identified strategies to remediate the experience of a SLD. Staels et al. (2015) reported that orthographic learning and text-to-speech software is a new form of direct instruction, on orthographic learning. They concluded that their results supported the hypothesis that all readers, even poor readers of transparent orthographies, are capable of developing word-specific knowledge even though a negative effect of text-to-speech software on orthographic learning was demonstrated.

### 2.3 Limitations with previous research on SLDs

Research into the area of SLDs has been limited by a combination of similar, methodological factors. In most cases, research was limited by a small sample size as research ranged from subject numbers of one to an average of one hundred. Studies that did include larger subject numbers were often limited by the lack of sample group diversity. In some studies, categories were not clear cut and often when large sample sizes were used findings were based on interviews that were relied on opinions rather than validated structured clinical interviews. In other studies the diagnostic criteria that were used were originally designed for adults, rather than children or adolescents, and it was difficult to distinguish true change from the change that was due to suboptimal instrument test-retest reliability. Even though the groups in some studies

were matched on demographic variables and socioeconomic status, there may have been regional variables that influenced performance on tests or responses to rating scales that could not be accounted for. It was also reported that in some studies the standardization (control) group was not administered the performance-based tests and the correlations were made only on the sample group. Measures used on some testing were limited in the number of items considered therefore findings could be inaccurate and biased. A common limitation related to how well results from studies of community-based samples could be generalized to clinical populations. In other studies, subjects were used from one community and were not compared to subjects from other communities. This narrow scope did not take into account other factors like economic circumstance, cultural or environmental influences and gender differences. Many studies were limited by the lack of random selection of subjects that also limited accuracy and increased bias in the findings.

As EI began to be recognized as a significant factor relating to performance and emotional functioning, studies examining at EI and SLDs began to emerge. Limitations included the observation that findings of change due to intervention may be achieved by the process of maturation. Also, practitioner research brings with it its own dilemmas and difficulties of ensuring that the findings present a true account, as free of personal bias as can be the case. In studies where the analysis was based on a non-adjusted significance level, the significant associations reported were weak. If a more stringent significance level were employed to correct for a large number of correlations performed, the majority of the findings would no longer be significant.

Another limitation for some studies was the possibility that the outcomes of the study could have been achieved without intervention through a process of maturation and that the methodology highlighted the difficulties in accurate generalization of the findings. Also, practitioner research brings with it its own dilemmas and difficulties of ensuring that the findings present a true account that is free of personal opinion or bias. Evaluative judgments depend in part on internal normative expectations, and they are not always accurate and vary across informants. Despite the research limitations of some studies into EI and SLDs, studies have consistently supported the view that the experience of a SLD is related to emotions and that the experience of a SLD can be reversed.

## 2.4 Summary

Research into the causes, treatment and amelioration of SLDs has covered many and diverse areas of investigation without producing definitive strategies or solutions to date. It is widely recognized that SLDs are multi-dimensional in their presentation and experience which explains the vast array of research directions. Research has focused on developing definitive tests for SLDs like Wechsler's Deterioration Index (WDI) but it has mainly focused on finding the cause or causes of SLDs. Areas researched to date include etiological and ecological factors; behaviour: personality; cognition; Imbalances of omega-3 polyunsaturated fatty acids; psychosocial factors; electro cortical late positivity; resilience and putative risk factors. In order to find a treatment for SLDs research into diet administration, drug therapy and mental health have also been subject to investigation. This thesis sought to build on research into the role emotions play in an individual's ability to interact and perform functionally, specifically in relation to EI.

## **CHAPTER 3: Literature Review: Emotional Intelligence (EI)**

While the notion of EI appears to be a relatively new concept many great thinkers in history have linked emotions to learning. Plato, in 400 BC, believed that emotions are the base of all learning. However Gross (2010) believed the earliest writing on what can be seen to refer to EI was by Charles Darwin in 1872 in his book titled 'The expression of the emotions.' He noted that Darwin's view helped in understanding how an adequate model of consciousness must be able to account for emotion. The search for this model has recently re-emerged as the foundational work in the science of emotion, both in terms of methodology and theory.

Kaplan et al. (2009) reported that, in the 1930s, Edward Thorndike depicted the notion of "social intelligence" in terms of an ability to get along with other people. He described social intelligence as an ability to manage, understand and to act with wisdom when interacting with others. He also reported that David Wechsler, in the 1940s, emphasized that factors other than intellectual ability are involved in intelligence. Unhappy with the 1937 Binet scale because it only offered a single score of intelligence (IQ), he developed The Wechsler Adult Intelligence Scale (WAIS) in 1939 and then the Wechsler-Bellevue Intelligence Test. Later in 1949 the Wechsler Intelligence Scale for Children (WISC) and in 1967 the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) tests were developed. Kaplan reported that these tests were based on his belief that intelligence is the global capacity to act purposefully, to think rationally, and to deal effectively with one's environment.

Maslowtoffler.com (2014) reported that humanistic psychologist Maslow in the 1950s focused research and thinking on mental health and human potential instead of mental illness. Maslow became the leader of the humanistic school of psychology which he referred to as the 'third force' beyond Freudian theory and behaviourism. He believed 'needs' could be categorized as the need for Self-actualization as well as Esteem, Belonging, Safety and Physiological needs. Carl Rogers, another humanist, became famous for his client-centered therapy. Leuner et al. (1983) reported that he coined the

term 'emotional intelligence' in an article titled 'Praxis der Kinderpsychologie und Kinderpsychiatrie' in 1966.

EI was first coined in English in 1985 in a doctoral thesis titled 'Study of Emotion: Developing Emotional Intelligence' by Wayne Payne. He wrote that his work was intended to be a prototype of a guidebook on developing emotional intelligence. His doctoral thesis sought to offer guidance by raising important issues and questions about emotion. It provided a language and framework to enable examination and discussion of the issues and questions raised and also provided concepts, methods and tools for developing emotional intelligence.

Gordon (2006) believed that cognitive ability could not simply be explained in terms of IQ because many other factors, including emotions, played significant roles in determining outcomes for individuals. However, Bar-On (2006) reported using the term 'emotional quotient' (EQ) in his graduate thesis that was unpublished. He reported that the theoretical foundation of the Bar-On model based on Darwin's early work demonstrated the importance of emotional expression for survival and adaptation (1872/1965). His model was also influenced the work of Thorndike who described social intelligence and its importance for human performance (1920). He also reported that Wechsler's observations related to the impact of non-cognitive and cognitive factors on what he referred to as 'intelligent behaviour.' He summarized that from Darwin to the present, most descriptions, definitions and conceptualizations of emotional-social intelligence have included one or more key components. These components include the ability to recognize, understand and express emotions and feelings; the ability to understand how others feel and relate with them; the ability to manage and control emotions; the ability to manage change, adapt and solve problems of a personal and interpersonal nature; and the ability to generate positive effect and be self-motivated.

Dr. Stanley Greenspan refined a medical guideline for understanding how children developed based on his belief that IQ takes a picture of an individual's current skill achievement of certain one-off tasks and results from clinical practice. Greenspan (1994) reported that IQ isn't essentially fixed, but it also doesn't gauge intelligence nearly as well as evaluating a child's general ability to interact with others. He also

believed that neither nature nor nurture works alone or in simple percentages to determine intelligence. He also believed that children's unique characteristics do not necessarily limit or define their potential. It is their traits that define the type of environment needed to promote development. He further reported that sensation also gives rise to an emotion, and that emotion orchestrates complex judgments. This answered one of modern psychology's main enigmas: how a child learns to discriminate between different situations and to generalize from one to another. Greenspan also reported on research showing that early experiences affect brain growth and developmental competency.

The growth of many new sciences of human capacity in the 1970s and 80s resulted in research that sought to find definitions for both intelligence and emotions. Mayer and Salovey (1995) reported that they proposed a Regulatory Model 1 which consists of three propositions that they believed belong within a general class of intelligent ways to construct and regulate emotion. It was their view that many immediate emotional reactions are a result of evolution or biology. They are neither intelligent nor unintelligent, but the interplay between the individual's cognitively more developed construction and regulation of emotion. They are also beliefs about emotion and can be more or less intelligent. They proposed Regulatory Model 1 because they believed it is already implicit, and also sometimes explicit, in contemporary psychological research on emotional construction and regulation. They further argued that it makes sense to apply the concept of intelligence to emotion even though basic emotion is often spoken of in terms of adaptation. More cognitively saturated emotion and emotional regulation may be evaluated in terms of intelligence. They reported that their colleague David Caruso also believed that it is very important to understand that emotional intelligence is not opposite to intelligence and that it is the unique intersection of both.

Goleman and Boyatzis (2008) reported that best practice in education is defined as 'emotional competence' and that it is a 'learned capability based on emotional intelligence that results in outstanding performance at work.' Goleman's first article on emotional intelligence and leadership ignited discussion on the significant role of empathy and self-knowledge in effective leadership. They further reported Goleman's idea that effective leadership is related to having powerful social circuits



in the brain. This prompted Goleman and others to expand their concept of emotional intelligence beyond theories of individual psychology. The accidental discovery of mirror neurons by Italian neuroscientists led to Goleman and others recognizing that mirror neurons had a special importance in organizations, because the emotions and actions of leaders prompted a mirror response of those feelings by followers. They also noted that alists describe the ability of the spindle cells that enable an ultrarapid connection of emotions, beliefs and judgments as a person's social guidance system.

Another leading researcher whose work inspired Goleman was Damasio and Carvalho (2013) reports on how emotions are functioning in the brain to create people's sense of identity and guide rational decision-making. They contend that our sense of being conscious comes from emotion and that feelings are mental experiences of body states. He also believes emotions signify physiological need, tissue injury; optimal function threats to the organism or specific social interactions. He concludes that feelings constitute a crucial component of the mechanisms of life regulation, from simple to complex. In recognition of neurological research findings, Damasio reinforces the view that neural substrates of emotions can be found at all levels of the nervous system, from individual neurons to subcortical nuclei and cortical regions.

### 3.2 Past research

While research and discussion about emotions and emotional intelligence occurred before the 1990's, Mayer's and Salovey's research and description of Emotional Intelligence and its significance in the way individuals function drew worldwide attention. Mayer and Salovey (1993) reported that the scope of emotional intelligence included the verbal and non-verbal appraisal and expression of emotion, the regulation of emotion in the self and others, and the utilization of emotional content in problem-solving. They also reported that they distinguished between general intelligence and emotional intelligence by recognizing that the processes described as emotional intelligence were different from those describing general intelligence. Explanations of general intelligence have typically included concepts of neural transmission speed or processing breath. Mayer and Salovey (1993) proposed that emotional intelligence probably related to general intelligence in ability. They also proposed that EI differs in terms of mechanisms where manifestations and underlying

mechanisms may include emotion malady and emotion management. Also, neurological substrates and manifestations may include greater verbal fluency in emotional domains, as well being a greater overall information transmission under emotional threat. In a later paper, Mayer and Salovey (1995) reported that emotionally intelligent people are defined in part as those who regulate their emotions according to a logically consistent model of economic functioning. They also identified and compared several models of emotion regulation. Mayer and Salovey (1995) concluded that although basic emotion is often spoken of in terms of adoption, more cognitively saturated emotion and emotional regulation may be evaluated in terms of intelligence.

Emotional Intelligence was increasingly being seen as a predictor of performance and considered a valuable predictor of how individuals related to others and professionally. Mayer and Geher (1996) reported on individual differences in the ability to connect thoughts to emotions. They proposed that people who are good at connecting thoughts to feelings may better 'hear' the emotional implications of their own thoughts, as well as understand the feelings of others from what they say. They also reported that despite these problems, both target agreement and consensus agreement did relate to the criterion measures of emotional intelligence, although they were unrelated to each other. They concluded that the ability to predict emotions from thought would deliver a social advantage to an individual and that, higher reported scores, should, therefore, have advantages in certain life tasks. In addition, they proposed that they could predict that individuals who scored high on EARS would have better, longer term intimate relationships, and better work histories within their occupation. Also if it was true, then it may be possible to educate those who are low in this skill to raise their ability levels and, therefore, better recognize the feelings of others.

The growing recognition that emotions had a significant role to play in human performance advanced research into understanding how a child's mental growth could be enhanced by this recognition. Seliger (1997) reported that he believed that enhancing the emotional life of the child is the key factor that would help develop the child's mind. Also, that focus on a child's interests and the development of emotional interactions between a child and parent could help improve the mind's growth.

Interest in EI led to research into testing the model of emotional intelligence proposed by Salovey and Mayer in 1990 which provided the conceptual foundation for items that could be used as a scale. Schutte et al (1998) addressed the development and validation of a self-report measure of emotional intelligence. They reported that because the first factor derived from factor analysis included a roughly equal number of items from the different categories and components of the model, one can view the results of the factor analysis as suggesting a homogeneous construction of emotional intelligence. Schutte et al. (1998) also reported that findings indicate that the 33-item scale holds promise as a reliable, valid measure of emotional intelligence as conceptualized by Salovey and Mayer (1990). Also, the potential uses of the scale in theoretical research involve exploring the nature of emotional intelligence, including the determinants of emotional intelligence, the effects of emotional intelligence and whether emotional intelligence can be enhanced. They further reported that the finding that EI predicted first-year college grades suggests the ability of the scale to help identify these individuals and that once identified, at-risk individuals might benefit from special guidance, training support. Sternberg (1999) however argued that a middle ground is needed that recognizes that multifarious nature of intelligence and people's conceptions of it, but that it is also subjected to rigorous empirical tests. He reported that he believed that the two extremes that have prevailed in the study of intelligence are limited.

### 3.2.1 The multi-intelligence model and EI

In response to this criticism, supporters of the multi-intelligence model Petrides and Furnham (2000) reported that the validation of any EI measure must be pursued primarily within the framework in which the measure was developed. Furthermore, the validity of EI measures must be predicated on experimental rather than correlational studies. Petrides and Furnham (2000) prescribed to the view that a broader differentiation is that between trait EI and information processing EI. This view takes into account the different measurement approaches and operational definitions adopted by mixed and ability model theorists.

### 3.2.2 Bar-On Emotional Quotient Inventory and EI

To further validate theories of EI Dawda and Hart (2000) examined reliability and validity of a new measure of emotional (i.e. non-cognitive) intelligence, the Bar-On Emotional Quotient Inventory (EQ-i: Bar-On 1997). They reported that overall, the results suggested that the EQ-I is a promising measure of emotional intelligence. They suggested that the EQ Total score may be a good overall index of emotional intelligence. Dawda and Hart (2000) also suggested that the usefulness of the intermediate level EQ composite scales may be limited and consequently, when assessing more specific aspects of emotional intelligence, they concluded that the 15 EQ subscale scores, be used. Along with these findings, Bradshaw (2000) described the six crucial experiences that allow a child to reach their full potential. He concluded that intimate games, conversations, and types of play stimulate the child's experiences through the normal developmental stages. He also reported that loving one-on-one relationships, rather than self-conscious enrichment programs, are promoted as the best way to develop cognitive skills.

### 3.2.3 Traditional standards of intelligence and EI

To further validate their theories on EI Mayer et al. (2000) compared Emotional Intelligence to traditional standards of intelligence concluding that emotions are internal events that coordinate many psychological subsystems. These subsystems include psychological responses, cognitions, and conscious awareness and those emotions typically arise in response to a person's changing relationships. Mayer et al. (2000) reported that emotional intelligence does play some role in everyday life and that emotional intelligence represents an important candidate to enlarge the group on which general intelligence is based. Newsome et al. (2000) conducted a study to determine the relationship of emotional intelligence, cognitive ability, and personality with academic achievement. They reported that the initial purpose of this study was to examine the incremental validity of emotional intelligence in predicting academic achievement. They also reported that the results provided no support for claims of emotional intelligence's (as assessed by EQ-i) ability to predict academic achievement. However, they recognized that despite the non-significance in findings involving EQ-I, a different conceptualization and measurement of emotional

intelligence may be more effective in predicting performance outcomes. Luther et al. (2000), in their study on the phenomenon of resilience, also examined which factors allow children to maintain socially competent behaviours despite stress. They reported that limitations of their study included the use of cross-sectional data that did not allow for definitive causal conclusions regarding the role of moderator variables. Moreover, the definition of the variable stress constituted another factor that may have disqualified interpretations to some extent and that the inclusion of controllable events in the overall stress score may have led to some confounding of outcome measures.

#### 3.2.4 [EARS; Intelligence 22 (1996) 89] as a performance measure of EI

Geher et al. (2001) however, evaluated the predictive validity of the emotional accuracy research scale [EARS; Intelligence 22 (1996) 89] as a performance measure of emotional intelligence. They reported that compared with their scores on the trade-empathy measures, the participants scores on the EARS were more predictive of accurately detecting the emotions of targets. This finding provided empirical evidence of the EARS' predictive validity as a measure of emotional intelligence. Geher et al. (2001) also reported that there may be two very different abilities that may underlie emotional intelligence.

#### 3.2.5 Life satisfaction and EI

To add to the validation of EI theories and to further understanding, Palmer et al. (2002) examined the connection between emotional intelligence and life satisfaction. To determine the nature of this relationship, personality constructs known to predict life satisfaction were also assessed for positive and negative effect. They reported that that only the Clarity sub-scale accounted for further variance in life satisfaction not accounted for by positive and negative effect. This finding provides further evidence that components of the EI construct account for variance not accounted for by personality. They also reported that the findings of the study provided further support for the notion that EI accounts for individual differences in life satisfaction and that positive effect was found to be the strongest predictor of life satisfaction. They further reported that the findings of the study provide preliminary empirical evidence that EI,

specifically how clearly individuals tend to experience their emotions, accounts for further variance in this human value. They concluded that well conceptualized and developed self-report measures of EI can account for the variance in life criteria over and above other well-established constructs.

### 3.2.6: Bar-On's EQ-i as compared to the general adult mental ability scale (GAMA) and EI

Derksen et al. (2002) also examined the self-report measure of emotional intelligence to report on whether it assesses something different to general intelligence. They reported that the results replicated and elaborated those reported by Bar-on, [BarOn (1997). BarOn Emotional Quotient Inventory: technical manual. Toronto: Multi Health Systems]. Wong and Law (2002) in an exploratory study examined the effects of leader and follower emotional intelligence on performance and attitude. They developed a psychometrically sound and practically short EI measure that can be used in leadership and management studies. They concluded that the EI of followers affects job performance and job satisfaction, while the EI of leaders affects their satisfaction and extra-role behaviour. Also, for followers, the proposed interaction effects between EI and emotional labour on job performance, organizational commitment, and turnover in tension were supported. Derksen et al. (2002) reported there is a major problem in the area of psychological testing that concerns maintaining a clear distinction between the aims and purposes of an instrument in contrast to theories about how a type of instrument is produced. They concluded that emotional intelligence measured by the EQ-I was not equivalent to conventional personality traits.

### 3.2.7 Stress, depression, hopelessness, and suicidal ideation and EI

Even though some disagreement with terminology and testing processes existed research by Ciarrochi et al (2002) hypothesized that EI would make a unique contribution to understanding the relationship between stress and three important mental health variables, depression, hopelessness, and suicidal ideation. They concluded that emotionally perceptive people appear to be more strongly impacted by

stress than their less perceptive counterparts, expressing higher levels of depression, hopelessness, and suicidal ideation.

### 3.2.8 Insensitivity hypothesis and the confusion hypothesis and EI

Ciarrochi et al. (2002) reported that the insensitivity hypothesis suggests that low perception people acknowledge that there are a lot of difficulties in their life, but they successfully repressed thoughts of the difficulties or ignore them altogether. They reported that a second possibility is that low perception people are indeed sensitive and distressed but just do not realize that it is impacting on them adversely. Ciarrochi et al. (2002) concluded that, as well as supporting the argument that aspects of the EI construct are both distinctive and useful; there is a relationship between stress and mental health. Also, some aspects of emotional intelligence may not always be intelligent, that is, emotionally perceptive people may be more vulnerable to the adverse effects of stress. They also concluded that EI measures have been shown to be distinctive and useful in understanding the relationship between stress and mental health. Also the performance measure of emotion perception showed particular promise, having satisfactory levels of reliability and distinctiveness and moderating the link between stress and all three of our mental health variables. They reported that one limitation of their study was that it was based on correlational rather than experimental evidence and that this limitation is inherent in any study of depression and suicidal ideation, since it would be unethical to induce the states in people.

### 3.2.9 Factor structure of the Bar-On Emotional Quotient Inventory with an Australian general population sample and EI

As research continued to advance in the area of EI Palmer et al. (2003) examined the factor structure of the Bar-On Emotional Quotient Inventory with an Australian general population sample. They reported that in contrast to claims by Bar-on, there was evidence for a general factor of emotional intelligence and six primary factors. They concluded that EQ – I does appear to provide a general index of individual differences in psychological health, and perhaps therefore, individual's capacity to succeed in coping with environmental demands and pressures.

### 3.2.10 Cohesive theoretical framework and EI

Lopes et al. (2003) agreed that in spite of a large body of research, it has proved difficult to integrate existing knowledge about social and emotional competence into a cohesive theoretical framework. Their study explored links between emotional intelligence, measured as a set of abilities, and personality traits, as well as the contribution of both to the perceived quality of one's interpersonal relationships. Lopes et al. (2003) reported that emotional intelligence, assessed as a set of abilities, and showed limited overlap with verbal intelligence and personality measures. They concluded that the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), designed to assess emotional skills, and the Big Five, intended to measure the social and emotional dispositions, taps into different aspects of psychological functioning. Also the fact that MSCEIT explained unique variance in self-reported satisfaction with interpersonal relationships supports the incremental validity of this ability-based measure of emotional intelligence.

### 3.2.11 Emotional and social intelligence and cognitive intelligence and EI

Exploring the neurological substrate of emotional and social intelligence Baron et al (2003) tested the hypothesis that somatic marker hypothesis posits that deficits in emotional signalling (somatic states) lead to poor judgment in decision making, especially in the personal and social realms. This hypothesis was similar to the concept of emotional intelligence, defined as an array of emotional and social abilities, competencies and skills that enable individuals to cope and be more effective in their personal and social life. Baron et al. (2003) reported that the findings provide preliminary evidence suggesting that emotional and social intelligence is different from cognitive intelligence. They concluded that the neural systems supporting somatic state activation and personal judgment in decision making may overlap with critical components of a neural circuitry subserving emotional and social intelligence, independent of the neural system supporting cognitive intelligence.



### 3.2.12 Level of Emotional Awareness Scale (LEAS)

Research carried out by Ciarrochi et al. (2003) critically evaluated the Level of Emotional Awareness Scale (LEAS), which is a measure of people's awareness of emotions in both the self and others. They reported that the LEAS were statistically distinct from a wide variety of personality measures, emotional intelligence tests, and self-report ability measures. They also reported that both studies demonstrated that people high in emotional awareness were less likely than others to show mood-congruent biases in their judgments (e.g. when bad moods lead to negative judgments and good moods to good judgments). They concluded that the LEAS appears to be reasonably distinct from tests that measure the Big Five, self-esteem, and related constructs, emotional intelligence, and self-reported ability measures.

### 3.2.13 MSCEIT Scale

In research designed to determine if EI would predict academic achievement more effectively when conceptualized as a cognitive ability using (MSCEIT), O'Connor and Little (2003) reported weak correlations between capital GPA and EQ-i total score, two EQ-i Scales, and one MSCEIT Scale and that these findings suggest that neither measure is a good predictor of college GPA. While they concluded that EI is not a valid predictor of academic performance, they also concluded that EI may be an ability that is totally distinct from other types of cognitive functioning and cannot be correlated with traditional indicators of cognitive ability.

### 3.2.14 Personality measures and EI

Factor structure and validity of a trait emotional intelligence measure were studied in a short self-reported EI measure by Saklofske et al. (2003). They reported EI was found to be negatively and significantly correlated with Neuroticism, and positively and significantly correlated with Extraversion, Openness, Agreeableness, and Conscientiousness. They concluded that these results and regression modelling showed that EI accounts for variance in these measures were not accounted for by personality and that the results indicated that the two constructs are distinct, although strongly correlated.

### 3.2.15 Discriminant, criterion and incremental validity of an ability measure of EI

Emotional intelligence and its relation to everyday behaviour were evaluated in a study that assessed the discriminant, criterion and incremental validity of an ability measure of emotional intelligence. Brackett, et al. (2004) reported that EI predicts important behavioural criteria, particularly for the male college students. They concluded their findings remained significant after the big five and verbal capital SAT scores were statistically controlled. However they reported that a limitation of their study was that it was not clear why EI was related to more negative aspects of the male's life than positive or negative aspects of the female's life. They reported this threshold effect may have occurred because there may be some minimum level of EI that is necessary for good judgment in social situations, and the proportion of males who fall below this threshold may be higher than the proportion of females. Brackett et al. (2004) reported a further limitation was whether the group differences in EI and the predictive validity of EI for males and females would replicate in larger and more diverse samples.

### 3.2.16 Social and emotional competency, academic success, and EI

Research has continued in the relationship between EI and academic achievement. Parker et al. (2004) reported an overall relationship between social and emotional competency and academic success. However, they reported that a limitation of their study was that it needed to be replicated with students from a more diverse range of ethnic backgrounds as their study used a sample that was predominantly white. They also reported that a limitation was that their study needed to be over a longer period to examine the stability of emotional and social competency to predict academic success. A further limitation was that the study did not examine the relationship between EI and the achievement in different educational subjects. Also indicators other than grade-point-average were not included in the study, nor were the number of courses taken, or the number of courses dropped or not completed, and whether a student withdraws from school.

### 3.2.17 Psychological variables underlining EI

Warwick and Nettlebeck (2004) conducted a study to identify psychological variables underlining EI. The measures included work personality, affiliation, abstract reasoning ability, and emotional knowledge. A second aim of this study was to examine the predictive validity of EI, in relation to task orientation. They reported that their study supported Petrides' and Furnham's, (2000) and Petrides' and Furnham's, (2001) distinction between self-reported or trait EI, and maximal performance or ability EI. They concluded that whether cognitive ability and emotional knowledge underline ability EI to some extent remains unclear. Not only has the predictability of EI been the focus of research many have critiqued the construct of EI. Brody (2004) concluded it is not clear whether subsequent research based on existing tests will provide strong evidence for the construct of EI.

### 3.2.18 Attachment orientations and EI

Research by Kafetsios (2004) tested hypotheses about the relationship between attachment orientations and emotional intelligence and measured as a set of abilities (perception, facilitation, understanding and management of emotion). The study highlighted the importance of distinguishing fearful and dismissing avoidance and the associated cognitive and affective processes and provided validation for the recent emotional intelligence abilities test.

### 3.2.19 Meta-analytic techniques and EI

Van Rooy and Viswesvaran (2004) used meta-analytic techniques to examine the relationship between emotional intelligence (EI) and performance outcomes. They reported that results of their meta-analysis demonstrated that EI is a construct that is worthy of future research and indicates that EI should indeed be considered a valuable predictor of performance. They reported that one weakness with existing EI research can be traced to the classification, measurement, and validation of sub-dimensions that are used. The current measures typically use either of the 4- or 5- dimension model but continued research is needed to explore which dimension is necessary.

They reported that a limitation was the need to determine if measures of EI gauge what a person can do or what they will do.

### 3.2.20 Life skills (academic achievement, life satisfaction, anxiety, problem-solving and coping) and EI

The growing recognition of EI as a predictor of performance led to a study by Bastian et al (2005) investigating relationships between EI and a number of 'life skills' (academic achievement, life satisfaction, anxiety, problem-solving and coping). They reported that correlations between EI and academic achievement were small and not statistically significant, although higher EI was correlated with higher life satisfaction, better perceived problem-solving and coping ability and lower anxiety. They concluded that EI might be a threshold variable, relevant to a lesser highly selected sample than the sample used in their study. Gohm et al (2005) also examined the association between emotional intelligence (emotion-relevant abilities) and stress (feelings of inability to control life events), considering personality (self-perception of the meta-emotion traits of clarity, intensity, and attention) as a moderating variable. They concluded that emotional intelligence is potentially helpful in reducing stress in some individuals, but unnecessary or irrelevant for others. However, they also reported that a limitation was that their traits, for example, neuroticism or anxiety may be confounded with reports of perceived stress, in their study.

### 3.2.21 Objective tests, self-reports and EI

Lyons and Schneider (2005) examined the relationship of ability-based EI factors with performance under stress. They reported that some EI dimensions were related to performance after controlling for cognitive ability, demonstrating incremental validity and that this pattern of findings differed somewhat for males and females. Zeidner et al (2005) targeted a study to examine academically gifted and non-gifted high school students. They compared mean EI scores, various assessment procedures, and relations between EI ability, across different populations. They reported that their findings suggested that individual differences are measure dependent, with the profile of scores variable across EI assessment procedures. They concluded that in so far as assessment of EI is concerned, their findings were consistent with other findings

suggesting that objective tests are preferable to self-reports. However, they reported a limitation of their study that the study sample was too narrow.

### 3.2.22 Multiple intelligences theory and EI

Visser et al (2006) conducted a study to test multiple intelligences theory and investigated Gardner's Theory of Multiple Intelligences. For each of the hypothesized intelligence domains-- Linguistic, Logical/Mathematical, Spatial, Intrapersonal, Musical, Bodily-Kinesthetic, Naturalistic-- they selected two tests based on Gardner's description of its content. They reported that their results supported previous findings that highly diverse tests of peculiarly cognitive abilities share strong loadings on a factor of general intelligence as well as abilities involving sensory, motor, or personality influences other less strongly g-loaded. Visser et al (2006) also reported that with regard to the coherence of each of the intelligences that they found that the tests within most ability domains tended to be more strongly correlated with each other than with tests in other domains. They concluded that this suggested that the intelligences could be viewed as coherent group factors. They observed that this result is explained equally well by the much older hierarchical models of intelligence, which postulate several group factors in addition to an important g factor.

### 3.2.23 EI, intelligence and conscientiousness

Amelang and Steinmayr (2006) conducted two studies to examine if EI could predict achievement above and beyond intelligence and conscientiousness. They reported that in both samples, EI could not explain any variance in the criteria beyond psychometric intelligence and conscientiousness and that the tests for sex differences only showed sex-specific convergent validity of EI in the student sample. They also reported that girls tend to show the same underlying structure of the EI as adults whereas boys seem to be still in an earlier stage of development of EI. They concluded this provided useful information on the developmental aspect of EI and that their results give important insights on how the different facets of EI change during development.

### 3.2.24 Psychometric intelligence and EI

Reid et al (2007) investigated whether a performance measure of the EI is related to reasoning about social situations (specifically social exchange reasoning) using versions of the Wason Card Selection Task. They reported that EI is mediated in part by mechanisms supporting social reasoning and validate a new approach to investigating EI in terms of more basic information processing mechanisms. They also reported that their results indicated distinct patterns of hemodynamic activity during social versus precautionary reasoning, which supports prior research suggesting separation of these processes. They concluded that their results indicated that, while reasoning about social exchange and precautions share many features similar behavioural performance, there are distinct neural mechanisms underlining each type of reasoning performance.

### 3.2.25 Life experiences and EI

Wong et al. (2007) conducted an exploratory study to examine whether life experiences affect EI development. They reported that the results indicated that a large amount of variances in EI were left unexplained after controlling for parents' EI and the Big-Five personality dimensions that should have reflected largely the natural effects on EI. They reported a limitation of their study was a sampling error where samples may not have been directly comparable as the Taiwanese sample comprised graduate students and they were compared to the undergraduate students in Singapore and Hong Kong.

### 3.2.26 Academic success and EI

A study by Downey et al. (2008) examined the relationship between EI and the scholastic achievement in Australian adolescents. They reported that academic success was found to be associated with higher levels of total EI, via assessment of the EI of different academic levels. Downey et al. (2008) concluded that the examination of the relationship between EI measured by the Adolescent SUEIT and a wide range of educational subjects indicated that EI was generally positively associated with performance across school subjects.

### 3.2.27 Factor models and EI

Keele and Bell (2008) conducted a study that adopted the Anderson and Gerbing (1988) two-step strategy of first considering the structure within subscales before examining the relationship between subscales. They reported that results were characterized by instability, heterogeneity, and inconsistency. Specifically, the capital EIS was not found to form the homogenous structure postulated by authors and that additionally, reliability statistics for the MSCEIT V.2 were less than optimal. Rossen et al. (2008) conducted a study that sought to further examine the constructs measured by the MSEIT by replicating and extending their research through confirmatory factor analysis (CFA) of the following models; (a) a one-factor model reflecting general emotional intelligence (EI); (b) and a bleak two-factor model reflecting the Experimental and Strategic areas; (C) an oblique four-factor model reflecting the four branches of all scales of the ability model; (d) an oblique three-factor model reflecting the Perceiving Emotions, Understanding Emotions, and Managing Emotions factors; (e) a general factor model with the nested orthogonal Perceiving Emotions factor and oblique Understanding Emotions and Managing Emotions factors; and (f) a hierarchical model reflecting the MSCEIT's implied theoretical structure, with oblique first-order factors reflecting the four branches, two oblique second-order factors, and a third-order general EI factor. They reported that the results of these analyses replicated those of Gignac (2005) and Palmer et al. (2005), suggesting that the MSCEIT does not measure all the constructs intended by its authors. Rossen et al (2008) concluded that, taken as a whole, their analysis and interpretation, as well as those of previous research, indicated that the MSCEIT 2.0 lacks structural fidelity, a necessary but not sufficient condition for construct validity and that the absence of structural fidelity indicated that the MSCEIT 2.0 did not measure all of the constructs it was intended to measure.

### 3.2.28 Conflict communication patterns, relationship satisfaction and EI

Smith et al (2008) examined trait emotional intelligence (EI), conflict communication patterns, and relationship satisfaction in cohabiting heterosexual couples as well as examining whether actor or partner effects or a combination of the two, best predicted relationship satisfaction. They concluded that the most satisfied couples were those

who do not avoid conflicts, who tend to see each other as being similar in EI, and who tend to idealize the other's EI to some extent.

### 3.2.29 EI and coping

Because of growing controversy and interest in EI, Parker et al. (2009) published an assessment of the literature on EI. They concluded specific cognitive and behavioural strategies mediate the pathway between EI and successful stress adaptation. Parker et al (2009) also reported that confidence in one's coping abilities and perceptions of personal control over the situation would enable active coping through constructive emotion-regulation and problem-solving strategies, whereas low coping self-efficacy, confusion about the sources of stress, and perceptions of being powerless in a situation would elicit avoidance strategies or passive rumination and self-blame. They concluded that despite the acceptance among many educators that EI is important for the success of school-aged children, there is limited direct research investigating the link between EI and academic success at the elementary school level.

### 3.2.30 Training programs and EI

Nelis et al (2009) investigated whether EI could be developed among young adults using a proper experimental design and theoretically grounded training program. They reported that results showed a significant increase in emotion identification and emotional management abilities in the training group and that follow-up measures after six months revealed that these changes were persistent. They concluded that their findings suggested that EI can be improved and open to new treatment avenues. Follesdal and Hagtvet (2009) sought to eliminate the magnitude of the multiple explicit sources of variance in the four branches in the MSCEIT measurement design and estimate generalizability of scores. Follesdal and Hagtvet (2009) reported that, overall, the findings revealed that some scales provided multi-dimensional scores, some provided scores that may not generalize to the intended domains, and some provided scores that are not interpretable.



### 3.2.31 Measurement design and EI

Rossen and Kranzler (2009) examined the incremental validity of the Mayer-Salovey-Caruso Emotional Intelligence Test Version 2.0 after controlling the general cognitive ability and the Big 5 personality factors. They concluded that EI may explain a significant and nontrivial amount of unique variance in a range of important and socially relevant outcomes related to social/emotional functioning, and additional research on EI may lead to advances in theory and practice (e.g., early identification and intervention). They reported, however, that one potential limitation to their study was the over-representation of female participants.

### 3.2.32 Coping strategies and EI

Downey et al (2010) explored the mediating effect of EI and coping strategies on problem behaviours in Australian adolescents. They reported that the relationships between Emotional Management and Control and engagement in internalizing and externalizing behaviours were found to be mediated by the use of non-productive coping strategies. Also, mediation models of the relationship between problem behaviours and the Understanding Emotions and Emotional Recognition and Expression dimensions were found to be only partially mediated by the engagement in problem-focused and non-productive coping strategies. They concluded that as previous research had suggested, adolescent problem behaviours increase in middle to late adolescence (Steinberg and Morris, 2001) and that EI also increases as a function of cognitive maturation (Mayer et al., 2000) from an 'ability' point of view. They also concluded that adolescents who reported greater abilities in managing emotions, were more likely to deal effectively with stressful situations common during adolescence, and in turn were less likely to internalize or externalize these experiences via antisocial or problem behaviours. While individuals may grow out of certain problem behaviours, Downey et al. (2010) concluded that maladaptive coping strategies learned in adolescence may inhibit a person's sense of personal efficacy or confidence in dealing with stress, and therefore limit the development of more adaptive coping.

### 3.2.33 Cognitive performance and EI

Almeida et al. (2010) examined whether or not contextualized cognitive tasks and more traditional psychometric tests converge into a general factor of cognitive performance. They reported that their results challenged Gardner's original position on refusing a general factor of intelligence, especially when considering the cognitive dimensions measured which do not coincide with the more traditional tests of intelligence. Almeida et al (2010) reported that by analysing the data obtained, they could affirm the relative independence between Gardner's tasks and the classic intelligence test scores. MacCann, C. (2010) conducted a study to test whether emotional intelligence (EI) is distinct from existing factors of intelligence after controlling for methods factors in EI measurement. The study was designed to test claims: (a) that EI is indeed intelligence and (b) that it is a distinct intelligence, as opposed to (for example) a crystallized or verbal test of intelligence where the emotional content of the items is merely a surface characteristic. They concluded that knowledge of emotions and emotion regulation (EI) are likely to be learned informally through social modelling and experience, and may be subject to different motivational influences. They also concluded that accumulated knowledge and emotional knowledge are strongly related, with empirical results demonstrating a substantial overlap.

### 3.2.34 Factor structure of EI

Maul (2011) examined the convergence between the Multifactor Emotional Intelligence Test (MEIS) and the MSCEIT of emotional intelligence and reexamined the factor structure of EI using an appropriate number of indicators per factor. He reported that a high degree of convergence between the two tests was found, but, consistent with some previous studies, only partial support was found for the proposed factor structure of both tests. He concluded that his study helped address the major concern regarding that the number of indicator variables were adequate in the MEIS and the MSCEIT and that this could have contributed to the inconsistency in reported results. He also concluded that his was the first test of the convergence between the two major tests of EI which validated authoritative judgments concerning the state and scope of research on the Mayer-Salovey model of emotional intelligence.

He did however report that one limitation of the study arose because the tests and tasks did not on their own provide evidence that the tests were measuring a form of intelligence even though they did establish a degree of convergence between the MEIS and the MSCEIT as the general factor in the nested models could absorb variance related to anything common to all tasks, such as the nature of the scoring method and thus, the generally positive correlations between the tests and tasks.

### 3.2.35 Mindfulness and subjective well-being and EI

Schutte and Malouff (2011) examined whether or not emotional intelligence mediates the relationship between mindfulness and subjective well-being. They reported that higher levels of mindfulness were associated with greater emotional intelligence, positive affect, and life satisfaction and lower negative affect. Also higher levels of emotional intelligence were associated with greater positive affect and life satisfaction and lower negative affect and emotional intelligence mediated between mindfulness and higher positive affect, lower negative affect, and greater life satisfaction. They concluded that their results provided information regarding a possible process through which mindfulness exerts its beneficial effects. They also concluded that the findings provide evidence of the connection between mindfulness and emotional intelligence and between those two characteristics and subjective well-being. They further concluded that mindfulness training could provide a practical means of increasing emotional intelligence and characteristics influenced by emotional intelligence. They reported that limitations of their study included the limited sample of only university students that was largely female, and the mediation design was correlational which limited findings of causal conclusions.

### 3.2.36 Intel related individual differences in ability and EI

Thingujam et al (2012) examined convergence between individual branches of ability model of Emotional Intelligence and used performance tests that measure actual ability and have objective standards of right answers. They reported that the results indicated substantial convergence between emotion recognition through the voice and emotional understanding. Thingujam et al. (2012) also reported that few tests using ability measures that have objective standards to represent the underlying emotional

capabilities have been done and that their study provided new data to inform the often heated debate about the validity of EI. They concluded that emotion recognition converges with emotional understanding and that it converges with emotional expression accuracy. They further concluded that this convergence provide a basis of optimism that EI may truly be considered ‘intelligence.’ They also concluded that rather than merely a matter of renaming existing constructs within psychology, EI holds the promise to represent a set of Intel related individual differences in the ability to deal effectively with one’s emotional environment. They reported that their study was limited partly by challenges in measurement which resulted in a dearth of empirical data results, the reliance on self-reports and difficulty in establishing appropriate scoring systems.

### 3.2.37 Working memory and EI

Chooi, and Thompson (2012) aimed to replicate and extend the original study by Jaeggi (2008) and her colleagues who claimed that they were able to improve fluid intelligence by training working memory, in a well-controlled experiment that could explain the cause or causes of such transfer if indeed the case. They reported that this did not support the notion that increasing one’s working memory capacity by training and practice could transfer to improvement on fluid intelligence as asserted by Jaeggi and her colleagues and that results from the study did not suggest improvement in general intelligence after repeated training on a challenging working memory task. They concluded that their prediction that spatial and reasoning abilities could be improved after working memory training was not supported. They also reported limitations of small sample size and sample characteristic that consisted of college students with high cognitive abilities.

### 3.2.38 Priming self-schemas and EI

Schutte and Malouff (2012) examined whether priming self-schemas relating to successful emotional competency results in better emotional intelligence performance. They reported that successful emotional competency prime most influenced strategic emotional functioning. They concluded that emotional intelligence ability can be primed and provided a possible link between ability and trait conceptualizations of

emotional intelligence. They reported that priming can influence performance on the MSCEIT and suggested that MSCEIT scores should be interpreted in the context of the situation surrounding administration of the MSCEIT as it is possible that the time a respondent took to complete the MSCEIT may relate to priming effects or alternatively might be an indicator of motivation.

### 3.2.39 Creativity and EI

Hansenne and Legrand (2012) investigated the incremental validity of EI over creativity. They reported that children's school performances were predicted by creativity and that EI had no influence on performance. They concluded that these findings questioned the recent spread of EI training programs within elementary schools.

### 3.2.40 Bullying behaviours and victimization and EI

Lomas et al. (2012) for the first time examined the relationship between emotional intelligence (EI) of adolescents, bullying behaviours, and victimization to better understand bullying behaviours. They reported that EI dimensions of emotions Direct Cognition and Emotional Management and Control, significantly predicted the propensity of adolescents to be subjected to peer victimization. Also, the EI dimension of Understanding the Emotions of Others was found to be negatively related with bullying behaviours. They concluded that anti-bullying programs in schools could be improved by addressing deficits in the EI in adolescence who bully others as well as those who are at a greater risk of being subjected to peer victimization. They also concluded that measures of EI may be utilized to identify students who showed less developed EI competencies, which may allow for more targeted, accurate or timely intervention to protect students from the potential harmful consequences that are associated with exposure to bullying. They reported that although their results report a preliminary empirical examination of this area of research, the sample itself was small and the frequency of reported bullying behaviours and peer victimization was relatively low in their investigation.

### 3.2.41 Decision-making and EI

In more recent studies Yip and Cote (2013) examined how emotional intelligence and emotion understanding ability facilitates decision-making. They reported that their finding revealed that emotion understanding ability guards against the biasing effects of incidental anxiety by helping individuals to determine that such anxiety is relevant to current decisions. Deary (2014) wrote an article to encourage psychologists to teach intelligence at different levels of the undergraduate curriculum and postgraduate level. He concluded that intelligence should be ‘taught’ to psychologists more broadly, to relevant professionals, and to the public. He also concluded that intelligence can be taught simply as an interesting topic with some greater data and with the assurance that, if people take the time to know something about the data and think about what it means, they will be better off for it.

### 3.3 Limitations of the research on EI

In summary, the limitation of the studies that were commonly experienced was small sample size but other studies reported limitations that were much broader. Other limitations included the use of cross-sectional data that did not allow for definitive causal conclusions regarding the role of moderator variables. Also, some studies were based on correlational rather than experimental evidence that is a limitation inherent in any study of depression and suicidal ideation since it would be unethical to induce the states in people. Another potential limitation was that EI variables might significantly overlap with other variables not included in the study, which would suggest that EI is perhaps not distinctive.

Other studies reported the need for their study to be replicated in order to substantiate whether their solution offers a more accurate description. Further research is also needed to establish the predictive validity of emotional intelligence, using outcome measures that do not rely on self-reports, recognizing the limitations of self-reports. Also some studies reported that a limitation was the lack of research which established the relationship between EI and academic success as EI may be an ability that is totally distinct from other types of cognitive functioning and cannot be correlated with traditional indicators of cognitive ability.

A further limitation was the threshold effect which may have implications regarding gender performance differences and whether the group differences in EI and the predictive validity of EI for males and females would replicate in larger and more diverse samples. Sample diversity was also a common limitation in many studies as variables of not only gender but ethnic background, age, location, academic level, personality, motivation, creativity, emotional maturity, bullying behaviours and others were missing. Study length was also a limitation as some studies reported that the study needed to be over a longer period to examine the stability of the variables to accurately predict outcomes, like academic success. A further limitation reported was that indicators of success were too narrow to make accurate generalizations. Also in all correlation based studies, no causal inferences could be accurately made on the basis of the analysis presented in the study between constructs that are influenced by the same emotion regulation processes that infuse cognitive processes with affective biases.

Some studies were limited by unreliable measures like adult attachment. One limitation that affected many studies was the classification, measurement, and validation of the sub-dimensions that were used. The available research measures typically use either of the 4- or 5- dimension model but continued research is needed to explore which dimensional is necessary. Also, there is limited testing in studies to the possibility of faking measures. Limitations also included unreliable scoring methods that were sensitive to response bias. In some studies, the applied formulas did not take into account the many sources of variance in the measurement design affecting the reliability of the applied correlation.

Another limitation was the use of several self-report measures that could be inaccurate or produce distorted responses to create favourable impressions. Also, studies were limited when EI was narrowly constituted, and only group factors were considered. Assessing EI using video or audio footage, pictorial or tasks that were artistic in nature (in preference to text-based items) may have affected the distinctions. A further limitation affecting some studies related to the convergence between tests in nested models that could absorb variance related to anything common to all tasks, such as the nature of the scoring method and thus, the generally positive correlations between the tests and tasks affected the reliability of the result.

### 3.4 Summary

Research into EI, the developing branch of psychological science (Matthews et al, 2002), provides a unique opportunity to investigate a correlation between SLDs and emotions. This thesis sought to examine that correlation and provide empirical evidence of its existence in order to establish recognition of the significance of emotions in understanding how SLDs are created, and develop recognition of the significance emotions have in relation to the prevention and treatment of SLDs.



# **CHAPTER 4: Aims, hypotheses and study methodology: Study One**

## **Overview**

Study One examines whether a deficit in the emotional wellbeing or emotional development of a person manifests as a SLD or multiple SLDs and specifically examines whether a relationship exists for the first time between EI and SLDs.

### **4.1 Research Question**

Will the group with more than 3 symptoms of SLDs score lower on the EI dimension of Emotions Direct Cognition than the group with less than three symptoms of SLDs?

### **4.2 Research Aim**

Study One aimed to assess the relationship between the individual facets of EI, Emotional Recognition and Expression; Understanding Others' Emotion; Emotional Management and Control; and the SLD's dyslexia, dyspraxia, dyscalculia and ADD.

### **4.3 Study Hypotheses**

#### **4.3.1 Hypothesis One**

The first variable examined was Emotional Recognition and Expression. It was hypothesized that the group with more than 3 symptoms of a SLDs and the group with less than three symptoms of SLDs would differ on the level of Emotional Recognition and Expression in that the group with more than 3 symptoms of a SLDs would be lower on EI and higher on SLDs than the group with less than three symptoms of SLDs.

#### **4.3.2 Hypothesis Two**

The second variable examined was Understanding Others' Emotions. It was hypothesized that the group with more than 3 symptoms of a SLDs and the group with less than three symptoms of SLDs would differ on the level of Understanding Others'

Emotions in that the group with more than 3 symptoms of a SLDs would be lower on EI and higher on SLDs than the group with less than three symptoms of SLDs.

### 4.3.3 Hypothesis Three

The third variable examined was Emotional Management and Control. It was hypothesized that the group with more than 3 symptoms of a SLDs and the group with less than three symptoms of SLDs would differ on the level of Emotional Management and Control in that the group with more than 3 symptoms of a SLDs would be lower on EI and higher on SLDs than the group with less than three symptoms of SLDs.

## 4.4 Implementation

To assess the relationship between EI and SLDs, the constructs of EI, personality, depression and SLD were tested using a series of questionnaires. Tests administered included the Adolescent Self-Report Version, the Swinburne University Emotional Intelligence Test – Self Report Version, 20-Item Mini IPP, DASS 21 and a Clinical Tool for Dyslexia.

### 4.4.1 Summary of EI, Personality and DASS variables

Variables related to EI, personality and the DASS that were identified to be significantly correlated SLDs were examined in order to assess their relative contribution and predictive value of identifying individuals who report greater symptoms of each individual SLD. These variables included: Extraversion; Agreeableness; Conscientiousness; Neuroticism; Openness; Emotional Recognition/Expression; Understanding Emotions; Emotions Direct Cognition; Emotional Management; Emotional Control; DASS stress scale; DASS anxiety scale; DASS depression scale; Hard to be sociable; Hard to be assertive; Too aggressive; Too open; Too caring; Hard to be supportive; Hard to be involved and Too dependent. There was an 18 % variance in self-reported dyslexia symptoms and the contribution of each of the factors revealed that Understanding Emotions, Emotional Control, DASS anxiety, too caring and hard to be supportive made statistically significant semi-partial contributions to the model. Furthermore there was a 26% variance in self-reported dyspraxia symptoms and the contribution of each of the

factors revealed that conscientiousness, Understanding Emotions, Emotions Direct Cognition, anxiety and too caring made statistically significant semi-partial contributions to the model. In addition there was an 18% of the total variance in self-reported dyscalculia symptoms and the contribution of each of the factors revealed that conscientiousness, Emotions Direct Cognition, Emotional Control, stress, too aggressive and too caring made statistically significant semi-partial contributions to the model. Moreover there was a 28% variance in self-reported A.D.D. symptoms. and the contribution of each of the factors revealed that conscientiousness, Emotional Control, stress, too dependent and too caring made statistically significant semi-partial contributions to the model.

Ethics approval was sought and received by Swinburne University of Technology Ethics Committee (Appendix 1 and Appendix 2), and written informed consent was obtained from each participant in Study Two prior to evaluation. On ethics approval number **SUHREC Project 0708/127**. Participants in Study One were anonymous and volunteered to complete the self-report questionnaires through the application described below under the heading 'Recruitment', ethics approval is included in Appendix 2. The Information sheets and Consent Forms are included in Appendix 3, Appendix 5, Appendix 6, Appendix 7 and Appendix 8. .

## 4.5 Recruitment

Participants were recruited world-wide using a free mobile telephone application for an Apple iPhone, designed by the researcher and the company 'Underbeak' ([www.underbeak.com](http://www.underbeak.com)) titled 'Dyslexia Detector', which invited participants to fill in the questionnaires for the purpose of research into SLDs with the knowledge that these completed questionnaires were anonymous and sent to Swinburne University of Technology's data base for the purposes of research. The participants were volunteers and they were not paid. Ethics approval was provided (Appendix 2). The participants were grouped according to SLD symptoms, specifically symptoms of dyslexia, dyscalculia, dyspraxia and ADD based on the symptoms they reported on the self-report questionnaire (Appendix 4).

The free mobile telephone application titled 'Dyslexia Detector' provided users the opportunity to enter SLD symptoms into the Application which then produced a graph

summary of the SLD or SLDs those related symptoms related in a ‘Results’ screen (Appendix 16). The results screen advised participants that ‘Your results have been calculated. These results are only an indication. Your results have been graded from low to high’ (Appendix 16). Results were then provided in a series of screens with headings. Headings included ‘Dyscalculia’ and a summary definition to describe the symptoms of dyscalculia, specifically the typical ‘Difficulty in understanding mathematical concepts, symbols or sequencing.’ (Appendix 16). Headings also included ‘Dyspraxia’ and a summary definition to describe the symptoms of dyspraxia, specifically how it typically ‘Affects body movement and co-ordination. e.g. clumsiness, speech and language problems or thought difficulties’ (Appendix 16). A third heading ‘ADD’ included a summary definition to describe the symptoms of ADD, specifically how ADD is typically ‘Characterized by learning disorders as a result of reduced ability to concentrate on a specific task, is easily distracted or has poor memory’ (Appendix 17). The last heading ‘Dyslexia’ included a summary definition to describe the symptoms of dyslexia, specifically how dyslexia is typically ‘Reading, writing or spelling difficulties’ (Appendix 17). Results were indicated in the four screens next to a heading ‘Results:’ (Appendix 16), at the bottom of the page for dyscalculia, dyspraxia, ADD and dyslexia and rated ‘high’ with three red dots, ‘medium’ with two yellow dots and low with one green dot. If there were no symptoms of a SLD no dots were coloured on any of the ‘Results’ dots. Users of the Apple iPhone application then had the opportunity to read a brief statement about this research under the heading ‘Research.’ This screen displayed the sub-heading and title of the research project ‘The Social and Emotional consequences of Specific Learning Difficulties’ followed by information about the researcher, the university and an invitation to volunteer as a participant in the research. This information specifically included the information about “Lana McLean, a PhD researcher from the faculty of Life and Social Sciences at Swinburne University of Technology, is seeking participants aged 12–65 to complete an online self-assessment that takes approximately 45 minutes.

The aim of the ‘Screen shorts for Apple iPhone mobile application (Screen headings: Research, What next? For more information)’ (Appendix 18), was to encourage participants to complete the questionnaires. Participants could then choose the green ‘Participate’ button on the bottom right hand corner of the screen for additional

information about the aim of the research, or press a red 'Restart' button at the bottom centre of the screen to re-do the test or press a red 'Back' button at the bottom left hand corner of the screen and return to the beginning. A second screen headed 'What next' appeared after pressing the green 'Participate' button with the information that 'There are many tools available to help with learning difficulties. A positive reading in this test does not confirm a learning difficulty but does suggest one.' Under this information is a sub-heading 'Dyslexia Helper', an Apple iPhone application designed by the researcher, for use by iPhone application users to assist with focus and concentration. If users of the iPhone application press a green 'Try' button they are diverted to the 'Dyslexia Helper' application. Information on the 'Dyslexia Helper' application is provided in the centre of the screen, specifically that 'Dyslexia Helper will help you focus, improve concentration, and help reduce the symptoms associated with a learning difficulty' (Appendix 18).

This application was not part of the research but was made available for Apple iPhone users of the application 'Dyslexia Detector' as an additional application for their own use if they chose to 'Try' it. At the bottom of this 'What next' screen users of this 'Dyslexia Detector' application can choose to press the red button 'Back' at the bottom middle of the screen and return to the beginning of the application, or participate in the research by pressing the green 'Next' button at the bottom right hand corner of the screen. If users of the iPhone application chose the 'Next' button they were taken to a screen titled 'For more information' with the information that 'There are many studies being conducted to understand the causes of Learning Difficulties and find methods of correction.' Additional information included that 'You can help with these studies by participating in this research' (Appendix 18). This screen displays a red 'Back' button (Appendix 18) on the bottom left hand corner of the screen which allows users to return the beginning of the application and a green 'Next' button at the bottom right hand corner of the screen, (Appendix 18), where they were then were provided the questionnaires to fill in subsequent screens. When participants completed the questionnaires they simply submitted their results which were collated in the Swinburne University SPSS program to generate results for this research project.

## 4.6 Participants

836 anonymous participants took part in the current study. Because of the anonymity there is no record of which countries the participants were drawn from as participants were specifically drawn from Apple iPhone users worldwide. Anonymity provided the opportunity for more Apple iPhone users to participate as many may not have wanted their SLD to be made public in any way, but were interested in contributing to research that may ameliorate SLDs.

## 4.7 Method

In Study One the Adolescent Self-Report Version, the Swinburne University Emotional Intelligence Test – Self Report Version was implemented and evaluated within the diverse group of anonymous participants who participated in the research by filling in the self-report questionnaires provided in the ‘Research section of the Apple iPhone application titled ‘Dyslexia Detector’ described in the ‘4.3.1 Recruitment’ section above, to determine Total EI, and Emotional Intelligence competencies in Emotional Recognition /Expression, Understanding Emotions, Emotions Direct Cognition, Emotional Management and Emotional Control.

The tests were administered in the order of Clinical Tool for Dyslexia then The Adolescent Self-Report Version or the SUEIT - Swinburne University Emotional Intelligence Test – Self Report Version, depending on the age of the participant. The Adolescent Self-Report Version was completed by participant 12 years old and less than 17 years of age. The SUEIT - Swinburne University Emotional Intelligence Test – Self Report Version was completed by participants 18 years of age and 65 years of age or less. This was followed by the 20 -Item Mini IPP then the DASS 21 test.

The tests were self-administered through an Apple iPhone application titled ‘Dyslexia Detector’ which provided access to volunteers to participate in the research by following a series of buttons on the application that directed them to the research self-report questionnaires. The time to complete the self-report questionnaires varied with the time required by each participant, however the average time observed in supervised sessions (in Study Two) was around 35 minutes.

Emotional Intelligence using the SUEIT showed excellent internal reliability measured by alpha (ERE = .728; UE=.884; EDC=.660; EM=.777; EC=.790). Learning Disability = .832, IIP Sociable .886; aggressive .805; Too Open .841, caring .725; Supportive .704 after deleting item 13; Involved .671 and Dependent .677

## 4.8 Design

Study One was designed to test a large sample of randomised and anonymous participants between the age of 12 and 65 who, as users of Apple iPhone applications, would access an application titled ‘Dyslexia Detector’ and agree to participate in research into the causes and possible treatments for SLDs. As their iPhone application specifically evaluated self-reported symptom or symptoms of a SLD or SLDs, it was assumed that the iPhone Application would attract individuals interested in SLDs and likely to participate. The anonymity allowed access to information only on gender and age and specifically protected the participants from any public or research recognition beyond the symptoms and responses to the self-report questionnaires. The responses to the questionnaires were designed to statistically evaluate levels of EI, specifically Emotional Recognition and Expression (ERE); Understanding Emotions (UE); Emotions Direct Cognition (EDC); Emotional Management (EM) and Emotional Control (EC).

## 4.9 Instruments

### 4.9.1 The Adolescent Swinburne University Emotional Intelligence Test A-SUEIT

The Palmer and Stough (2002) model was designed to evaluate the way adolescents typically feel, think and act. The five dimensions include:

1. Emotional Recognition and Expression (ERE).
2. Understanding Emotions (UE).
3. Emotions Direct Cognition (EDC).
4. Emotional Management (EM).
5. Emotional Control (EC).

#### 4.9.2 Swinburne University Emotional Intelligence Test–Self Report Version

The Palmer and Stough (2002) model was designed to evaluate the way adults typically feel, think and act. The five dimensions include:

1. Emotional Recognition and Expression (ERE).
2. Understanding Emotions (UE).
3. Emotions Direct Cognition (EDC).
4. Emotional Management (EM).
5. Emotional Control (EC).

#### 4.9.3 20-Item Mini Inventory of Interpersonal Problems (IP)

The Inventory of Interpersonal Problems (IIP-32) was used to measure the difficulties people have in their interpersonal relationships. Responses for each of the items are made on a five point scale ranging from 0 ('not at all') to 4 ('extremely'). The overall internal consistency of the inventory is high (0.86). Items in the inventory load on eight areas of difficulty in which individuals experience difficulty in interpersonal relationships; hard to be sociable (Items 1,3,7,9;  $\alpha=0.89$ ); assertive (Items 2,4,6,11;  $\alpha=0.86$ ); supportive (Items 13, 14,15,16;  $\alpha=0.75$ ); involved (Items 5,8,12,19;  $\alpha=0.75$ ); being too aggressive (Items 20,21,28,30;  $\alpha=0.85$ ); being too caring (Items 18,25,26,32;  $\alpha=0.72$ ); too dependent (Items 22,23, 27,31;  $\alpha=0.71$ ) and too open (Items 10,17,24,29;  $\alpha=0.80$ ).

#### 4.9.4 The Depression and Anxiety Scale (DASS)-21

This scale is described by Lovibond and Lovibond (1995) as a test used to measure anxiety, depression and stress that has been shown to possess adequate convergent and discriminant validity. Their general description of the scale is that the DASS is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress and it was not merely constructed as another set of scales to measure conventionally defined emotional states, but to further the process of defining, understanding, and measuring the ubiquitous and clinically significant emotional states usually described as depression, anxiety and stress.



The Psychological First Aid (PFA) (2014) reported that the DASS should meet the requirements of both researchers and scientist-professional clinicians. The PFA (2014) describes the DASS as containing 14 items, in three scales and that these scales are divided into subscales of 2-5 items with similar content. The Depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. The 'Anxiety' scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The 'Stress' scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. Subjects are asked to use 4-point severity/frequency scales to rate the extent to which they have experienced each state over the past week. Scores for Depression, Anxiety and Stress are calculated by summing the scores for the relevant items.

The PFA (2014) also report that the scales have been shown to have high internal consistency and to yield meaningful discriminations in a variety of settings, specifically when measuring a current state or change in state over time on the three dimensions of depression, anxiety and stress. They describe high scorers on the Depression scale as being self-disparaging, dispirited, gloomy, blue, convinced that life has no meaning or value, pessimistic about the future, unable to experience enjoyment or satisfaction, unable to become interested or involved, slow and lacking in initiative. They describe people to score high on the 'Anxiety' scale as apprehensive, panicky, trembly, shaky, aware of dryness of the mouth, breathing difficulties, pounding of the heart, sweatiness of the palms, worried about performance and possible loss of control. The PFA (2014) describe high scorers on the 'Stress' scale as over-aroused, tense, unable to relax, touchy, easily upset, irritable, easily startled, nervy, jumpy, fidgety and intolerant of interruption or delay.

#### 4.9.5 Clinical Tool for Dyslexia.

The participants' diagnosis of dyslexia was confirmed by completing a clinical self-report questionnaire prepared by the investigator (Appendix 4). The questionnaire consisted of 28 questions which asked questions related to symptoms typically associated with dyslexia, dyscalculia, dyspraxia and ADD.

Questions describing typical symptoms of dyslexia include 1. Do shapes and sequences of letters or numbers appear changed or reversed? 2. Is spelling incorrect or inconsistent? 3. Are words or lines skipped when reading or writing? 4. Do letters or numbers appear to move, disappear, grow or shrink? 5. Are punctuation marks or capital letters omitted ignored or not seen? 11. Do you experience dizziness or nausea while reading? 23. Do, or did, you remember your alphabet by singing the Alphabet song? 24. Do you use extreme concentration while reading? 27. Do you have a preference to think by using pictures of concepts or ideas with no internal monologue?

Questions describing typical symptoms of dyscalculia include 1. Do shapes and sequences of letters or numbers appear; changed or reversed? 4. Do letters or numbers appear to move, disappear, grow or shrink? 18. Are mathematical concepts difficult to learn? 19. Do you have difficulty being on time or telling time?

Questions describing typical symptoms of dyspraxia include 6. Are, or were, some speech sounds difficult to make? 7. Are digraphs such as “ch” or “th” mispronounced? 12. Do you have a poor sense of direction? 14. Do you have difficulty with hand writing? 15. Do you have problems with co-ordination or balance? 26. Are you aware if you have any unusual body postures?

Questions describing typical symptoms of ADD include 8. Are false sounds perceived? 9. Do you ever get accused of not listening or hearing what is said? 10. Are sounds perceived as quieter, louder, farther away or nearer than actual? 13. Do you find it hard to sit still? 16. Are you hyperactive (over active)? 17. Are you hypoactive (under active)? 20. Do you daydream excessively? 21. Do you lose your train of thought easily? 22. Do you have trouble sequencing, (putting things in the right order)? 25. Are you very dependent on others? 28. Do you experience imagination as reality?

## **CHAPTER 5: Results-Study One**

### **5.1. Statistical Analysis**

Pearson's product-moment correlation coefficient was computed to assess the association between total EI scores and the level of total SLDs including dyslexia, dyscalculia, dysgraphia, dyspraxia and attention deficit disorder (ADD). Separate multiple linear regressions were performed to investigate the contribution of significant variables indented in bi-variate assessment towards the prediction of individual SLD. Personality, DASS, EI and interpersonal problems were entered as the predictor variables, and the SLDs dyslexia, dyspraxia, dyscalculia and ADD variables were entered as the outcome in all models. One-way between subjects ANOVAs were conducted to compare differences in emotional intelligence competencies for participants who reported less than 3 symptoms of SLDs dyslexia, dyspraxia, dyscalculia, attention deficit disorder (ADD) and participants who reported 3 or more symptoms. Assessments of skewedness and kurtosis and tests for normality were conducted prior to statistical analyses. No assumptions of normality were violated, and thus parametric tests were used in all analyses. All analyses were conducted using SPSS V18 for Windows, and all tests were two-tailed with conventional  $p < 0.05$  as significance threshold.

#### **5.1.2. Program Attendance, Attrition and Completion of Questionnaires**

All 836 participants included for analyses completed the testing session and all study questionnaires.

### **5.2 Sample Descriptives**

#### **5.2.1 Group Characteristics**

The sample comprised 836 individuals, aged between 7 and 65 years (mean age 28.4,  $SD = 11.2$ ). The sample comprised 72% female ( $n = 599$ ) and 28% male ( $n = 237$ ). All participants reported English as their primary language spoken.

Assessed individually, of the sample, 755 (90%) were classified as having 3 or more dyslexia symptoms; 376 (45%) were classified as having 3 or more dyscalculia symptoms; 698 (83.5%) were classified as having 3 or more dyspraxia symptoms and 663 (79.3) were considered to have 3 or more symptoms of ADD.

## 5.2.2 Bi-Variate Correlations

A Pearson product-moment correlation coefficient was computed to assess the relationship between personality, DASS, EI and interpersonal problems and total dyslexia symptoms.

There was a weak negative correlation between Extraversion, Agreeableness, Conscientiousness, Emotional Recognition/Expression, Understanding Emotions, Emotions Direct Cognition and Emotional Management with total dyslexia symptoms ( $r$  range =  $-.06$  to  $-.24$ ,  $n = 774$ ,  $p = \text{all} < 0.05$ ). Lower scores on these measures were correlated with greater total dyslexia symptoms. A weak to moderate positive association was also noted between neuroticism, DASS stress scale, DASS anxiety scale, hard to be sociable, hard to be assertive, too aggressive, too caring, hard to be supportive, hard to be involved and too dependent with dyslexia ( $r$  range =  $.15$  to  $.30$ ,  $n = 774$ ,  $p = \text{all} < 0.05$ ). Higher scores on these measures were correlated with lower total dyslexia symptoms. No significant correlation was observed between variables; Openness, Emotions Direct Cognition or Too open and total dyslexia symptoms.

A Pearson product-moment correlation coefficient was computed to assess the relationship between personality, DASS, EI and interpersonal problems and total dyscalculia symptoms.

There was a weak negative correlation between Extraversion, Conscientiousness, Emotional Recognition/Expression, Understanding Emotions, Emotional Management, Emotional Control with dyscalculia symptoms ( $r$  range =  $-.06$  to  $-.29$ ,  $n = 774$ ,  $p = \text{all} < 0.001$ ). Lower scores on these measures were correlated with greater dyscalculia symptoms. A weak to moderate positive association was also noted between Neuroticism, Emotions Direct Cognition, DASS stress scale score, DASS anxiety scale score, DASS depression scale score, Hard to be sociable, Too

aggressive, Hard to be supportive, Hard to be involved, and Too dependent ( $r$  range = .06 to .25,  $n = 774$ ,  $p = \text{all} < 0.001$ ). A strong positive association was noted between dyslexia total symptoms and dyscalculia total symptoms ( $r = .50$ ,  $n = 744$ ,  $p < 0.001$ ). Higher scores on these measures were correlated with lower total dyscalculia symptoms. No significant correlation was noted between Agreeableness, Openness and Too open with dyscalculia total symptoms.

A Pearson product-moment correlation coefficient was computed to assess the relationship between personality, DASS, EI and interpersonal problems and total dyspraxia symptoms.

There was a weak to moderate negative correlation between Extraversion, Agreeableness, Conscientiousness, Openness, Emotional Recognition/Expression, Understanding Emotions, Emotional Management, Emotional Control with dyspraxia total symptoms ( $r$  range =  $-.10$  to  $-.32$ ,  $n = 774$ ,  $p = \text{all} < 0.001$ ). Lower scores on these measures were correlated with greater dyspraxia symptoms. A weak to moderate positive association was also noted between Neuroticism, Emotions Direct Cognition, DASS stress scale score, DASS depression scale score, Hard to be sociable, Hard to be assertive, Too aggressive, Too open, Too caring, Hard to be supportive, Hard to be involved, Too dependent with dyspraxia total symptoms ( $r$  range =  $.10$  to  $-.32$ ,  $n = 774$ ,  $p = \text{all} < 0.001$ ). A strong positive association was noted between DASS anxiety scale score, Dyslexia Total symptoms, Dyscalculia Total symptoms with dyspraxia total symptoms ( $r$  range =  $.42$  to  $.73$ ,  $n = 774$ ,  $p = \text{all} < 0.001$ ). Higher scores on these measures were correlated with lower total dyspraxia symptoms. No significant correlation was noted between Openness and total dyspraxia symptoms.

A Pearson product-moment correlation coefficient was computed to assess the relationship between personality, DASS, EI and interpersonal problems and total ADHD symptoms.

There was a weak to moderate negative correlation between Agreeableness, Conscientiousness, Emotional Recognition/Expression, Understanding Emotions, Emotional Management, Emotional Control with ADD total symptoms ( $r$  range =  $-.09$  to  $-.38$ ,  $n = 774$ ,  $p = \text{all} < 0.05$ ). Lower scores on these measures were correlated with

greater total ADD symptoms. A weak to moderate positive association was also noted between Neuroticism, Emotions Direct Cognition, DASS anxiety scale score, DASS depression scale score, Hard to be sociable, Hard to be assertive, Too aggressive, Too open, Too caring, Hard to be supportive, Hard to be involved, Too dependent with ADD total symptoms ( $r$  range = .07 to -.38,  $n = 774$ ,  $p = \text{all} < 0.05$ ). A strong positive association was noted between DASS stress scale score, Dyslexia Total symptoms, Dyscalculia Total symptoms, Dyspraxia Total symptoms and total ADD symptoms ( $r$  range = .41 to .46,  $n = 774$ ,  $p = \text{all} < 0.001$ ). Higher scores on these measures were correlated with lower total ADD symptoms. No significant correlation was noted between Extraversion and Openness and total ADD symptoms.

Table 1: Bi-variate correlations between personality, DASS, EI and interpersonal problems and total SLD.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
1	1.00																										
2	.32**	1.00																									
3	.07	.14**	1.00																								
4	-.22**	.00	-.13**	1.00																							
5	.23**	.27**	.05	-.09*	1.00																						
6	.27**	.31**	.15**	-.09*	.19**	1.00																					
7	.30**	.52**	.23**	-.20**	.30**	.45**	1.00																				
8	.07*	.29**	-.03	.10**	.25**	.23**	.27**	1.00																			
9	.39**	.30**	.26**	-.55**	.26**	.34**	.53**	.12**	1.00																		
10	.19**	.17**	.30**	-.57**	.16**	.27**	.36**	-.02	.71**	1.00																	
11	-.19**	-.09*	-.17**	.55**	-.09*	-.26**	-.25**	.07	-.48**	-.56**	1.00																
12	-.18**	-.09*	-.11**	.39**	-.10*	-.24**	-.27**	.03	-.40**	-.45**	.71**	1.00															
13	-.25**	-.10*	-.18**	.47**	-.11**	-.26**	-.26**	.01	-.48**	-.46**	.72**	.65**	1.00														
14	-.67**	-.29**	-.18**	.36**	-.20**	-.38**	-.38**	-.05	-.52**	-.39**	.44**	.40**	.45**	1.00													
15	-.41**	-.15**	-.19**	.22**	-.14**	-.32**	-.32**	.01	-.40**	-.28**	.33**	.33**	.35**	.56**	1.00												
16	-.09*	-.19**	-.23**	.48**	-.10*	-.27**	-.27**	-.05	-.42**	-.57**	.52**	.41**	.43**	.30**	.02	1.00											
17	.09*	.14**	-.03	.16**	-.01	.02	.02	.18**	-.01	-.12**	.20**	.16**	.17**	.05	.13**	.13**	1.00										
18	-.04	.21**	-.06	.26**	.02	.03	.03	.12**	-.07	-.20**	.42**	.35**	.35**	.27**	.29**	.19**	.32**	1.00									
19	-.06	-.34**	-.34**	.12**	-.03	-.18**	-.18**	.01	-.20**	-.24**	.22**	.15**	.21**	.22**	.12**	.38**	.04	-.05	1.00								
20	-.24**	-.32**	-.32	.20**	-.20**	-.32**	-.32**	-.16**	-.36**	-.31**	.42**	.36**	.41**	.48**	.36**	.32**	-.07	.19**	.31**	1.00							

<b>21</b>	-.13--	-.06	-.22**	.40**	-.08*	-.27**	-.27**	.07	-.39**	-.46**	.45**	.40**	.41**	.40**	.36**	.47**	.36**	.33**	.28**	.30**	1.00				
<b>22</b>	-.08*	-.08*	-.17**	.13**	-.06	-.21**	-.21**	.03	-.17**	-.24**	.27**	.30**	.20**	.22**	.17**	.16**	.03	.26**	.15**	.17**	.19**	1.00			
<b>23</b>	-.06	-.00	-.25**	.16**	-.03	-.14**	-.14**	.11**	-.19**	-.29**	.25**	.20**	.18**	.21**	.18**	.10**	.06	.20**	.15**	.16**	.19**	.50**	1.00		
<b>24</b>	-.11**	-.10**	-.23**	.19**	-.07	-.28**	-.28**	.10**	-.27**	-.32**	.37**	.42**	.32**	.29**	.25**	.28**	.11**	.25**	.20**	.24**	.30**	.73**	.45**	1.00	
<b>25</b>	-.04	-.09*	-.24**	.27**	.03	-.13**	-.20**	.07*	-.27**	-.38**	.41**	.37**	.33**	.27**	.21**	.30**	.13**	.26**	.20**	.24**	.30**	.44**	.41**	.46**	1.00

$N = 774$ ; \*  $p < 0.01$ ; \*\* =  $p < 0.001$

1 = Extraversion; 2 = Agreeableness; 3 = Conscientiousness; 4 = Neuroticism; 5 = Openness; 6 = Emotional Recognition/Expression; 7 = Understanding Emotions; 8 = Emotions Direct Cognition; 9 = Emotional Management; 10 = Emotional Control; 11 = DASS stress scale; 12 = DASS anxiety scale; 13 = DASS depression scale; 14 = Hard to be sociable; 15 = Hard to be assertive; 16 = Too aggressive; 17 = Too open; 18 = Too caring; 19 = Hard to be supportive; 20 = Hard to be involved; 21 = Too dependent; 22 = Dyslexia Total symptoms; 23 = Dyscalculia Total symptoms; 24 = Dyspraxia Total symptoms; 25 = ADD Total symptoms



### 5.2.3 Regression

Variables that were identified to be significantly correlated to each SLD in bi-variate analyses were applied in regression models in order to assess their relative contribution and predictive value of identifying individuals who report greater symptoms of each individual SLD.

#### 5.2.3.1 *Dyslexia*

To investigate the contribution the study variables made towards the prediction of number of self-reported dyslexia symptoms, a multiple regression analysis was conducted. Table 2 presents the multiple regression analysis with personality, DASS, EI and interpersonal problems as the predictor variables and total number of dyslexia symptoms as the dependant variable.

Table 2. Multiple regression analysis with dyslexia as the dependent variable

Independent variables	<i>B</i>	Beta	<i>t</i> -value	Sig. ( <i>p</i> -value)	<i>R</i> <sup>2</sup>	Sig. <i>F</i> change ( <i>R</i> <sup>2</sup> )
Block 1					0.18	<.001
Extraversion	.01	.02	.25	.80		
Agreeableness	.01	.01	.18	.86		
Conscientiousness	-.06	-.07	-1.58	.11		
Neuroticism	-.04	-.06	-1.08	.28		
ERE	-.02	-.12	-1.32	.19		
UEX	-.02	.09	-2.14	<.05		
EM	.03	-.15	1.29	.20		
EC	-.06	.05	-2.29	<.05		
DASS stress	.02	.19	.62	.54		
DASS anxiety	.09	-.05	3.28	<.01		
DASS depression	-.02	.07	-.84	.40		
Hard to be sociable	.04	.07	.98	.33		
Hard to be assertive	.00	.00	.04	.97		
Too aggressive	-.04	-.06	-1.06	.29		
Too caring	.15	.22	4.61	<.001		
Hard to be supportive	.10	.09	1.97	<.05		
Hard to be involved	-.04	-.06	-1.23	.22		
Too dependent	-.01	-.02	-.32	.75		

$n=561$

Summary statistics indicated that the overall model was significant ( $F(18,542) = 6.76$ ,  $p < .001$ ) with a multiple  $R = .43$ , that is, the overall regression model explained 18 % of the total variance in self-reported dyslexia symptoms.

Inspection of the contribution of each of the factors revealed that Understanding Emotions, Emotional Control, DASS anxiety, too caring and hard to be supportive made statistically significant semi-partial contributions to the model ( $p < .05$ ).

### 5.2.3.2 Dyspraxia

To investigate the contribution the study variables made towards the prediction of number of self-reported dyspraxia symptoms, a multiple regression analysis was conducted. Table 3 presents the multiple regression analysis with personality, DASS, EI and interpersonal problems as the predictor variables and total number of dyspraxia symptoms as the dependant variable.

Table 3. Multiple regression analysis with dyspraxia as the dependent variable

Independent variables	<i>B</i>	Beta	<i>t</i> -value	Sig. ( <i>p</i> -value)	<i>R</i> <sup>2</sup>	Sig. <i>F</i> change ( <i>R</i> <sup>2</sup> )
Block 1					.26	<.001
Extraversion	.01	.01	.22	.82		
Agreeableness	.01	.02	.34	.73		
Conscientiousness	-.07	-.11	-2.71	<.01		
Neuroticism	-.07	-.10	-1.84	.07		
ERE	-.02	-.06	-1.35	.18		
UEX	-.02	-.13	-2.59	<.05		
EDC	.05	.11	2.70	<.01		
EM	.00	.01	.12	.90		
EC	-.03	-.08	-1.27	.21		
DASS stress	.01	.02	.27	.79		
DASS anxiety	.12	.25	4.42	<.001		
DASS depression	-.00	-.01	-.10	.92		
Hard to be sociable	.01	.02	.35	.73		
Hard to be assertive	.03	.05	.96	.34		
Too aggressive	.01	.02	.37	.71		
Too open	.01	.01	.13	.90		
Too caring	.09	.13	2.83	<.01		
Hard to be supportive	.05	.05	1.13	.26		
Hard to be involved	-.01	-.01	-.23	.82		
Too dependent	.02	.02	.45	.65		

*n* = 557

Summary statistics indicated that the overall model was significant ( $F(20,536) = 9.60$ ,  $p < .001$ ) with a multiple  $R = .51$ , that is, the overall regression model explained 26% of the total variance in self-reported dyspraxia symptoms.

Inspection of the contribution of each of the factors revealed that conscientiousness, Understanding Emotions, Emotions Direct Cognition, anxiety and too caring made statistically significant semi-partial contributions to the model ( $p < .05$ ).

### 5.2.3.3 Dyscalculia

To investigate the contribution the study variables made towards the prediction of number of self-reported dyscalculia symptoms, a multiple regression analysis was conducted. Table 4 presents the multiple regression analysis with personality, DASS, EI and interpersonal problems as the predictor variables and total number of dyscalculia symptoms as the dependant variable.

Table 4. Multiple regression analysis with dyscalculia as the dependent variable

Independent variables	<i>B</i>	Beta	<i>t</i> -value	Sig. ( <i>p</i> -value)	<i>R</i> <sup>2</sup>	Sig. <i>F</i> change ( <i>R</i> <sup>2</sup> )
Block 1					.18	<.001
Conscientiousness	-.05	-.15	-3.64	<.001		
Neuroticism	-.03	-.07	-1.25	.21		
ERE	.00	.01	.19	.85		
UEX	-.00	-.02	-.48	.64		
EDC	.02	.10	2.38	<.05		
EM	.01	.07	1.02	.30		
EC	-.05	-.27	-4.09	<.001		
DASS stress	.04	.15	2.06	<.05		
DASS anxiety	-.00	-.02	-.31	.76		
DASS depression	-.00	-.02	-.24	.81		
Hard to be sociable	.02	.07	1.35	.18		
Hard to be assertive	.00	.01	.25	.80		
Too aggressive	-.05	-.17	-3.00	<.01		
Too caring	.05	.15	3.21	<.01		
Hard to be supportive	.03	.06	1.31	.19		
Hard to be involved	-.00	-.00	-.06	.95		
Too dependent	-.01	-.02	-.35	.73		

*n* = 565

Summary statistics indicated that the overall model was significant ( $F(17,547) = 7.11$ ,  $p < .001$ ) with a multiple  $R = .51$ , that is, the overall regression model explained 18% of the total variance in self-reported dyscalculia symptoms. Inspection of the contribution of each of the factors revealed that conscientiousness, Emotions Direct Cognition, Emotional Control, stress, too aggressive and too caring made statistically significant semi-partial contributions to the model ( $p < .05$ ).

#### 5.2.3.4 ADD

To investigate the contribution the study variables made towards the prediction of number of self-reported ADD symptoms, a multiple regression analysis was conducted. Table 5 presents the multiple regression analysis with personality, DASS, EI and interpersonal problems as the predictor variables and total number of ADD symptoms as the dependant variable.

Table 5. Multiple regression analysis with ADD as the dependent variable

Independent variables	<i>B</i>	Beta	<i>t</i> -value	Sig. ( <i>p</i> -value)	<i>R</i> <sup>2</sup>	Sig. <i>F</i> change ( <i>R</i> <sup>2</sup> )
Block 1					.28	<.001
Agreeableness	-.02	-.04	-.71	.48		
Conscientiousness	-.06	-.13	-3.26	<.01		
Neuroticism	.01	.03	.46	.64		
ERE	.01	.04	.77	.44		
UEX	-.00	-.03	-.48	.63		
EDC	.01	.04	.96	.34		
EM	.03	.11	1.70	.09		
EC	-.06	-.21	-3.37	<.01		
DASS stress	.05	.14	2.06	<.05		
DASS anxiety	.03	.09	1.66	.10		
DASS depression	-.01	-.03	-.44	.66		
Hard to be sociable	.01	.02	.34	.73		
Hard to be assertive	.01	.02	.46	.64		
Too aggressive	-.02	-.04	-.73	.47		
Too open	-.01	-.01	-.29	.77		
Too caring	.06	.12	2.60	<.05		
Hard to be supportive	.05	.07	1.49	.14		
Hard to be involved	.02	.04	.85	.39		
Too dependent	.05	.11	2.19	<.05		

*n* = 552

Summary statistics indicated that the overall model was significant ( $F(19,532) = 11.08, p < .001$ ) with a multiple  $R = .53$ , that is, the overall regression model explained 28% of the total variance in self-reported ADD symptoms. Inspection of the contribution of each of the factors revealed that conscientiousness, Emotional Control, stress, too dependent and too caring made statistically significant semi-partial contributions to the model ( $p < .05$ ).

## 5.2.4 ANOVA

One-way between subjects ANOVAs were conducted to compare differences in emotional intelligence competencies for participants who reported less than 3 symptoms of SLDs dyslexia, dyspraxia, dyscalculia, ADD and participants who reported 3 or more symptoms of these SLDs.

### 5.2.4.1 *Dyslexia*

Information for N = 14 participants was not included due to missing data resulting in an eligible sample of N= 822. A one-way between subjects ANOVA was conducted to compare differences in emotional intelligence competencies for participants who reported less than 3 symptoms of dyslexia and participants who reported 3 or more symptoms of dyslexia. There was a significant between groups' difference for the emotional intelligence competencies of Understanding Emotions, Emotional Management and Emotional Control, with ( $F(1,820) = 9.99, p < 0.01$ ), ( $F(1,820) = 15.31, p < 0.001$ ) and ( $F(1,820) = 21.24, p < 0.001$ ) respectively. Inspection of the means revealed that participants with 3 or more symptoms were lower in Emotional Recognition/Expression, Understanding Emotions, Emotional Management and Emotional Control and higher in Emotions Direct Cognition. Specifically the results suggest that individual with 3 or more symptoms of dyslexia incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of dyslexia. No significant differences were noted between groups on measure of Emotional Recognition/Expression ( $p > 0.05$ ). A summary of these findings can be found in Table 6.

Table 6. Means and standard deviations for emotional intelligence competencies

	<i>M (SD)</i> <i>Less than 3</i> <i>symptoms</i>	<i>M (SD)</i> <i>3 or more</i> <i>symptoms</i>
Emotional Recognition/Expression	33.60 (6.14)	32.15 (6.36)
Understanding Emotions Ext	72.88 (10.30)	68.26 (11.12)
Emotions Direct Cognition	34.07 (6.34)	35.32 (5.91)
Emotional Management	35.85 (7.47)	32.25 (7.20)
Emotional Control	25.64 (6.61)	21.93 (6.29)

Note: *n* (less than 3 symptoms) = 67; *n* (3 or more symptoms) = 755

#### 5.2.4.2 *Dyspraxia*

Information for  $N = 21$  participants was not included due to missing data resulting in an eligible sample of  $N = 815$ . A one-way between subjects ANOVA was conducted to compare the differences in emotional intelligence competencies for participants who reported less than 3 symptoms of dyspraxia and participants who reported 3 or more symptoms of dyspraxia. There was a significant between groups' difference for the emotional intelligence competencies of Emotional Recognition and Expression ( $F(1,813) = 17.90, p < 0.001$ ), Understanding Emotions ( $F(1,813) = 23.90, p < 0.001$ ), Emotional Management ( $F(1,813) = 36.49, p < 0.001$ ) and Emotional Control ( $F(1,813) = 39.50, p < 0.001$ ). Inspection of the means revealed that participants with 3 or more symptoms were lower in Emotional Recognition/Expression, Understanding Emotions, Emotional Management and Emotional Control and higher in Emotions Direct Cognition. Specifically the results suggest that individual with 3 or more symptoms of dyspraxia incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of dyspraxia. No difference was noted between groups with regard to Emotion Direct Cognition ( $p > 0.05$ ). A summary of these findings can be found in Table 7.



Table 7. Means and standard deviations for emotional intelligence competencies

	<i>M (SD)</i> <i>Less than 3</i> <i>symptoms</i>	<i>M (SD)</i> <i>3 or more</i> <i>symptoms</i>
Emotional Recognition/Expression	34.53 (5.94)	31.87 (6.34)
Understanding Emotions Ext	73.44 (9.83)	67.90 (11.58)
Emotions Direct Cognition	34.65 (5.44)	35.36 (6.04)
Emotional Management	36.24 (7.22)	31.95 (7.09)
Emotional Control	25.59 (6.54)	21.67 (6.19)

Note: *n* (less than 3 symptoms) = 117; *n* (3 or more symptoms) = 698

#### 5.2.4.3 *Dyscalculia*

Information for  $N = 6$  participants was not included due to missing data resulting in an eligible sample of  $N = 830$ . A one-way between subjects ANOVA was conducted to compare differences in emotional intelligence competencies for participants who reported less than 3 symptoms of dyscalculia and participants who reported 3 or more symptoms of dyscalculia. There was a significant between groups' difference for the emotional intelligence competencies of Emotional Recognition and Expression ( $F(1,828) = 6.84, p < 0.01$ ), Understanding Emotions ( $F(1,828) = 12.76, p < 0.001$ ), Emotions Direct Cognition ( $F(1,828) = 5.13, p < 0.05$ ), Emotional Management ( $F(1,828) = 21.52, p < 0.001$ ) and Emotional Control ( $F(1,828) = 43.82, p < 0.001$ ). Inspection of the means revealed that participants with 3 or more symptoms were lower in Emotional Recognition/Expression, Understanding Emotions, Emotional Management and Emotional Control and higher in Emotions Direct Cognition. Specifically the results suggest that individual with 3 or more symptoms of dyscalculia incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of dyscalculia. A summary of these findings can be found in Table 8.

Table.8. Means and standard deviations for emotional intelligence competencies

	<i>M (SD)</i> <i>Less than 3</i> <i>symptoms</i>	<i>M (SD)</i> <i>3 or more</i> <i>symptoms</i>
Emotional Recognition/Expression	32.80 (6.22)	31.64 (6.45)
Understanding Emotions Ext	69.92 (10.10)	67.08 (12.82)
Emotions Direct Cognition	34.82 (5.75)	35.76 (6.15)
Emotional Management	33.57 (7.32)	31.25 (6.98)
Emotional Control	23.50 (6.40)	20.62 (6.00)

Note: *n* (less than 3 symptoms) = 454; *n* (3 or more symptoms) = 376

#### 5.2.4.4 ADD

Information for  $N = 24$  participants was not included due to missing data resulting in an eligible sample of  $N = 812$ . A one-way between subjects ANOVA was conducted to compare differences in emotional intelligence competencies for participants who reported less than 3 symptoms of ADD and participants who reported 3 or more symptoms of ADD. There was a significant between groups' difference for the emotional intelligence competencies of Emotional Recognition and Expression ( $F(1,810) = 9.82, p < 0.01$ ), Understanding Emotions ( $F(1,810) = 21.85, p < 0.001$ ), Emotional Management ( $F(1,810) = 43.50, p < 0.001$ ) and Emotional Control ( $F(1,810) = 82.36, p < 0.001$ ). Inspection of the means revealed that participants with 3 or more symptoms were lower in Emotional Recognition/Expression, Understanding Emotions, Emotional Management and Emotional Control and higher in Emotions Direct Cognition. Specifically the results suggest that individual with 3 or more symptoms of ADD incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of ADD. No differences were noted between groups with regard to Emotions Direct Cognition ( $p > 0.05$ ). A summary of these findings can be found in Table 9.

Table 9. Means and standard deviations for emotional intelligence competencies

	<i>M (SD)</i> <i>Less than 3</i> <i>symptoms</i>	<i>M (SD)</i> <i>3 or more</i> <i>symptoms</i>
Emotional Recognition/Expression Understanding Emotions Ext	33.79 (6.06)	32.00 (6.36)
Emotions Direct Cognition	72.66 (9.82)	67.86 (11.61)
Emotional Management	35.04 (6.09)	35.34 (5.95)
Emotional Control	35.99 (6.98)	31.75 (7.11)
	26.31 (6.31)	21.32 (6.01)

Note: *n* (less than 3 symptoms) = 149; *n* (3 or more symptoms) = 663

# **CHAPTER 6: Aims, hypotheses and study methodology: Study Two**

## **Overview**

This thesis argues that a deficit in emotional wellbeing or emotional development may manifest as a SLD or multiple SLDs and therefore examines whether a relationship between EI and SLDs exists. In addition Study Two seeks to argue that a targeted educational skills intervention has an insignificant impact on decreasing SLD or on increasing EI.

### **6.1 Research Question One**

Compared to pre-treatment, will the treated group differ on the level of Emotions Direct Cognition and score higher on SLD following the clinical intervention?

### **6.2 Research Aim**

Study Two aimed to evaluate whether any changes in the level of specific facets of EI, Emotional Recognition and Expression, Understanding Others' Emotions and Emotional Management and Control in a group of adolescents and adults with SLD's was due to the educational intervention.

### **6.3 Hypotheses**

#### **6.3.1 Hypothesis One**

The first variable used was Emotional Recognition and Expression. It was hypothesized that the treated clinical group results would improve on the level of Emotional Recognition and Expression compared to their level before treatment.

#### **6.3.2 Hypothesis Two**

The second variable used was Understanding Others' Emotions. It was hypothesized that the treated clinical group results would improve on the level of Understanding Others' Emotions compared to their level before treatment.

### 6.3.3 Hypothesis Three

The third variable used was Emotional Management and Control. It was hypothesized that the treated clinical group results would improve on the level of Emotional Management and Control compared to their level before treatment.

## 6.4 Study Methodology

Study Two involved the development, implementation and evaluation of a SLD Correction Program based on the research-based recommendations of Goldman et al (2006) from the RCM Research Centre. These recommendations were developed under cooperative agreement with the U.S. Department of Education specifically designed for individuals who Goldman et al (2006) describe as struggling considerably in developing English proficiency, academic skills, and meeting grade-level standards. These are the individuals this thesis refers to as having SLDs. Goldman et al (2006) recommendation that for ELLs (English Language Learners), individuals described in this thesis with dyslexia, an instructional approach or intervention, must consider the content format for delivery and match it to the learner's difficulty and the approach or intervention, and whether it is meant to be a class-wide approach or targeted for small-group or one-on-one settings.

The 40 participants in this study received the academic intervention during the 8 week sessions on a one-on-one basis. Even though their ages ranged from 12 to 65 years, all experienced difficulty with alphabetic symbols, word recognition and spelling, as they had described in the Questionnaire listing symptoms of SLDs (Appendix 5).

The intervention, as detailed in 6.3.2 of this thesis, was designed to accommodate their educational deficit in English. Goldman et al (2006) also recommend that for those who struggle with mathematics, individuals described in this thesis with dyscalculia, that they also need explicit, intensive instruction and intervention in basic mathematics concepts. The intervention was again designed on the basis of deficits the participants described in the Questionnaire listing symptoms of SLDs (Appendix 5).

The number stages of the systematic process carried out in this study are described below:

#### 6.4.1 The Development of a SLD Correction Program

As the number of people with SLDs continues to increase there is growing interest in developing SLD Correction Programs as Pellitteri, et al. (2006) recommended developing a SLD Correction Program reported that every academic task and social interaction can be an opportunity to facilitate emotional awareness in students. Mugnaini et al. (2009) also recommended that suitable social, health and school policies be designed to identify and treat dyslexia which is a cause of discomfort. They also reported a clinical need to assess and contrast additional risk factors that may increase the probability of this suffering in dyslexic students. Staels et al. (2015) concluded that their results support the hypothesis that all readers, even poor readers of transparent orthographies, are capable of developing word-specific knowledge further promoting the need for the development of SLD Correction Programs.

Bates (2015) reported that approximately 15% of people have dyslexia and that this equates to over 30 million adults in the United States, about 6 million in the United Kingdom, 3 million in Canada and 3.5 million in Australia and that most don't know they are dyslexic! He also reported that dyslexia occurs in people of all backgrounds and that it is found in speakers of every language and country, but rates vary. Men and women are equally likely to have dyslexia and of those placed in special education for a learning disability, around 80% have dyslexia. Somewhere between 25-40% of children with dyslexia also have ADHD and conversely, approximately 25% of children with ADHD also have dyslexia.

Lyon, as early as (1996), found that approximately 5% of all public school students are identified as having a learning disability (LD) and the longer children with disability in basic reading skills, at any level of severity, go without identification and intervention, the more difficult the task of remediation and the lower the rate of success. Their observations focused primarily on the deficits in basic reading skills, both because of their critical importance to academic success and because relatively more is known about these deficiencies, and they reported that other academic, social, and behavioural manifestations of learning disability are also important and cannot be

assumed to be adequately addressed by programs to improve basic reading skills. Lyon (1996) reported that while early intervention is necessary, it should not be assumed to be sufficient to address the multiple manifestations of learning disability.

The mid 2000's saw the first significant studies of the connection between social-emotional learning and learning disabilities and the implications for intervention based on Wallace et al (2002). They reported findings that factors such as the way in which emotion directs attention and influences learning and the importance of helping children focus amidst the many distractions that exist to their learning have been deemed important in effective classrooms that include high school students with learning difficulties. Their study found that the majority of students with learning disabilities have difficulties with social relationships and the three key skill areas in social-learning are identified as the main source of these difficulties: recognizing emotions in self and others, regulating and managing strong emotions (positive and negative), and recognizing strengths and areas of need.

Researchers in the area of LD are finding that the skills of SEL and the principles by which they are learned are demonstrably relevant to understanding students' academic difficulties and why these are so often accompanied by social difficulty. Elais (2004) also reported that three essential SEL principles that serve as complements to the list of skill guide interventions (National Center for Innovation and Education, 1999) are that:

1. Caring relationships are the foundation of all lasting learning;
2. Emotions effect how and what we learn;
3. Goal setting and problem solving provide focus, direction, and

energy for learning. Also that the essence of these principles is to highlight the importance of the learning environment, the need for educators both to establish caring relationships with the students and help students develop the skills they need to establish such relationships with others.

Chinese educators were one of the first groups to instigate integrated intervention for SLDs in children with the intention of producing a therapeutic effect. Research by Lin, et al., (2005) reported that this process trialed on thirty-one children with learning difficulties who received integrated interventions for one year consisting of cognitive

training, behavioural intervention and comprehensive training of the senses, revealed that interventions integrating cognitive training of the senses may produce good and persistent effect on the cognitive and emotional systems of children with learning difficulties, resulting in obviously improved visual, auditory and brain functions. Karande, et al. (2005, p.961) reported that education is one of the most important aspects of human resource development and that poor school performance not only results in the child having low self-esteem, but also causes significant stress to parents and that it is important to find the reason(s) for a child's poor school performance and come up with a treatment plan early so that the child can perform up to full potential.

As it is now widely accepted that SLDs are multidimensional, involve emotions and that the experience of a SLD can have significant and long term negative consequences, research has also looked at strategies to remediate the experience of a SLD. Staels et al. (2015, p. 1) reported orthographic learning and the use of text-to-speech software had a role to play in correcting SLDs. They concluded that their results support the hypothesis that all readers, even poor readers of transparent orthographies, are capable of developing word-specific knowledge.

A training program was designed and developed for the purpose of this study with the aim of determining whether improved numeracy, literacy and orientation skills combined with an assessment and understanding of the participants EI competences and deficiencies would result in decreased SLD.

#### 6.4.2 Program Design

The SLD Correction Program was designed to correct SLDs in private clients of the Educational Personal and Child Consulting Service. As the intervention received positive outcomes for many of the students it was used in Study Two and delivered to a diverse group of participants. Participants ranged in gender, age, socio-economic status, ethnicity, professional and educational background, relationship status, personality and emotional state.

The SLD Correction Program was designed with the following aims:

1. To improve Literacy skills in:



- a. Alphabet recognition
- b. Reading of single words and sentences
- c. Punctuation symbol recognition in context
- d. Writing of words and sentences
- e. Recognition of correct pronunciation of digraphs like ‘ch’ or ‘th’
- f. Improved handwriting
- g. Improved coordination and balance
- h. Number recognition
- i. To identify EI competencies and weaknesses
- h. To raise awareness of EI models of competency

The program was presented in one-on-one training sessions. The Study was advertised by word of mouth through existing clients of the Educational Personal and Child Consulting Service. A verbal assessment was provided to each participant at the end of the Study.

#### 6.4.3 Program Delivery

The program was delivered over a period of eight weeks with 8 one hour sessions. Each hour represented one stage of the eight stage intervention. The study involved 40 subjects between the age of 12 and 65 years who had either been previously diagnosed with dyslexia or who had learning and/or social disabilities and were diagnosed with dyslexia by clinical interview or observation before the eight session period. The subjects completed tests in the Adolescent Self-Report Version, Swinburne SUEIT - Swinburne University Emotional Intelligence Test – Self Report Version, 20-Item Mini IP, DASS 21 and a Clinical Tool for Dyslexia in the first Session and each test was re-administered at the final session, Session 8.

#### 6.4.4 Program Structure

##### SESSION 1

Participants were administration the self-evaluative tools:- Adolescent Self-Report Version, SUEIT - Swinburne University Emotional Intelligence Test – Self Report Version, 20 -Item Mini IP, DASS 21 and a Clinical Tool for Dyslexia. These tools

assessed the participant's overall EI as well as their Emotional Recognition and Expression; ability to Understand Emotions, Emotions; Direct Cognition; and Emotional Management and Control and depression, anxiety and stress as well as provided an inventory of interpersonal problems.

## SESSION 2

Participants were asked to mould the upper case Alphabet symbols out of black plasticine to match these symbols written onto paper as a stencil for their letter shaping. These capital letters were then laid out on a bench and subjects were asked to point to each symbol and name them to reinforce their recognition of the three dimensional letter symbol. Participants were then asked to close their eyes and while reciting the alphabet sequence and point to where they believed the alphabetic symbol was positioned on the bench. This encouraged memory in a three dimensional space as well as establishing orientation in their physical space. If any errors occurred in letter sequencing or spatial referencing by pointing, participants were asked to open their eyes and all errors were discussed. Participants repeated the process until no errors occurred.

## SESSION 3

Participants were asked to mould the lower case Alphabet symbols out of black plasticine to match these symbols written onto paper as a stencil for their letter shaping. These lower case letters were then laid out on a bench and subjects were asked to point to each symbol and name them to reinforce their recognition of the three dimensional letter symbol. Participants were then asked to close their eyes and while reciting the alphabet sequence and point to where they believed the alphabetic symbol was positioned on the bench. This encouraged memory in a three dimensional space as well as establishing orientation in their physical space. If any errors occurred in letter sequencing or spatial referencing by pointing, participants were asked to open their eyes and all errors were discussed. Participants repeated the process until no errors occurred.

#### SESSION 4

Participants were asked to mould the numerical symbols [1, 2, 3, 4, 5, 6, 7, 8, 9, 0], out of black plasticine to match these symbols written onto paper as a stencil for their letter shaping. These numbers were then laid out on a bench and subjects were asked to point to each symbol and name them to reinforce their recognition of the three dimensional letter symbol. Participants were then asked to close their eyes and while reciting the number sequence and point to where they believed the number symbol was positioned on the bench. This encouraged memory in a three dimensional space as well as establishing orientation in their physical space. If any errors occurred in letter sequencing or spatial referencing by pointing, participants were asked to open their eyes and all errors were discussed. Participants repeated the process until no errors occurred.

#### SESSION 5

Participants were asked to mould punctuation symbols, [., / \ ? “ ‘ ; ( ) { } + - = x \* & @ ! # \$ %], out of black plasticine to match these symbols drawn onto paper as a stencil for their shape. These punctuation symbols were then laid out on a bench and subjects were asked to point to each symbol and name them to reinforce their recognition of the three dimensional punctuation symbol. Participants were then asked to close their eyes and while reciting the punctuation symbol sequence and point to where they believed the punctuation symbol was positioned on the bench. This encouraged memory in a three dimensional space as well as establishing orientation in their physical space. If any errors occurred in letter sequencing or spatial referencing by pointing, participants were asked to open their eyes and all errors were discussed. Participants repeated the process until no errors occurred.

#### SESSION 6

Participants were given 25 trigger words to learn which are often incorrectly spelt by individuals with a SLD. These are words included the verbs [would, take, shall, see, may, make, left, went, gone, did, can, was, be, being, became], prepositions [with, until, on, into, between,] adverbs [yet, very, then, so, otherwise, off, maybe, here,

down, anyway, about, again], adjectives [your, sure, same, other, more, many, less, just, full, even, either, another ], nouns [noun, will, liking, front ] and pronouns [ you, whose, we, which, these, this, that, she, none, mine, it, he, her, each ]’ conjunctions [when, until, or]. They were asked to spell out each letter in the word and to put the word in a spoken sentence. The word was removed and the participants were asked to write the word at the top of paper provided and then to draw a quick image to represent the sentence they had spoken which included the word.

## SESSION 7

Participants were given an additional 30 trigger words to learn which are often incorrectly spelt by individuals with a SLD. These are words included the verbs [took, should, put, made, leave, have, goes, does, could, were, been, become], prepositions [without, upon, over, of, from, before], adverbs [why, too, there, soon, no, not, much, ever, anyhow, away, after, always], adjectives [such, some, one, neither, most, last, into, full, every, any,], nouns [while, running, leaving, back] and pronouns [who, us, what, them, they, those, ours, me, his, its, hers, him,]’ conjunctions [whether, than, and] They were asked to spell out each letter in the word and to put the word in a spoken sentence. The word was removed and the participants were asked to write the word at the top of paper provided and then to draw a quick image to represent the sentence they had spoken which included the word.

## SESSION 8

The self-evaluative tools The Adolescent SUEIT, or the General SUEIT; Depression, Anxiety and Stress; and Inventory of Interpersonal Problems were re-administered which concluded the intervention.

## 6.5 Study Instruments

### 6.5.1 Self-evaluative tools

#### **1. The Adolescent Swinburne University Emotional Intelligence Test A-SUEIT**

The Palmer and Stough (2001?) model was designed to evaluate the way adolescents

typically feel, think and act. The five dimensions include:

1. Emotional Recognition and Expression (ERE).
2. Understanding Emotions (UE).
3. Emotions Direct Cognition (EDC).
4. Emotional Management (EM).
5. Emotional Control (EC).

## **2. Swinburne University Emotional Intelligence Test–Self Report Version**

The Palmer and Stough (2001) model was designed to evaluate the way adults typically feel, think and act. The five dimensions include:

1. Emotional Recognition and Expression (ERE).
2. Understanding Emotions (UE).
3. Emotions Direct Cognition (EDC).
4. Emotional Management (EM).
5. Emotional Control (EC).

## **3. 20 -Item Mini IP**

The Inventory of Interpersonal Problems (IIP-32) was used to measure the difficulties people have in their interpersonal relationships. Responses for each of the items are made on a five point scale ranging from 0 ('not at all') to 4 ('extremely'). The overall internal consistency of the inventory is high (0.86). Items in the inventory load on eight areas of difficulty in which individuals experience difficulty in interpersonal relationships; hard to be sociable (Items 1,3,7,9;  $\alpha=0.89$ ); assertive (Items 2,4,6,11;  $\alpha=0.86$ ); supportive (Items 13, 14,15,16;  $\alpha=0.75$ ); involved (Items 5,8,12,19;  $\alpha=0.75$ ); being too aggressive (Items 20,21,28,30;  $\alpha=0.85$ ); being too caring (Items 18,25,26,32;  $\alpha=0.72$ ); too dependent (Items 22,23, 27,31;  $\alpha=0.71$ ) and too open (Items 10,17,24,29;  $\alpha=0.80$ ).

## **4. DASS 21**

This scale is described by Lovibond and Lovibond (1995) a test used to measure anxiety, depression and stress. This measure has been shown to possess adequate convergent and discriminant validity. Their general description of the scale is that it is

a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress. It was not merely constructed as another set of scales to measure conventionally defined emotional states, but to further the process of defining, understanding, and measuring the ubiquitous and clinically significant emotional states usually described as depression, anxiety and stress. The PFA (2014) reported that the DASS should meet the requirements of both researchers and scientist-professional clinicians. The PFA (2014) describe the DASS as containing 14 items, in three scales and that these scales are divided into subscales of 2-5 items with similar content. The Depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. The Anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The Stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. Subjects are asked to use 4-point severity/frequency scales to rate the extent to which they have experienced each state over the past week. Scores for Depression, Anxiety and Stress are calculated by summing the scores for the relevant items.

The PFA (2014) also report that the scales have been shown to have high internal consistency and to yield meaningful discriminations in a variety of settings, specifically when measuring a current state or change in state over time on the three dimensions of depression, anxiety and stress. They describe high scorers on the Depression scale as being self-disparaging, dispirited, gloomy, blue, convinced that life has no meaning or value, pessimistic about the future, unable to experience enjoyment or satisfaction, unable to become interested or involved, slow and lacking in initiative. They describe people to score high on the Anxiety scale as apprehensive, panicky, trembly, shaky, aware of dryness of the mouth, breathing difficulties, pounding of the heart, sweatiness of the palms, worried about performance and possible loss of control. The PFA (2014) describe high scorers on the Stress scale as over-aroused, tense, unable to relax, touchy, easily upset, irritable, easily startled, nervy, jumpy, fidgety and intolerant of interruption or delay.

## **5. Clinical Tool for Dyslexia**

The participants' diagnosis of dyslexia was confirmed via a clinical interview conducted by the investigator or by completing a clinical questionnaire prepared by the investigator (Appendix 4). The questionnaire consisted of 28 questions which asked questions related to symptoms typically associated with dyslexia, dyscalculia, dyspraxia and ADD.

Questions describing typical symptoms of dyslexia include 1. Do shapes and sequences of letters or numbers appear changed or reversed? 2. Is spelling incorrect or inconsistent? 3. Are words or lines skipped when reading or writing? 4. Do letters or numbers appear to move, disappear, grow or shrink? 5. Are punctuation marks or capital letters omitted ignored or not seen? 11. Do you experience dizziness or nausea while reading? 23. Do, or did, you remember your alphabet by singing the Alphabet song? 24. Do you use extreme concentration while reading? 27. Do you have a preference to think by using pictures of concepts or ideas with no internal monologue?

Questions describing typical symptoms of dyscalculia include 1. Do shapes and sequences of letters or numbers appear; changed or reversed? 4. Do letters or numbers appear to move, disappear, grow or shrink? 18. Are mathematical concepts difficult to learn? 19. Do you have difficulty being on time or telling time?

Questions describing typical symptoms of dyspraxia include 6. Are, or were, some speech sounds difficult to make? 7. Are digraphs such as "ch" or "th" mispronounced? 12. Do you have a poor sense of direction? 14. Do you have difficulty with hand writing? 15. Do you have problems with co-ordination or balance? 26. Are you aware if you have any unusual body postures?

Questions describing typical symptoms of ADD include 8. Are false sounds perceived? 9. Do you ever get accused of not listening or hearing what is said? 10. Are sounds perceived as quieter, louder, farther away or nearer than actual? 13. Do you find it hard to sit still? 16. Are you hyperactive (over active)? 17. Are you hypoactive (under active)? 20. Do you daydream excessively? 21. Do you lose your train of thought easily? 22. Do you have trouble sequencing, (putting things in the

right order)? 25. Are you very dependent on others? 28. Do you experience imagination as reality?

## 6.6 Implementation

The purpose of Study Two was to empirically investigate whether it is possible to improve EI through the delivery of an intervention designed to improve SLDs in a diverse group of participants. Improvement on EI levels was re-assessed post the intervention period to gauge variations in levels of EI and to examine any improvement in Total EI.

## 6.7 Method

The levels of the various constructs of EI were evaluated at the beginning of the program and again in the last session of the program and the responses of the participants were compared to evaluate whether the intervention to reduce the SLD was effective in improving EI.

Ethics approval was sought and received by the Swinburne University of Technology Ethics Committee (Appendix 1), and written informed consent was obtained from each participant before commencing the study. The Information Sheet and Consent Forms are included in Appendix 2.

### 6.7.1 Participants

There were 40 participants who took part, and completed Study Two and they were between the age of 12 and 65 years. They individually underwent the intervention program over an eight week period with weekly one hour appointments of their choosing. Only one family group of 4 took group sessions because of travel and time commitments. Study attrition was zero (0%) with every participant completing the entire 8 week series of sessions.

### 6.7.2 Recruitment

Participants for Study Two were recruited from Victoria Australia. They were recruited by word of mouth. Participants were friends or family of existing clients of the researcher's private practice, 'Educational, Personal and Child Consulting



Service' (EPCCS), or friends of members of the researcher's social and family network.

## 6.8 Design

Participants were enrolled over a period of 4 weeks and the one hour intervention sessions began shortly afterwards. There was no control group as the study was confined to testing specifically for changes in EI and the EI dimensions after a SLD corrective intervention on participants with a SLD. Also a control group would be both unethical and impractical. Participants were asked to select their preferred times around available times provided to them over a period of 8 weeks during business hours and their preferred times were accommodated.

# CHAPTER 7: Results- Study Two

## 7.1. Statistical Analysis

To assess the differences in levels of Emotional Recognition and Expression, Understanding Others' Emotions, Emotional Management and Control and Emotions Direct Cognition as a function of the treatment intervention, a series of paired sampled t-tests were applied. Assessments of skewedness and kurtosis and tests for normality were conducted prior to statistical analyses. No assumptions of normality were violated. All analyses were conducted using SPSS V18 for windows, and all tests were two-tailed with conventional  $p < 0.05$  as significance threshold.

## 7.2 Results

### 7.2.1 Adolescents

#### 7.2.1.1 Group Characteristics

A total of 17 participants were included in the adolescent group. The mean age of participants was 14.5 (range 12-17, SD= 2.0), and the sample comprised 71% male (n=12). The average length of intervention was 34 days, with a range of between 5 and 57 days.

#### 7.2.1.2 Changes in scores pre and post intervention

To assess the change in Emotional Recognition and Expression score for the group pre-intervention compared to post intervention for the adolescents, a paired-sample t-test was applied. There was no difference found between the scores for pre-intervention Emotional Recognition and Expression (M=34.0, SD=4.2) and post-intervention Emotional Recognition and Expression (M=33.9, SD=4.1)  $t(16)=.06$ ,  $p = .96$ .

To assess the change in Understanding Others' Emotions score for the group pre-intervention compared to post intervention for the adolescents, a paired-sample t-test was applied. No significant differences were observed between scores for pre-intervention Understanding Others' Emotions (M=69.2, SD=7.8) and post-intervention Understanding Others' Emotions (M=70.2, SD=9.3)  $t(16)=-.75$ ,  $p = .46$  .

To assess the change in Emotions Direct Cognition score for the group pre-intervention compared to post intervention for the adolescents, a paired-sample t-test was applied. No differences were noted in the scores for pre-intervention Emotions Direct Cognition (M=33.2, SD=6.7) and post-intervention Emotions Direct Cognition (M=32.4, SD=4.9)  $t(16)=-.80, p = .44$ .

Table 7.1: Means and standard deviation of SUEIT items pre and post intervention for adults

<b>Variable</b>	<b>Pre-intervention M(SD)</b>	<b>Post-intervention M(SD)</b>
<b>Emotional Recognition/Expression</b>	37.90 (6.45)	38.83 (5.44)
<b>Understanding Emotions</b>	76.30 (8.77)	76.52 (7.14)
<b>Emotion Direct Cognition</b>	39.80 (5.60)	32.41 (5.44)

## 7.2.2 Adult

### 7.2.2.1 Group Characteristics

A total of 23 participants were included in the adult group. The mean age of participants was 40.2 years (range 20-62, SD= 10.7), and the sample comprised 70% female (n=16). The average length of intervention was 42 days, with a range of between 2 and 68 days.

### 7.2.2.2 Changes in scores pre and post intervention

To assess the change in Emotional Recognition and Expression score for the group pre-intervention compared to post intervention for the adults, a paired-sample t-test was applied. There was a no difference in the scores for pre-intervention Emotional Recognition and Expression (M=37.9, SD=6.5) and post-intervention Emotional Recognition and Expression (M=38.8, SD=5.44)  $t(22)=-1.14, p = .27$ .

To assess the change in Understanding Others' Emotions score for the group pre-intervention compared to post intervention for the adults, a paired-sample t-test was applied. No significant differences were noted in the scores for pre-intervention

Understanding Others' Emotions (M=76.3, SD=8.8) and post-intervention Understanding Others' Emotions (M=76.5, SD=7.1)  $t(22)=-.13, p = .90$ .

To assess the change in Emotions Direct Cognition score for the group pre-intervention compared to post intervention for the adults, a paired-sample t-test was applied. No difference was observed in the scores for pre-intervention Emotions Direct Cognition (M=39.8, SD=5.6) and post-intervention Emotions Direct Cognition (M=39.1, SD=5.4)  $t(22)=.77, p = .45$ .

Table 7.2 Means and standard deviation of SUEIT items pre and post intervention for adolescents

<b>Variable</b>	<b>Pre-intervention M(SD)</b>	<b>Post-intervention M(SD)</b>
<b>Emotional Recognition/Expression</b>	34.00 (4.20)	33.94 (4.11)
<b>Understanding Emotions</b>	69.23 (7.81)	70.20 (9.30)
<b>Emotion Direct Cognition</b>	33.24 (6.70)	32.41 (5.00)

## **CHAPTER 8: Overall Discussion**

### **8.1 General Discussion**

The present thesis has provided empirical evidence to suggest that a deficit in emotional development and emotional wellbeing of a person may manifest as a SLD or multiple SLDs.

Earlier research into the area of SLDs has been limited by a combination of factors and this thesis sought to overcome those limitations principally by evaluating a large sample size of 836 participants and through the use of the validated and comprehensive self-evaluative tools, specifically The Adolescent Self-Report Version, SUEIT - Swinburne University Emotional Intelligence Test – Self Report Version, 20-Item Mini IPP, DASS 21 and a Clinical Tool for Dyslexia. In order to evaluate these relationships, comprehensive statistical analysis was performed. First, with bi-variate correlations; specifically a Pearson product-moment correlation coefficient, was employed to assess the relationship between personality, DASS, EI and interpersonal problems and total dyslexia symptoms. To further evaluate the contributory factors in this association, a multiple regression analysis was performed with dyslexia, dyspraxia, dyscalculia and ADD as the dependent variable. Lastly, one-way ANOVA were performed to assess mean differences in emotional intelligence competencies for individuals with dyslexia, dyspraxia, dyscalculia and ADD when compared to healthy controls. In a sample of 836 participants, results from this study demonstrated that there is a correlation between EI and independent SLDs, however these were somewhat differentially represented between SLDs.

Study Two aimed to assess the efficacy of an academic intervention designed to improve numeracy and literacy, specifically number, letter and punctuation symbol recognition as well as word recognition in a sample of 17 adolescents and 23 adults. Results from this study indicated there was no difference found between the scores for pre-intervention in Emotional Recognition and Expression, Understanding Others' Emotions, Emotional Management and Control Emotions Direct Cognition. Taken together, collated findings from Study One and Study Two suggest the existence of an

association between EI and SLDs; however academic intervention is not the means to the treatment of SLDs; at least in the short term or with the current type of intervention.

This present thesis was designed to build on findings previously described by Simonoff, and colleagues (2007). Specifically, it expanded on observations of the effect of the systematic investigation of both additive and interactive effects of early ADHD symptoms and EF deficits on later behavioural and cognitive outcomes, which suggests that both ADHD symptoms and impaired EF act as early predictors of problem behaviours, although it appears that prediction based on ADHD symptoms encompass a wider range of problems. However, limitations identified in this research impacted on the validity of the reported findings. Simonoff, et al. (2007) reported the measures of ADHD were limited as the parent and teacher WSDQ measures each included only five items in the symptoms subtype comparison. They also reported it was less powerful because of the scale's brevity and there is a question of whether ADHD ratings in those with ID were accurate and unbiased. Simonoff, et al. (2007) concluded that in line with models of heterogeneity in ADHD, the study pointed to the need for theoretical development and empirical studies that will further our understanding of the relatively large group of children with high levels of ADHD symptoms, but without EF impairment.

The present thesis is designed to demonstrate a relationship between EI and SLDs to further the understanding of how and why SLDs occur. It was also designed to overcome the limitations where categories were not clear cut and where findings were based on interviews that were based on opinions rather than validated clinical self-evaluative tools. In this thesis participants were asked to complete recognized and validated self-report tools that are comprehensive and extensive, specifically The Adolescent Self-Report Version, SUEIT - Swinburne University Emotional Intelligence Test – Self Report Version, 20 -Item Mini IPP, DASS 21 and a Clinical Tool for Dyslexia. The test responses took on average 45 minutes to complete in total and the results demonstrated a significant correlation. Specifically, the results suggest that individuals with 3 or more symptoms of dyslexia incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of dyslexia, substantiating a correlation between

EI and SLDs.

Parker et al (2009) in their published assessment of literature on EI reported that (Lazarus, 1999; Lazarus and Folkman, (1984)) suggest that, in an effort to resolve, tolerate, or escape a stressful situation, individuals purposefully engage in various coping behaviours that can either offset or aggravate the adverse effects of stress on the body. Parker et al (2009) also reported that confidence in one's coping abilities and perceptions of personal control over the situation would enable active coping through constructive emotion-regulation and problem-solving strategies and that these strategies are considered adaptive for health and well-being, as they act to reduce the emotional and psychological arousal and minimize the duration of stress. A possible explanation for this finding may be, in part due to individuals with a SLD finding decision making and problem solving stressful and seek emotional regulation.

Along with limitations of scope, sample size, unclear categories and bias, the thesis was also designed to eliminate the limitations of the impact of regional variables that influenced performance in previous research which demonstrated a relationship between emotions and SLDs. Knivsberg et al. (2008) assessed why students with phonological deficits and severely impaired reading abilities, in spite of prolonged educational remediation, had more behavioural/emotional problems than normal reading students. They reported that their study was limited because of a small sample size and subjects, with phonological deficits and severely impaired reading ability, were students from one school and were compared to students from another school. They also reported that the scope of the study was narrow and that CBCL was administered orally to the parents of students and this may have initiated more problems to be reported than if parents filled in forms and that the participants in the study were not from a random sample. Despite the limitations they reported findings that the dyslexia group showed significantly more problems in all areas than the controls and recommended that further research was needed in this area. They also reported that the results clearly indicate that identifying additional /emotional problems may be imperative for students with severe reading problems.

This thesis was designed to identify emotional correlations for SLDs and to broaden the scope, randomize the sample to a worldwide sample through the use of a

telephone application and to widen the participant age range from students to include adolescents aged 12 to 17 years and adults up to 65 years of age who used validated clinical self-report tools. Adults were supplied tools designed for 18 years and older, specifically the SUEIT - Swinburne University Emotional Intelligence Test – Self Report Version, along with the general tools 20 -Item Mini IPP, DASS 21 and a Clinical Tool for Dyslexia. Adolescents were supplied tools designed for 18 years and older, specifically The Adolescent Self-Report Version, along with the general tools 20 -Item Mini IPP, DASS 21 and a Clinical Tool for Dyslexia. The use of these tools is advantageous because they have been validated and several recent studies have employed these measures when assessing levels of EI.

A study by Downey et al (2008) examined the relationship between emotional intelligence (EI) and the scholastic achievement in Australian adolescents. They reported that academic success was found to be associated with higher levels of total EI, via assessment of the EI of different academic levels. Downey et al (2008) concluded that the examination of the relationship between EI measured by the Adolescent SUEIT and a wide range of educational subjects indicated that EI was generally positively associated with performance across school subjects. This thesis is designed to assess whether the clinical group and the control group would differ on the level of Emotional Recognition and Expression, Understanding Others' Emotions, Emotional Management and Control and Emotions Direct Cognition. The present findings indicated that lower scores on measures of Emotional Recognition and Expression, Understanding Emotions, Emotions Direct Cognition and Emotional Management as well as Extraversion, Agreeableness, Conscientiousness in the clinical group correlated with greater total dyslexia, dyscalculia, dyspraxia and ADD symptoms. Specifically, a weak negative correlation was noted between Extraversion, Agreeableness, Conscientiousness, Emotional Recognition/Expression, Understanding Emotions, Emotions Direct Cognition and Emotional Management with total dyslexia symptoms. It is likely that these factors are driven by an individual's poor coping strategies, confusion and powerlessness.

Parker et al (2009) published an assessment of literature on EI, and noted that it was reported that confidence in one's coping abilities and perceptions of personal control over the situation would enable active coping through constructive emotion-regulation



and problem-solving strategies, whereas low coping self-efficacy, confusion about the sources of stress, and perceptions of being powerless in a situation would elicit avoidance strategies or passive rumination and self-blame. Therefore it appears that individuals with a SLD have poor emotion-regulation and as a result are less confident which in turn would result in low Extraversion, Agreeableness, and Conscientiousness. A weak negative correlation was also observed to exist between measures of Extraversion, Conscientiousness, Emotional Recognition/Expression, Understanding Emotions, Emotional Management, Emotional Control and total Dyscalculia symptoms. These findings suggest that as ability in mathematics relies on competency in problem-solving, individuals with low EI present with diminished coping abilities during these types of tasks. A weak negative correlation was also observed to exist between measures of Extraversion, Conscientiousness, Emotional Recognition/Expression, Understanding Emotions, Emotional Management, Emotional Control and total Dyspraxia symptoms. Dyspraxia symptoms have previously been linked to dyslexia and ADHD and thus these findings support the notion that individuals with this disability have difficulty with academic tasks like numeracy and literacy.

Smyth (1992) examined specifically clumsiness as an impaired motor skill in children considered to be otherwise normal and found a review of the literature suggests that significant associated and secondary emotional problems are common. Lastly, a weak and negative correlation was observed between measures of Agreeableness, Conscientiousness, Emotional Recognition/Expression, Understanding Emotions, Emotional Management, Emotional Control and total ADD symptoms. ADD is characterized by the inability to pay attention; impulsive responses and the inability to remain still thus these findings reflect a deficit in emotional well-being and low EI. Therefore the results demonstrate that individuals with ADD are less likely to be conscientious and agreeable and more likely to have difficulty with understanding emotions in themselves and others which in part explains why they have difficulty in concentration, attention and regulating their emotions. Lower scores in Extraversion, Agreeableness and Conscientiousness also provide evidence that a deficit in emotional development and emotional well-being of a person may manifest as a SLD or multiple SLDs and that there is a relationship between EI and SLDs.

Extraversion, Agreeableness and Conscientiousness are all significant elements of emotional well-being and without the ability to recognize and express emotions, understand emotions and exercise emotional management and control, it can be expected that elements of emotional well-being will be deficit. Parker et al (2009) reported that constructive emotion-regulation and problem-solving strategies are considered adaptive for health and well-being, as they act to reduce the emotional and psychological arousal and minimize the duration of stress. No association was noted for any SLD and the variable openness.

Saklofske et al (2003) in their study reported EI was found to be positively and significantly correlated with Openness, Agreeableness, Extraversion, and Conscientiousness. They concluded that these results and regression modeling showed that EI accounts for variance in these measures not accounted for by personality and that the results indicated that the two constructs are distinct, although strongly correlated. It is possible that this specific variable/item is less sensitive to the subtleties of the social effect associated with the SLDs assessed in this study. Conversely, however it is possible that this trait remains unaffected by the SLDs assessed, and that this particular trait is preserved among these separate diagnoses. Additional research is therefore warranted to assess the relatedness of this trait with other SLDs, and the representation and normal distribution of this variable among the general population needs to be described if clinical research is to characterise deviations of this factor among clinical populations.

Saklofske et al (2003) also reported EI was found to be negatively and significantly correlated with Neuroticism. The present thesis also found that the higher the scores on Neuroticism, the DASS stress scale, the DASS anxiety scale and finding it hard to be sociable, the lower the dyslexia and dyscalculia. An explanation for this finding may be that while SLDs have a correlation to EI, emotions may not correlate to a deficit relating to neuroticism, now medically referred to as a depressive disorder or anxiety, stress and/ or the ability to be sociable. Specifically, neuroticism is a mental disorder which causes distress but this mental disorder does not impact on a person's ability to use rational thought and function. According to Sigmund Freud (1856-1939), neurosis is an ineffectual coping strategy caused by emotions from past experience which overwhelm or interfere with current experience.

As reported by Wallace et al (2002) the main source of difficulties of directing attention and learning is the difficulty in recognizing emotions in self and others, regulating and managing strong emotions (positive and negative), and recognizing strengths and areas of need, rather than experiencing, clinical depression, anxiety, stress or the desire to be sociable. The current study demonstrated that higher scores on the DASS stress scale, the DASS anxiety scale, finding it hard to be sociable, being too aggressive, finding hard to be supportive, finding it hard to be involved and being too dependent was associated with lower dyslexia and dyscalculia total scores. This may be due to tendency for people with these SLD to accept their diagnoses, and may be attributable to an increased awareness and discussion about the existence of SLDs, and thus SLDs are becoming a more and more recognized experience and less unusual.

Shany et al. (2011) reported that in their study, participants provided rich and accurate information about reading disabilities and the academic and emotional implications of having a reading disability and that children's knowledge about the characteristics of reading disabilities was positively associated with reading comprehension. Conversely, it was demonstrated that preoccupation with disability was negatively associated with reading comprehension. Thus, it was concluded that children with the most adaptive profile in terms of reading comprehension and anxiety were those who had high levels of knowledge and low levels of preoccupation with their disability.

Higher scores on the DASS stress scale were positively associated with total ADD symptoms, thus indicating that increased stress correlated with higher ADD. This may reflect that individuals who are more resilient are less likely to experience stress as a result of ADD. Mahone, et al. (2007) undertook a study which examined the behaviour ratings of executive function among preschoolers with ADHD and sought to establish whether preschoolers with ADHD are likely to exhibit deficits in certain aspects of EF; particularly those related to inhibitory control. They reported that there is growing evidence of a link between an underlying cause and the experience of a SLD which has resulted in interest in observing specific character traits like resilience in children experiencing an undiagnosed SLD and the consequences.

Higher scores on the DASS Anxiety Scale were also associated with lower Total Dyspraxia scores, which is indicative of the possibility that dyspraxia may not create as much social pressure as other SLDs and therefore individuals with dyspraxia are less anxious about the SLD. Higher scores on the DASS depression scale were similarly associated with lower scores in Dyscalculia, which is likely attributed to Dyscalculia being less correlated to symptoms of depression.

Lower scores in dyslexia were associated with higher scores on 'being too open' which indicates that as openness is associated with the desire to learn, there is a correlation between openness and lower symptoms of dyslexia. Lastly, higher scores in 'finding it hard to be assertive' were indicative of a lower score in Dyslexia, which may reflect individuals with Dyslexia find it hard to be assertive.

Shany et al. (2011) investigated the extent to which children's knowledge about reading disabilities, preoccupation with their own reading disability, and anxiety predicted reading comprehension in fifth and sixth grade children with reading disabilities. They reported that participants provided rich and accurate information about reading disabilities and the academic and emotional implications of having a reading disability and that children's knowledge about the characteristics of reading disabilities was positively associated with reading comprehension, and preoccupation with their own disability was negatively associated with reading comprehension. The multiple regression analysis in this thesis was designed to investigate the contribution the study variables made towards the prediction of number of self-reported SLD symptoms and an inspection of the contribution of each of the factors. Analyses revealed that the prediction of self-reported SLD symptoms of dyslexia, dyscalculia, dyspraxia and ADD were significantly linked to the study variable of being too caring. This supports Lyon's (1996) reported findings that while early intervention is necessary, it should not be assumed to be sufficient to address the multiple manifestations of learning disability. Also the prediction that self-reported SLD symptoms of dyslexia and dyscalculia are significantly linked to the study variable of conscientiousness supports research conducted by Shany et al. (2011) who concluded that children with the most adaptive profile in terms of reading comprehension and anxiety were those who had high levels of knowledge and low levels of preoccupation with their disability.

The prediction of self-reported SLD symptoms of dyslexia, dyspraxia, were also significantly linked to the study variable of anxiety, which can be further explained by Shany et al. (2011) in their reported findings that preoccupation with disability was negatively associated with reading comprehension. Individuals with dyspraxia may well become preoccupied with their lack of coordination and sporting competency which would be negatively associated with physical performance. The prediction of self-reported SLD symptoms of dyslexia was also significantly linked to the study variable of finding it hard to be supportive. Individuals with dyslexia often become preoccupied with their disability because reading and writing ability is a fundamental requirement of academic learning and they would then be unlikely to be able to understand or care about the needs of others when their own needs are unfulfilled. The prediction of self-reported SLD symptoms of ADD was also significantly linked to the study variable of being too dependent. In part, this may be explained by the predominant symptom of ADD: hyperactivity and attention deficits. Therefore, individuals with ADD would rely heavily on others for information and direction, which may impede an individual's task performance.

Interest in research into the connection between EI and SLDs grew out of the recognition of the importance of EI as a significant component of personal development, coupled with the observation that SLDs were becoming a significant problem for an ever increasing number of children. Zimmerman (2002) reported that this interest was largely based on the findings which suggested that deficits in reading abilities are often associated with a complex array of issues beyond academic achievement, such as poor self-concept, lack of motivation, and difficulties with social interactions Hallahan, et al (1997). This is coupled with the assertion that the EI components of emotional regulation and facilitation, for instance, relate to the concept of self-regulated learning, which refers to self-generated thoughts, feelings and behaviours that are oriented to attaining goals.

Interventionists targeting EI for students with reading disabilities recognised that the construct of EI provides a framework for understanding emotional processes in students with reading disabilities. Pellitteri and colleagues (2006) reported that the components of EI include the perception of emotions, emotional facilitation of

thinking, emotional knowledge, and emotional regulation and that every academic task and social interaction can be an opportunity to facilitate emotional awareness in students.

The present thesis posed the question whether the clinical group and the control group differed on the level of Emotions Direct Cognition in that the clinical group would be either higher or lower on Emotions Direct Cognition and higher on SLD than the control group. The one-way ANOVAs between subjects were conducted to compare differences in emotional intelligence competencies for participants who reported less than 3 symptoms of SLDs dyslexia, dyspraxia, dyscalculia, ADD and participants who reported 3 or more symptoms.

There was significance between groups' difference for the emotional intelligence competencies of Understanding Emotions, Emotional Management and Emotional Control. Inspection of the means revealed that participants with 3 or more symptoms were lower in Emotional Recognition/Expression, Understanding Emotions, Emotional Management and Emotional Control and higher in Emotions Direct Cognition when compared to control participants. Specifically, the results suggest that individuals with 3 or more symptoms of dyslexia (cluster) incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of dyslexia, dyscalculia, dyspraxia and ADD.

This can be explained by Parker et al (2009) whose published assessment of literature on EI reported that confidence in coping abilities and perceptions of personal control over the situation enables active coping through constructive emotion-regulation and problem-solving strategies. They also reported that low coping ability, confusion about the sources of stress, and perceptions of being powerless in a situation would produce avoidance strategies or passive rumination and self-blame.

Specifically, the results suggest that individuals with 3 or more symptoms of dyslexia, dyspraxia, dyscalculia and ADD incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of a SLD. These findings support earlier findings by Wallace et al (2002) who reported on the way in which emotion directs attention and influences learning.

Their study found that the majority of students with learning disabilities have difficulties with social relationships and the three key skill areas in social-learning are identified as the main source of these difficulties: recognizing emotions in self and others, regulating and managing strong emotions (positive and negative), and recognizing strengths and areas of need.

The current findings expand on research conducted by Parker et al (2009), where it was found that individuals with a SLD perceive themselves as having poor personal control over the situation which hinders their ability to actively cope through the use of constructive emotion-regulation and problem-solving strategies. Gordon, (1993) also reported that the reaction of the children with a SLD can lead to social problems and feelings of shame, loss, rejection and the powerful feelings of ambivalence and guilt. As guilt is an emotion that is associated with a decrease in social standing and a concern about the opinion of others, specifically the inability to meet standards set by others, it is reasonable to assume they would lack conscientiousness.

This study found that lower scores on these measures of Conscientiousness, Emotional Recognition/Expression, Understanding Emotions, Emotions Direct Cognition and Emotional Management correlated with greater total dyslexia, dyscalculia, dyspraxia and ADD symptoms. This further supports the hypotheses that the clinical group and the control group would differ on the level of in Emotional Recognition/Expression, Understanding Emotions Ext, Emotional Management and Emotional Control in that the clinical group would be lower on EI and higher on SLD than the control group.

The finding that the clinical group was higher in Emotions Direct Cognition than the control group demonstrates that the greater the number of symptoms of SLDs the greater the incorporation of emotions and emotional knowledge in decision-making and problem solving. This provides empirical evidence of a significant relationship between EI and dyslexia, dyscalculia, dyspraxia and ADD symptoms SLDs. Also, when the variables of Emotional Recognition and Expression, Understanding Others' Emotions and Emotional Management and Control and Emotions Direct Cognition were used to investigate whether the clinical group and the control group would

differ, the present findings indicated the lower scores in Emotions Direct Cognition the greater dyslexia.

These findings support previous research conducted by Shany and colleagues (2011), where it was reported that a preoccupation with one's own disability was negatively associated with reading comprehension. Individuals with dyslexia often become preoccupied with their disability because reading and writing ability is a fundamental requirement of academic learning, and as reported by Wallace et al (2002), the main source of difficulties of directing attention and learning, are the difficulty in recognizing emotions in self and others, regulating and managing strong emotions (positive and negative), and recognizing strengths and areas of need. These findings also coincide with the earlier finding that suggest the less the individual cares about their dyslexia, the more likely they are to accept their dyslexia and the less likely they are to want to improve their symptoms.

The present findings also indicated that the higher Emotions Direct Cognition the lower the Maths competency. Dyscalculia relates to a lack of mathematical competency and for many individuals mathematics can be a prerequisite for career choices and everyday transactions related to survival. In a paper published by the 'American Educational Research Journal' (2013), a study examined how the placement of some students into the courses needed only for high school graduation and others into those that prepare them for college constitutes academic stratification. This study uses data from the Education Longitudinal Study of 2002 to investigate whether students labelled with SLDs complete fewer academic courses by the end of high school compared to their peers who are not labelled. The study reported large disparities in completion of college preparatory coursework, especially in math, science, and foreign language, based on students' academic preparation for high school and their cognitive and non-cognitive skills. This evidence supports the possibility that school processes contribute to the poorer course-taking outcomes of students labelled with learning disabilities.

Increase in caring has been shown to correlate to a decrease in SLD, particularly among individuals with dyscalculia diagnoses. Elais (2004) indicated that caring relationships are the foundation of all lasting learning; emotions effect how and what



we learn and goal setting and problem solving provide focus, direction, and energy for learning. Moreover, the essence of these principles is to highlight the importance of the learning environment and the need for educators both to establish caring relationships with the students and help student develop the skills they need to establish such relationships with others.

Chohan and Khan (2010) examined the link between academic achievement and educational support provided to the child at home and determined whether this support directly or indirectly affects child's self-concept. Results of this study reflected a developmental sequence, such that earlier family support processes enable the child to establish a better academic status and positive self-concept, which then contribute to the maturation of his/her personality and career. In this thesis no significant difference was noted between groups with regard to Emotional Recognition/Expression ( $p>0.05$ ). This is to be somewhat expected, as individuals with symptoms of SLDs, as reported by Wallace et al (2002), experience their main source of difficulties of directing attention and learning, as the difficulty in recognizing emotions in self and others, regulating and managing strong emotions (positive and negative).

Lin, et al., (2005) conducted a trial on thirty-one children with learning difficulties who received integrated interventions for one year consisting of cognitive training, behavioural intervention and comprehensive training of the senses. Their findings suggest that cognitive training and behavioural intervention coupled with integrated 'intervention' over a sustained period of time has been successful in remediating SLDs. They reported that interventions integrating cognitive training of the senses may produce good and persistent effect on the cognitive and emotional systems of children with learning difficulties, resulting in improved visual, auditory and brain functions. Zimmerman, (2002) also reported that findings that deficits in reading abilities are often associated with a complex array of issues beyond academic achievement, such as poor self-concept, lack of motivation, and difficulties with social interactions.

Staels et al. (2015) reported on orthographic learning and the role of text-to-speech software in disabled readers. They investigated whether orthographic learning through

the use of text-to-speech software can be demonstrated to assist disabled readers in learning to read in transparent orthography. They concluded that their results support the hypothesis that all readers, even poor readers of transparent orthographies, are capable of developing word-specific knowledge despite a negative effect of text-to-speech software on orthographic learning having been demonstrated.

In this thesis a second study was designed to evaluate the effectiveness of a SLD Correction Program designed to improve Numeracy and Literacy skills. Study Two was designed to assess whether academic intervention was efficacious in producing improvements in functioning associated with the numerous presentations of SLD. Lyon (1996) found that approximately 5% of all public school students are identified as having a learning disability (LD). Furthermore, it has been highlighted that unidentified and unattended disability in basic reading skills (at any level of severity) among students lead to increased difficulty in task remediation and a lower success rate. His observations focused primarily on the deficits in basic reading skills, both because of their critical importance to academic success and because relatively more is known about these deficiencies, and they reported that other academic, social, and behavioural manifestations of learning disability are also important and cannot be assumed to be adequately addressed by programs to improve basic reading skills. Lyon (1996) also reported that while early intervention is necessary, it should not be assumed to be sufficient to address the multiple manifestations of learning disability.

To assess the differences in levels of reported total EI, Emotional Recognition and Expression, Understanding Others' Emotions, Emotional Management and Control and Emotions Direct Cognition as a function of the treatment intervention, a series of paired sampled t-tests were applied. The research asked whether the treated group differ on the level of Emotions Direct Cognition compared to the comparison group and whether they score higher on SLD following the clinical intervention. The hypotheses tested the variables of Emotional Recognition and Expression, Understanding Others' Emotions, Emotional Management and Control.

It was hypothesized that the treated clinical group results would improve on the level of Emotional Recognition and Expression, Understanding Others' Emotions, Emotional Management and Control compared to their level before treatment. The

intervention sought to address the symbol and word recognition deficit experienced by individuals with SLDs in a targeted, condensed, intense individual program to replicate treatment for SLDs based on previous studies. The format of the intervention was based on the academic intervention design of Goldman, et al (2006). This intervention design was selected as it is a research based set of recommendations structured as a practical guideline for the education of English language learners (ELL) who struggle considerably in developing English proficiency, academic skills, and meeting grade-level standards. It was also chosen because it is based on the view that academic language is central to mathematics and all academic areas.

The design recommends that English Language Learners (ELLs), like any other population of learners with academic difficulties, require effective instructional approaches and interventions on the content, such as the format for delivery, the match between the learner's difficulty and the approach or intervention, and whether it is meant to be a class-wide approach or targeted for small-group or one-on-one settings. As the intervention also sought to ameliorate basic mathematical symbol difficulty, an intensive instruction and intervention of basic mathematics symbols was used.

The Study Two intervention program was presented in eight one-on-one training sessions to improve: alphabet recognition; reading of single words and sentences; punctuation symbol recognition in context; writing of words and sentences as recognition of correct pronunciation of digraphs like 'ch' or 'th'; improved handwriting; improved coordination and balance; number recognition; as well as to identify EI competencies and weaknesses and to raise awareness of EI models of competency. However, no differences were found between the scores for pre-intervention in Emotional Recognition and Expression, Understanding Others Emotions, Emotional Management and Control Emotions Direct Cognition.

These findings validate Lyon's (1996) report that while early intervention is necessary, it should not be assumed to be sufficient to address the multiple manifestations of learning disability, specifically dyslexia, dyscalculia, dyspraxia and ADD. Gofman (1965, p. 262) reported that it had been neurological scientists experience that many learning difficulties are not solely on an emotional basis but

may result from organic or physiological dysfunctions which can easily miss detection. Simonds (1974) also reported that an evaluation of the degree of emotional and learning disability and recognition of the interrelations between the two disorders is essential for effective remediation and treatment.

The eight week intervention in Study Two also may not have worked because the sample included more adults than adolescents and adults may have different learning requirements to adolescents and they may have reinforced coping strategies to accommodate their SLDs, or because they are less conducive to change. Because this study was conducted over a relatively short period of time and included only 8 hours of one-on-one teaching the positive changes may have been too small to register statistical significance.

This thesis has demonstrated that EI is correlated to SLDs. Other research has also sought to find significant links between issues beyond academic achievement that correlate with SLDs. One issue that has been investigated is diet. Colgan and Cilgan (1984) examined the relevance of diet and the use of nutrient supplements in ameliorating SLDs. In their research subjects were given an individually designed vitamin and mineral supplement and diets were also changed to reduce sugars and refined foods and toxic metals contamination. Over the duration of their program, they reported that the experimental group showed significantly greater improvements than the control group in assessed at school, at home and in the clinic, and that the experimental group also made significantly greater gains in reading skills.

Other research has investigated the administration of medications and the effect on reducing SLDs. Frank (1996) observed that although there are no medications which directly affect the learning ability of the patients he investigated, central stimulants, clonidine [an antihypertensive] or antidepressants and reported that he found they may enhance learning ability through an effect on frequently present co morbidity. Other factors linked with SLDs include Omega-3 levels. Kirby et al. (2010) reported some evidence that higher omega -3 levels were associated with decreased levels of attention, hyperactivity emotional and conduct difficulties and increased levels of pro-social behaviour.

Emotions, however, have been found to play a significant role in the way children learn. Wallace et al (2002) reported findings that factors such as the way in which emotion directs attention and influence learning and the importance of helping children focus amidst the many distractions that exist to their learning have been deemed important. Factors which impact on the development and correction of SLDs also relate to the learning environment.

Elais (2004) highlighted the importance of the learning environment and the need for educators both to establish caring relationships with the students and help students develop the skills they need to establish such relationships with others. Zimmerman and colleagues (2002) reported that deficits in reading abilities are often associated with a complex array of issues beyond academic achievement. Hallahan, et al. (1997) reported poor self-concept, lack of motivation, and difficulties with social interactions impacted on a child's ability to learn as they are associated with the emotional state of the individual. Orenstein (2007) reported that shame was found to be an experience that is central to the psychological landscape of ULD and this is significant in light of Knivsberg et al. (2008) findings when assessing students with phonological deficits and severely impaired reading abilities. They found that in spite of prolonged educational remediation that individuals with SLDs had more behavioural/emotional problems than normal. Many reported findings agree with Poulou (2013) that the cultivation of emotional and social skills is important for positive relationships in a school environment.

The results of the present thesis have significantly contributed to the escalating body of scientific literature on EI by providing empirical evidence on the correlation between EI, specifically on the parameters of Emotional Recognition and Expression, Understanding Others' Emotions, Emotional Management and Control Emotions Direct Cognition and SLDs, in relation to dyslexia, dyscalculia, dyspraxia and ADD. Such Knowledge may have application within a wider clinical context, such as assisting in outlining effective and appropriate treatment modalities for individuals with SLDs, thus providing a more personal and tailored program aimed at improving an individual's functional outcomes. Moreover, these findings add crucial information to the limited literature base regarding the role of emotion among individuals with SLD.

## 8.2 Limitations

The correlation between EI and SLDs has been broadly investigated and the empirical evidence of a correlation of this thesis provides the opportunity for further research to investigate how this correlation can be incorporated in intervention programs, teachings methods, the development and understanding of parenting skills, psychological frameworks and strategies to ameliorate, treat and prevent the occurrence of SLDs.

While causes of SLDs other than emotional causes, have been investigated based on the view reported by Gofman (1965) that it had been neurological scientists experience that many learning difficulties are not solely on an emotional basis but may result from organic or physiological dysfunctions which can easily miss detection, no intervention designed to date has had the effect of treating or preventing SLDs.

Research into the observed connection between SLDs and emotions also sought to determine which accredited tests of the presence of SLDs was most accurate, as controversy existed around whether the Wescheler Intelligence Scale for Children (WISC), or the Wide Range Achievement Test (WRAT) was the best indicator of the presence of a SLD. Simonds (1974) reported that the WISC and WRAT tests enable the educator and the clinician to screen for learning disorders and help in the analysis of the effects of emotional symptoms on the learning process. He concluded that the results of these tests point the way to other diagnostic testing and that research pointed clearly to the fact that an evaluation of the degree of emotional and learning disability and recognition of the interrelations between the two disorders is essential for effective remediation and treatment.

Recognition that emotions impacted on the experience of a SLD led to Clare and Clements (1990) research to examine social cognition and impaired social interaction in people with severe learning difficulties. Their research found that social skills' training has focused on 'performance' or overt behaviour, rather than on the other components of successful social functioning like motivation and goals, analysis of social information, and performance feedback.

Researchers also evaluated aspects of dyspraxia and Smyth (1992) examined specifically at clumsiness as an impaired motor skill in children considered to be otherwise normal, and found that impaired performance of motor skills, to a degree experienced by clumsy children, is unlikely to present a serious problem. However, he also found that significant associated and secondary emotional problems are common. Gordon (1993) investigated the link between SLDs and delinquency and a survey found that learning disorders of various types are relatively common. The reaction of the affected children can lead to social problems and that if a link between learning disorders and delinquency is recognised there is considerable scope for prevention.

Doctors, psychologists, psychiatrists, educationalists and many others have sought to understand this growing problem of SLDs. Lyon (1996) found that approximately 5% of all public school students are identified as having a learning disability (LD) and the longer children with disability in basic reading skills, at any level of severity go without identification and intervention, the more difficult the task of remediation and the lower the rate of success. Lyon (1996) reported that while early intervention is necessary, it should not be assumed to be sufficient to address the multiple manifestations of learning disability.

Research around personality disorders provided relevant parallels to the experience of a SLD as both were considered to be an enduring pattern of experience and that deviates markedly from cultural expectations and causes distress or impairment. Johnson et al (2000) in their Scandinavian study into age-related change in personality disorder trait levels between early adolescence and adulthood the objective investigated change in personality disorder (PD) traits between early adolescence and early adulthood among individuals in the community. They concluded that such findings suggest that there are likely to be important differences in the developmental and course of specific PDs which merit further investigation.

The first significant studies of the connection between social-emotional learning and learning disabilities were demonstrated by Wallace et al (2002) who reported that factors such as the way in which emotion directs attention and influences learning and the importance of helping children focus amidst the many distractions that exist to their learning have been deemed important in effective classrooms that include high

school students with learning difficulties. Their study found that the majority of students with learning disabilities have difficulties with social relationships and the three key skill areas in social-learning are identified as the main source of these difficulties: recognizing emotions in self and others, regulating and managing strong emotions (positive and negative), and recognizing strengths and areas of need.

Researchers in the area of LD are finding that the skills of social-emotional learning (SEL) and the principles by which they are learned are demonstrably relevant to understanding students' academic difficulties and why these are so often accompanied by social difficulty. Elais (2004) also reported that three essential SEL principles that serve as complements to the list of skill guide interventions (National Center for Innovation and Education, 1999) are that: caring relationships are the foundation of all lasting learning; emotions effect how and what we learn and goal setting and problem solving provide focus, direction, and energy for learning. Also the essence of these principles is to highlight the importance of the learning environment and the need for educators both to establish caring relationships with the students and help student develop the skills they need to establish such relationships with others.

Chinese educators were one of the first groups to instigate integrated intervention for SLDs in children with the intention of producing a therapeutic effect. Lin, et al., (2005) reported that this process trialed on thirty-one children with learning difficulties who received integrated interventions for one year consisting of cognitive training, behavioural intervention and comprehensive training of the senses. They reported that interventions integrating cognitive training of the senses may produce good and persistent effect on the cognitive and emotional systems of children with learning difficulties, resulting in improved visual, auditory and brain functions.

The diagnosis of increasing numbers of children presenting with symptoms, now described as Attention Deficit Hyperactivity Disorder (ADHD), saw the implementation of new assessment tools and an understanding that School and clinical psychologists play an important role in the assessment of a child's emotional and behavioural difficulties, including problems with attention. Jarratt, et al. (2005) reported that the use of the Behaviour Assessment System for Children (BASC) and



Behaviour Rating Inventory of Executive Function (BRIEF) in ADHD assessment appeared promising and may generate additional areas in need of intervention

The recognition that the impact of SLDs had wide ranging and often long term negative ramifications came to the attention of medical practitioners and others. Karande, et al. (2005) reported at an Indian Pediatric conference the view that education is one of the most important aspects of human resource development and that poor school performance not only results in the child having low self-esteem, but also causes significant stress to parents and that it is important to find reason(s) for a child's poor school performance and come up with a treatment plan early so that the child can perform up to their full potential.

A growing recognition of the importance of Emotional Intelligence (EI) as a significant component of personal development and the observation that SLDs were becoming a significant problem for an ever increasing number of children. This generated interest in research into the connection between EI and SLDs. Zimmerman, (2002) reported that this interest was based on the findings that deficits in reading abilities are often associated with a complex array of issues beyond academic achievement, such as poor self-concept, lack of motivation, and difficulties with social interactions as reported by (Hallahan, et al., 1997), and that the EI components of emotional regulation and facilitation, for instance, relate to the concept of self-regulated learning, which refers to self-generated thoughts, feelings and behaviours that are oriented to attaining goals.

Interventions targeting EI for students with reading disabilities recognised that the construct of EI provides a framework for understanding emotional processes in students with reading disabilities. Pellitteri, et al. (2006) also reported that the components of EI include the perception of emotions, emotional facilitation of thinking, emotional knowledge, and emotional regulation and that every academic task and social interaction can be an opportunity to facilitate emotional awareness in students.

As ADHD and reading disability became the focus of most research, clinical neuropsychologists began to examine for a relationship between executive function

(EF) and ADHD. Mahone, et al. (2007) undertook a study which examined the behaviour ratings of executive function among preschoolers with ADHD sought to establish whether, preschoolers with ADHD are likely to exhibit deficits in certain aspects of EF, particularly those related to inhibitory control reported that there is growing evidence of a link between an underlying cause and the experience of a SLD resulted in interest in observing specific character traits like resilience in children experiencing an undiagnosed SLD and the consequences.

Orenstein (2007) reported that shame was found to be an experience that is central to the psychological landscape of undiagnosed learning disability (ULD) sufferers. He also reported that the fundamental problem that is caused by UDL involves excruciatingly shameful humiliation, exposure, and despair and occurs when people cannot live up to internal expectations and they then must struggle not only with UDL but also with the emotional consequences. He concluded that this observation leads to the recognition that academic institutions need to face and deal with the emotional aspects of learning disabilities.

Interest in researching students with ADHD led to interest in either establishing, or eliminating a link with intellectual disability. Research in America examined ADHD symptoms in children with mild intellectual disability. Simonoff, et al. (2007), investigated whether the nature of the correlates of ADHD symptoms are different in subjects with mild intellectual disability (ID) compared to subjects with average ability. They concluded that in line with models of heterogeneity in ADHD, the study pointed to the need for theoretical development and empirical studies that will further our understanding of the relatively large group of children with high levels of ADHD symptoms, but without EF impairment.

Further research investigated how effective ADHD and EF impairment were as early predictors of future al problems. Wahlstadt et al. (2008) in a longitudinal study investigated ADHD symptoms and EF impairments in terms of continuity and cross-domain associations, as well as their predictive relations to a range of socio-emotional problem behaviours found that early ADHD symptoms and EF impairments acted as predictors of continuing problems within each domain. He reported that it was only ADHD symptoms that predicted other aspects of socio-emotional functioning such as

dysfunctional regulation and lower levels of social competence and that both ADHD symptoms and impaired EF act as early predictors of problem behaviours, although it is clear that prediction based on ADHD symptoms encompass a wider range of problems in early school age children.

Research had also broadened beyond individuals experiencing ADHD to include individuals experiencing severe dyslexia and to focus on, attention and cognition. Knivsberg et al. (2008) assessed students with phonological deficits and severely impaired reading abilities, in spite of prolonged educational remediation that had more behavioural/emotional problems than normal reading students. They reported findings that the dyslexia group showed significantly more problems in all areas than the controls and recommended that further research was needed in this area, and that the results clearly indicate that identifying additional /emotional problems may be imperative for students with severe reading problems.

While research continued to observe a link between emotions and SLDs, Silver, et al. (2008) report there is still some resistance to formally recognizing that link by some in the field of neuropsychology who believe that a learning disability (LD) is a neurobiological disorder that presents as a serious difficulty with reading, arithmetic, and/or written expression that is unexpected, given the individual's intellectual ability, and that learning disability is not an emotional disorder nor is it caused by an emotional disorder.

Hall (2008) and others are of the view that severe SLDs require medical treatment and that for complex or comorbid SLD, treatment of ADHD with methylphenidate and therapeutic work with the child and his/her family are vital as early as possible to prevent, low self-esteem or serious problems which inhibit a child's ability to achieve their academic potential. However a broader view is emerging as studies are indicating a strong link between the experience of a SLD and emotions with some identifying the internalizing correlates of dyslexia. Mugnaini et al. (2009) reported that suitable social, health and school policies aimed at identifying and treating dyslexia as a cause of discomfort are required, and confirm the clinical need to assess and contrast additional risk factors that may increase the probability of this suffering in dyslexic students.

Scientists are also interested in investigating the link between EI and SLDs. Narimani et al. (2009) in a study focusing on boys experiencing dyslexia hypothesized that there is a difference in emotional intelligence between dyslexic and nondyslexic people; there is a difference in disorders between dyslexic and nondyslexic people and that there is a relationship between EI and disorders among students. They reported that there is a relationship between EI and disorders and that there is an adverse relationship between EI and disorders in a way that there is a relationship between high EI and low disorders: the higher the EI the lower the disorder. They concluded that dyslexic children compared to nondyslexic children have more behavioural problems in all-micro scales, and that one of which could be low emotional intelligence.

A further study examined how knowledge about and preoccupation with reading disabilities impacted on the experience of a SLD. Shany et al. (2011) investigated the extent to which children's knowledge about reading disabilities, preoccupation with their own reading disability, and anxiety predicted reading comprehension in fifth and sixth grade children with reading disabilities. They concluded that children with the most adaptive profile in terms of reading comprehension and anxiety were those who had high levels of knowledge and low levels of preoccupation with their disability.

Building on these findings, educators in a recent study in Scotland examined at the development of intrapersonal intelligence in pupils experiencing social, emotional and behavioural difficulties. Mowat (2011) drew from the accounts of Secondary School students who participated within the intervention during its first four years of inception and from a range of stakeholder accounts – parents, Support Group Leaders, class teachers and senior managers and focused specifically upon the extent to which pupils developed intrapersonal intelligence and the findings indicate that the majority of pupils had, to at least an extent, developed greater understanding of their and that these outcomes were still in evidence up to two years after intervention.

Psychological intervention has also been trialed in an attempt to treat SLDs. Miranda et al. (2011) considered the effects of a psychosocial intervention on the executive functioning in children with ADHD. Analyses were conducted on the effects of an intensive psychosocial intervention on the executive functioning (EF) in children

with ADHD. They reported that the comparative analysis of the treated group of ADHD children and the untreated ADHD group showed significant differences that were especially important in visuospatial memory and planning in favor of the treated children and concluded that psychosocial interventions with children with ADHD can have a positive effect on some executive functions. They also noted that one of the most outstanding contributions of the study is the attempt it makes to construct a bridge between the neuroscientific and the psychoeducational approaches and that future studies should more closely examine the relationships between performance on EF tasks and ability to cope in significant real-life situations.

The link between problem behaviours and SLDs has led to further recent studies into the link between executive control (EC) and dimensions of problem behaviours in preschool children. Espy et al. (2011) reported that EC referred to the higher order, top-down abilities that enable the execution of an action requiring the active maintenance of information in light of competition, delay, distraction or interference under changing contingencies. They reported poor modulatory management of negative emotionality such as anger, aggressive behaviour, and non-compliance and a strong, systematic relation between EC and problem behaviour in typically developing preschool children.

As the recognition of the link between the experience of a SLD and emotions continues to grow, so to does the research into specific groups with SLDs and specific emotional factors increases. Kochel et al. (2012) reported on affective inhibitory control in adults with attention deficit hyperactivity disorder and abnormalities in electro cortical late positivity, specifically men experiencing ADHD and was based on the premise that, boys afflicted with ADHD are characterized by deficient response inhibition and reduced electro cortical late positivity when presented with facial expressions of anger. He reported that there were no behavioural differences in inhibitory control between the ADHD and the control group, however, the patients showed reduced right parietal late positivity when instructed to inhibit a response to negative emotions and there was reduced positivity correlated with lowered self-reported emotional intelligence in the ADHD group.

The emergence of the Trait Emotional Intelligence construct has shifted the interest in personality research to the investigation of the effect of global personality characteristics on behaviour. Poulou (2013) reported on the role of trait EI and social emotional and behavioural strengths on difficulties in adolescent's perceptions and the role of both personality traits and social and emotional skills, in the occurrence of emotional and behavioural strengths and difficulties. They concluded that the cultivation of emotional and social skills is important for positive relationships in a school environment.

With the dramatic increase in the number of children experiencing a SLD world-wide research continues to examine for ways to detect SLDs as early as possible.

Mascheretti et al. (2013) reported on putative risk factors in developmental dyslexia in a case-control study of children in Italy investigated. They identified that although dyslexia runs in families, several putative risk factors that cannot be immediately identified as genetic predict reading disability and that published studies analyzed one or a few risk factors at a time, with relatively inconsistent results. They reported that factors like younger parental age at child's birth, lower parental education, and risk of miscarriage significantly increased the odds of belonging to the dyslexic group and concluded that these findings support reading disabilities as a multifactorial disorder and may bear some importance for the prevention and/or early detection of children at heightened risk of dyslexia.

As it is now widely accepted that SLDs are multidimensional, involve emotions and that the experience of a SLD can have significant and long term negative consequences, research has also identified strategies to remediate the experience of a SLD. Staels et al. (2015) reported on orthographic learning and the role of text-to-speech software in Dutch disabled readers and whether orthographic learning can be demonstrated in disabled readers learning to read in transparent orthography. They also reported on the effect of the use of text-to-speech software, a new form of direct instruction, on orthographic learning. They concluded that their results support the hypothesis that all readers, even poor readers of transparent orthographies, are capable of developing word-specific knowledge. However a second, a negative effect of text-to-speech software on orthographic learning was demonstrated.

In order to add to the validation of EI theories and to further understanding Palmer et al (2002) examined the connection between emotional intelligence and life satisfaction and in order to determine the nature of this relationship, personality constructs known to predict life satisfaction were also assessed (positive and negative effect). They reported that subsequent analysis revealed that only the Clarity sub-scale accounted for further variance in life satisfaction not accounted for by positive and negative effect and that this finding provides further evidence that components of the EI construct account for variance in this important human value not accounted for by personality. Palmer et al (2002) also reported that the findings of the study provided further support for the notion that EI accounts for individual differences in life satisfaction and that consistent with previous research, positive effect was found to be the strongest predictor of life satisfaction accounting for the majority of the variance in scores. They further reported that the findings of the study provide preliminary empirical evidence that EI, specifically how clearly individuals tend to experience their emotions, accounts for further variance in this important human value and that the findings also suggest that well conceptualized and developed self-report measures of EI can account for the variance in life criteria over and above other well-established constructs.

Despite some disagreement with terminology and testing processes further research by Ciarrochi et al (2002) hypothesized that EI would make a unique contribution to understanding the relationship between stress and three important mental health variables, depression, hopelessness, and suicidal ideation. They argued that emotionally perceptive people appear to be more strongly impacted by stress than their less perceptive counterparts, expressing higher levels of depression, hopelessness, and suicidal ideation.

Ciarrochi et al (2002) reported that there are at least two possibilities, which we label the insensitivity hypothesis and the confusion hypothesis. The insensitivity hypothesis suggests that low perception people acknowledge that there are a lot of hassles in their life, but they successfully repressed thoughts of the hassles, or ignore them altogether. A second possibility is that low perception people are indeed sensitive distressed but just do not realise that it is impacting on them adversely. Ciarrochi et al (2002) also reported that as well as supporting the argument that aspects of the EI construct are

both distinctive and useful, their set of findings has important practical implications for understanding the link between stress and mental health. Also some aspects of emotional intelligence may not always be intelligent, that is, emotionally perceptive people may be more vulnerable to the adverse effects of stress. They concluded that their findings suggest that under stress, low perception people don't believe themselves to feel particularly depressed, hopeless, or suicidal and that it may make little difference whether this belief is accurate (bliss) or inaccurate (ignorant bliss). Ciarrochi et al (2002) also concluded that EI measures have been shown to be distinctive and useful in understanding the link between stress and mental health and the performance measure of emotion perception showed particular promise, having satisfactory levels of reliability and distinctiveness, and moderating the link between stress and all three of our mental health variables.

Lopes et al (2003) agreed that in spite of a large body of research, it has proved difficult to integrate existing knowledge about social and emotional competence into a cohesive theoretical framework. Their study explored links between emotional intelligence, measured as a set of abilities, and personality traits, as well as the contribution of both to the perceived quality of one's interpersonal relationships. Lopes et al (2003) reported that emotional intelligence, assessed as a set of abilities, shed limited overlap with verbal intelligence and personality measures. The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), designed to assess emotional skills, and the Big Five, intended to measure the social and emotional dispositions, seem to tap into different aspects of psychological functioning. Also the fact that MSCEIT explained unique variance in self-reported satisfaction with interpersonal relationships supports the incremental validity of this ability-based measure of emotional intelligence. They reported that future research should seek to establish the predictive validity of emotional intelligence, using outcomes measures that do not rely on self-report recognizing the limitations of self-reports.

Emotional intelligence and its relation to everyday were evaluated in a study that assessed the discriminant, criterion and incremental validity of an ability measure of emotional intelligence. Brackett, et al (2004) reported that the research suggests that EI predicts important criteria, particularly for the male college students in their sample. Further research into the relationship between emotional intelligence and



academic achievement, like that of Parker et al (2004) reported that an overall link between social and emotional competency and academic success was supported in their study.

The growing recognition of EI as a predictor of performance and led to Bastian et al (2005) undertaking a study to investigate relationships between EI and a number of 'life skills' (academic achievement, life satisfaction, anxiety, problem-solving and coping). Even though they reported that Correlations between EI and academic achievement were small and not statistically significant, higher EI was correlated with higher life satisfaction, better perceived problem-solving and coping ability and lower anxiety. Bastian et al (2005) also reported that because the concept of EI is still relatively new and there are known problems with the construction of EI measures, it is therefore possible that current measures did not assess EI adequately and that it is also possible that the markedly uniform samples assessed (primarily university students) affected results as EI may be a threshold variable. Gohm et al (2005) also examined the association between emotional intelligence (emotion-relevant abilities) and stress (feelings of inability to control life events), considering personality (self-perception of the meta-emotion traits of clarity, intensity, and attention) as a moderating variable. They reported that their results suggested that emotional intelligence is potentially helpful in reducing stress in some individuals, but unnecessary or irrelevant for others. Gohm et al (2005) reported that in their study a limitation was that other traits, for example, neuroticism or anxiety, may be confounded with reports of perceived stress.

Interest continued in the potential for EI to have predictive value particularly in relation to educational performance. Deary et al (2007) undertook a five year prospective longitudinal study of 70,000+ English children to examine the association between psychometric intelligence at age 11 years and educational achievement in national examinations in 25 academic subjects at age 16. Deary et al (2007) concluded that the data established the validity of 'g' (general intelligence, general mental ability or general intelligence factor) as an important life outcome. Reid et al (2007) investigated whether a performance measure of the EI is related to reasoning about social situations (specifically social exchange reasoning) using versions of the Wason Card Selection Task. They reported that the results of the first directly suggested that

EI is mediated in part by mechanisms supporting social reasoning and validate a new approach to investigating EI in terms of more basic information processing mechanisms.

A study by Downey et al (2008) examined the relationship between EI and the scholastic achievement in Australian adolescents. They reported that academic success was found to be associated with higher levels of total EI, via assessment of the EI of different academic levels. Downey et al (2008) concluded that the examination of the relationship between EI measured by the Adolescent SUEIT and wide range of educational subjects indicated that EI was generally positively associated with performance across school subjects. As further studies reported conflicting results continued research into the correlation between EI and SLDs is important to develop treatment and prevention of SLDs.

Because of growing controversy and interest in EI, Parker et al (2009) published an assessment of literature on EI. They reported that to understand the specific cognitive and al strategies that mediate the pathway between EI and successful stress adaption, they turned to the literature on EI and coping. Parker et al (2009) reported that confidence in one's coping abilities and perceptions of personal control over the situation would enable active coping through constructive emotion-regulation and problem-solving strategies, whereas low coping self-efficacy, confusion about the sources of stress, and perceptions of being powerless in a situation would elicit avoidance strategies or passive rumination and self-blame. The first two strategies are considered adaptive for health and well-being, as they act to reduce the emotional and psychological arousal and minimize the duration of stress. Parker et al (2009) concluded that despite the acceptance among many educators that EI is important for the success of school-aged children, there is limited direct research investigating the link between EI and academic success at the elementary school level.

Nelis et al (2009) investigated whether EI could be developed among young adults using a proper experimental design and theoretically grounded training program. They reported that results showed a significant increase in emotion identification and emotional management abilities in the training group and that follow-up measures after six months revealed that these changes were persistent. Also no significant

change was observed in the control group. They concluded that their findings suggested that EI can be improved and open to new treatment avenues.

Research has extended beyond only the academic ramifications of SLDs to include all dysfunction. Downey et al (2010) explored the mediating effect of emotional intelligence and coping strategies on problem behaviours in Australian adolescents. They reported that the relationships between Emotional Management and Control and engagement in internalizing and externalizing behaviours were found to be mediated by the use of non-productive coping strategies. Also, Mediation models of the relationship between problem behaviours and the Understanding Emotions and Emotional Recognition and expression dimensions were found to be only partially mediated by the engagement in problem-focused and non-productive coping strategies. Downey et al (2010) concluded that as previous research suggests that adolescent problem behaviours increase in middle to late adolescence (Steinberg and Morris, 2001) and that EI also increases as a function of cognitive maturation (Mayer et al., 2000) from an “ability” point of view, replication of their study with the broader sample age range to include older adolescents and use of ability-based measure, may further validate these findings and potentially elucidate stronger relationships between the dimensions. Also comparison to an at-risk population of adolescents and a general population sample may also contribute further to the understanding of the relationship between EI, coping and problem behaviours. They also reported that adolescents who reported greater abilities in managing emotions, were more likely to effectively deal with stressful situations common during adolescence, and in turn were less likely to internalize or externalize these experiences via antisocial or problem behaviours. While individuals may grow out of certain problem behaviours, maladaptive coping strategies learned in adolescence may inhibit one’s sense of personal efficacy or confidence in dealing with stress, and therefore limit the development of more adaptive coping.

Schutte and Malouff (2011) examined whether or not emotional intelligence mediates the relationship between mindfulness and subjective well-being. They reported that higher levels of mindfulness were associated with greater emotional intelligence, positive affect, and life satisfaction and lower negative affect. Also higher levels of emotional intelligence were associated with greater positive affect and life satisfaction

and lower negative affect and emotional intelligence mediated between mindfulness and higher positive affect, lower negative affect, and greater life satisfaction. They concluded that their results provided information regarding a possible process through which mindfulness exerts its beneficial effects. Schutte and Malouff (2011) also concluded that the findings thus provide evidence of the connection between mindfulness and emotional intelligence and between those two characteristics and subjective well-being. Also if, as proposed, mindfulness leads to increased emotional intelligence, their study provided information regarding one possible process through which mindfulness exerts its beneficial effects. Further, mindfulness training could provide a practical means of increasing emotional intelligence and characteristics influenced by emotional intelligence.

Thingujam et al (2012) examined convergence between individual branches of ability model of Emotional Intelligence and used performance tests that measure actual ability and have objective standards of right answers. They reported that the results indicated substantial convergence between emotion recognition through the voice and emotional understanding. Thingujam et al (2012) also reported that few tests using ability measures that have objective standards to represent the underlying emotional capabilities have been done and that their study provided new data to inform the often heated debate about the validity of EI- a research topic for which the available empirical data has not yet kept up with strong arguments. They concluded that the current finding that emotion recognition converges with emotional understanding--and, recently, that it converges with emotional expression accuracy-- provide a basis of optimism that EI may truly be considered "intelligence." They also concluded that rather than merely a matter of renaming existing constructs within psychology, EI holds the promise to represent a set of Intel related individual differences in the ability to deal effectively with one's emotional environment. Schutte and Malouff (2012) also examined whether priming self-schemas relating to successful emotional competency results in better emotional intelligence performance. They reported that successful emotional competency prime most influenced strategic emotional functioning. Schutte and Malouff (2012) concluded that the results of their two studies indicated that emotional intelligence ability can be primed and provided a possible link between ability and trait conceptualizations of emotional intelligence.

Lomas et al (2012) examined for the first time the relationship between emotional intelligence (EI) of adolescents, bullying behaviours and victimization in order to better understand bullying behaviours. They reported that results of the study indicated that EI dimensions of Emotions Direct Cognition and Emotional Management and Control, significantly predicted the propensity of adolescents to be subjected to peer victimization. Also the EI dimension of Understanding the Emotions of Others was found to be negatively related with bullying behaviours. They concluded that anti-bullying programs in schools could be improved by addressing deficits in the eye in adolescence who bully others as well as those who are at a greater risk of being subjected to peer victimization. Lomas et al (2012) also concluded that measures of EI may be utilized to identify students who showed less developed EI competencies, which may allow for more targeted, accurate or timely intervention to protect students from the potential harmful consequences that are associated with exposure to bullying.

In more recent studies Yip and Cote (2013) examined how emotional intelligence and emotion-understanding ability facilitates decision-making. They reported that their finding revealed that emotion understanding ability guards against the biasing affects of incidental anxiety by helping individuals to determine that such anxiety is relevant to current decisions. Deary (2014) wrote an article to encourage psychologists to teach intelligence at different levels of the undergraduate curriculum and at postgraduate level. He concluded that intelligence should be 'taught' to psychologists more broadly, to relevant professionals, and to the public. Deary (2014) also concluded that it can be taught simply as an interesting topic with some greater data and with the assurance that, if people take the time to know something about these data and think about what they mean, they will be better off for it.

In light of growing difficulty for educators, psychologists, parents and other to understand, treat, ameliorate and prevent the growing incidence of SLDs further research into the significance of EI as a correlate of SLDs needs to focus on how that correlation can be understood in the context of a child's home, school and social environment and the emotional factors that cause or aggravate SLDs in individuals.

### 8.3 Recommendations and Future Directions

The correlation between EI and SLDs has had broad investigation and the empirical evidence of a correlation of this thesis provides the opportunity for further research to investigate how this correlation can be incorporated in intervention programs, teachings methods, the development and understanding of parenting skills, psychological frameworks and strategies to ameliorate, treat and prevent the occurrence of SLDs.

While causes of SLDs other than emotional causes, have been investigated based on the view reported by Gofman (1965) that it had been neurological scientists experience that many learning difficulties are not solely on an emotional basis but may result from organic or physiological dysfunctions which can easily miss detection, no intervention designed to date has had the effect of treating or preventing SLDs.

Research into the observed connection between SLDs and emotions also sought to determine which accredited tests of the presence of SLDs was most accurate, as controversy existed around whether the Wescheler Intelligence Scale for Children (WISC), or the Wide Range Achievement Test (WRAT) was the best indicator of the presence of a SLD. Simonds (1974) reported that the WISC and WRAT tests enable the educator and the clinician to screen for learning disorders and help in the analysis of the effects of emotional symptoms on the learning process. He concluded that the results of these tests point the way to other diagnostic testing and that research pointed clearly to the fact that an evaluation of the degree of emotional and learning disability and recognition of the interrelations between the two disorders is essential for effective remediation and treatment. Recognition that emotions impacted on the experience of a SLD led to Clare and Clements (1990) research to examine social cognition and impaired social interaction in people with severe learning difficulties. Their research found that social skills' training has focused on 'performance' or overt, rather than on the other components of successful social functioning like motivation and goals, analysis of social information, and performance feedback.

Researchers also evaluated aspects of dyspraxia and Smyth (1992) examined specifically at clumsiness as an impaired motor skill in children considered to be otherwise normal, and found that impaired performance of motor skills, to a degree experienced by clumsy children, is unlikely to present a serious problem. However, he also found that significant associated and secondary emotional problems are common. Gordon (1993) investigated the link between SLDs and delinquency and a survey found that learning disorders of various types are relatively common. The reaction of the affected children can lead to social problems and that if a link between learning disorders and delinquency is recognised there is considerable scope for prevention.

Doctors, psychologists, psychiatrists, educationalists and many others have sought to understand this growing problem of SLDs. Lyon (1996) found that approximately 5% of all public school students are identified as having a learning disability (LD) and the longer children with disability in basic reading skills, at any level of severity go without identification and intervention, the more difficult the task of remediation and the lower the rate of success. Lyon (1996) reported that while early intervention is necessary, it should not be assumed to be sufficient to address the multiple manifestations of learning disability.

Research around personality disorders provided relevant parallels to the experience of a SLD as both were considered to be an enduring pattern of experience and that deviates markedly from cultural expectations and causes distress or impairment. Johnson et al (2000) in their Scandinavian study into age-related change in personality disorder trait levels between early adolescence and adulthood the objective investigated change in personality disorder (PD) traits between early adolescence and early adulthood among individuals in the community. They concluded that such findings suggest that there are likely to be important differences in the developmental and course of specific PDs which merit further investigation.

The first significant studies of the connection between social-emotional learning and learning disabilities were demonstrated by Wallace et al (2002) who reported that factors such as the way in which emotion directs attention and influences learning and the importance of helping children focus amidst the many distractions that exist to their learning have been deemed important in effective classrooms that include high

school students with learning difficulties. Their study found that the majority of students with learning disabilities have difficulties with social relationships and the three key skill areas in social-learning are identified as the main source of these difficulties: recognizing emotions in self and others, regulating and managing strong emotions (positive and negative), and recognizing strengths and areas of need.

Researchers in the area of LD are finding that the skills of social-emotional learning (SEL) and the principles by which they are learned are demonstrably relevant to understanding students' academic difficulties and why these are so often accompanied by social difficulty. Elais (2004) also reported that three essential SEL principles that serve as complements to the list of skill guide interventions (National Center for Innovation and Education, 1999) are that: caring relationships are the foundation of all lasting learning; emotions effect how and what we learn and goal setting and problem solving provide focus, direction, and energy for learning. Also the essence of these principles is to highlight the importance of the learning environment and the need for educators both to establish caring relationships with the students and help students develop the skills they need to establish such relationships with others.

Chinese educators were one of the first groups to instigate integrated intervention for SLDs in children with the intention of producing a therapeutic effect. Lin, et al., (2005) reported that this process trialed on thirty-one children with learning difficulties who received integrated interventions for one year consisting of cognitive training, behavioural intervention and comprehensive training of the senses. They reported that interventions integrating cognitive training of the senses may produce good and persistent effect on the cognitive and emotional systems of children with learning difficulties, resulting in improved visual, auditory and brain functions.

The diagnosis of increasing numbers of children presenting with symptoms, now described as Attention Deficit Hyperactivity Disorder (ADHD), saw the implementation of new assessment tools and an understanding that School and clinical psychologists play an important role in the assessment of a child's emotional and behavioural difficulties, including problems with attention. Jarratt, et al. (2005) reported that the use of the Behaviour Assessment System for Children (BASC) and



Behaviour Rating Inventory of Executive Function (BRIEF) in ADHD assessment appeared promising and may generate additional areas in need of intervention.

The recognition that poor school performance and the impact of SLDs had wide ranging, and often long term negative ramifications, came to the attention of medical practitioners and others. Karande, et al. (2005) reported at an Indian Pediatric conference the view that education is one of the most important aspects of human resource development and that poor school performance not only results in the child having low self-esteem, but also causes significant stress to parents and that it is important to find reason(s) for a child's poor school performance and come up with a treatment plan early so that the child can perform up to full potential.

A growing recognition of the importance of Emotional Intelligence (EI) as a significant component of personal development and the observation that SLDs were becoming a significant problem for an ever increasing number of children. This generated interest in research into the connection between EI and SLDs. Zimmerman, (2002) reported that this interest was based on the findings that deficits in reading abilities are often associated with a complex array of issues beyond academic achievement, such as poor self-concept, lack of motivation, and difficulties with social interactions as reported by (Hallahan, et al.,1997. *Exceptional learners: Introduction to special education*, 7<sup>th</sup> edition.), and that the EI components of emotional regulation and facilitation, for instance, relate to the concept of self-regulated learning, which refers to self-generated thoughts, feelings and behaviours that are oriented to attaining goals. Interventions targeting EI for students with reading disabilities recognised that the construct of EI provides a framework for understanding emotional processes in students with reading disabilities. Pellitteri, et al. (2006) also reported that the components of EI include the perception of emotions, emotional facilitation of thinking, emotional knowledge, and emotional regulation and that every academic task and social interaction can be an opportunity to facilitate emotional awareness in students.

As ADHD and reading disability became the focus of most research, clinical neuropsychologists began to examine for a relationship between executive function (EF) and ADHD. Mahone, et al. (2007) undertook a study which examined the

behaviour ratings of executive function among preschoolers with ADHD sought to establish whether, preschoolers with ADHD are likely to exhibit deficits in certain aspects of EF, particularly those related to inhibitory control reported that there is growing evidence of a link between an underlying cause and the experience of a SLD resulted in interest in observing specific character traits like resilience in children experiencing an undiagnosed SLD and the consequences.

Orenstein (2007) reported that shame was found to be an experience that is central to the psychological landscape of undiagnosed learning disability (ULD) sufferers. He also reported that the fundamental problem that is caused by UDL involves excruciatingly shameful humiliation, exposure, and despair and occurs when people cannot live up to internal expectations and they then must struggle not only with UDL but also with the emotional consequences. He concluded that this observation leads to the recognition that academic institutions need to face and deal with the emotional aspects of learning disabilities.

Interest in researching students with ADHD led to interest in either establishing, or eliminating a link with intellectual disability. Research in America examined ADHD symptoms in children with mild intellectual disability. Simonoff, et al. (2007), investigated whether the nature of the correlates of ADHD symptoms are different in subjects with mild intellectual disability (ID) compared to subjects with average ability. They concluded that in line with models of heterogeneity in ADHD, the study pointed to the need for theoretical development and empirical studies that will further our understanding of the relatively large group of children with high levels of ADHD symptoms, but without EF impairment.

Further research investigated how effective ADHD and EF impairment were as early predictors of future al problems. Wahlstadt et al. (2008) in a longitudinal study investigated ADHD symptoms and EF impairments in terms of continuity and cross-domain associations, as well as their predictive relations to a range of socio-emotional problem behaviours found that early ADHD symptoms and EF impairments acted as predictors of continuing problems within each domain. He reported that it was only ADHD symptoms that predicted other aspects of socio-emotional functioning such as dysfunctional regulation and lower levels of social competence and that both ADHD

symptoms and impaired EF act as early predictors of problem behaviours, although it is clear that prediction based on ADHD symptoms encompass a wider range of problems in early school age children.

Research had also broadened beyond individuals experiencing ADHD to include individuals experiencing severe dyslexia and to focus on, attention and cognition. Knivsberg et al. (2008) assessed students with phonological deficits and severely impaired reading abilities, in spite of prolonged educational remediation that had more behavioural/emotional problems than normal reading students. They reported findings that the dyslexia group showed significantly more problems in all areas than the controls and recommended that further research was needed in this area, and that the results clearly indicate that identifying additional /emotional problems may be imperative for students with severe reading problems.

While research continued to observe a link between emotions and SLDs, Silver, et al. (2008) report there is still some resistance to formally recognizing that link by some in the field of neuropsychology who believe that a learning disability (LD) is a neurobiological disorder that presents as a serious difficulty with reading, arithmetic, and/or written expression that is unexpected, given the individual's intellectual ability, and that learning disability is not an emotional disorder nor is it caused by an emotional disorder. Hall (2008) and others are of the view that severe SLDs require medical treatment and that for complex or comorbid SLD, treatment of ADHD with methylphenidate and therapeutic work with the child and his/her family are vital as early as possible to prevent, low self-esteem or serious problems which inhibit a child's ability to achieve their academic potential. However a broader view is emerging as studies are indicating a strong link between the experience of a SLD and emotions with some identifying the internalizing correlates of dyslexia. Mugnaini et al. (2009) reported that suitable social, health and school policies aimed at identifying and treating dyslexia as a cause of discomfort are required, and confirm the clinical need to assess and contrast additional risk factors that may increase the probability of this suffering in dyslexic students.

Scientists are also interested in investigating the link between EI and SLDs. Narimani et al. (2009) in a study focusing on boys experiencing dyslexia hypothesized that there is a difference in emotional intelligence between dyslexic and nondyslexic

people; there is a difference in disorders between dyslexic and nondyslexic people and that there is a relationship between EI and disorders among students. They reported that there is a relationship between EI and disorders and that there is an adverse relationship between EI and disorders in a way that there is a relationship between high EI and low disorders: the higher the EI the lower the disorder. They concluded that dyslexic children compared to nondyslexic children have more behavioural problems in all-micro scales, and that one of which could be low emotional intelligence.

A further study examined how knowledge about and preoccupation with reading disabilities impacted on the experience of a SLD. Shany et al. (2011) investigated the extent to which children's knowledge about reading disabilities, preoccupation with their own reading disability, and anxiety predicted reading comprehension in fifth and sixth grade children with reading disabilities. They concluded that children with the most adaptive profile in terms of reading comprehension and anxiety were those who had high levels of knowledge and low levels of preoccupation with their disability.

Building on these findings educators, in a recent study in Scotland, examined at the development of intrapersonal intelligence in pupils experiencing social, emotional and behavioural difficulties. Mowat (2011) drew from the accounts of Secondary School students who participated within the intervention during its first four years of inception and from a range of stakeholder accounts – parents, Support Group Leaders, class teachers and senior managers and focused specifically upon the extent to which pupils developed intrapersonal intelligence and the findings indicate that the majority of pupils had, to at least an extent, developed greater understanding of their and that these outcomes were still in evidence up to two years after intervention.

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As it is now widely accepted that SLDs are multidimensional, involve emotions and that the experience of a SLD can have significant and long term negative consequences, research has also identified strategies to remediate the experience of a SLD. Staels et al. (2015) reported on orthographic learning and the role of text-to-speech software in Dutch disabled readers and whether orthographic learning can be demonstrated in disabled readers learning to read in transparent orthography. They also reported on the effect of the use of text-to-speech software, a new form of direct instruction, on orthographic learning. They concluded that their results support the hypothesis that all readers, even poor readers of transparent orthographies, are capable of developing word-specific knowledge. However a second, a negative effect of text-to-speech software on orthographic learning was demonstrated.

In order to add to the validation of EI theories and to further understanding Palmer et al (2002) examined the connection between emotional intelligence and life satisfaction and in order to determine the nature of this relationship, personality

constructs known to predict life satisfaction were also assessed (positive and negative effect). They reported that subsequent analysis revealed that only the Clarity sub-scale accounted for further variance in life satisfaction not accounted for by positive and negative effect and that this finding provides further evidence that components of the EI construct account for variance in this important human value not accounted for by personality. Palmer et al (2002) also reported that the findings of the study provided further support for the notion that EI accounts for individual differences in life satisfaction and that consistent with previous research, positive effect was found to be the strongest predictor of life satisfaction accounting for the majority of the variance in scores. They further reported that the findings of the study provide preliminary empirical evidence that EI, specifically how clearly individuals tend to experience their emotions, accounts for further variance in this important human value and that the findings also suggest that well conceptualized and developed self-report measures of EI can account for the variance in life criteria over and above other well-established constructs.

Despite some disagreement with terminology and testing processes further research by Ciarrochi et al (2002) hypothesized that EI would make a unique contribution to understanding the relationship between stress and three important mental health variables, depression, hopelessness, and suicidal ideation. They argued that emotionally perceptive people appear to be more strongly impacted by stress than their less perceptive counterparts, expressing higher levels of depression, hopelessness, and suicidal ideation.

Ciarrochi et al (2002) reported that there are at least two possibilities, which we label the insensitivity hypothesis and the confusion hypothesis. The insensitivity hypothesis suggests that low perception people acknowledge that there are a lot of hassles in their life, but they successfully repressed thoughts of the hassles, or ignore them altogether. A second possibility is that low perception people are indeed sensitive distressed but just do not realise that it is impacting on them adversely. Ciarrochi et al (2002) also reported that as well as supporting the argument that aspects of the EI construct are both distinctive and useful, their set of findings has important practical implications for understanding the link between stress and mental health. Also some aspects of emotional intelligence may not always be intelligent, that is, emotionally perceptive

people may be more vulnerable to the adverse effects of stress. They concluded that their findings suggest that under stress, low perception people don't believe themselves to feel particularly depressed, hopeless, or suicidal and that it may make little difference whether this belief is accurate (bliss) or inaccurate (ignorant bliss). Ciarrochi et al (2002) also concluded that EI measures have been shown to be distinctive and useful in understanding the link between stress and mental health and the performance measure of emotion perception showed particular promise, having satisfactory levels of reliability and distinctiveness, and moderating the link between stress and all three of our mental health variables.

Lopes et al (2003) agreed that in spite of a large body of research, it has proved difficult to integrate existing knowledge about social and emotional competence into a cohesive theoretical framework. Their study explored links between emotional intelligence, measured as a set of abilities, and personality traits, as well as the contribution of both to the perceived quality of one's interpersonal relationships. Lopes et al (2003) reported that emotional intelligence, assessed as a set of abilities, shed limited overlap with verbal intelligence and personality measures. The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), designed to assess emotional skills, and the Big Five, intended to measure the social and emotional dispositions, seem to tap into different aspects of psychological functioning. Also the fact that MSCEIT explained unique variance in self-reported satisfaction with interpersonal relationships supports the incremental validity of this ability-based measure of emotional intelligence. They reported that future research should seek to establish the predictive validity of emotional intelligence, using outcomes measures that do not rely on self-report recognizing the limitations of self-reports.

Emotional intelligence and its relation to everyday were evaluated in a study that assessed the discriminant, criterion and incremental validity of an ability measure of emotional intelligence. Brackett, et al (2004) reported that the research suggests that EI predicts important criteria, particularly for the male college students in their sample. Further research into the relationship between emotional intelligence and academic achievement, like that of Parker et al (2004) reported that an overall link between social and emotional competency and academic success was supported in their study.



The growing recognition of EI as a predictor of performance and led to Bastian et al (2005) undertaking a study investigate relationships between EI and a number of 'life skills' (academic achievement, life satisfaction, anxiety, problem-solving and coping). Even though they reported that correlations between EI and academic achievement were small and not statistically significant, higher EI was correlated with higher life satisfaction, better perceived problem-solving and coping ability and lower anxiety. Bastian et al (2005) also reported that because the concept of EI is still relatively new and there are known problems with the construction of EI measures, it is therefore possible that current measures did not assess EI adequately and that it is also possible that the markedly uniform samples assessed (primarily university students) affected results as EI may be a threshold variable. Gohm et al (2005) also examined the association between emotional intelligence (emotion-relevant abilities) and stress (feelings of inability to control life events), considering personality (self-perception of the meta-emotion traits of clarity, intensity, and attention) as a moderating variable. They reported that their results suggested that emotional intelligence is potentially helpful in reducing stress in some individuals, but unnecessary or irrelevant for others. Gohm et al (2005) reported that in their study a limitation was that other traits, for example, neuroticism or anxiety, may be confounded with reports of perceived stress.

Interest continued in the potential for EI to have predictive value particularly in relation to educational performance. Deary et al (2007) undertook a five year prospective longitudinal study of 70,000+ English children to examine the association between psychometric intelligence at age 11 years and educational achievement in national examinations in 25 academic subjects at age 16. Deary et al (2007) concluded that the data established the validity of 'g,' (general intelligence, general mental ability or general intelligence factor), as an important life outcome. Reis et al (2007) investigated whether a performance measure of the EI is related to reasoning about social situations (specifically social exchange reasoning) using versions of the Wason Card Selection Task. They reported that the results of the first directly suggested that EI is mediated in part by mechanisms supporting social reasoning and validate a new approach to investigating EI in terms of more basic information processing mechanisms.

A study by Downey et al (2008) examined the relationship between EI and the scholastic achievement in Australian adolescents. They reported that academic success was found to be associated with higher levels of total EI, via assessment of the EI of different academic levels. Downey et al (2008) concluded that the examination of the relationship between EI measured by the Adolescent SUEIT and wide range of educational subjects indicated that EI was generally positively associated with performance across school subjects. As further studies reported conflicting results continued research into the correlation between EI and SLDs is important to develop treatment and prevention of SLDs.

Because of growing controversy and interest in EI, Parker et al (2009) published an assessment of literature on EI. They reported that to understand the specific cognitive and al strategies that mediate the pathway between EI and successful stress adaption, they turned to the literature on EI and coping. Parker et al (2009) reported that confidence in one's coping abilities and perceptions of personal control over the situation would enable active coping through constructive emotion-regulation and problem-solving strategies, whereas low coping self-efficacy, confusion about the sources of stress, and perceptions of being powerless in a situation would elicit avoidance strategies or passive rumination and self-blame. The first two strategies are considered adaptive for health and well-being, as they act to reduce the emotional and psychological arousal and minimize the duration of stress. Parker et al (2009) concluded that despite the acceptance among many educators that EI is important for the success of school-aged children, there is limited direct research investigating the link between EI and academic success at the elementary school level.

Nelis et al (2009) investigated whether EI could be developed among young adults using a proper experimental design and theoretically grounded training program. They reported that results showed a significant increase in emotion identification and emotional management abilities in the training group and that follow-up measures after six months revealed that these changes were persistent. Also no significant change was observed in the control group. They concluded that their findings suggested that EI can be improved and open to new treatment avenues.

Research has extended beyond only the academic ramifications of SLDs to include all dysfunction. Downey et al (2010) explored the mediating effect of emotional intelligence and coping strategies on problem behaviours in Australian adolescents. They reported that the relationships between Emotional Management and Control and engagement in internalizing and externalizing behaviours were found to be mediated by the use of non-productive coping strategies. Also, Mediation models of the relationship between problem behaviours and the Understanding Emotions and Emotional Recognition and expression dimensions were found to be only partially mediated by the engagement in problem-focused and non-productive coping strategies. Downey et al (2010) concluded that as previous research suggests that adolescent problem behaviours increase in middle to late adolescence (Steinberg and Morris, 2001) and that EI also increases as a function of cognitive maturation (Mayer et al., 2000) from an “ability” point of view, replication of their study with the broader sample age range to include older adolescents and use of an ability-based measure, may further validate these findings and potentially elucidate stronger relationships between the dimensions. Also comparison to an at-risk population of adolescents and a general population sample may also contribute further to the understanding of the relationship between EI, coping and problem behaviours. They also reported that adolescents who reported greater abilities in managing emotions, were more likely to effectively deal with stressful situations common during adolescence, and in turn were less likely to internalize or externalize these experiences via antisocial or problem behaviours. While individuals may grow out of certain problem behaviours, maladaptive coping strategies learned in adolescence may inhibit one’s sense of personal efficacy or confidence in dealing with stress, and therefore limit the development of more adaptive coping.

Schutte and Malouff (2011) examined whether or not emotional intelligence mediates the relationship between mindfulness and subjective well-being. They reported that higher levels of mindfulness were associated with greater emotional intelligence, positive affect, and life satisfaction and lower negative affect. Also higher levels of emotional intelligence were associated with greater positive affect and life satisfaction and lower negative affect and emotional intelligence mediated between mindfulness and higher positive affect, lower negative affect, and greater life satisfaction. They concluded that their results provided information regarding a possible process through

which mindfulness exerts its beneficial effects. Schutte and Malouff (2011) also concluded that the findings thus provide evidence of the connection between mindfulness and emotional intelligence and between those two characteristics and subjective well-being. Also if, as proposed, mindfulness leads to increased emotional intelligence, their study provided information regarding one possible process through which mindfulness exerts its beneficial effects. Further, mindfulness training could provide a practical means of increasing emotional intelligence and characteristics influenced by emotional intelligence.

Thingujam et al (2012) examined convergence between individual branches of ability model of Emotional Intelligence and used performance tests that measure actual ability and have objective standards of right answers. They reported that the results indicated substantial convergence between emotion recognition through the voice and emotional understanding. Thingujam et al (2012) also reported that few tests using ability measures that have objective standards to represent the underlying emotional capabilities have been done and that their study provided new data to inform the often heated debate about the validity of EI as a research topic for which the available empirical data has not yet kept up with strong arguments. They concluded that the current finding that emotion recognition converges with emotional understanding--and, recently, that it converges with emotional expression accuracy-- provide a basis of optimism that EI may truly be considered 'intelligence.' They also concluded that rather than merely a matter of renaming existing constructs within psychology, EI holds the promise to represent a set of Intel related individual differences in the ability to deal effectively with one's emotional environment. Schutte and Malouff (2012) also examined whether priming self-schemas relating to successful emotional competency results in better emotional intelligence performance. They reported that successful emotional competency prime most influenced strategic emotional functioning. Schutte and Malouff (2012) concluded that the results of their two studies indicated that emotional intelligence ability can be primed and provided a possible link between ability and trait conceptualizations of emotional intelligence.

Lomas et al (2012) examined for the first time the relationship between emotional intelligence (EI) of adolescents, bullying behaviours and victimization in order to better understand bullying behaviours. They reported that results of the study

indicated that EI dimensions of Emotions Direct Cognition and Emotional Management and Control, significantly predicted the propensity of adolescents to be subjected to peer victimization. Also the EI dimension of Understanding the Emotions of Others was found to be negatively related with bullying behaviours. They concluded that anti-bullying programs in schools could be improved by addressing deficits in the eye in adolescence who bully others as well as those who are at a greater risk of being subjected to peer victimization. Lomas et al (2012) also concluded that measures of EI may be utilized to identify students who showed less developed EI competencies, which may allow for more targeted, accurate or timely intervention to protect students from the potential harmful consequences that are associated with exposure to bullying.

In more recent studies Yip and Cote (2013) examined how emotional intelligence and emotion-understanding ability facilitates decision-making. They reported that their finding revealed that emotion understanding ability guards against the biasing affects of incidental anxiety by helping individuals to determine that such anxiety is relevant to current decisions. Deary (2014) wrote an article to encourage psychologists to teach intelligence at different levels of the undergraduate curriculum and at postgraduate level. He concluded that intelligence should be ‘taught’ to psychologists more broadly, to relevant professionals, and to the public. Deary (2014) also concluded that it can be taught simply as an interesting topic with some greater data and with the assurance that, if people take the time to know something about these data and think about what they mean, they will be better off for it.

In light of growing difficulty for educators, psychologists, parents and other to understand, treat, ameliorate and prevent the growing incidence of SLDs further research into the significance of EI as a correlate of SLDs needs to focus on how that correlation can be understood in the context of a child’s home, school and social environment and the emotional factors that cause or aggravate SLDs in individuals.

## 8.4 Summary/ Key Outcome Points

### 8.4.1. Study One

The sample comprised 836 individuals, aged between 7 and 65 years (mean age 28.4, SD= 11.2). The sample comprised 72% female (n= 599) and 28% male (n=237). All participants reported English as their primary language spoken.

Assessed individually, of the sample, 755 (90%) were classified as having 3 or more dyslexia symptoms; 376 (45%) were classified as having 3 or more dyscalculia symptoms; 698 (83.5%) were classified as having 3 or more dyspraxia symptoms and 663 (79.3) were considered to have 3 or more symptoms of ADHD.

#### 8.4.1.1 Bi-Variate Correlations

##### Dyslexia

- ◆ A Pearson product-moment correlation coefficient was computed to assess the relationship between personality, DASS, EI and interpersonal problems and total dyslexia symptoms. Findings were:
  - There was a weak negative correlation between Extraversion, Agreeableness, Conscientiousness, Emotional Recognition/Expression, Understanding Emotions, Emotions Direct Cognition and Emotional Management with total dyslexia symptoms ( $r$  range =  $-.06$  to  $-.24$ ,  $n = 774$ ,  $p = \text{all} < 0.05$ ). Lower scores on these measures were correlated with greater total dyslexia symptoms.
  - A weak to moderate positive association was also noted between neuroticism, DASS stress scale, DASS anxiety scale, hard to be sociable, hard to be assertive, too aggressive, too caring, hard to be supportive, hard to be involved and too dependent with dyslexia ( $r$  range =  $.15$  to  $.30$ ,  $n = 774$ ,  $p = \text{all} < 0.05$ ). Higher scores on these measures were correlated with lower total dyslexia symptoms
  - No significant correlation was observed between variables; Openness, Emotions Direct Cognition or Too open and total dyslexia symptoms.

## Dyscalculia

- ◆ A Pearson product-moment correlation coefficient was computed to assess the relationship between personality, DASS, EI and interpersonal problems and total dyscalculia symptoms. The findings were:
  - There was a weak negative correlation between Extraversion, Conscientiousness, Emotional Recognition/Expression, Understanding Emotions, Emotional Management, Emotional Control with dyscalculia symptoms ( $r$  range =  $-.06$  to  $-.29$ ,  $n = 774$ ,  $p = \text{all} < 0.001$ ). Lower scores on these measures were correlated with greater dyscalculia symptoms.
  - A weak to moderate positive association was also noted between Neuroticism, Emotions Direct Cognition, DASS stress scale score, DASS anxiety scale score, DASS depression scale score, Hard to be sociable, Too aggressive, Hard to be supportive, Hard to be involved, and Too dependent ( $r$  range =  $.06$  to  $.25$ ,  $n = 774$ ,  $p = \text{all} < 0.001$ ).
  - A strong positive association was noted between dyslexia total symptoms and dyscalculia total symptoms ( $r = .50$ ,  $n = 744$ ,  $p < 0.001$ ). Higher scores on these measures were correlated with lower total dyscalculia symptoms.
  - No significant correlation was noted between Agreeableness, Openness and Too open with dyscalculia total symptoms.

## Dyspraxia

- ◆ A Pearson product-moment correlation coefficient was computed to assess the relationship between personality, DASS, EI and interpersonal problems and total dyspraxia symptoms. The findings were:
  - There was a weak to moderate negative correlation between Extraversion, Agreeableness, Conscientiousness, Openness, Emotional Recognition/Expression, Understanding Emotions, Emotional Management, Emotional Control with dyspraxia total symptoms ( $r$  range =  $-.10$  to  $-.32$ ,  $n = 774$ ,  $p = \text{all} < 0.001$ ). Lower scores on these measures were correlated with greater dyspraxia symptoms.

- A weak to moderate positive association was also noted between Neuroticism, Emotions Direct Cognition, DASS stress scale score, DASS depression scale score, Hard to be sociable, Hard to be assertive, Too aggressive, Too open, Too caring, Hard to be supportive, Hard to be involved, Too dependent with dyspraxia total symptoms (r range = .10 to -.32, n =774, p = all<0.001).
- A strong positive association was noted between DASS anxiety scale score, Dyslexia Total symptoms, Dyscalculia Total symptoms with dyspraxia total symptoms (r range = .42 to .73, n =774, p = all<0.001). Higher scores on these measures were correlated with lower total dyspraxia symptoms.
- No significant correlation was noted between Openness and total dyspraxia symptoms.

## ADD

- ◆ A Pearson product-moment correlation coefficient was computed to assess the relationship between personality, DASS, EI and interpersonal problems and total ADD symptoms. The findings were:
  - There was a weak to moderate negative correlation between Agreeableness, Conscientiousness, Emotional Recognition/Expression, Understanding Emotions, Emotional Management, Emotional Control with ADD total symptoms (r range = -.09 to -.38, n =774, p = all<0.05). Lower scores on these measures were correlated with greater total ADD symptoms.
  - A weak to moderate positive association was also noted between Neuroticism, Emotions Direct Cognition, DASS anxiety scale score, DASS depression scale score, Hard to be sociable, Hard to be assertive, Too aggressive, Too open, Too caring, Hard to be supportive, Hard to be involved, Too dependent with ADD total symptoms (r range = .07 to -.38, n =774, p = all<0.05).
  - A strong positive association was noted between DASS stress scale score, Dyslexia Total symptoms, Dyscalculia Total symptoms, Dyspraxia Total symptoms and total ADD symptoms (r range = .41 to



.46,  $n = 774$ ,  $p = \text{all} < 0.001$ ). Higher scores on these measures were correlated with lower total ADD symptoms.

- No significant correlation was noted between Extraversion and Openness and total ADD symptoms.

#### 8.4.1.2 Multiple regression analysis

##### Dyslexia

To investigate the contribution the study variables made towards the prediction of number of self-reported dyspraxia symptoms, a multiple regression analysis was conducted. Table 5 presents the multiple regression analysis with personality, DASS, EI and interpersonal problems as the predictor variables and total number of dyslexia symptoms as the dependant variable a sample of 561 participants. The results were:

- ◆ Summary statistics indicated that the overall model was significant ( $F(18,542) = 6.76$ ,  $p < .001$ ) with a multiple  $R = .43$ , that is, the overall regression model explained 18 % of the total variance in self-reported dyslexia symptoms.
- ◆ Inspection of the contribution of each of the factors revealed that Understanding emotions, emotional control, DASS anxiety, too caring and hard to be supportive made statistically significant semi-partial contributions to the model ( $p < .05$ ).

##### Dyscalculia

To investigate the contribution the study variables made towards the prediction of number of self-reported dyspraxia symptoms, a multiple regression analysis was conducted. Table 5 presents the multiple regression analysis with personality, DASS, EI and interpersonal problems as the predictor variables and total number of dyscalculia symptoms as the dependant variable a sample of 565 participants. The results were:

- ◆ Summary statistic indicated that the overall model was significant ( $F(17,547) = 7.11$ ,  $p < .001$ ) with a multiple  $R = .51$ , that is, the overall regression model explained 18% of the total variance in self-reported dyscalculia symptoms.

- ◆ Inspection of the contribution of each of the factors revealed that conscientiousness, emotions direct cognition, emotional control, stress, too aggressive and too caring made statistically significant semi-partial contributions to the model ( $p < .05$ ).

## Dyspraxia

To investigate the contribution the study variables made towards the prediction of number of self-reported dyspraxia symptoms, a multiple regression analysis was conducted. Table 5 presents the multiple regression analysis with personality, DASS, EI and interpersonal problems as the predictor variables and total number of dyspraxia symptoms as the dependant variable a sample of 557 participants. The results were:

- ◆ Summary statistics indicated that the overall model was significant ( $F(20,536) = 9.60, p < .001$ ) with a multiple  $R = .51$ , that is, the overall regression model explained 26% of the total variance in self-reported dyspraxia symptoms.
- ◆ Inspection of the contribution of each of the factors revealed that conscientiousness, understanding emotions, emotions direct cognition, anxiety and too caring made statistically significant semi-partial contributions to the model ( $p < .05$ ).

## ADD

To investigate the contribution the study variables made towards the prediction of number of self-reported dyspraxia symptoms, a multiple regression analysis was conducted. Table 5 presents the multiple regression analysis with personality, DASS, EI and interpersonal problems as the predictor variables and total number of ADD symptoms as the dependant variable a sample of 552 participants. The results were:

- ◆ Summary statistics indicated that the overall model was significant ( $F(19,532) = 11.08, p < .001$ ) with a multiple  $R = .53$ , that is, the overall regression model explained 28% of the total variance in self-reported ADD symptoms.
- ◆ Inspection of the contribution of each of the factors revealed that conscientiousness, emotional control, stress, too dependent and too caring made statistically significant semi-partial contributions to the model ( $p < .05$ ).

### 8.4.1.3 One-way ANOVA

One-way between subjects ANOVAs were conducted to compare differences in emotional intelligence competencies for participants who reported less than 3 symptoms of SLDs dyslexia, dyspraxia, dyscalculia, ADD and participants who reported 3 or more symptoms of these SLDs.

#### Dyslexia

Information for  $N = 14$  participants was not included due to missing data resulting in an eligible sample of  $N = 822$ . A one-way between subjects ANOVA was conducted to compare differences in emotional intelligence competencies for participants who reported less than 3 symptoms of dyslexia and participants who reported 3 or more symptoms of dyslexia For  $n$  (less than 3 symptoms) = 67;  $n$  (3 or more symptoms) = 755.

- ◆ There was a significant between groups difference for the emotional intelligence competencies of Understanding Emotions, Emotional Management and Emotional Control, with ( $F(1,820) = 9.99, p < 0.01$ ), ( $F(1,820) = 15.31, p < 0.001$ ) and ( $F(1,820) = 21.24, p < 0.001$ ) respectively. Inspection of the means revealed that participants with 3 or more symptoms were lower in Emotional Recognition/Expression, Understanding Emotions Ext, Emotional Management and Emotional Control and higher in Emotions Direct Cognition.
- ◆ Specifically the results suggest that individuals with 3 or more symptoms of dyslexia incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of dyslexia.
- ◆ No significant differences were noted between groups on measure of Emotional Recognition/Expression ( $p > 0.05$ ).

#### Dyscalculia

Information for  $N = 6$  participants was not included due to missing data resulting in an eligible sample of  $N = 830$ . A one-way between subjects ANOVA was conducted

to compare differences in emotional intelligence competencies for participants who reported less than 3 symptoms of dyslexia and participants who reported 3 or more symptoms of dyspraxia for:  $n$  (less than 3 symptoms) = 117;  $n$  (3 or more symptoms) = 698.

- ◆ There was a significant between groups difference for the emotional intelligence competencies of Emotional Recognition and Expression ( $F(1,828) = 6.84, p < 0.01$ ), Understanding Emotions ( $F(1,828) = 12.76, p < 0.001$ ), Emotions Direct Cognition ( $F(1,828) = 5.13, p < 0.05$ ), Emotional Management ( $F(1,828) = 21.52, p < 0.001$ ) and Emotional Control ( $F(1,828) = 43.82, p < 0.001$ ).
- ◆ Inspection of the means revealed that participants with 3 or more symptoms were lower in Emotional Recognition/Expression, Understanding Emotions Ext, Emotional Management and Emotional Control and higher in Emotions Direct Cognition.
- ◆ Specifically the results suggest that individual with 3 or more symptoms of dyscalculia incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of dyscalculia.

## Dyspraxia

Information for  $N = 21$  participants was not included due to missing data resulting in an eligible sample of  $N = 815$ . A one-way between subjects ANOVA was conducted to compare differences in emotional intelligence competencies for participants who reported less than 3 symptoms of dyslexia and participants who reported 3 or more symptoms of dyspraxia for:  $n$  (less than 3 symptoms) = 117;  $n$  (3 or more symptoms) = 698.

- ◆ There was a significant between groups difference for the emotional intelligence competencies of Emotional Recognition and Expression ( $F(1,813) = 17.90, p < 0.001$ ), Understanding Emotions ( $F(1,813) = 23.90, p < 0.001$ ), Emotional Management ( $F(1,813) = 36.49, p < 0.001$ ) and Emotional Control ( $F(1,813) = 39.50, p < 0.001$ ).
- ◆ Inspection of the means revealed that participants with 3 or more symptoms were lower in Emotional Recognition/Expression, Understanding Emotions

Ext, Emotional Management and Emotional Control and higher in Emotions Direct Cognition

- ◆ Specifically the results suggest that individuals with 3 or more symptoms of dyspraxia incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of dyspraxia.
- ◆ No difference was noted between groups with regard to Emotions Direct Cognition ( $p>0.05$ ).

## ADD

Information for  $N = 24$  participants was not included due to missing data resulting in an eligible sample of  $N = 812$ . A one-way between subjects ANOVA was conducted to compare differences in emotional intelligence competencies for participants who reported less than 3 symptoms of dyslexia and participants who reported 3 or more symptoms of dyspraxia for  $n$  (less than 3 symptoms) = 149;  $n$  (3 or more symptoms) = 663.

- ◆ There was a significant between groups difference for the emotional intelligence competencies of Emotional Recognition and Expression ( $F(1,810) = 9.82, p < 0.01$ ), Understanding Emotions ( $F(1,810) = 21.85, p < 0.001$ ), Emotional Management ( $F(1,810) = 43.50, p < 0.001$ ) and Emotional Control ( $F(1,810) = 82.36, p < 0.001$ ).
- ◆ Inspection of the means revealed that participants with 3 or more symptoms were lower in Emotional Recognition/Expression, Understanding Emotions Ext, Emotional Management and Emotional Control and higher in Emotions Direct Cognition.
- ◆ Specifically the results suggest that individuals with 3 or more symptoms of ADD incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of ADD.
- ◆ No differences were noted between groups with regard to Emotions Direct Cognition ( $p > 0.05$ ).

## 8.4.2. Study Two

### 8.4.2.1. Adolescent Group

A total of 17 participants were included in the adolescent group. The mean age of participants was 14.5 (range 12-17, SD= 2.0), and the sample comprised 71% male (n=12). The average length of intervention was 34 days, with a range of between 5 and 57 days. Changes in scores pre and post intervention results were:

#### **Emotional Recognition and Expression**

To assess the change in Emotional Recognition and Expression score for the group pre-intervention compared to post intervention a paired-sample t-test was applied.

- ◆ There was no difference found between the scores for pre-intervention Emotional Recognition and Expression (M=34.0, SD=4.2) and post-intervention Emotional Recognition and Expression (M=33.9, SD=4.1)  $t(16)=-.06, p = .96$ .

#### **Understanding Others' Emotions**

To assess the change in Understanding Others' Emotions score for the group pre-intervention compared to post intervention a paired-sample t-test was applied.

- ◆ No significant differences were observed between scores for pre-intervention Understanding Others' Emotions (M=69.2, SD=7.8) and post-intervention Understanding Others' Emotions (M=70.2, SD=9.3)  $t(16)=-.75, p =.46$  .

#### **Emotions Direct Cognition**

To assess the change in Emotions Direct Cognition score for the group pre-intervention compared to post intervention a paired-sample t-test was applied.

- ◆ No differences were noted in the scores for pre-intervention Emotions Direct Cognition (M=33.2, SD=6.7) and post-intervention Emotions Direct Cognition (M=32.4, SD=4.9)  $t(16)=.80, p = .44$ .

### 8.4.2.2 Adult Group

A total of 23 participants were included in the adult group. The mean age of participants was 40.2 years (range 20-62, SD= 10.7), and the sample comprised 70% female (n=16). The average length of intervention was 42 days, with a range of between 2 and 68 days.

#### **Emotional Recognition and Expression**

To assess the change in Emotional Recognition and Expression score for the group pre-intervention compared to post intervention a paired-sample t-test was applied.

- ◆ There was a no difference in the scores for pre-intervention Emotional Recognition and Expression (M=37.9, SD=6.5) and post-intervention Emotional Recognition and Expression (M=38.8, SD=5.44)  $t(22)=-1.14$ ,  $p = .27$ .

#### **Understanding Others' Emotions**

To assess the change in Understanding Others' Emotions score for the group pre-intervention compared to post intervention a paired-sample t-test was applied.

- ◆ No significant differences were noted in the scores for pre-intervention Understanding Others' Emotions (M=76.3, SD=8.8) and post-intervention Understanding Others' Emotions (M=76.5, SD=7.1)  $t(22)=-.13$ ,  $p = .90$ .

#### **Emotions Direct Cognition**

To assess the change in Emotions Direct Cognition score for the group pre-intervention compared to post intervention a paired-sample t-test was applied.

- ◆ No difference was observed in the scores for pre-intervention Emotions Direct Cognition (M=39.8, SD=5.6) and post-intervention Emotions Direct Cognition (M=39.1, SD=5.4)  $t(22)=.77$ ,  $p = .45$ .

## 8.5. Limitations

### **Study One**

A limitation of Study One is the choice of statistical model. A series of ANOVAs to assess changes in outcome variables were used for clarity. The alternative approach to use a single MANOVA, which would have reduced the Type 1 error, was regarded as too difficult to interpret. Although there were no obvious differences between the series of univariate tests and the multivariate tests the multivariate test does have the advantage of reducing the Type 1 error.

Being limited over a period of time, specifically 24 months, the results are also affected by social trends and public interest in, and knowledge of, SLDs. The studied participants responded to a survey which limited the type and geographical scope of participants and therefore may impact on how random the sample was. However the conclusions reached were based on results obtained from internet samples which are considered to be generally better at measurement than national polls and broader and more diverse than, for example, student samples. Internet samples however are limited to internet, and specifically in the case of this study, App users, and participants are therefore likely to be well educated, liberal and largely white.

An additional limitation was the use of self-report data as participants are not always truthful or have accurate understanding about their own abilities. However motivated internet users are likely to be more truthful than participants approached at random. To further overcome the problem of dishonest responses this study included a large sample of over 800 participant responses and those completed responses required participants to voluntarily spend approximately 45 minutes on the self-report survey. To overcome measurement error the self-report survey included well validated measures and a battery of questions rather than single item measures. The accuracy of measurements for the thesis may have improved if data was obtained from rater assessments as well as self-report but this was unfortunately outside the scope of this thesis data collection.

### **Study Two**

A limitation of Study One is the choice of statistical model. A series of ANOVAs to assess changes in outcome variables were used for clarity. The alternative approach to use a single MANOVA, which would have reduced the Type 1 error, was regarded as



too difficult to interpret. Although there were no obvious differences between the series of univariate tests and the multivariate tests the multivariate test does have the advantage of reducing the Type 1 error.

The sample was limited to 40 participants for practical reasons as the intervention required 8 hours for each participant over an 8 week period on a one-on-one basis to administer numeracy and literacy skills development interventions. The results are also influenced by the restricted time allowed to practice and revise skill development interventions. A control group was not used in the current study as this was the first study of this type. As such it was thought that a control group was not ethical or practical. It is unknown how to develop an active control of the new intervention that was assessed in this thesis. Given the preliminary results from a pilot study it was thought that a no-treatment or active control treatment was unethical given the importance of helping adolescents with SLDs. Perhaps a wait list could be utilized in future studies.

The studied participants responded to a survey which limited the type and geographical scope of participants and therefore may impact on how random the sample was. Measurement relied on self-report data and people are not always truthful. To overcome the problem of dishonest responses this study required participants to voluntarily spend approximately 45 minutes on the self-report survey. To overcome measurement error the self-report survey included well validated measures and a battery of questions rather than single item measures.

## **8.6. Conclusion**

The present thesis provides empirical evidence of a significant correlation between EI and SLDs which includes dyslexia, dyscalculia, dyspraxia and ADD. This supports the growing recognition that emotions significantly impact on the way a person performs, interacts and learns. The findings in the two studies contribute to the growing interest of professionals in the field of education and mental health to help find preventions and treatments for SLDs. Specifically the results in Study One suggest that individuals with 3 or more symptoms of a SLD incorporate emotions and emotional knowledge in decision-making and problem solving to a greater degree than those with less than 3 symptoms of a SLD. Also Study Two demonstrated that academic intervention alone produces little if any corrective benefit for individuals experiencing a SLD.

Scientific observation and research has progressed dramatically in recognizing the role emotions play in a person's ability to perform across many areas and in particular in the role emotions play in the experience of learning difficulties. However, effective assessment and treatment strategies are necessary to improve the learning opportunities for individuals with a SLD.

Educators, psychologists and others have yet to understand how to treat, ameliorate and prevent the growing occurrence of SLDs. Further research into the significance of EI as a correlate of SLDs needs to focus on how that relationship can be understood in the context of an individual's private, public, educational, social and professional life and the emotional factors that create or exacerbate SLDs in individuals.

Orenstein (2007) reported that shame was found to be central in the emotional experience of individuals with undiagnosed learning disability. He concluded that academic institutions need to recognize and incorporate emotional aspects in understanding how to prevent and treat learning disabilities. This thesis takes a further vital step in providing evidence of the importance of recognizing the significant role emotions play in an individual's functionality or dysfunction, specifically in the area of the experience of SLDs.

## References

Almeida, LS, Prieto, MD, Ferreira, AI, Bermejo, M., Ferrando, M, and Ferrandiz, C 2010, 'Intelligence Assessment: Gardner multiple intelligence theory as an alternative', *Learning and Individual Differences*, 20(3), 225-230.

Amelang, M and Steinmayr 2006, 'Is there a validity increment for tests of emotional intelligence in explaining the variance of performance criteria?' *Intelligence*, 34(5), 459-468.

Anseo.net. Blog Post 28 Feb, 'How is school leadership Connected with Emotional Intelligence? Part 1', viewed 17 July 2014, <http://www.anseo.net/how-is-school-leadership-connected-with-emotional-intelligence-part-1/>.

Australian Psychological Society, 2010. 'Emotional literacy' for kids key to better school results', Media Release, viewed 13 February 2015, <[http://www.psychology.org.au/publications/tip\\_sheets/learning](http://www.psychology.org.au/publications/tip_sheets/learning)>.

Bandura, A 1982, 'Self-efficacy mechanism in human agency,' *American Psychologist*, 37, 122-147.

Bar-On, R, Parker, JDA 2000, *The Handbook of Emotional Intelligence: Theory, Development, Assessment, and Application at Home, School, and in the Workplace*, San Francisco, CA: Josey-Bass.

Baron, R Tranel, D, Denburg, N L and Bechara, A 2003, 'Exploring the neurological substrate of emotional and social intelligence', *Brain*, 126 (8), 1790-1800.

Bar-On, R 2006, 'The Bar-On model of emotional-social intelligence (ESI) Psicothema', *Consortium for Research on Emotional Intelligence*, 18, 13-25.

Barrett, P 1980, *Metaphysics, Materialism, and the evolution of mind: the early*

*writings of Charles Darwin*, Chicago: University of Chicago Press, ISBN 0-226-13659-0, "Early writings of Charles Darwin. With a commentary by Howard E. Gruber"[http://en.wikipedia.org/wiki/The\\_Expression\\_of\\_the\\_Emotions\\_in\\_Man\\_and\\_Animals](http://en.wikipedia.org/wiki/The_Expression_of_the_Emotions_in_Man_and_Animals): viewed 16 August 2013.

Bastian, V A, Burne, NR and Nettelbeck, T 2005, 'Emotional intelligence predicts life skills, but not as well as personality and cognitive abilities', *Personality and Individual Differences*. 39(6), 1135-1145.

Basu, A, Mermillod, M 2011, 'Emotional Intelligence and Social-Emotional Learning: An Overview', *Psychology Research*, 1 (3), 182-185.

Beasley, K 1987, 'The Emotional Quotient', *Mensa Magazine - United Kingdom Edition*, May.

Boyatzis, RE 1982. *The competent manager: A Model for effective performance* John Wiley & Sons, NY.

Boyatzis, RE, Goleman, D and Rhee, SK.1999, 'Clustering competence in Emotional Intelligence: Insights from the Emotional Competence Inventory (ECI)', *Department of Organizational Behaviour Weatherhead School of Management Case Western Reserve University, Cleveland OH 44106-7235*, WP 99-6

Brackett, MA, Mayer, JD and Warner, RM 2004, 'Emotional intelligence and its relation to everyday', *Personality and Individual Difference*, 36, 1387-1402.

Bradshaw, J 2000, 'Briefly Noted Review: Building Healthy Minds: The Six Experiences That Create Intelligence and Emotional Growth in Babies and Young Children,' *Journal of Human Lactation*, 16(3), 251.

Brody, N 2004, 'Emotional Intelligence: Science and Myth' (book review), *Personality and Individual Differences*, 32(1), 109-111.

Buckley, M, Storino, M, and Saarni, C 2003), 'Promoting emotional competence in children and adolescents: Implications for school psychologists', *School Psychology Quarterly*, 18 (2), 177-191.

- Caruso, DR, Mayer, JD and Salovey, P 2002, 'Relation of an ability measure of emotional intelligence to personality,' *Journal of Personality Assessment*, 79, 306-320.
- Ciarrochi, J, Caputi, P, and Mayer, JD 2003, 'the distinctiveness and utility of a measure of trait emotional awareness,' *Personality and Individual Differences*, 34(8), 1477-1490.
- Ciarrochi, JV, Chan, ATC. and Caputi, P 2000, 'A critical evaluation of the emotional intelligence construct', *Personality and Individual Differences*, 28 (3), 539-561.
- Ciarrochi, J, Deane, FP and Anderson, S 2002, 'Emotional Intelligence moderates the relationship between stress and mental health', *Personality and Individual Differences*, 32 (2), 197-209.
- Chantrell, S 2009, 'Images – Growth in emotional intelligence with a learning disabled girl', *Journal of Child Psychotherapy*, 35(2), 157-174.
- Cherniss, C., Extein, M., Goleman, D., and Weissberg R.P. (2006). Emotional Intelligence: What does research really indicate? *Educational Psychologist*, 41 (4), 239-245.
- Chohan, BI, and Khan, RM 2010, 'Impact of Parental Support on the Academic Performance and Self Concept of the Student', *Journal of Research and Reflections in Education*, 4(2), 14-26
- Chooi, Weng-Tink., and Thompson, L. 2012, 'Working memory training does not improve intelligence in healthy young adults', *Intelligence*, 40(6), 531-542.
- Clare, I and Clements, J 1990, 'Social cognition and impaired social interaction in people with severe learning difficulties,' *Journal of Mental Deficiency Research*, 34(4), 309-324.

Colgan, M and Cilgan, L 1984, 'Do nutrient supplements and dietary changes affect learning and emotional reactions of children with learning difficulties? A controlled series of 16 cases', *Nutrition and health ( Berkhamsted, Hertfordshire)*, 3(1-2), 69-77.

Crowne, KA 2013, 'An empirical analysis of three intelligences', *Canadian Journal of Science/Revue canadienne des sciences du comportement*, 45 (2), 105-114.

Damasio, A, Damasio H and Tranel D 2012. 'Persistence of feelings and sentience after bilateral damage of the insula', *Cerebral Cortex* **23** (4): 833–46.

Damasio, A and Carvalho, GB 2013, 'The nature of feelings: Evolutionary and neurobiological origins', *Nature reviews. Neuroscience* **14** (2): 143–152.

Damle, A 2013, 'Emotional Intelligence as a function of overall adjustment (life-skills) in adolescents', *Indian Streams Research Journal*. 3 (5), 1-4.

Davies, M, Stankov, L and Roberts, RD 1998, 'Emotional Intelligence: in search of an elusive construct', *Journal of personality and social psychology*, 75 (4), 989-1015.

Davis, RD 1995 '*The Gift of Dyslexia*,' Souvenir Press Ltd. London.

Dawda, D and Hart, SD 2000. 'Assessing emotional intelligence: reliability and validity of the Bar-On Emotional Quotient Inventory (EQ-i) in university students,' *Personality and Individual Differences*, 28(4), 797-812.

Deary, IJ, 2014, 'Teaching intelligence', *Intelligence*, 42, 142-147.

Deary, IJ, Strand, S, Smith, P and Fernandes, C 2007,' 'Intelligence and educational achievement', *Intelligence*, 35, 13-21.

*Depression Anxiety Stress Scales (DASS)* 2014, University of New South Wales, viewed 15 September 2015, <<http://www2.psy.unsw.edu.au/dass/>>.

Derksen, J, Kramer, I and Katzko, M 2002, 'Does self-report measure for emotional intelligence assess something different than general intelligence?' *Personality and Individual Differences*, 32(1), 37-48.

Downey, L A, Johnson, PJ, Hansen, K., Birney, J and Stough, C 2010, 'Investigating the mediating effects of emotional intelligence and coping on problems in adolescents', *Australian Journal of Psychology*, 62 (1), 20-29.

Downey, LA, Mountstephen, J, Lloyd, J, Hansen, K. and Stough, C 2008, 'Emotional intelligence and scholastic achievement in Australian adolescents,' *Australian Journal of Psychology*, 60 (1), 10-17.

Dunoon, L 2010, *Helping Children with dyslexia*, Global Publishing Group, Australia.

*Dyslexia Reading Well*, U.S. Parent Guide 2014 -2015, viewed 12 August 2015, <<http://www.dyslexia-reading-well.com/dyslexia-statistics.html>>.

Elais, MJ 2004, 'The connection between social-emotional learning and learning disabilities: Implications for intervention', *Learning Disability Quarterly*, 27(1), 53-63.

Einsberg, N and Sulik, MJ, 2012, 'Emotion-related self-regulation in children', *Teaching of Psychology*, 39 (1), 77-83.

Einsenberg, N Wentzel, M and Harris, JD 1998, 'The role of emotionality and regulation in empathy-related responding', *School Psychology Review*, 27 (4), 506-521.

Espy, KA, Sheffield, TD and Wiebe, SA 2011, 'Executive control and dimensions of problem behaviours in preschool children', *The Journal of Child Psychology and Psychiatry*, 52 (1), 33-46.

Follesdal, H and Hagtvet, K 2009, 'Emotional intelligence: The MSCEIT from the perspective of generalizability theory', *Intelligence*, 37(1), 94-105.

Forness, R 1982, 'Diagnosing dyslexia. A note on the need for ecological assessment' (Review), *American Journal of Diseases of Children*, 136(9), 794-799.

Frank, Y 1996, 'Learning Disabilities: Classification, Clinical Features and Treatment', *CNS Drugs*, 5(1), 24-36.

Geher, G, Warner, RM. and Brown, AS 2001, 'Predictive validity of the emotional accuracy research scale', *Intelligence*, 29(5), 373-388.

Gofman, H 1965, 'Etiologic factors in learning disorders of children', *Journal of Neurological Sciences*, 2(3), 262-270.

Gohm, CL, Corser, GC and Dalsky, DJ 2005, 'Emotional intelligence under stress: Useful, unnecessary, or irrelevant?' *Personality and Individual Differences*, 39(6), 1017-1028.

Goldman, E, Noonis, L, Kozman, R and Adler, CR 2006, 'Research-based Recommendations for Instruction and Academic Interventions: Practical Guidelines for the Education of English Language Learners', *RCM Research Centre, Book 1 of 3, developed under cooperative agreement S283B050034A with the U.S. Department of Education*.

Goleman, D 1995, *Emotional Intelligence*, Bantam Books, NY.

Goleman, D 1998, *Working with emotional intelligence*, Bantam Books, NY.

Goleman, D 1995, *Emotional Intelligence*, Bantam Books, Inc, NY, London.

Goleman, D and Boyatzis, R 2008, 'Social Intelligence and the Biology of Leadership', *Harvard Business Review*. 86(9), 74-81.

Gordon, N 1993, 'Learning disorders and delinquency,' (Short Survey), *Brain and Development*, 15(3), 169-172.



- Gordon, L M 2006, Howard Gardner. The encyclopaedia of human development. *Thousand Oaks: Sage Publications*, 2, 552-553.
- Gottfredson, LS 1997, 'Why g matters: The complexity of everyday life,' *Intelligence*, 24(1), 79-132.
- Gredler, ME 1997, 'Learning and instructions', *Theory into practice*, 3<sup>RD</sup> edition. Upper Saddle River, NJ: Merrill.
- Greenspan, SI and Porges, SW 1984, 'Psychopathology in Infancy and Early Childhood: Clinical Perspectives on the Organization of Sensory and Affective-Thematic Experience', *Child Development*, 55(1), 49-70.
- Greenspan, S and Benderly, BL 1994, 'The emotional basis of intelligence. (playful interaction between parent and child can often gauge child's intelligence level)', (Washington Health), *The Washington Post*, Nov 8, Vol.117, p.WH11
- Grewal, D.D and Salovey, P 2005, 'Feeling smart: The science of emotional intelligence,' *American Scientist*, 93, 330-339.
- Gross, D.M 2010, 'Defending the Humanities with Charles Darwin's The Expression of the Emotions in Man and Animals', *Critical Inquiry*; 2010, 37 (1), p34-59.
- Hall, A 2008, 'Specific Learning Difficulties' (Review), *Psychiatry*, 7(6), 260-265.
- Hallahan, DP and Kauffman, JM 1997, *Exceptional learners*, Introduction to special education, 7<sup>th</sup> edition, Allyn and Bacon, Boston.
- Hansenne, M and Legrand, J 2012, 'Creativity, emotional intelligence, and school performance in children', *International Journal of Educational Research*. 53, 264-268.
- Hoerger, M, Chapman, BP, Epstein, RM, and Duberstein, PR 2012, 'Emotional Intelligence: A theoretical framework for individual differences in affective forecasting', *American Psychological Association*, 12 (4), 716-725.

- Jarratt, KP, Riccio, CA, Siekierski, BM 2005, 'Assessment of attention deficit hyperactivity disorder (ADHD) using the BASC and BRIEF', *Applied Neuropsychology*, 12(2), 89-03.
- Johnson, AP 2012, 'Affect and Adolescents with Severe Reading Disabilities', *Encounter*, 25(3), 15-22.
- Johnson, JG, Cohen, P, Kasen, S, Skodol, AE, Hamagami, F and Brook, JS 2000, 'Age-related change in personality disorder trait levels between early adolescence and adulthood: a community-based longitudinal investigation,' *Acta Psychiatrica Scandinavica*, 102; 265-275.
- Kafetsios, K 2004, 'Attachment and emotional intelligence abilities across the life course,' *Personality and Individual Differences*, 37(1), 129-145.
- Kaplan, R M and Saccuzzo, OP 2009, *Psychological testing: Principles, applications, and issues*, 8<sup>th</sup> edn, Cengage Learning, Belmont CA.
- Karande, S, Kulkarni, M 2005, 'Poor School performance (Conference Paper)', *Indian Journal of Pediatrics*, 72(11), 961-967.
- Keele, SM and Bell, RC 2008, 'The factorial validity of emotional intelligence: An unresolved issue', *Personality and Individual Differences*, 44(2), 487-500.
- Kirby, A, Woodward, A and Jackson, S 2010, 'Children's' learning and the association with cheek cell polyunsaturated fatty acid levels', *Research in Developmental Disabilities*, 31 (3), 731-742.
- Klassen, RM, Tze, VMC, Hannok, W 2013, 'Internalizing Problems of Adults with Learning Disabilities: A Meta-Analysis', *Journal of Learning Disabilities*, 46(4) 317-327.
- Knivsberg, AM and Andreassen, AB 2008, 'Attention and cognition in severe dyslexia', *Nordic Journal of Psychiatry*, 62 (1), 59-65.

- Kochel, A, Leutgeb, V, and Schiene, A 2012, 'Affective inhibitory control in adults with attention deficit hyperactivity disorder: Abnormalities in electrocortical late positivity', *Neuroscience Letters*, 530 (1), 47-52.
- Kulger, J 2006, 'Emotionally Intelligent Interventions for Students with Reading Disabilities', *Reading and Writing Quarterly: Overcoming Learning Difficulties*, 22, 155-171.
- Labby, S, Lunenburg, FC and Slate, JR 2012, 'Emotional Intelligence and Academic Success: A Conceptual Analysis for Educational Leaders', *International Journal of Educational Leadership Preparation*, 7 (1), 11.
- Laker-Andrews, AS, Haviland-Jones, J 2005, 'A dynamic duo: Emotion and development', *Behavioral and Brain Sciences*, 28 (2) 221-222.
- Laurence, AS, and Deepa, T. 2013, 'Emotional Intelligence and Academic Achievement of High School Students in Kanyakumari District', *International Journal of Physical and Social Sciences*, 3 (2), 101-107.
- Lee, YK, Hung, SF, Lam, WC, and Lee, TMC 2009, 'The ability of Hong Kong children with attention-deficit hyperactivity disorder to recognise facial emotion', *Hong Kong Journal of Psychiatry*, 19 (1), 18-25.
- Leuner, H, Gunther, H, and Klessmann, E 1983, *Guided Affective Imagery with Children and Adolescents*, Plenum Press, NY.
- Lin, GX, Chen, S, Chen, DG, Hu, J and Yin, XR 2005, 'Therapeutic effect assessment of integrated intervention for learning difficulties in children,' *Chinese Journal of Clinical Rehabilitation*, 9(24), 210-212.
- Lyon, GR 1996 , 'Learning Difficulties', *Kumamoto Medical Journal*, 45(3), 54-75.

- Lomas, J, Stough, C, Hansen, K and Downey, LA 2012). 'Brief report: Emotional intelligence, victimization and bullying in adolescents', *Journal of Adolescence*, 35, 207-211.
- Lopes, N, Salovey, P and Straus, R 2003, 'Emotional intelligence, personality, and the perceived quality of social relationships,' *Personality and Individual Differences*, 34, 641-658.
- Lovibond, SH and Lovibond, PF 1995, '*Manual for the Depression Anxiety Stress Scales*,' (2nd Ed.) Sydney: Psychology Foundation
- Luebbers, S, Downey, LA, and Stough, C 2007, 'The development of an adolescent measure of EI,' *Personality and Individual Differences*, 42, 999-1009.
- Lupu, V, 2012, 'Emotional Intelligence in gifted and non-gifted high school students', *Buletin Stiintific*, 17 (2), 128-132.
- Luther, S. S. (1991). Vulnerability and Resilience: A Study of High Risk Adolescents. *Child Development* 62, 600-616.
- Luther, SS, Cicchetti, D and Becker, B 2000, 'Research on Resilience: Response and Commentaries,' *Child Development*, 71 (3), 573-575
- Lyon, GR 1996, 'Learning Disabilities', *Kumamoto Medical Journal*, 45 (3), 54-75.
- Lyons, JB and Schneider, TR 2005, 'The influence of emotional intelligence on performance', *Personality and Individual Differences*, 39(4), 693-703.
- MacCann, C 2010, 'Further examination of emotional intelligence as a standard intelligence: A latent variable analysis of fluid intelligence, crystallized intelligence, and emotional intelligence', *Personality and Individual Differences*, 49(5), 490-496.
- Mahone, EM and Hoffman, J 2007, 'Behavior ratings of executive function among preschoolers with ADHD', *The Clinical Neuropsychologist*, 21 (4), 569-586.

- Majid, V, Hossein, N 2011, 'Emotional Intelligence, Parental Involvement and Academic Achievement', *Procedia – Social and Behavioural Sciences*, 30, 331-335.
- Maslow, A.H 1949, 'The expressive component of behavior,' *Psychological Review*, 56, 261-72.
- Maslow, A. H 1949, 'Our maligned animal nature', *Journal of Psychology*, 28, 273-78.
- Maslow, AH 1950, 'Self-actualizing people: A study of psychological health', In W. Wolff (Ed.), *Personality Symposia: Symposium 1 on Values* (pp. 11-34).
- Maslow, AH 1950, 'Social theory of motivation. In M. Shore (Ed.), Twentieth century mental hygiene: New directions in mental health', *Social Sciences*. 347-357.
- Maslow-Toffler School of Futuristic Education, *Abraham Maslow "Human nature is not nearly as bad as it has been thought to be"*, biography compiled from Compton's Encyclopaedia, The Concise Columbia Encyclopaedia, and various sites on the internet, viewed 16 July 2014, <<http://www.maslowtoffler.com/AMaslow.html>, viewed 16 July 2014>.
- Mascheretti, S, Marino, C, Simone, D, Quadrelli, E, Riva, V, Cellino, .R, Maziadw, M, Brombin, C, Battaglia, M 2013, 'Putative Risk Factors in Developmental Dyslexia: A Case-Control of Italian Children', *Journal of Learning Disabilities*, XX(X), 1-10.
- Maul, A. 2011, 'The factor structure and cross-test convergence of the Mayer-Salovey-Caruso model of emotional intelligence,' *Personality and Individual Differences*, 50 (4), 457-463.
- Mayer, JD and Salovey, P 1993, 'The Intelligence of Emotional Intelligence', *Intelligence*, 17, 433-442.
- Mayer, JD and Salovey, P 1995, 'Emotional intelligence and the construction and regulation of feelings,' *Applied and Preventative Psychology*, 4, 197-208.

- Mayer, JD and Salovey, P 1993, 'The intelligence of emotional intelligence,' *Intelligence*, 17(4), 433-442.
- Mayer, JD and Salovey, P 1995, 'Emotional intelligence and the construction and regulation of feelings,' *Applied and Preventive Psychology*, 4(3), 197-208.
- Mayer, JD and Geher, G 1996, 'Emotional Intelligence and the identification of Emotion,' *Intelligence*, 22, 89-113.
- Mayer, J.D, Caruso, DR and Salovey, P 1999, 'Emotional intelligence meets traditional standards for intelligence,' *Intelligence*, 27(4), 267-298.
- Mayer, JD, Caruso, DR and Salovey, P 2000, 'Emotional Intelligence Meets Traditional Standards for Intelligence,' *Intelligence*, 27(4), 267-298.
- Mayer, JD, Salovey, P and Caruso, DR 2000, 'Models of emotional intelligence,' *The handbook of intelligence*, 396-420.
- Mayer, J.D, Salovey, P, Caruso, DR and Sitarenios, G 2001, 'Emotional intelligence as a standard intelligence,' *Emotion*, 1, 232-242.
- Mayer, J D, Salovey, P, Caruso, DR and Sitarenios, G 2003, ' Measuring and modelling emotional intelligence with the MSCEIT V 2.0', *Emotion*, 3, 97-105.
- Mayer, JD, Salovey, P and Caruso, DR 2004, 'Emotional intelligence: Theory, findings, and implications', *Psychological Inquiry*, 15, 197-215.
- Mayer, JD, Salovey, P and Caruso, DR 2008, 'Emotional intelligence: New ability or eclectic mix of traits?' *American Psychologist*, 63, 503-517.
- Miranda, A, Presentacion, MJ, Siegenthaler, R, Jara, P 2011, 'Effects of a Psychosocial Intervention on the Executive Functioning in Children With ADHD', *Journal of Learning Disabilities*, 46(4), 363-376.
- Moore, JH 2010, 'Can Children with ADHD Benefit From Instruction in Social and Emotional Intelligence?' *Academic Leadership*, 8 (4).

- Mowat, JG 2011, 'The Development of intrapersonal intelligence in pupils experiencing social, emotional difficulties' *Educational Psychology in Practice*, 27(3), 227-253.
- Mugnaini, D, Lassi, S, La Malfa, G, Albertini, G 2009, 'Internalizing correlates of Dyslexia'(Review), *World Journal of Pediatrics*, 5(4), 255-264.
- Naglieri, JA, Goldstein, S and LeBuffe, P 2010, 'Resilience and impairment: An exploratory study of resilience factors and situational impairment,' *Journal of Psychoeducational Assessment*, 28 (4), 349-356.
- Narimani, M, Ahari, SS, and Homeily, N2009, 'A comparison of emotional intelligence and problems in dyslexic and non-dyslexic boys,' *Journal of Applied Sciences*, 9(7), 1388-1392.
- Nelis, D, Quoidbach, J, Mikolajczak, M and Hansenne, M 2009, 'Increasing emotional intelligence: (How) is it possible?' *Personality and Individual Differences*, 47(1), 36-41.
- Newsome, S, Day, A., and Catano, VM 2000, 'Assessing the predictive validity of emotional intelligence', *Personality and Individual Differences*. 29, 1005-1016.
- O'Connor, H 2001, 'Will we grow out of it? A psychotherapy group for people with learning disabilities,' *Psychodynamic Counselling*, 7(3), 297-314.
- O'Connor Jr. RM and Little, IS 2003, 'Revisiting the predictive validity of emotional intelligence: self-report versus ability-based measures,' *Personality and Individual Differences*. 35(8), 1893-1902.
- Orenstein, M 2007, 'Smart but stuck: How resilience frees imprisoned intelligence from learning disabilities,' *Haworth Press*, (2), 1-283
- Oxford Dictionaries Language Matters, 2016, *Learning Difficulties*, Oxford University Press, Viewed 13 February 2015, <<http://www.oxforddictionaries.com/>

Definition/English/learning-difficulties>.

Palmer, B, Donaldson, C and Stough, C 2002, 'Emotional intelligence and life satisfaction', *Personality and Individual Differences*, 33 (7), 1091-1100.

Palmer, B, Manocha, R, Gignac, G and Stough, C 2003, 'Examining the factor structure of the Bar-On Emotional Quotient Inventory with an Australian general population sample,' *Personality and Individual Differences*, 35, 1191-1210.

Parker, JDA, Creque Sr, RE, Barnhart, DL, Harris, JI, Majeski, SA, Wood, LM, Bond, BJ and Hogan, MJ 2004, 'Academic achievement in high school: does emotional intelligence matter?', *Personality and Individual Differences*, 37(7), 1321-1330.

Parker, JDA, Keefer, KV and Wood, LM 2011, 'Toward a brief multidimensional assessment of emotional intelligence: Psychometric properties of the Emotional Quotient Inventory – short form,' *Psychological Assessment*, 23(3), 762-777.

Parker, J.D, Saklofske, DH and Stough, C 2009, 'Assessing Emotional Intelligence', *Plenum Series on Human Exceptionality*, 197-240.

Payne, W 1985, *doctoral Paper on Emotions and Emotional Intelligence*, The Union Institute, OH, viewed 16 July 2014, <<http://www.eqj.org/payne.htm>>.

Petrides, KV, Frederickson, N and Furhan, A 2004, 'The role of trait emotional intelligence in academic performance and deviant behavior at school,' *Personality and Individual Differences* (36), 277-293.

Petrides, KV and Furnham, A 2000, 'On the dimensional structure of emotional intelligence,' *Personality and Individual Differences*, 29, 313-320.

Pellitteri, J, Dealy, M, Fasano, C and Kugler 2006, 'Emotionally intelligent interventions for students with reading disabilities', *Reading and Writing Quarterly*, 22, 155-171.



Pool, LD, Qualter, P 2012, 'Improving emotional intelligence and emotional self-efficacy through a teaching intervention for university students,' *Learning and Individual Differences*, 22 (3), 306-312.

Poulou, MS 2013, 'The role of trait emotional intelligence and social and emotional in students' emotional and al strengths and difficulties: A study of Greek adolescents' perceptions', *The International Journal of Emotional Education*, 2(2), 30-47.

Reid, G 2009, *Dyslexia a practitioner's handbook*, John Wiley and Sons Ltd, NY.

Rivers, SE, Brackett, MA, Reyes, MR, Mayer, JD, Caruso, DR and Salovey, P 2012, 'Measuring Emotional Intelligence in Early Adolescence with the MSCEIT-YV: Psychometric Properties and Relationship with Academic Performance and Psychological Functioning', *Journal of Psychoeducational Assessment*, 30 (4) 344-366.

Rodin, J, and Salovey, P 1989, 'Health psychology', *Annual Review of Psychology*, 40, 533-579

Roberts, RD 2002, 'The Handbook of Emotional Intelligence: Theory, Development, Assessment, and Application at Home, School, and in the Workplace', *Intelligence*, 30(2), 209-221.

Rogers, Carl 1959, 'A Theory of Therapy, Personality and Interpersonal Relationships as Developed in the Client-centered Framework,' *Psychology: A Study of a Science. Vol. 3: Formulations of the Person and the Social Context*.

Rogers, Carl 1961, 'On Becoming a Person: A Therapist's View of Psychotherapy', *Constable*. Excerpts

Rooy, DL and Viswesvaran, C 2004, 'Emotional intelligence: A meta-analytic investigation of predictive validity and nomological net,' *Journal of Vocational Behavior*, 65(1), 71-95.

Rossen, E, Kranzler, JH 2009, 'Incremental validity of the Mayer-Salovey-Caruso Emotional Intelligence Test Version 2.0 (MSCEIT) after controlling for personality and intelligence,' *Journal of Research in Personality*, 43(10), 60-65.

Rossen, E, Kranzler, JH and Algina, J 2008, 'Confirmatory factor analysis of the Mayer-Salovey-Caruso Emotional Intelligence Test V 2.0 (MSCEIT),' *Personality and Individual Differences*, 44(5), 1258-1269.

Rothman, A. J, and Salovey, P 1997, 'Shaping perceptions to motivate healthy behavior: the role of message framing,' *Psychological Bulletin*, 121(1), 3.

Rutter, M 1974, 'Emotional disorder and educational underachievement' (Review), *Archives of Disease in Childhood*, 49(4), 249-256.

Salovey, P and Mayer, JD 1989, 'Emotional intelligence,' *Imagination, Cognition and Personality*, 9(3), 185-211.

Salovey, P, Rothman, AJ, Detweiler, JB and Steward, WT 2000, 'Emotional states and physical health,' *American Psychologist*, 55(1), 110.

Salovey, P, Stroud, L.R, Wooley, A and Epel, ES 2002, 'Perceived emotional intelligence, stress reactivity, and symptom reports: Further explorations using trait meta-mood scale', *Psychology and Health*, 17 (5), 611-627.

Saklofske, DH, Austin, EJ and Minski, PS 2003, 'Factor structure and validity of a trait emotional intelligence measure,' *Personality and Individual Differences*, 34(4), 707-721.

Schulte, MJ, Ree, M.J, and Carretta, TR 2004, 'Emotional intelligence: not much more than g and personality', *Personality and Individual Differences*, 37(5), 1059-1068.

Schutte, NS and Malouff, JM 2011, 'Emotional intelligence mediates the relationship between mindfulness and subjective well-being' *Personality and Individual Differences*, 50(7), 1116-1119.

Schutte, NS and Malouff, JM 2012, 'Priming ability emotional intelligence,' *Intelligence*, 40(6), 613-621.

Schutte, NS, Malouff, JM, Hall, LE, Haggerty, JT, Cooper, CJ, Golden, CJ and Dornheim, L 1998, 'Development and validation of a measure of emotional intelligence', *Personality and Individual Differences*, 25, 167-177.

Seliger, S 1997, 'The key to intelligence (child's intellect is influenced by emotional life) (includes related article on guidelines to developing a child's mind) Interview', *Working Mother*, May. 20(5), 38.

Semrud-Clikeman, M, Walkowiak, J, Wilkinson, A, and Butcher, B 2010, 'Executive functioning in children with Asperger Syndrome, ADHD-Combined type, ADHD-Predominately Inattentive Type, and controls', *Journal of Autism and Developmental Disorders*, 40 (8), 1017-1027.

Shany, M, Wiener, J, Feingild, L 2011, 'Knowledge About and Preoccupation With Reading Disabilities: A Delicate Balance,' *Journal of Learning Disabilities*, 44(1), 80-93.

Silver, CH, Ruff, RM, Iverson, GL, Barth, JT, Broshek, DB, Bush, SS, Koffler, SP, Reynolds, CR 2008, 'Learning disabilities: The need for neuropsychological evaluation', *Archives of Clinical Neuropsychology*, 23(2), 217-219.

Simonds, JF 1974, 'Relationship between children's learning disorders and emotional disorders at a mental health clinic,' *Journal of Clinical Psychology*, 30(4), 450-458.

Simonoff, E, Pickles, A and Wood, N 2007, 'ADHD symptoms in children with mild intellectual disability,' *Journal of the American Academy of Child and Adolescent Psychiatry*, 46 (5), 591-600.

Smyth, TR 1992, 'Impaired motor skill (clumsiness) in otherwise normal Children: a review', *Child: Care, Health and Development*, 18(5), 283-300.

Smith, L, Heaven, PCL and Ciarrochi, J 2008, 'Trait emotional intelligence, conflict communication patterns, and relationship satisfaction,' *Personality and Individual Differences*, 44 (6), 1314-1325.

SparkNotes Editors 2005, *SparkNote on Development*. Viewed 21 June 2014, <<http://www.sparknotes.com/psychology/psych101/development/>>

Staels, E. Van den Broeck. W 2015, 'Orthographic Learning and the Role of Text-to-Speech Software in Dutch Disabled Readers', *US National Library of Medicine National Institutes of Health*, 48(1), 39-50

Sternberg, RJ 1999, 'Successful intelligence: finding a balance', *Trends in Cognitive Sciences*, 3(11), 436-442.

Stough, C et al, 2009, 'Assessing Emotional Intelligence', *The Springer Series on Human Exceptionality, Springer Science Business Media*, 3-101.

*The Journey to Excellence*, Education Scotland Foghalm Alba, viewed 17 June 2014, <<http://www.journeytoexcellence.org.uk/resourcesandcpd/research/summaries/rsmultipl intelligences.asp>>.

Thingujam, NS, Laukka, P and Elfenbein, HA 2012, 'Distinct emotional abilities converge: Evidence from emotional understanding and emotion recognition through the voice,' *Journal of Research in Personality*, 46 (3), 350-354.

Thorndike, EL 1920, 'Intelligence and its use,' *Harper's Magazine*, 140, 227-235.

Greenspan, N 1985, 'First Feelings: Milestones in the Emotional Development of Your Infant and Child from Birth to Age 4', *Viking Press*.

Van Rooy, DL and Viswesvaran, C 2004, 'Emotional intelligence: A meta-analytic investigation of predictive validity and nomological net', *Journal of Vocational Behavior*. 65 (1), 71-95.

- Visser, BA, Ashton, MC and Vernon, PA 2006, 'Beyond g: Putting multiple intelligences theory to the test', *Intelligence*, 34(5), 487-502.
- Vives Gomila, M 1989, 'Emotional deficits, practical intelligence, and school learning difficulties in 8-yr-olds,' *Revista de Psicologia*, 11(1), 75-88.
- Wahlstadt, C, Thorell, LB and Bohlin, G 2008, 'ADHD symptoms and executive function impairment: Early predictors of later al problems' *Developmental Neuropsychology*, 33 (2), 160-178.
- Wallace, T, Anderson, A, Bartholomay, T and Hupp, S 2002, 'An ecobehavioral examination of high school classrooms that include students with disabilities', *Exceptional Children*, 68 (3), 345-360.
- Warwick, J and Nettlebeck, T 2004, 'Emotional intelligence is...?' *Personality and Individual Differences*, 37(5), 1091-1100.
- Watkins, MW 1996) 'Diagnostic ability of the WISC-III development index as a predictor of learning difficulties,' *Journal of Learning Disabilities*, 29 (3), 305-312.
- Webb, CA, Schwab, ZJ, Weber, M, DelDonno, S, Kipman, M, Weiner, MR and Killgore, WDS 2013, 'Convergent and Divergent Validity of Integrative versus mixed Model Measures of Emotional Intelligence,' *Intelligence*, 41 (3), 149-156.
- Westwood, P 2004, 'Learning and Learning Difficulties: A Handbook for Teachers', *ACER Press*.
- Wong, Chi-Sum and Law, KS 2002, 'The effects of leader and follower emotional intelligence on performance and attitude: An exploratory study,' *The leadership Quarterly*, 13(3), 243-274.
- Wong, Chi-Sum, Foo, Maw-Der, Wang, Ching-Wen. and Wong, Ping-Man 2007, 'The feasibility of training and development of EI: An exploratory study in Singapore, Hong Kong and Taiwan', *Intelligence*, 35(2), 141-150.

Yip, JA and Cote, S 2013, 'The Emotionally Intelligent Decision Maker', *Psychological Science*, 24(1), 48-55.

Zargar, SS Gania, MY 2013, 'A comparative study of Emotional Intelligence and Academic Achievement of Science and Social Science Higher Secondary Students', *Nature and Science*, 11 (3), 71-76.

Zeidner, M, Matthews, G, Roberts, RD 2001, 'Slow Down, You Move Too Fast: Emotional Intelligence Remains an "Elusive" Intelligence', *Emotion*, 1(3), 265-275.

Zeidner, M, Shani-Zinovich, I, Matthews, G and Roberts, RD 2005, 'Assessing emotional intelligence in gifted and non-gifted high school; students: Outcomes depend on the measure,' *Intelligence*, 33(4), 369-391.

Zimmerman, B J 2002, 'Becoming a self-regulated learner: An overview,' *Theory in Practice*, 41(2), 64-74.

# Appendices

## APPENDIX 1

### Ethics Approval: Study One

To: Dr Karen Hansen/Ms Lana McLean, FLSS

Dear Karen and Lana

SUHREC Project 0708/127 An investigation of relationship between Emotional Intelligence and dyslexia

Dr K Hansen FLSS Ms Lana McLean Assoc Prof Roger Cook

Approved Duration: 03/03/2008 To 31/12/2009

I refer to the ethical review of the above project protocols undertaken by Swinburne's Human Research Ethics Committee (SUHREC). Your further responses to the review, as emailed on 26 February 2008 with attached revised consent/publicity instruments, were put to a delegate of SUHREC for consideration.

I am pleased to advise that approval for the project to proceed has been given as submitted to date in line with standard on-going ethics clearance conditions here outlined.

- All human research activity undertaken under Swinburne auspices must conform to Swinburne and external regulatory standards, including the National Statement on Ethical Conduct in Human Research and with respect to secure data use, retention and disposal.
- The named Swinburne Chief Investigator/Supervisor remains responsible for any personnel appointed to or associated with the project being made aware of ethics clearance conditions, including research and consent procedures or instruments approved. Any change in chief investigator/supervisor requires timely notification and SUHREC endorsement.
- The above project has been approved as submitted for ethical review by or on behalf of SUHREC. Amendments to approved procedures or instruments ordinarily require prior ethical appraisal/ clearance. SUHREC must be notified immediately or as soon as possible thereafter of (a) any serious or unexpected adverse effects on participants and any redress measures; (b) proposed changes in protocols; and (c) unforeseen events which might affect continued ethical acceptability of the project.
- At a minimum, an annual report on the progress of the project is required as well as at the conclusion (or abandonment) of the project.
- A duly authorised external or internal audit of the project may be undertaken at any time.

Please contact me if you have any queries about on-going ethics clearance or if you need a signed ethics clearance certificate. The SUHREC project number should be quoted in communication.

Best wishes for the project.

Yours sincerely

Keith Wilkins  
Secretary, SUHREC

\*\*\*\*\*

Keith Wilkins  
Research Ethics Officer  
Swinburne Research (H68)  
Swinburne University of Technology  
P O Box 218  
HAWTHORN VIC 3122  
Tel: 9214 5218



## APPENDIX 2

### Ethics Approval: Study Two

To:  
Ms Lana McLean  
cc Prof Con Stough, FHAD

Dear Ms McLean

**SUHREC Project 0708/127 An investigation of the relationship between Emotional Intelligence and dyslexia**

Prof Con Stough; Ms Lana McLean, Dr Karen Hansen

Approved Duration: 03/03/2008 To 31/12/2009. Extended to 31/12/2011.

[Project Modified March 2009, April and December 2010, March 2011]

I confirm receipt of progress/final reports on the human research activity conducted for the above project in line with ethics clearance conditions issued.

Best wishes for your higher degree submission.

Yours sincerely

Keith

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Keith Wilkins  
Secretary, SUHREC and Research Ethics Officer  
Swinburne Research (H68)  
Swinburne University of Technology  
P O Box 218  
HAWTHORN VIC 3122  
Tel +61 3 9214 5218  
Fax +61 3 9214 5267

### **APPENDIX 3**

#### **Project Information Sheet**

#### **SWINBURNE UNIVERSITY**

##### **Volunteers required for participation in a research project**

Lana McLean, a PhD researcher from the faculty of Life and Social Sciences at Swinburne University of Technology, is seeking participants aged 12 – 65 to complete online self-evaluative questionnaires that takes approximately 45 minutes.

Lana has had extensive experience in assessing, counseling and tutoring many clients with a focus on building self-esteem based on their personal and/or academic goals.

The current project involves research on the social and emotional consequences of specific learning difficulties (SLD; i.e. dyslexia) and aims to build on the researcher's success in the diagnosis and development of intervention therapies to assist in the correction of SLDs.

SLDs affect over 15% of children and adults. Research which improves the understanding and development for treatment of many disorders would not be possible without the voluntary involvement of participants

Participants aged 18 and over can complete the online questionnaire by clicking on the following link: <http://opinio.online.swin.edu.au/s?s=8018>

Participants under the age of 18 require the consent of a parent or guardian. Parents/guardians can obtain a consent form by contacting Lana McLean on [lmclean@swin.edu.au](mailto:lmclean@swin.edu.au)

For more information please contact Lana McLean  
Email: [lmclean@swin.edu.au](mailto:lmclean@swin.edu.au) Phone: 9510 9505

**APPENDIX 4**

**Clinical Tool for Dyslexia**

**Skills Questionnaire**

	<b>YES</b>	<b>NO</b>
1. Do shapes and sequences of letters or numbers appear changed or reversed?	.....	.....
2. Is spelling incorrect or inconsistent?	.....	.....
3. Are words or lines skipped when reading or writing?	.....	.....
4. Do letters or numbers appear to move, disappear, and grow or shrink?	.....	.....
5. Are punctuation marks or capitol letters omitted ignored or not seen?	.....	.....
6. Are, or were, some speech sounds difficult to make?	.....	.....
7. Are digraphs such as “ch” or “th” mispronounced?	.....	.....
8. Are false sounds perceived?	.....	.....
9. Do you ever get accused or not listening or hearing what is said?	.....	.....
10. Are sounds perceived as quieter, louder, farther away or nearer than actual?	.....	.....
11. Do you experience dizziness or nausea while reading?	.....	.....
12. Do you have a poor sense of direction?	.....	.....
13. Do you find it hard to sit still?	.....	.....
14. Do you have difficulty with hand writing?	.....	.....
15. Do you have problems with co-ordination or balance?	.....	.....

- |   |       |       |
|---|-------|-------|
| 16. Are you hyperactive (over active)?  | ..... | ..... |
| 17. Are you hypoactive (under active)?  | ..... | ..... |
|   | YES   | NO    |
| 18. Are mathematical concepts difficult to learn  | ..... | ..... |
| 19. Do you have difficulty being on time or telling time?   | ..... | ..... |
| 20. Do you daydream excessively?  | ..... | ..... |
| 21. Do you lose your train of thought easily?   | ..... | ..... |
| 22. Do you have trouble sequencing, (putting things in the right order)?                                  | ..... | ..... |
| 23. Do, or did, you remember your alphabet by singing the Alphabet song?                                  | ..... | ..... |
| 24. Do you use extreme concentration while reading?   | ..... | ..... |
| 25. Are you very dependant on others?   | ..... | ..... |
| 26. Are you aware if you have any unusual body postures?  | ..... | ..... |
| 27. Do you have a preference to think by using pictures? of concepts or ideas with no internal monologue? | ..... | ..... |
| 28. Do you experience imagination as reality?   | ..... | ..... |

## APPENDIX 5

### Project Information Statement



**SWINBURNE UNIVERSITY OF TECHNOLOGY**

### **Project Information Statement for Participants under 18**

#### **PROJECT TITLE**

The project is an evaluation of the relationship between Emotional Intelligence and dyslexia.

#### **INVESTIGATORS**

Lana McLean, Consultant & Proprietor of 'Educational, Personal & Child Consulting Service'  
Dr Karen Hansen, Postdoctoral research fellow, Swinburne University of Technology  
A/Prof Roger Cook, Director, Swinburne Psychology Clinic

#### **EXPLANATION OF PROJECT**

Personal accounts from both children and adults with dyslexia indicate that a significant part of the experience is social and emotional problems. This project aims to look at the relationship between dyslexia and emotional intelligence (EI).

**In this project, children and adults with and without dyslexia will complete paper and pencil questionnaires measuring Emotional Intelligence, psychological well-being (depression, stress and anxiety) and perceived quality of interpersonal relationships.** Participation in this study is entirely voluntary. Completion of the questionnaires should take approximately 45 minutes.

Participants with dyslexia will also have the choice to participate in a 7 session correction program that aims to resolve the symptoms of dyslexia. The correction program is based on the Davis Orientation Counselling Process for dyslexia. If participants choose not to participate in the correction program they are still able to participate in the questionnaire part of the project.

No adverse effects are anticipated from participating in this study and **participants are free to withdraw consent or discontinue at any time.** The findings from this study may appear in professional psychological publications, but will only be reported as group data. No individual results will be revealed. Any questions regarding this research can be directed to the Senior Researcher, Dr Karen Hansen at [khansen@swin.edu.au](mailto:khansen@swin.edu.au) or alternatively: Brain Science Institute, Swinburne University of Technology, P.O. Box 218, HAWTHORN, VIC, 3122.

#### **PRIVACY PROTECTION**

Your responses to the questionnaires will remain anonymous to the Swinburne researchers and all the information provided on these questionnaires will remain confidential. All of the information provided to the Swinburne Researchers will have your name removed and replaced with a numerical code. Swinburne University will not be able to match any of the information back to you. Participants can only be identified by the student investigator (Lana McLean). To ensure anonymity these codes will be kept in a locked safe on the investigators premises and will be destroyed by the investigator at the end of her studies.

#### **COMPLAINTS PROCEDURE**

If you have any concerns or complaints about the conduct of this project you can contact:

Research Ethics Officer, Office of Research & Graduate Studies (H68), Swinburne University of Technology, P O Box 218, HAWTHORN VIC 3122. Tel (03) 9214 5218 (or +61 3 9214 5218) or [reseethics@swin.edu.au](mailto:reseethics@swin.edu.au)

**APPENDIX 6**

**Project Consent form for Adults**



**SWINBURNE UNIVERSITY OF TECHNOLOGY**

**Project Consent Form for Adults**

**Title of Project:**

An evaluation of the relationship between Emotional Intelligence and dyslexia.

**Investigators:** Lana McLean, Consultant & Proprietor of 'Educational, Personal & Child Consulting Service'; Dr Karen Hansen, Postdoctoral research fellow, Swinburne University of Technology; Dr Roger Cook

1. I consent to participate in the project named above, the particulars of which have been explained to me. I have been provided with a copy of the project consent information statement and this consent form and any questions I have asked have been answered to my satisfaction.
2. Please circle your response to the following:
  - I agree to complete questionnaires asking me about my Emotional Intelligence, depression, stress, anxiety and interpersonal relationships Yes / No
3. I acknowledge that
  - a. the possible side effects have been explained to me to my satisfaction;
  - b. my participation is voluntary and that I am free to withdraw from the project at any time without explanation;
  - c. the project is for the purpose of research and not for profit;
  - d. my personal and/or health information will be collected and retained for the sole purpose of carrying out this project;
  - e. my anonymity is preserved and I will not be identified in publications or otherwise without my express written consent.

By signing this document I agree to participate in this project.

NAME OF PARTICIPANT.....  
SIGNATURE.....DATE.....

NAME/S OF PRINCIPAL INVESTIGATOR/S.....  
SIGNATURE.....DATE.....  
SIGNATURE.....DATE.....

## APPENDIX 7

### Project Information Statement for participants aged less than 18 years



#### SWINBURNE UNIVERSITY OF TECHNOLOGY

#### Project Information Statement for Participants under 18

##### PROJECT TITLE

The project is an evaluation of the relationship between Emotional Intelligence and dyslexia. †SLD'S

##### INVESTIGATORS

Lana McLean, Consultant & Proprietor of 'Educational, Personal & Child Consulting Service'  
Dr Karen Hansen, Postdoctoral research fellow, Swinburne University of Technology  
A/Prof Roger Cook, Director, Swinburne Psychology Clinic

##### EXPLANATION OF PROJECT

Personal accounts from both children and adults with dyslexia indicate that a significant part of the experience is social and emotional problems. This project aims to look at the relationship between dyslexia and emotional intelligence (EI).

**In this project, children and adults with and without dyslexia will complete paper and pencil questionnaires measuring Emotional Intelligence, psychological well-being (depression, stress and anxiety) and perceived quality of interpersonal relationships.** Participation in this study is entirely voluntary. Completion of the questionnaires should take approximately 45 minutes.

No adverse effects are anticipated from participating in this study and participants are free to **withdraw consent or discontinue at any time**. The findings from this study may appear in professional psychological publications, but will only be reported as group data. No individual results will be revealed. Any questions regarding this research can be directed to the Senior Researcher, Dr Karen Hansen at [khansen@swin.edu.au](mailto:khansen@swin.edu.au) or alternatively: Brain Science Institute, Swinburne University of Technology, P.O. Box 218, HAWTHORN, VIC, 3122.

##### PRIVACY PROTECTION

Your responses to the questionnaires will remain anonymous to the Swinburne researchers and all the information provided on these questionnaires will remain confidential. All of the information provided to the Swinburne Researchers will have your name removed and replaced with a numerical code. Swinburne University will not be able to match any of the information back to you. Participants can only be identified by the student investigator (Lana McLean). To ensure anonymity these codes will be kept in a locked safe on the investigators premises and will be destroyed by the investigator at the end of her studies.

##### COMPLAINTS PROCEDURE

If you have any concerns or complaints about the conduct of this project you can contact:

Research Ethics Officer, Office of Research & Graduate Studies (H68), Swinburne University of Technology, P O Box 218, HAWTHORN VIC 3122. Tel (03) 9214 5218 (or +61 3 9214 5218) or [resethics@swin.edu.au](mailto:resethics@swin.edu.au)

## APPENDIX 8

### Consent form for participants aged less than 18 years of age



**SWINBURNE UNIVERSITY OF TECHNOLOGY**

**Project Consent Form for Participants under 18**

**Title of Project:**  
An evaluation of the relationship between Emotional Intelligence and dyslexia.

**Investigators:**  
Lana McLean, Consultant & Proprietor of 'Educational, Personal & Child Consulting Service'; Dr Karen Hansen, Postdoctoral research fellow, Swinburne University of Technology; Dr Roger Cook

1. I consent to my child participating in the project named above, the particulars of which have been explained to me. I have been provided with a copy of the project consent information statement and this consent form and any questions I have asked have been answered to my satisfaction.
2. Please circle your response to the following:
  - I agree to allow my child to complete questionnaires asking them about their Emotional Intelligence, depression, stress, anxiety and interpersonal relationships Yes / No
  - I consent to my child participating in a seven session dyslexia treatment program Yes / No
3. I acknowledge that:
  - a. the possible side effects have been explained to me to my satisfaction;
  - b. my child's participation is voluntary and that they are free to withdraw from the project at any time without explanation;
  - c. the project is for the purpose of research and not for profit;
  - d. personal and/or health information will be collected and retained for the sole purpose of carrying out this project;
  - e. anonymity will be preserved and my child will not be identified in publications or otherwise without my express written consent.

By signing this document I agree to allow my child to participate in this project.

NAME OF PARTICIPANT.....

NAME/S OF PRINCIPAL INVESTIGATOR/S.....

SIGNATURE.....DATE.....

SIGNATURE.....DATE.....

Parental or guardian consent to a child's participation.


NAME OF PARENT OR GUARDIAN.....DATE.....

SIGNATURE.....DATE.....




## APPENDIX 9

### Swinburne Emotional Intelligence Test (SUEIT)- Self Report Version, questions 1-30



62457



### Swinburne University Emotional Intelligence Test - Self Report Version

If you make a mistake simply cross it out and fill in the correct response!

Slide Circles Like This →  
Not Like This →


Below are the series of statements, please fill in the circle containing the number that is most indicative of the way you **typically** think, feel and act.

		Never	Seldom	Sometimes	Usually	Always
		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1. I can tell how others are feeling.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I generate positive moods and emotions within myself to get over being frustrated.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Examination of feelings is useful in solving problems.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. When I'm anxious I can remain focused on what I am doing.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I can tell whether others like each other or not.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. When I'm under stress, I tend to get irritated by those around me.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I find it difficult to talk about my feelings with others.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I find it hard to determine how others are feeling from their body language alone.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Difficult situations elicit emotions in me that I find hard to overcome.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Others find it easy to pick-up on how I am feeling.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I find it difficult to keep from getting stressed-out when I am under a lot of pressure.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. My moods and emotions help me generate new ideas.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I can tell how others feel by the tone in their voice.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. When I am anxious, I find it difficult to express this to others.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I find it easy to influence the moods and emotions of those around me.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I don't easily pick-up on the emotional overtones of the environment I'm in.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I can tell when others are trying to hide their true feelings.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I try not to let my emotions guide me when problem solving.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I find it easy to control my anger.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I can describe my feelings on an issue to others.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I don't think it's a good idea to use emotions to guide my decision making.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I find it hard to identify if somebody is upset without them telling me.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. I find it hard to get people to cooperate with each other.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. I come-up with new ideas using rational thoughts rather than my moods and emotions.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. I find it hard to concentrate on a task when I'm really excited about something.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I can portray how I am feeling to others through my body language.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. I find it hard to determine friendships between people I don't know well.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I overcome conflict with others by influencing their moods and emotions.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. I watch the way people react to things when I'm trying to build rapport with them.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. My problem solving is based on sound reasoning rather than feelings.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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**APPENDIX 10**

**Swinburne Emotional Intelligence Test (SUEIT)- Self Report Version, questions  
30-64**



#2457

**Swinburne University Emotional  
Intelligence Test - Self Report Version**

If you make a mistake simply cross it out and fill in the correct response!

Shade Circles Like This →

→

Not Like This →


Below are the series of statements, please fill in the circle containing the number that is most indicative of the way you typically think, feel and act.

		Never	Seldom	Sometimes	Usually	Always
		○	○	○	○	○
31. I find it difficult to think clearly when I'm feeling anxious about something.		○	○	○	○	○
32. I have trouble finding the right words to express how I feel.		○	○	○	○	○
33. I find it difficult to get others excited about things.		○	○	○	○	○
34. I can pick-up on the emotional 'overtone' of a discussion.		○	○	○	○	○
35. I attend to my feelings on a matter when making important decisions.		○	○	○	○	○
36. I overcome anger by thinking through what's causing it.		○	○	○	○	○
37. Others know when I am worried.		○	○	○	○	○
38. I readily understand the reasons why I have upset someone.		○	○	○	○	○
39. I find it hard to reduce anxiety in others.		○	○	○	○	○
40. I weigh-up how I feel about different solutions to problems.		○	○	○	○	○
41. I can be upset and still think clearly.		○	○	○	○	○
42. I find it hard to convey my anxiety to others.		○	○	○	○	○
43. I can determine when a other's emotional reactions are inappropriate.		○	○	○	○	○
44. I find it easy to comfort others when they are upset about something at work.		○	○	○	○	○
45. Other's facial expressions reveal a lot to me about the way they are feeling.		○	○	○	○	○
46. I find it difficult to control strong emotions.		○	○	○	○	○
47. Feelings should be kept at bay when making important decisions.		○	○	○	○	○
48. I readily notice the 'feel' of different environments.		○	○	○	○	○
49. When something gets me down I find it difficult to snap out of it.		○	○	○	○	○
50. I go with my 'feelings' when making important decisions.		○	○	○	○	○
51. I can detect my emotions as I experience them.		○	○	○	○	○
52. When discussing an issue, I find it difficult to tell whether others feel the same way as me.		○	○	○	○	○
53. Thinking about how I felt in certain situations helps me remember them.		○	○	○	○	○
54. I can easily snap out of feeling down.		○	○	○	○	○
55. I find it hard to distinguish my emotions.		○	○	○	○	○
56. I can tell when someone feels the same way as myself about another person without actually discussing it.		○	○	○	○	○
57. I find it difficult to maintain positive moods and emotions when I'm under stress.		○	○	○	○	○
58. When others get worked-up I stay out of their way.		○	○	○	○	○
59. I find it hard to determine exactly how others feel about issues I have with them.		○	○	○	○	○
60. When something goes wrong in my life, I find it difficult to remain positive.		○	○	○	○	○
61. Others can easily tell how I feel.		○	○	○	○	○
62. I try to keep emotions out of my decision making.		○	○	○	○	○
63. I can tell when someone doesn't really like me.		○	○	○	○	○
64. When someone upsets me, I think through what the person has said and find a solution.		○	○	○	○	○


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**APPENDIX 11**

**SUIET Adolescent Self-Report Version (Question 1-30)**



52161





Swinburne University Emotional Intelligence Test

**Adolescent Self-Report Version**

Below are the series of statements, please fill in the circle containing the number that is most common of the way you typically think, feel and act.

If you make a mistake simply cross it out and fill in the correct response!

Shade Circles Like This → ●


Not Like This → ✗

		Very Seldom	Seldom	Sometimes	Often	Very Often
		1	2	3	4	5
1. I can tell how others are feeling.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I try to make myself feel happy to get over being stressed or frustrated.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I use my 'gut feelings' when I try to solve problems.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I can still stay focussed when I get worried.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I can tell if others like each other or not.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. When I'm stressed, I get annoyed by people around me.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I find it hard to talk about my feelings to other people.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I find it hard to tell how others are feeling just from their 'body language'.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Difficult situations bring out feelings in me that are hard to deal with.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Others find it easy to tell how I am feeling.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I get stressed-out when I am under a lot of pressure.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I use my feelings to help me find new ideas.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I can tell how others feel by the tone of their voice.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. When I get worried, I find it hard to tell other people.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I find it easy to change other people's feelings.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I don't easily pick-up on the 'vibe' of the place I'm in.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I can tell when other people are trying to hide their true feelings.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. When I try to solve problems I keep my feelings out of it.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I find it easy to control my anger and calm down.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I can tell others how I feel about things.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I don't think it's a good idea to listen to my feelings when I make a decision.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I find it hard to tell if somebody is upset if they don't say it to me.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. I find it hard to get people to 'get along' with each other.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. I come-up with new ideas by logic and clear thinking instead of using my moods or feelings.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. I find it hard to stay focussed if I'm really excited about something.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I can show people how I am feeling through my 'body language'.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. I find it hard to tell how people feel about each other.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I solve my problems using logic and clear thinking instead of feelings.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. I find it hard to think clearly when I am worried about something.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. I find it hard to say how I feel.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


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**APPENDIX 12**

**SUIET Adolescent Self-Report Version (Question 31-57)**



52151





**SUIET**  
Swinburne University Emotional Intelligence Test

**Adolescent Self-Report Version**

Below are the series of statements, please fill in the circle containing the number that is most common of the way you typically think, feel and act.

If you make a mistake simply cross it out and fill in the correct response!

Grade Circles Like This → ●  
 Not Like This → ✕

		Very Seldom	Seldom	Sometimes	Often	Very Often
		1	2	3	4	5
31. I find it hard to make others excited about things.		○	○	○	○	○
32. I can pick-up on what the 'vibe' is when other people are talking about something.		○	○	○	○	○
33. I listen to my feelings when making important decisions.		○	○	○	○	○
34. Other people know when I am worried or stressed.		○	○	○	○	○
35. When I have upset someone I understand why they are upset with me.		○	○	○	○	○
36. I find it hard to calm people down when their worried or stressed.		○	○	○	○	○
37. I can still think clearly when I'm upset.		○	○	○	○	○
38. I find it hard to let others know that I am worried or stressed.		○	○	○	○	○
39. I can tell when another person's feeling or reactions don't fit or make sense with what is happening.		○	○	○	○	○
40. I can make my friends relax when they get stressed.		○	○	○	○	○
41. The look on other people's faces tells me a lot about the way they are feeling.		○	○	○	○	○
42. I find it hard to control really strong emotions.		○	○	○	○	○
43. You should stop your feelings from having a big influence over any important decisions.		○	○	○	○	○
44. I easily notice the 'feel' or atmosphere of different situations and places.		○	○	○	○	○
45. When something gets me down I find it difficult to snap out of it.		○	○	○	○	○
46. I trust my feelings when I make important decisions.		○	○	○	○	○
47. I am good at knowing what my feelings are.		○	○	○	○	○
48. When I talk about something, it is hard to tell if other people feel the same way as me.		○	○	○	○	○
49. I can easily 'snap' myself out of feeling down or sad.		○	○	○	○	○
50. I can tell when someone feels the same way as me about other people without talking about it to them.		○	○	○	○	○
51. I find it hard to stay 'positive' when I get stressed or worried.		○	○	○	○	○
52. When I am upset with someone, I find it hard to tell how they might be feeling.		○	○	○	○	○
53. When things go wrong in my life, I find it hard to stay 'positive'.		○	○	○	○	○
54. Other people seem to find it easy to tell how I feel about things.		○	○	○	○	○
55. I try to keep my feelings out of the decisions I make.		○	○	○	○	○
56. I can tell when someone doesn't really like me.		○	○	○	○	○
57. When someone upsets me, I think about what they said and then usually find a solution.		○	○	○	○	○

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## APPENDIX 13

### Depression Anxiety Scale (DASS)- 21

# DASS<sub>21</sub>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me to a considerable degree, or a good part of time
- 3 Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (eg, in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

## APPENDIX 14

### 20-ITEM MINI IPAP

#### 20-Item Mini-IPAP

On the following pages, there are phrases describing people's behaviors. Please use the rating scale below to describe how accurately each statement describes you. Describe yourself as you generally see now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then fill in the bubble that corresponds to the number on the scale.

#### Response Options

- 1: Very Inaccurate
- 2: Moderately Inaccurate
- 3: Neither Inaccurate nor Accurate
- 4: Moderately Accurate
- 5: Very Accurate

- |  |           |
|--|-----------|
| 1 Am the life of the party.                              | 1 2 3 4 5 |
| 2 Sympathize with others' feelings.                      | 1 2 3 4 5 |
| 3 Get chores done right away.                            | 1 2 3 4 5 |
| 4 Have frequent mood swings.                             | 1 2 3 4 5 |
| 5 Have a vivid imagination.                              | 1 2 3 4 5 |
| 6 Don't talk a lot.                                      | 1 2 3 4 5 |
| 7 Am not interested in other people's problems.          | 1 2 3 4 5 |
| 8 Often forget to put things back in their proper place. | 1 2 3 4 5 |
| 9 Am relaxed most of the time.                           | 1 2 3 4 5 |
| 10 Am not interested in abstract ideas.                  | 1 2 3 4 5 |
| 11 Talk to a lot of different people at parties.         | 1 2 3 4 5 |
| 12 Feel others' emotions.                                | 1 2 3 4 5 |
| 13 Like order.   | 1 2 3 4 5 |
| 14 Get upset easily.                                     | 1 2 3 4 5 |
| 15 Have difficulty understanding abstract ideas.         | 1 2 3 4 5 |
| 16 Keep in the background.                               | 1 2 3 4 5 |
| 17 Am not really interested in others.                   | 1 2 3 4 5 |
| 18 Make a mess of things.                                | 1 2 3 4 5 |
| 19 Seldom feel blue.                                     | 1 2 3 4 5 |
| 20 Do not have a good imagination.                       | 1 2 3 4 5 |

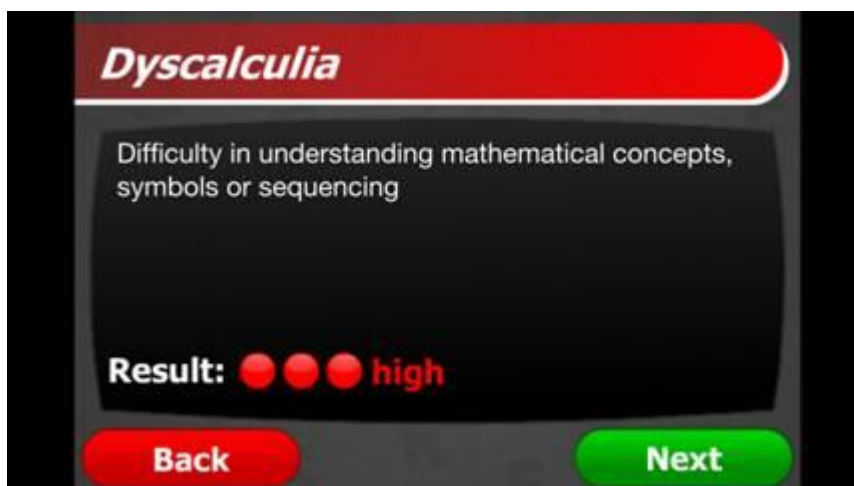
## APPENDIX 15

### Personality Scale (Things you find hard to do with other people)

		Not at all	A little	Somewhat	Very much	Extremely
<i>The following are things you find hard to do with other people</i>						
<i>It is hard for me to ...</i>						
1	Hard to join in on groups	0	1	2	3	4
2	Hard to be assertive with another person	0	1	2	3	4
3	Hard to make friends	0	1	2	3	4
4	Hard to disagree with other people	0	1	2	3	4
5	Hard to make a long-term commitment to another person	0	1	2	3	4
6	Hard to be aggressive toward another person when the situation calls for it	0	1	2	3	4
7	Hard to socialize with other people	0	1	2	3	4
8	Hard to show affection for another person	0	1	2	3	4
9	Hard to feel comfortable with other people	0	1	2	3	4
10	Hard to tell personal things to other people	0	1	2	3	4
11	Hard to be firm when I need to be	0	1	2	3	4
12	Hard to experience a feeling of love for another person	0	1	2	3	4
13	Hard to be supportive of another person's goals in life	0	1	2	3	4
14	Hard to really care about other people's problems	0	1	2	3	4
15	Hard to put someone else's needs before my own	0	1	2	3	4
16	Hard to take instructions from people who have authority over me	0	1	2	3	4
17	Hard to open up and tell my feelings to another person	0	1	2	3	4
18	Hard to attend to my own welfare when somebody else is needy	0	1	2	3	4
19	Hard to be involved with another person without feeling trapped	0	1	2	3	4
<i>The following are things you do too much ...</i>						
20	I fight with people too much	0	1	2	3	4
21	I get irritated or annoyed too easily	0	1	2	3	4
22	I want people to admire me too much	0	1	2	3	4
23	I am too dependent on other people	0	1	2	3	4
24	I open up to people too much	0	1	2	3	4
25	I put other people's needs before my own too much	0	1	2	3	4
26	I am overly generous to other people	0	1	2	3	4
27	I worry too much about other people's reactions to me	0	1	2	3	4
28	I lose my temper too easily	0	1	2	3	4
29	I tell personal things to other people too much	0	1	2	3	4
30	I argue with others too much	0	1	2	3	4
31	I am too cautious and jealous of other people	0	1	2	3	4
32	I am affected by another person's misery too much	0	1	2	3	4

## APPENDIX 16

### Screen shorts for Apple iphone mobile application (Screen headings: Results, Dyscalculia, Dyspraxia)





## APPENDIX 17

### Screen shorts for Apple iphone mobile application (Screen headings: A.D.D, Dyslexia)



## APPENDIX 18

### Screen shorts for Apple iphone mobile application (Screen headings: Research, What next? For more information)

