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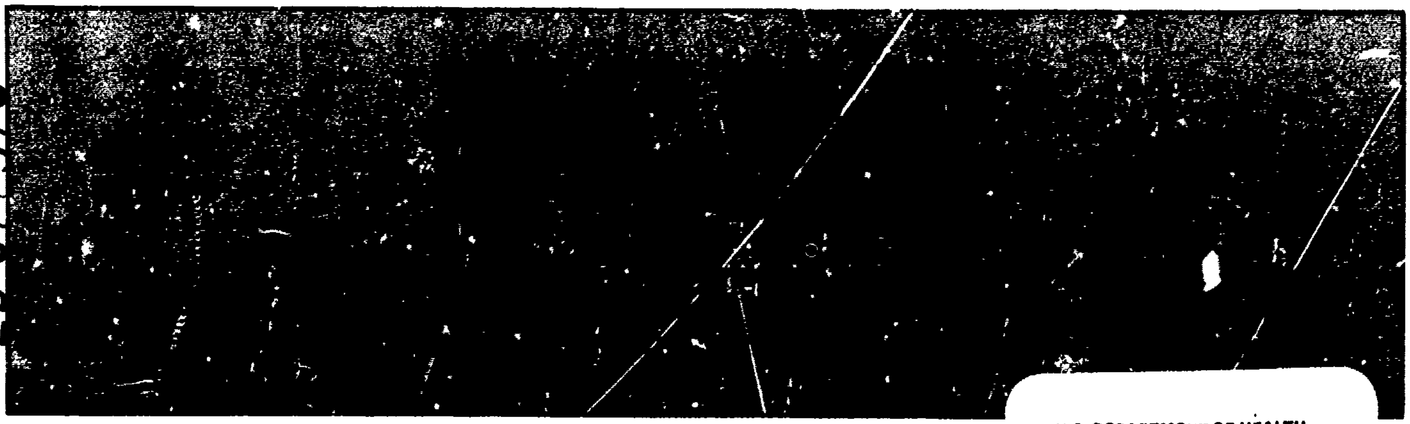
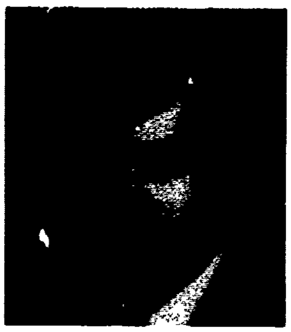
ABSTRACT

Research in the field of Career Maturity is reviewed and summarized, with particular attention to Super's Career Pattern Study, Gribbons and Lohnes' Career Development Study, and Crites' Vocational Development Project. Crites' organization and revision into a hierarchical structure of the five dimensions of vocational maturity proposed in Supers' Career Pattern Study are discussed. Work to develop a Career Maturity Inventory to measure the hypothesized dimensions, taking into account both cognitive and connative factors, is summarized. Research into correlates of career maturity is reviewed. The interrelationship between career maturity and career education is stressed, and it is pointed out that the research on career maturity can provide the concepts and tools which career education requires to conceive and evaluate curricula and training programs. (Author/DB)



Career Maturity



John O. Crites

"Vocational guidance" has come a long way since Parsons proposed his "crossroads of life" model of occupational decision-making. Rather than a once-in-a-lifetime event, career decision-making is now seen as part of the process of developing *career maturity*. John O. Crites reviews and summarizes research in the field, with particular attention to Super's Career Pattern Study, Gribbons and Lohnes' Career Development Study, and his own Vocational Development Project. Crites discusses his organization and revision into a hierarchical structure of the five dimensions of vocational maturity proposed in Super's work. He then summarizes his work to develop a Career Maturity Inventory to measure the hypothesized dimensions, taking into account both cognitive and connative factors. Finally, he reviews research into correlates of career maturity.

In a brief afterword, Crites stresses the interrelationship between career maturity and career education, and points out that the research on career maturity can provide the concepts and tools which career education requires to conceive and evaluate curricula and training programs.

John O. Crites is a well known authority in the field of career development and vocational counseling. Currently on the staff at the University of Maryland, he has also taught at Columbia, University of Iowa and Harvard. He publishes widely and is the author of the *Career Maturity Inventory*.

CJF

John O. Crites

Since the turn of the twentieth century, through the years of the Great Depression, to the post-World War Two era, the prevailing view of vocational choice among counselors, educators, and laymen alike was largely that of "putting square pegs in square holes and round pegs in round holes." It stemmed from Frank Parsons', the acknowledged father of vocational guidance, tripartite model of vocational counseling, in which a young person first conducted a self-analysis of his/her personal capabilities (strengths and weaknesses), then determined the characteristics required by available occupations, and finally through a process of "true reasoning" matched himself/herself to the best-fitting job. Exemplified by pictures in the early guidance literature that depicted a youth at the "crossroads of life" deciding upon which occupational path to follow, the Parsonian model quickly gained widespread currency and served as the conceptual touchstone for much of the pioneer work in vocational psychology pursued by Donald G. Paterson and his associates at the University of Minnesota during the 1930s. This group of researchers and practitioners set about the enormous task of "operationalizing" Parsons' approach to choosing a vocation. They constructed and validated such well-known measures of special aptitudes as the Minnesota Clerical Test, the Minnesota Paper Form Board, and the Minnesota Rate of Manipulation Test, which, in conjunction with Strong's publication of his Vocational Interest Blank in 1927 and personality inventories like the Bell Adjustment Inventory, gave the counselor an armamentarium of techniques for appraising a client's work potential which had never before existed. Moreover, these tests and inventories were soon supplemented by nationwide occupational analyses conducted by the United States Employment Service and published as the Dictionary of Occupational Titles in 1935. With the first two components of the "matching men and jobs" schema "filled in," the Minnesota vocational psychologists next directed their resources and resourcefulness to the problem of articulating how the "matching" might best be accomplished. As a result of their efforts and experiences, there has emerged over the years what has become known as "trait-and-factor" vocational counseling. Based upon a rationalistic, cross-sectional concept of vocational choice, in which decision-making was seen as a point-in-time event rather than a developmental process, this orientation in vocational counseling enjoyed its heyday during the late 1940s and still is widely advocated (Williamson, 1972), although there are signs that it is in an incipient decline.

THE CONCEPT OF CAREER MATURITY

The shortcomings of "trait-and-factor" vocational counseling, and the notion of vocational choice upon which it was predicated, were dramatically brought to the attention of counselors and personnel workers by Eli Ginzberg, an economist of neo-Freudian persuasions. Speaking at the annual convention of the American Personnel and Guidance Association in 1950, Ginsberg declared that they had no *real* theory of vocational choice and that, in any case, vocational choice is not a once-in-a-lifetime phenomenon. Rather, he and his colleagues (Ginzberg, Ginsburg, Axelrad, & Herma, 1951) proposed that vocational choice is a developmental process which spans the years from late childhood to early adulthood when the individual enters the world-of-work. They divided the process into three periods, each of which was characterized by the factor that was paramount in decision-making during a given stage of career development. First comes the Fantasy period, in which the desire to be grown-up largely determines the child's choices; next is the Tentative period, in which choices are based successively upon a consideration of the adolescent's interests, capacities, and values; finally there is the Realistic period, in which there is an increasing cognizance of the limits of choice and a progressive narrowing down of feasible career options until one is specified and implemented. Ginzberg also notes that the career decision-making process is generally *irreversible,* in that making new choices becomes more and more difficult as old ones are acted upon. To change from an industrial arts curriculum in the Junior year of high school, for example, to the College Preparatory program would necessitate taking at least an additional year of studies. Ultimately, Ginzberg maintains that the vocational choice process, because of the factors which impinge upon it and its irreversible nature, culminates for most individuals in a compromise between what they want and what they can realistically have. Thus, in contrast to trait-and-factor conceptions of vocational choice, Ginzberg proposed that career decision-making is a developmental process, which is largely irreversible and which eventuates in compromise between needs and realities.

Despite the emphasis which Ginzberg placed upon the developmental nature of vocational choice, however, he did not take the next logical step and formulate the concept of career maturity implied by his theory, although he did observe that:

"To some degree, the way in which a young person deals with his occupational choice is indicative of his general maturity and, conversely, in assessing the latter, consideration must be given to the way in which he is handling his occupational choice problem" (Ginzberg, *et al.*, 1951, p. 60). It was Donald E. Super who subsequently introduced and articulated the concept of career maturity, drawing upon his own earlier work (Super, 1942) in which he had used Buehler's (1933) framework of "life stages" as well as the theoretical contributions of others on the development of vocational interests (notably Carter, 1940). He defined what was earlier termed *Vocational maturity*[1] as "the place reached on the continuum of vocational development from exploration to decline" (Super, 1955, p. 153). The more vocationally mature an individual is, the more he behaves vocationally like older individuals in the same life stage, e.g., adolescence. Super (1955, p. 153) also notes that a vocational maturity quotient might be developed to indicate "whether or not the vocational development of an individual is appropriate for his age, and how far below or beyond his chronological age his vocational development is." In short, a VMQ (vocational maturity quotient) might be derived, much like the IQ, which would express the ratio of the individual's standing on a behavioral scale of career development to his expected status, as indexed by his chronological age. Such a ratio leads, according to Super, Crites, Hummel, Moser, Overstreet, and Warnath (1957, p. 57), to two definitions of vocational maturity:

"Actual life stage in relation to expected life stage provides one basis for judging vocational maturity (vocational maturity I). The second way of evaluating vocational maturity is based on the behavioral repertoire which the individual has available for coping with the developmental tasks considered appropriate for his age and expected life stage (vocational maturity II)."

The behavioral scale of career development referred to in these definitions of vocational maturity has several presumed dimensions, which Super and his associates (1955; 1957) have delineated and defined over the years as part of the Career Pattern Study, a 20-year longitudinal investigation of career development from early adolescence (approximately age 15) to mid-life (age 35). There are five principal dimensions, each with several parts or indices, which have been hypothesized as applicable to the adolescent life stage:[2]

1. *Orientation to Vocational Choice:* One mark of career maturity is the extent to which a young person is aware of the need to choose an occupation and the factors which enter into this decision.
2. *Information and Planning:* Another criterion of career maturity is the amount of reliable information an individual has to make decisions about occupations and then to plan logically and chronologically for the future.

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[1]Because of certain accrued surplus meaning, particularly as associated with the rubric "vocational education," the term *vocational* maturity has recently been revised to *career* maturity, which is a more precise designation since it better expresses the developmental nature of the career decision-making process.

[2]For a more detailed discussion of the dimensions of vocational maturity, as well as empirical findings on them, see Super and Overstreet (1960).

3. *Consistency of Vocational Preference:* Still another index of career maturity is how consistent an adolescent is in his/her preferences for different occupations from one point-in-time to another.

4. *Crystallization of Traits:* In mature career development, the psychological attributes of the individual relevant to decision-making, e.g., differentiable interest patterns, explicit values, and increasing independence, develop apace with the tasks which have to be accomplished.

5. *Wisdom of Vocational Preference:* More generally known as realism of vocational choice, this dimension of career maturity reflects how closely an individual's career decisions agree with various aspects of reality, such as the prerequisite ability for the preferred occupation, the appropriate interests for the chosen career field, and the availability of financial resources for relevant training.

Taken together, these five dimensions or Indices of Vocational Maturity (IVM), as they have been called in the Career Pattern Study, were conceived to chart the career maturity of adolescents during the high school years, although it was recognized that substantive changes in them might have to be made for them to be relevant to the entire exploratory life stage.

The writer (Crites, in press) has reorganized and revised the CPS dimensions of vocational maturity into the model of career maturity shown in Figure 1. This schema is analogous to one formulated by Vernon (1950) to represent the hierarchical organization and structure of abilities. It is predicated upon the assumption that the variables on the lowest level of the hierarchy cluster into groups on the intermediate level which, in turn, are sufficiently interrelated to define the highest level general factor, Degree of Career Development. This variable is comparable to Super's "continuum of vocational development" and is comprised of four group factors, two of which – Consistency of Career Choice and Realism of Career Choice – have been incorporated directly, with only minor changes, from the CPS Indices of Vocational Maturity. The other two group factors – Career Choice Competencies and Career Choice Attitudes – have some communalities with previous conceptualizations but also are elaborations and extensions of them. The variables which comprise the Competencies group are those which constitute the major components of cognition – information, comprehension, foresight, and problem-solving – in the process of career decision-making. Each of these variables is operationally defined in the next section on "The Measurement of Career Maturity," as are those in the Attitudes group. Suffice it to say here, that in contrast to choice competencies, the attitudinal variables reflect the dispositional response tendencies which play a part in career decision-making. Theoretically, it is hypothesized that they *mediate* the use of choice competencies in ultimately choosing an occupation. That is, they act as internal cues which precede overt goal selection or planning or problem-solving.

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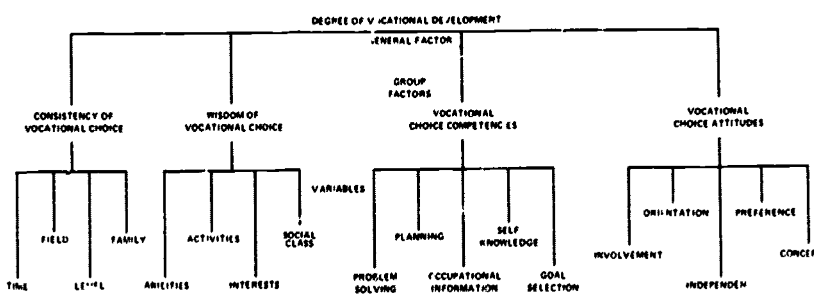

Figure 1. A Model of Career Maturity

Our apologies . . . .

In the Fall 1972 issue of *Measurement in Education* we inadvertently reversed the names beneath the pictures of authors Victor W. Doherty and Walter E. Hathaway. Our apologies to Drs. Doherty and Hathaway.

Extrapolating again from theory and research on intelligence, namely Garrett's (1946) "differentiation" hypothesis of intellectual development, it is proposed that earlier in adolescence the variables in the model of career maturity are more highly related, and therefore a factor analysis of them should yield a general Degree of Career Development factor which would account for most of the total variance. This expectation follows not only from Garrett's "differentiation" hypothesis but also from recent work on response tendencies in children which indicate that they are largely generalized and indiscriminate (Crites, 1965; Tyler, 1955; Van de Castle, 1962). As career development progresses into the later years of adolescence, however, this undifferentiated responding becomes increasingly discrete and specific as the individual learns to discriminate among similar and dissimilar stimuli through exposure to positive and negative reinforcements. Thus, toward the end of high school, it is hypothesized that the factorial structure of career maturity will more nearly approximate the model shown in Figure 1. The within-group correlations, e.g., among Career Choice Competencies, should be in the .50s and low .60s, whereas the between-group *r*s should be in the mid-.30s. That the latter should not be higher is apparent from an analysis of the possible interrelationships among groups. For example, some individuals may be consistent in their career choices from one occasion to another but be unrealistic in these choices. Likewise, a person may be realistic in his career choice, having changed it from an earlier unrealistic choice, but the change would reflect inconsistency. In other words, each of the dimensions in the model of career maturity is necessary but none is sufficient. All are needed, as well as possibly others not yet identified, to assess career maturity.

THE MEASUREMENT OF CAREER MATURITY

As was implied in the explication of the model of career maturity, most of its properties and parameters are hypothetical at the present time, primarily because it will take many years to test it empirically in longitudinal research, but concerted efforts along such lines of inquiry have been initiated and some have already yielded useful findings. Foremost among the tasks to be accomplished in testing the model has been that of constructing measures of the variables in it. The Career Pattern Study under the direction of Super (1955; *et al.*, 1957; & Overstreet, 1960) pioneered in this undertaking by devising the Indices of Vocational Maturity (IVM) from a variety of data, including ratings of interview protocols, standardized tests, and agreement (or discrepancy) scores. Currently, Super is engaged in the construction of the Career Development Inventory (CDI) which is based upon findings with the IVM but unlike them is an objectively-scored paper-and-pencil measure. Preliminary data have been collected on the CDI, but it is available only for research purposes. Following the lead of CPS, Gribbons and Lohnes (1968) have accumulated results over the past decade on a semi-structured interview technique for assessing career maturity called the Readiness for Vocational Planning (RVP) scales. What appeared to be promising initial data on the RVP have subsequently revealed some anomalies in their relationships to grade which are yet to be resolved. For several years, it has been clear from the research with the IVM and RVP that standardized measures of career maturity are needed. It was this need which prompted the writer (Crites, 1961) to launch the Vocational Development Project (VDP) in the early 1960s to construct an inventory which would provide easily administered, psychometrically sound, and theoretically meaningful measures of career maturity.

The instrument which was developed in VDP was first called the Vocational Development Inventory (VDI), and many of the research reports on it refer to this title (Crites, 1965, 1971), but it is presently known as the Career Maturity Inventory (CMI), in order to more accurately designate the processes it measures. From its inception, a combined "rational-empirical" test construction methodology was employed, in which central concepts in career development theory were first selected and given "literary definitions" and then items written so that those finally included in the CMI all were related to grade as an index of time. This procedure insured that the items were both theoretically meaningful *and* empirically valid—at least to the extent that any measure of a developmental variable must be a function of time (Crites, 1961). Moreover, item content was drawn from a universe of "real life" sources: counseling interviews case studies, career autobiographies, occupational information, and free responses to open-ended item stems cast in question form. The intention was to construct an inventory which would have maximal content validity as well as relevancy to the young people who would take it and hopefully benefit from it in making their career decisions. That this objective has been at least partially realized has been evidenced by the sustained interest and involvement of the students in VDP, many of whom have taken the CMI over periods ranging from five to eight years. For to standardize a measure of developmental variables, it is essential to gather longitudinal data. This was projected for the Core Sample depicted in Figure 2, but in addition cross-sectional data were also collected. Not only did the latter make possible a provisional standardization of the CMI, but they have provided a baseline against which to examine the relationship of items to grade at a given point-in-time and then to estimate which items were most likely to be valid developmentally (Crites, in press).

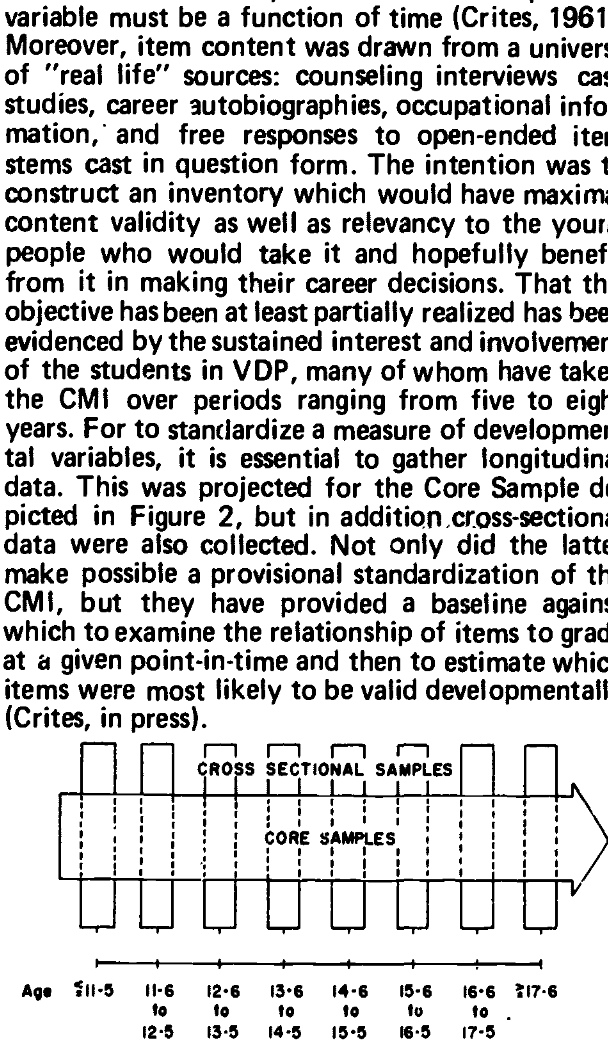

Figure 2. A Sampling Plan for the Career Maturity Inventory

Following this standardization and sampling design, the Attitude Scale of the CMI was first constructed. From a pool of approximately 1,000 items, written from the content universe discussed previously, 100 were selected for the initial form, so that there were about 20 items for each of the attitudinal clusters shown in Figure 1 and defined in Table 1. These items were administered to a stratified sample of fifth through twelfth graders, *N*s varying from 500 to 1000 in each grade, in the Cedar Rapids (Iowa) School System during the 1961-1962 academic year. From several different statistical analyses, it was found that 50 items were monotonically related to grade and that developmental stages occurred in them, as expected theoretically, at the transitional points in the educational ladder, which in the system studied are between the sixth and seventh grades and the ninth and tenth grades. Supplementary analyses also established that the Attitude Scale is equally applicable to males and females and to different socioeconomic classes; that it has internal consistencies in the mid-.70s and test-retest stabilities in the same range; that it is negligibly influenced by extraneous, test-specific sources of response bias (set and style); and, that it has acceptable content validity as determined by the agreement between judges' ratings of career-mature item responses and the empirically-derived scoring key constructed from the standardization. The relationships of the Attitude Scale to an extensive nomological network of other variables are summarized in the following section on the "Correlates of Career Maturity." The major research which remains to be conducted on it, which is currently in progress, is twofold: a factor analysis of the inter-item matrix to determine whether the *a priori* attitude clusters listed in Table 1 are empirically substantiated, and trend analyses of the longitudinal data collected between 1962 and 1969, when the original fifth graders graduated from high school. Plans are also being made to follow-up all of the standardization samples once they are established in the world-of-work to gather data on their subsequent careers which can be related to the maturity of their career attitudes in adolescence.

In contrast to the voluminous data which have accumulated on the Attitude Scale, the other part of the CMI—the Competence Test—has only recently been standardized, but what data are available

Table 1. Definitions and Samples of Items in the Attitude Scale of the Career Maturity Inventory (Crites, 1965, p. 35)

DIMENSION	DEFINITION	SAMPLE ITEM
Involvement in the choice process	Extent to which individual is actively participating in the process of making a choice	"I seldom think about the job I want to enter."
Orientation toward work	Extent to which individual is task- or pleasure-oriented in his attitudes toward work and the values he places upon work	"Work is dull and unpleasant" and "Work is worthwhile mainly because it lets you buy the things you want."
Independence in decision-making	Extent to which individual relies upon others in the choice of an occupation	"I plan to follow the line of work my parents suggest."
Preference for vocational choice factors	Extent to which individual bases his choice upon a particular factor	"Whether you are interested in a job is not as important as whether you can do the work."
Conceptions of the choice process	Extent to which individual has accurate or inaccurate conceptions about making an occupational choice	"A person can do any kind of work he wants as long as he tries hard."

Table 2. Sample Items from the Competence Test of the Career Maturity Inventory

SUBTEST	SAMPLE ITEM
Self Appraisal	Frank W. has always participated in a number of activities: debate, science club, plays, sports and band. He is also bright, having scored higher on the scholastic aptitude tests than anyone in his class. He keeps asking himself which of his interests he should follow. *What do you think?* (a) He should ask his parents for their opinion (b) He shouldn't give up any of his interests because he might give up the wrong one (c) It doesn't matter which interest he follows since he has enough ability for all of them (d) Before he decides which interest to follow he should be as certain as possible that it is the right one (e) Don't know
Occupational Information	Rita A. was looking forward to another busy day on her job at Marshall's, the largest department store in town. She was expecting her orders of women's fall fashions to arrive, and this meant getting them ready for a preseason sale. She also had to make plans for another trip to New York City's garment district to preview several new lines of coats and dresses for spring. *What is her occupation?* (a) Buyer (b) Copy writer (c) Public relations woman (d) Purchasing agent (e) Don't know
Goal Selection	Jim W. spends most of his time in the metal shop at school, both during and after classes. He has used the jigs and fixtures in the shop to make wrought-iron pieces, such as candlesticks, he has operated the lathe and punch press, and, he has even helped the shop teacher "set up" some jobs. He also has quite a collection of *Mechanix Illustrated*, from which he gets ideas for making things. *Which occupation would be the best one for him?* (a) Architect (b) Engineer (c) Machinist (d) Office machine operator (e) Don't know
Planning	Sandy G. is interested in becoming a dental hygienist. She must (1) Get a job working for a dentist (2) Major in dental hygiene in college (3) Take clinical training in dental hygiene *What is the correct order of these steps?* (a) 123 (b) 213 (c) 231 (d) 321 (e) Don't know
Problem Solving	Pedro G. likes engineering and selling about equally well. *But*, he cannot decide which one to make his vocation. *What should he do?* (a) Try both and then decide (b) Get more information about both occupations. (c) Forget about both of them, and choose another occupation. (d) Choose an occupation that combines both, like sales engineer (e) Don't know

on it tend to support its potential usefulness as a measure of career maturity. Whereas the Attitude Scale assesses the connative dimension of career development, however, the Competence Test appraises the cognitive facets of career decision-making. It was designed to quantify each of the variables in the Career Choice Competencies group of the career maturity model diagrammed in Figure 1. Sample items for each subtest of the Competence battery are given in Table 2. The Self-Appraisal (Knowing Yourself) subtest attempts to assess the psychological facility of accurately evaluating and estimating what a person's assets and liabilities are. The Occupational Information (Knowing about Jobs) subtest measures the individual's knowledge of what workers in different occupations do. The Goal Selection (Choosing a Job) subtest quantifies the ability to match an individual with the occupation for which he/she is best fitted. The Planning (Looking Ahead) subtest presents a scrambled series of actions which must be ordered in the proper sequence to enter and progress in a given career. And, the Problem Solving (What Should They Do) subtest poses a variety of problems which arise in the course of career decision-making, the task being to select what the individual considers to be the best solution from among the alternatives. Initially, there were 30 items in each of these subtests, but as a result of the standardization in the Spring of 1972,

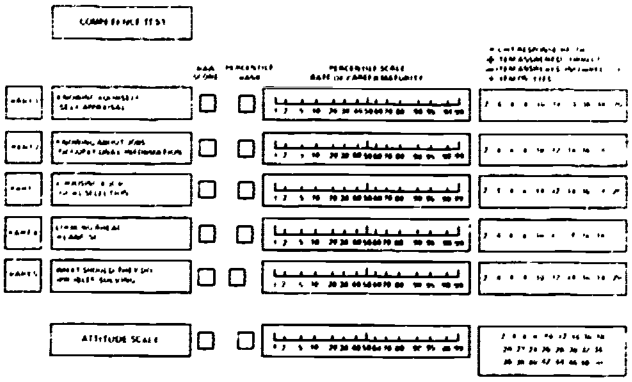

Figure 3. Career Maturity Profile

they were reduced to 20 items each, all of which were monotonically related to grade between the sixth and twelfth grades. With only two exceptions (.58 and .63) in the lower grades, the internal consistencies for the Competence battery ranged from .72 to .90. The median percentage overlap of score distributions for adjacent grades was 43%, and the mean intercorrelation among the subtests was .54. Thus, the preliminary findings on the Competence Test are promising indicating that it measures time-related variables with subtests which are internally consistent, differentiating between grades, and sufficiently orthogonal for each to contribute unique variance to the battery yet highly enough interrelated to be construct valid for the Choice Competencies dimension of the career maturity model. Further research on the Competence Test is under way to study its relationships to other relevant variables.

Scores from the CMI Attitude Scale and Competence Test can be expressed on the profile sheet reproduced in Figure 3 to define two aspects of career maturity: *degree* of career development and *rate* of career development (Crites, 1961). The former, which is analogous to Super's (1955) "behavioral scale of vocational development," is the *absolute* amount of career maturity attained by the individual as indexed by his/her raw score on the CMI. In other words, the higher the score on a scale, the farther the individual has progressed along that dimension of career development. In contrast, *rate* of career maturity, which is roughly comparable to Super's (1955) VMQ but with a different baseline, refers to the individual's *relative* standing in a norm group of his/her peers (grade-mates). Thus, the percentile rank indicates whether a person is arrested, average, or ahead of the norm in career maturity. Profiling both degree and rate of career maturity can be useful in counseling with individual students. Diagnoses of problems in career decision-making can be made from score configurations, much as "needs" assessments can be made for entire schools or systems. It was found in the standardization sample, for example, that the mean Occupational Information score for the twelfth graders was only 12 (out of a possible 20)! The need of these students for additional orientation to the world-of-work is apparent. The newly conceived career education programs may provide the didactic and other interventive experiences, such as counseling, industrial field trips, etc. which are lacking, since their avowed outcomes are almost identical to the variables measured by the CMI (see Summary).

THE CORRELATES OF CAREER MATURITY

Although the Career Pattern Study is in the last follow-up of its 20-year longitudinal investigation of career maturity, the only published findings on the correlates of the IVM come from analyses of the sample when it was in the ninth grade (Super & Overstreet, 1960). A total of 28 variables were correlated with the following Indices of Vocational Maturity: Concern with Choice, Acceptance of Responsibility for Choice and Planning, Specificity of Information, Specificity of Planning, Use of Resources, and VM Index Total. Of the variables designated as "biosocial," viz., age and intelligence, only the latter was related significantly to any of the IVM, the r with Specificity of Planning being .37 and with VM Index Total .29 ($p < .01$). The principal environmental correlate of IVM was parental occupational level, a frequently used index of socioeconomic status, weaker relationships were also found with family cohesiveness, enrollment in Regents School curriculum, cultural stimulation, and rural residence. With the exception of Use of Resources, all of the IVM (including Total) were correlated reliably ($p < .01$) with two other vocational behaviors: level of vocational aspiration, and agreement between levels of preferred and expected vocation. In general, the IVM were consistently related to various aspects of academic achievement, including grades, participation in school activities, and achievement/underachievement. They were also related to independence, and, in one instance (Specificity of Planning) to father identification. By and large, however, they were *not* systematically related to: father/mother educational level, birth order, parental vocational aspiration for son, parental and social mobility, religious affiliation, work values, personality adjustment, and peer acceptance.

The Career Development Study of Gribbons and Lohnes (1968) has produced a considerable body of data on the correlates of career maturity, as defined by the Readiness for Vocational Planning (RVP) scales, which were administered in both the eighth and tenth grades to the same sample of 110 male and female high school students. Longitudinal data on subsequent career adjustment as well as concurrent evidence on correlate variables were also collected. Only the relationship of the eighth grade RVP to these correlates and criteria are reviewed here, however, since corroborative results with the tenth grade scales were not always obtained, a fact which qualifies the conclusions that can be drawn from this research. The set of variables to which RVP is most highly related, both concurrently and predictively, is what might be termed other career behaviors. They include: curriculum choice, curriculum constancy, educational aspirations, socioeconomic level of career preference, and extent of educational and career planning. Later career development, classified as "Constant Maturity," "Emerging Maturity," "Degeneration," and "Constant Immaturity," was not significantly related to earlier RVP scores. Nor were such status variables as sex and socioeconomic level. Intelligence as assessed by Otis IQ, however, was highly related to RVP in the eighth grade, the R being .57 ($p < .001$). Gribbons and Lohnes point out that this communality may account for the relationship of RVP to other variables which are also related to intelligence, such as curriculum choice and level of career preference. But, then, they also note that: "RVP scales totally uncorrelated with verbal ability would be difficult to understand, since any judgments of the degree of maturity of verbal performances should be somewhat correlated with the verbal abilities of the performers" (Gribbons and Lohnes, 1968, p. 43). More disturbing was the finding that eighth and tenth grade RVP scales were not highly interrelated, although there were small, significant gains in the means during this time span. In both the Career Development Study and the Career Pattern Study, clear-cut relationships of career maturity measures to age and/or grade have not been empirically established, yet such systematic trends are a *sine qua non* of a developmental variable (Crites, 1961).

In the Vocational Development Project, the time dimension was, in effect, "built into" the Career Maturity Inventory (CMI) by selecting items initially on the basis of their cross-sectional relationships to grade, subject to later longitudinal verification. Such relationships are not sufficient, however, to demonstrate the validity of a measure for a developmental variable; it must also enter into a nomological network with other variables of interest (Crites, 1961). Research of this type has been completed only on the CMI Attitude Scale, not yet for the Competence Test, but it is extensive and allows several conclusions. With respect to *background* or *status variables*, several studies (e.g., Cover, 1968; Harris, 1966) have indicated that the Attitude Scale is not related to socioeconomic status as usually defined (Hamburger, 1958), but that it does differentiate the dichotomy employed/unemployed (Miller, 1968). It correlates non-significantly (gamma $r = -.23$) with number of siblings (Asbury, 1968) and only -.07 with previous work experience (Cover, 1968). In widespread testings of disadvantaged youth, American Indian children, Mexican-American students, and inner-city Blacks, however, there has been the uniform finding that these subgroups score significantly lower *within* grade levels than the original Cedar Rapids (Iowa) standardization sample, but the monotonic trend of career attitude maturity *between* grades still obtains. In other words, the grade sequence for Attitude Scale means remains intact for the minorities despite its generally depressed upper and lower limits. There have been no studies reported as yet on family variables in relation to career attitude maturity, but it is hypothesized that they would be significant correlates.

Psychological variables to which the Attitude Scale has been related are of two types: intellective and nonintellective. Among the former are measures of general scholastic aptitude and standardized achievement test, which, in a number of studies (Crites, 1971), correlate on the average of .35 with career attitude maturity. This amount of covariation is moderately high, and might be of practical concern, were it not that it was expected theoretically (see previous discussion) and that the Attitude Scale is related to variables which are unrelated to intellective ones. Otherwise, it might be contended that the Attitude Scale is simply a poor measure of intelligence. On the contrary, it correlates with such nonintellective variables as general adjustment status (Hollender and Schalon, 1965) and personality characteristics (Bartlett, 1968; Schalon, 1965). In general, the more mature an adolescent is in his/her career attitudes, the better adjusted and "more assertive, persistent, goal oriented, forceful, and independent" (Bartlett, 1968, p. 107) he/she is. And, this relationship appears to hold up over time. Crites and Semler (1967) found that, in a seven-year follow-up of fifth graders when they were high school seniors, their earlier personal and social adjustment, as assessed by the California Test of Personality, were correlated .22 and .23 ($p < .01$), respectively, with later career attitude maturity. Other findings from this study have suggested a hierarchical model of development in adolescence, in which career maturity and educational achievement are coordinate dimensions (or parallel "tracks") and general adjustment interrelates them as a supra-factor. In other words, the dual developmental tasks of achieving educationally and maturing careerwise are complementary aspects of adjustment in adolescence.

Finally, the Attitude Scale is related to a class of correlates which Super (1957, p. 186) has termed *outcome variables* and which he defines as "the result of interaction between the individual's personal resources including his vocational maturity—what he brings to his encounters with reality—on the one hand, and reality demands on the other." Included here are not only persistence in college, performance in vocational training, and job success but also enhanced career attitude maturity stemming from exposure to counseling and other interventive experiences. It has been demonstrated that all of these variables are correlates of the Attitude Scale in one study or another (Crites, 1971). The more persistent a student is in college the higher the instructor's rating obtained in practical nursing and mechanics, and the more successful the worker is on the job, the more mature the individual's career attitudes are. Similarly, preliminary results on the effects of counseling and didactic programs upon the Attitude Scale as the dependent variable indicate that gains can be achieved in career attitude maturity as a function of these activities. A particularly intriguing finding from one of the counseling experiments was that the counseling produced greater gains on the Attitude Scale when clients were pretested with it than when they were not. In other words, they benefited more from the counseling when they were evidently "sensitized" to the topical content of it beforehand by taking the Attitude Scale. This effect has opened up a whole new line of inquiry, in which experiments are being conducted on whether "teaching the test" (Attitude Scale) constitutes an efficacious counseling technique *per se*. If it does, and initial data *are* confirmatory, then such a procedure may provide counselors and teachers with a simple yet effective method for fostering career maturity as one of the major outcomes of career education programs.

CONCLUSION

One last thought: the obvious interface between career maturity and career education should be explicated and emphasized. The career behaviors which have been found to mature during late childhood, adolescence, and early adulthood are the very ones which are the proposed outcomes of career education (Marland, 1972). Theory and research on career maturity, as reviewed and summarized in this paper, can contribute the concepts and measures needed by career education to conceive and evaluate curricula and training programs; and, conversely, career education can expose young people to the experiences they need to enhance and facilitate their career maturity. Together, career maturity and career education represent a synthesis of principles and procedures which should benefit the individual and society alike.

Do You Have An Idea for *Measurement in Education?*

Measurement in Education solicits manuscripts based on planning and advice received from the Advisory Committee. However, the editor is open to suggestion for topics for future issues. Our aim is to provide information about measurement and evaluation which is helpful to the educational practitioner – the school superintendent, principal, counselor, classroom teacher. Topics featured in *Measurement in Education* should be of current wide interest, based in sound theory, expressed in nontechnical easy readable style and demonstrate how applications at the school level can be made. If you have an idea, you are invited to submit it to the editor for consideration by the Advisory Committee.

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