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ABSTRACT

The growing number of career choice process instruments may have outstripped counselors' understanding of these increasingly sophisticated and complex measures. The differences among measures bearing similar titles is often confusing and has led some counselors to misapply or misinterpret them. The most important developments/advances in the Career Decison Scale (CDS), the Career Development Inventory (CDI) and the Career Maturity Inventory (CMI) were described in the book "Career Decision Making" (1988). There have been even more recent developments in these scales. The most important development relative to the use of the CDS concerns the differential diagnosis of undecided students. Each review of the CDS and many investigations of it have offered explicit suggestions for research to further develop the Indecision Scale. Developments for the CMI concern its increasing use in teaching decisional attitudes and competencies. At this time the most pressing need for the CIM-Attitude Scale is a literature review. The most important development relative to the use of the CDI concerns developmental counseling. The CDI needs criterion-related research to firmly establish its validity and nomological network. (ABL)

Advances in the Use of Career Choice Process Measures

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Advances in the Use of Career Choice Process Measures

"What are the most important developments/advances in the Career Decision Scale (CDS; Osipow, Carney, Winer, Yanico, & Koschier, 1976), the Career Development Inventory (CDI; Super, Thompson, Lindeman, Jordaan, & Myers, 1981), and the Career Maturity Inventory (CMI; Crites, 1978a)? This question has been thoroughly answered in three chapters in a book on Career Decision Making edited by Walsh and Osipow (1988). Phillips and Pazienza (1988) discussed the history and theory of assessing both career development and decision making. Slaney (1988) reviewed the literature on career indecision and discussed the CDS. Betz (1988) reviewed the literature on career maturity and discussed the CMI and the CDI. This paper primarily deals with developments that have appeared since the publication of the Walsh and Osipow textbook and emphasizes the counseling use of the measures.

How They Are Used

The growing number of career choice process instruments may have outstripped counselors' understanding of these increasingly sophisticated and complex measures. The differences among measures bearing similar titles is often confusing and has led some counselors to misapply or misinterpret them. To address this problem, the recent literature on career choice process measures has conceptually compared the scales and empirically clarified what each scale measures (Blustein, 1988; Jepsen & Prediger, 1981; Rounds & Tinsley, 1984; Savickas 1984; Savickas, in press; Tinsley, Bowman, & York, 1989). Based on this work, clear distinctions can be made among the CDS, CDI, and CMI.

The CDS deals with indecision whereas the CDI and CMI deal with career maturity. More precisely, the CDS addresses adaptation to the tasks involved in developing a career choice. The CDS Certainty Scale helps counselors make a differential diagnosis of a client's decisional status, that is, degree of decidedness. The CDS Indecision Scale helps counselors assess the amount and variety of difficulties that delay clients' adaptation to career choice tasks (Tinsley, Bowman, & York, 1989). The CDI and CMI address not adaptation but adaptability, that is, the personal resources one can draw upon to form behavioral responses to the vocational development tasks of crystallization, specification, and implementation (Blustein, 1988). In particular, the CDI measures planning and exploration attitudes as well as informational and decisional competencies that people use to develop a realistic career choice. Counselors can use the CDI to make a developmental diagnosis of clients' readiness for coping with career choice tasks. In contrast, the CMI-Attitude Scale measures attitudes toward career choice (Form A-2 or B-1 total score) and dispositions toward vocational decision making (Counseling Form B-1 subscales). Counselors can use the CMI to make a decisional diagnosis of clients' readiness to make realistic career choices. The differential, developmental, and decisional perspectives on the career choice process focus attention on distinct variables, yet the variables of difficulties, readiness, and dispositions may eventually be integrated into comprehensive career choice process measures (Jepsen & Prediger, 1981) and diagnostic classification schemes (Rounds & Tinsley, 1984).

In addition to informing diagnosis for counseling, each of the scales has been used in evaluation, research, and surveys. In conducting program evaluation or research, counselors should choose the scale that most closely

coincides with objectives of the program or treatment: the CDS to measure decisional status and difficulties, the CDI to measure developmental task mastery attitudes and competencies, or the CMI-Attitude Scale to measure career choice concepts and dispositions toward vocational decision making. Although this selection criterion seems obvious, some counselors have overlooked it because the scale titles describe in general, not in particular, what they measure. In conducting surveys, many counselors select the CDS or CMI Screening Form A-2 to quickly screen large groups of students. The CMI A-2 works particularly well with junior and senior high school students. The CDS works better than the CMI with college students (Fretz & Leong, 1982) because it addresses major choice and has a higher ceiling. When planning guidance programs and career education curricula, counselors may use the CDI or the CMI Counseling Form B-1 because they each measure five variables and thus provide multidimensional data as a basis for intervention design.

The following three sections discuss, respectively, a recent development in using the CDS from the differential perspective, the CMI from the decisional perspective, and the CDI from the developmental perspective.

Career Decision Scale

Dimensions of Indecision

The most important development relative to the use of the CDS concerns *differential* diagnosis of undecided students. This research has followed two different approaches. One of the two prevalent approaches to assessing undecided students with the CDS seeks to understand the dimensions of indecision, map indecision's dimensional network, and then use dimensional profiles to differentially diagnose and treat undecided students. Researchers who try to identify the dimensions of indecision follow the prototypal work of

Osipow, Carney, and Barak (1976) who identified four dimensions within the problem of indecision. Typically, these researchers administer the CDS to students, factor analyze students' responses to the items, interpret the factors as dimensions of indecision, and propose CDS subscales to operationally define these dimensions. At least seven studies prior to 1988 have pursued this tactic. Unfortunately, results from these studies conflict from slightly to moderately. In considering these conflicting results, Osipow (1987, p. 7) advised caution in the use of factor-derived scales and Slaney (1988, p. 49) concluded that "the failure of subsequent studies to replicate the original factor structure raises questions about the usefulness of factor scores and, in turn, the development of treatments based on these factor scores". The conflicting results probably stem, at least in part, from researchers' repeatedly using exploratory factor analysis rather than confirmatory factor analysis. This approach is overly rigorous because several alternative and equally acceptable (on statistical grounds) solutions may result from exploratory factor analysis, thus making it harder to confirm a factor model extracted from a prior study. Given what we already know from exploratory factor analyses of the CDS, confirmatory factor analysis may now provide a better method for examining the dimensions of indecision.

Two studies published during 1988 discussed and tried to resolve the problem of whether the dimensions measured by the CDS are stable across samples. In the first study, Shimizu, Vondracek, Schulenberg, and Hostetler (1988) attributed, in part, the failure of the seven studies to identify a stable factor structure to differences in factoring methods. They methodologically integrated the seven studies by transforming the results of each study to a comparable metric. Unfortunately, they defined this common

metric using the partial information in the factor loading matrices rather than working with the complete information in the zero-order correlation matrices. After comparing the results in the common metric, they concluded that more factor stability existed in the disparate studies than had been previously recognized. Next they reported the results of their own exploratory factor analysis of the CDS items. They produced a four factor solution: (1) indecision regarding career choice accompanied by confusion, discouragement, and lack of experience and information; (2) relative decidedness with desire for reinforcement and support; (3) approach-approach conflict generated by multiple positive feelings about careers that make choosing difficult; and (4) internal and external barriers to career decision making. They concluded that these factors were quite similar to the factors identified in their methodological integration of prior studies.

In a second study using the same sample of students, Schulenberg, Shimizu, Vondracek, and Hostetler (1988) examined whether the dimensions of career indecision remain unchanged during adolescence. They used confirmatory factor analysis to test the four-factor model which they had devised in the first study. For four subgroups of grades 7-9 and 10-12 males and females, they found no evidence for structural reorganization or emergence of new dimensions during adolescence. They advised readers to be skeptical of this conclusion because they used the same sample to devise and test their model and because they addressed a developmental hypothesis with cross-sectional data. They did not, in the limitations section, remind readers that the chi-squared test for the model was significant thus indicating that the model provided a less than acceptable fit. They explained this finding following what is becoming common practice in interpreting LISREL results. However,

they could have tested other models or noted that other models may provide more acceptable fit. Although we still do not have a confirmatory factor analysis on an independent sample, Shimizu and his colleagues advanced our understanding of career indecision dimensions by looking at all the data and examining the developmental structure of the dimensions.

While other researchers concentrated on identifying a stable factor structure for the CDS, Fuqua, Newman, and Seaworth (1988) began to map the nomological network of indecision dimensions. They related trait and state anxiety to four dimensions of indecision which they extracted from the CDS responses of 349 college students: (1) need for information and tendency to delay decision making, (2) need for information about fit of self to various occupations, (3) multiple interests, and (4) barriers to implementation. The last two factors were each defined by only two items. After correlating trait and state anxiety to these four factors, they concluded that anxiety did not relate to the multiple interests dimension but did relate to the other three dimensions, most strongly to the first dimension. They advanced theory by showing that anxiety may relate differently to various dimensions of indecision. However, mapping the nomological network of indecision dimensions will not advance practice until researchers identify stable dimensions of indecision. Nevertheless, Fuqua, Newman, and Seaworth informed practice by reminding practitioners to consider clients' anxiety problems when they design interventions for career indecision.

Although several researchers are trying to identify stable dimensions of indecision for the CDS and to construct pertinent subscales, other researchers are less optimistic about this tactic. For example, Tinsley, Bowman, and York (1989) used factor analysis to empirically examine the conceptual similarity

among the CDS, My Vocational Situation, Vocational Rating Scale, and Decision Rating Scale. The results indicated that the CDS Indecision Scale composed a well-defined factor orthogonal to the factors from the other scales. They had not expected this finding because the factor analyses of the CDS mentioned above have found it to be multidimensional with factors similar to other factors extracted in their study. Given that the CDS items failed to load significantly on these factors, they concluded that the distinctions drawn among items in the CDS in factor analyses of it are minor in comparison to the distinctions among related but different instruments. The other prevalent approach to research with the CDS coincides with the conclusion drawn by Tinsley, Bowman, and York.

Types of Undecided Students

The second prevalent approach to assessing undecided students with the CDS seeks to type these students into homogeneous subgroups, delineate the characteristics of each type, and then use these characteristics to differentially diagnose and treat undecided students. Counselors who try to identify types of undecided students follow the lead of Holland and Holland (1977) who speculated, based on a literature review and their own research, that undecided students are a heterogeneous group composed of three subgroups. They characterized subgroups of students who (a) express no pressure to decide right now; (b) show slight to moderate immaturity; and (c) display moderate to severe immaturity.

Because they address types of students rather than dimensions of indecision, these studies use cluster analysis rather than factor analysis. In one study, Fuqua, Blum, and Hartman (1988) administered the CDS and measures of psychosocial identity, locus of control, and state and trait

anxiety to 152 high school seniors and 3 juniors enrolled in introductory sociology or psychology courses. Cluster analysis formed four groups. An analysis of variance for the five variables across the four groups distinguished the groups by level of indecision. A career decided cluster (CDS=22.9), constituting 41.9% of the sample, showed little excess anxiety and relatively effective identity formation and internal-control attributions. A moderate indecision/moderate anxiety group, constituting 22.6% of the sample, showed moderate indecision (CDS=28.7), fair internal-control attributions, increased anxiety, and less identity formation. The two remaining groups both displayed serious career indecision (CDS=37.0 and 36.4) along with more external-control attributions and poorer identity formation. Anxiety distinguished the two groups. The serious indecision/moderate anxiety group, constituting 27.7% of the sample, showed moderate anxiety whereas the serious indecision/excessive anxiety group, constituting 7.7% of the sample, showed excessive anxiety. Fuqua, Blum, and Hartman concluded that anxiety level may suggest differential intervention if future research confirms that anxiety differentiates the groups. For example, anxiety may cause indecision in the serious indecision/excessive anxiety group and result from indecision in the serious indecision/moderate anxiety group.

In a second study, Larson, Heppner, Ham and Dugan (1988) administered the CDS and measures of interests and problem-solving self-appraisal to 104 college sophomores and 9 freshman. They also constructed and administered a 42-item Career Planning Inventory (CPI) and scored it on eight scales that measured career problem solving, career myths, support systems, self-knowledge, perceived pressure, academic self-efficacy, world of work, and career obstacles. The researchers operationally defined students as decided

if they had declared a major by the college's official deadline and had scored above six on the first two items of the CDS. They defined students as undecided if they had not yet declared a major before the official deadline for sophomore students. CDS means were 21.9 for 26 decided students and 36.3 for 87 undecided students. Cluster analysis formed four subgroups of undecided students. A planless avoiders group, constituting 21% of the sample, had the highest CDS mean (39.9), very poor problem solving, and the worst scores on 5 of 8 CPI scales. An informed indecisives group, constituting only 5% of the sample, had the lowest CDS mean (24.0), best scores on 7 of 8 CPI scales, and poor problem-solving. A confident but uninformed group, constituting 25% of the sample, had moderate CDS (32.5) and CPI means but the best problem-solving. An uninformed group, constituting 49% of the sample, was similar (CDS mean = 37.9) to the confident but uninformed group but showed only average problem solving.

The results of these two cluster analytic studies seem remarkably similar given that they differed in participants (high school seniors vs. college sophomores), variables (anxiety vs. problem solving), clustering strategy (cluster undecided and decided students vs. cluster only undecided students), and clustering methods (centroid cluster analysis in BMDP2M vs. Fastclus in SAS). The CDS means for the Fuqua et al. decided cluster and the Larson et al. decided group were similar (22.9 vs. 21.9) Although Larson and her colleagues considered the informed indecisives group to be undecided, they seem similar to decided students. The four informed-indecisive students had a CDS mean of 24.0, and the best scores on 7 of the 8 CPI scales. I wondered if they were 4 of the 9 freshmen and what their scores were on the first two CDS items.

Matching the remaining three groups in each study suggests that the Larson et al. confident but uninformed group with their moderate indecision and excellent problem solving seem similar to the Fuqua et al. moderate indecision/moderate anxiety group. In addition to being similar to each other, these two groups may fit Holland and Holland's category of no pressure to decide now. The Larson et al. uninformed group with their serious indecision and average problem solving seem similar in level of indecision and conceptual description to the Fuqua et al. serious indecision/moderate anxiety group. Both these groups may fit Holland and Holland's category of slight to moderate immaturity. The Larson et al. planless avoiders group with their serious indecision and very poor problem solving seem similar in level of indecision and conceptual description to the Fuqua et al. serious indecision/excessive anxiety group. These two groups may fit Holland and Holland's category of moderate to serious immaturity.

Although more research is needed, accruing evidence on types of undecided students seems to indicate a three level continuum something like: Level I - slight to moderate indecision, with little anxiety, and good problem solving; Level II - moderate to serious indecision with moderate anxiety; and Level III - serious indecision with excessive anxiety. This interpretation basically supports Osipow's advice that counselors use the CDS total score, rather than factor scores, because the CDS total score can distinguish among decided students, undecided students with moderate indecision, and undecided students with serious indecision. However, the CDS total score cannot consistently differentiate between Levels II and III because these two levels overlap in both including serious indecision yet differ in degree of anxiety. Level II may include more students with developmental indecision (anxiety results from

indecision) whereas Level III may include more students with chronic indecision (anxiety causes indecisive disposition). This speculation implies that qualitatively different problem patterns may exist within the quantitative level of serious indecision.

The authors that reported results of clustering undecided students each suggested the possibility of differential intervention. As a group, they seemed to indicate that students at Level I may benefit sufficiently from vocational guidance in the form of brief workshops or self-directed individual learning experiences like those involved in DISCOVER, SIGI, and the Self-Directed Search. Students at level II may need the added benefits achieved in career planning courses or career counseling (including interest inventories) aimed at increased self-knowledge and readiness for career decision making. Students at Level III may benefit from personal counseling or psychotherapy to deal with psychological blocks to decision making, reduce anxiety, and increase problem-solving competence.

Career Maturity Inventory

The most important development relative to the CMI concerns its increasing use in teaching *decisional* attitudes and competencies. Of the four methods for instructional career counseling described by Healy (1982, p. 305), counselor may be least familiar with the "teach-the-test" method. Crites (1974) proposed this method of didactic career counseling when he suggested that counselors systematically teach clients the correct answers to items that appear in career development inventories. Crites reasoned that these items assess critical attitudes toward and competencies for career decision making. Therefore, counselors might discuss with their clients those items which clients answer incorrectly. At a minimum, this discussion can help clients

develop their career choice attitudes and competencies by having them learn and understand the correct answers to the items which they missed. Toward this end, Crites wrote programmatic discussion materials for the CMI-Attitude Scale. In addition to indicating the correct answer, Crites' programmatic materials explain the rationale for each item (Crites, 1973; Crites & Savickas, 1980).

During the last 15 years counselors have devised several ways of using the CMI rationales with the teach-the-test method. Flake, Roach, and Stenning (1975) combined the teach-the-test method with a second instructional counseling method, reinforcement-modeling. In individual sessions, counselors reviewed the client's incorrect responses to CMI items without indicating that the client had responded immaturely to the items. During this review, counselors ignored clients' immature statements and reinforced their mature statements. Flake, Roach, and Stenning concluded from their research that this counseling method increases clients' career maturity. Healy, (1982) suggested that counselors teach the attitudes measured by the CMI before administering the inventory and discussing incorrect responses in order to reduce "client errors, thereby lessening anxiety associated with career development learning" (p. 318). Freeman (1975) used the rationales to write ten sociodramas that proved effective in increasing the career maturity of seventh grade students. Counselors at a community college used the rationales to compose a "Dear Abby" type feature for their newsletter (Julian, 1980). And most recently Savickas and Crites (1988) augmented each item rationale with an activity that counselors may assign as homework or use as a microintervention during counseling sessions. They also developed a Career Decision-Making Course (1981) to teach the decision-making attitudes and

competencies through 20 lesson plans. The titles of the lessons plans appear in Table 1. A recent test of the course (Savickas, 1989) involving ten classes of tenth-grade students showed that the course decreased participants decisional difficulties and improved their foresight.

Insert Table 1 Here

Career Development Inventory

The most important development relative to the use of the CDI concerns *developmental* counseling. Super has explicated the place of the CDI in his Developmental Assessment and Counseling Model (DAC) which implements his "life stage and life role theory" (Super, 1982; 1983). Developmental assessment of life stage and life space is accomplished with the CDI and the Salience Inventory. The Salience Inventory assesses how important work is to a client. This information is "essential" to knowing what his or her scores on CDI mean (Nevill & Super, 1988; Super & Nevill, 1984). The counselor uses the assessment of work-role salience and career development attitudes and competencies to understand the client's readiness to make self and occupational matching decisions as well as to interpret the results of interest and aptitude tests. Taken together, information about orientation to life roles, career maturity, and interests and aptitudes may be used to select counseling interventions that (a) increase work salience, (b) develop decisional resources, (c) prompt career exploration, or (d) inform career planning. Developmental counseling is accomplished by helping clients (a) understand their orientation to life roles, (b) increase their awareness of the life stage tasks which they are facing and develop the pertinent coping resources, (c) comprehend their interests and abilities in light of their

life-role orientation and career development attitudes and competencies, and (d) form and implement exploration plans that increase life-role awareness, arouse the need to make choices, crystallize field and level preferences, or specify tentative occupational choices. The efforts to help counselors understand the use of the CDI in the DAC model rely heavily upon a case studies. Users of the CDS and the CMI would benefit from more case studies using these scales (Crites, 1976; Dorn, 1988).

What's Next?

Career Decision Scale

Each review of the CDS and many investigations of it have offered explicit suggestions for research to further develop the Indecision Scale. In sum, reviewers and researchers have called for: (a) explication of the conceptual rationale for item selection; (b) continuation of studies to define types of indecision or patterns of vocational decision-making difficulties; (c) development of subscales for differential diagnosis of indecision types; (d) extension of the inchoate work on matching intervention methods and materials to types of indecision; and (e) initiation of research on written responses to item 19.

Career Maturity Inventory

At this time, the most pressing need relative to the CMI-Attitude Scale is a literature review. The last literature review appeared in the Theory and Research Handbook (Crites, 1978b). A voluminous literature dealing with the CMI has appeared since 1975, the most recent reference in the Handbook bibliography. A systematic synthesis of the accumulated evidence would allow theorists, researchers, and practitioners to make the fullest use of the varied information offered by the numerous studies. It might also help

resolve the controversy surrounding the CMI-Attitude's Scale's relationship to intelligence (Crites, Wallbrown, & Blaha, 1985; Westbrook, 1982). The most pressing empirical research need is for studies of the validity of the five subscales in Counseling Form B-1. In order for these subscales to be more useful to counselors, their validity for use must be formally established.

Career Development Inventory

The CDI needs criterion-related research to firmly establish its validity and nomological network. In particular, researchers could refine the Developmental Assessment and Counseling Model by linking the CDI to variables commonly studied in developmental and personality psychology. To date, research on the CDI has been conducted in isolation from advances and debates in the behavioral sciences (Heath, 1976; Vondracek & Schulenberg, 1986). Linkages to this body of basic research would increase practitioner's understanding of career development and its facilitation. For example, researchers could relate the CDI variables to future orientation, causal attribution, and self-efficacy to learn if these personality variables condition career planning and exploration attitudes (Super, 1983). Practitioners would also benefit from research on the interpretive hypotheses suggested for each CDI scale. Although the scale interpretations suggested in the manual make sense, they await empirical confirmation. The interpretations of profile patterns also lack empirical support. For example, the profile interpretation that spiked scores on the Career Planning and the Knowledge of Preferred Occupational Group scales reflects premature closure or early fixation seems cogent yet needs empirical support. Validated decision rules for interpreting profiles could stimulate advances in differential treatment of clients.

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Table 1

Lesson plan titles

Attitudes and Concepts	Competencies and Tasks
Become involved now	Self-appraisal is crucial
Explore your future	Know yourself
Choose based on how things look to you	Appraise your activities
Control your future	Know about jobs
Work: A problem or opportunity	Select goals
View work positively	Choose a job
Conceptualize career choice	Plan
Clear up career choice misconceptions	Look ahead
Base your choice on yourself	Problem solve
Use four aspects of self as choice bases	Course summary