

AN ABSTRACT OF THE THESIS OF

Sonya Lea McDowell for the degree of Doctor of Education

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Title: VERIFICATION OF THE CAREER MATURITY INVENTORY

ATTITUDE SCALE FOR USE WITH OREGON TWELFTH

GRADE STUDENTS

Abstract approved: _____

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/// Larry J. Kenneke

Purpose of the Study

The Career Maturity Inventory (CMI) Attitude Scale is a standardized test used frequently in Oregon to measure effectiveness of career education programs. The purpose of this study was to verify the usefulness of this instrument with Oregon twelfth grade students.

The following null hypotheses were tested:

1. There is no significant difference between career attitudes of 1977-1978 Oregon twelfth grade males and females as shown by scores on the CMI Attitude Scale.
2. There is no significant difference between career attitudes of 1977-1978 Oregon twelfth grade students of four cultural groups (Black, Hispanic, American Indian, and White) as shown by scores on the CMI Attitude Scale.
3. There is no significant interaction between the levels of sex and culture of 1977-1978 Oregon twelfth graders as shown by scores on the CMI Attitude Scale.

4. There is no significant relationship between attitudes of 1977-1978 Oregon twelfth graders as shown by scores on the CMI Attitude Scale and career attitudes as expressed on an external criterion of desired behavior of students in Oregon.

Procedures

Subjects for this study included 398 randomly selected twelfth graders from the four largest cultural groups in Oregon: Black, Hispanic, American Indian, and White. Two instruments were used: the CMI Attitude Scale and the Current Career Attitude List (CCAL), an external criterion of desired career education outcomes for Oregon students, which was developed by the investigator. The data were collected during the fall of 1977 by the investigator.

A two-way analysis of variance was used to test Null Hypotheses 1, 2, and 3. Null Hypotheses 1 and 2 were rejected. The findings indicated that the female subjects scored significantly higher on the CMI Attitude Scale than the male subjects. Significant differences were also found between the scores of the four cultural groups. The Least Significant Difference test was used to determine where differences existed. This comparison showed that the Black and the Hispanic subjects' mean scores were significantly different from the mean scores of the American Indian and the White subjects.

Null Hypothesis 3 was retained. No significant interaction was found between the levels of sex and culture.

The Pearson product-moment correlation was used to determine Null Hypothesis 4. A positive, low relationship (significant at the .05 level) was found between scores on the CMI Attitude Scale and the CCAL.

Additional analyses were done in order to further describe the usefulness of the CMI Attitude Scale. Reliability of the CMI Attitude Scale was determined to be 0.82 using the Spearman-Brown prophecy formula. The distribution of scores was negatively skewed with scores tending to be higher than would be found in a normal distribution. However, this might be expected as Oregon high school graduation requirements include one Carnegie unit of career education. An item analysis using the top 27 percent and bottom 27 percent procedure indicated four items were not discriminatory.

Additional data collected indicated 31 Oregon teachers of career education classes believed most of the CMI Attitude Scale items to be relevant to today's students.

Conclusions

The CMI Attitude Scale may seem to be a useful instrument when examining the descriptive data provided by this study. However, when studying the data dealing with differences between scores of males and females, and differences between scores of various cultural groups it becomes evident that the CMI Attitude Scale is sex biased and culturally biased. Its usefulness, therefore, is questionable.

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Verification of the Career Maturity Inventory
Attitude Scale for Use with Oregon
Twelfth Grade Students

by

Sonya Lea McDowell

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Associate Professor of Education _____
in charge of major

Redacted for Privacy

Dean of School of Education

Redacted for Privacy

Dean of the Graduate School

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Typed by Mary Jo Stratton for _____ Sonya Lea McDowell

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VERIFICATION OF THE CAREER MATURITY INVENTORY
ATTITUDE SCALE FOR USE WITH OREGON
TWELFTH GRADE STUDENTS

I. INTRODUCTION

Career education has become an increasingly important theme in education. The recent signing by President Jimmy Carter of the Career Education Incentive Act which authorizes \$325 million for the development of career education, gives national recognition to the importance of infusing career education into ongoing educational programs.

Oregon has become a pioneer in the recognition of the need for career education. In 1972 the Oregon State Board of Education adopted new requirements for high school graduation in response to the input of students, parents, citizens, educators, and school board members. These requirements, effective for the class of 1978, included one Carnegie unit of credit in career education.

Oregon educators seriously responded to the task of providing career education for Oregon students. The Oregon Department of Education (Annual Descriptive Report, Vocational Education in Oregon, 1976) reported by 1976, 50 percent of students in grades one through six, 60 percent of students in grades seven through ten, and 50 percent of eleventh and twelfth grade students were participating in planned career education activities.

Measuring Effectiveness of Career Education

Concurrently, there are legislators, school board members, and taxpayers demanding accountability of educational programs. Standardized tests are of critical importance in meeting this demand. They are used by educational decision makers in new program development, curriculum planning, and evaluation of students' achievement. Advantages of using standardized tests for these purposes include established reliability and validity, and the availability of norms based on responses of large numbers of students. Data regarding the use of standardized instruments in various studies are also available. This information is useful in considering the selection of a standardized test for measurement in a specific situation.

Standardized instruments must be studied carefully and test selection made thoughtfully if the results of the measurement are to be useful. Several factors must be considered. The objectives of such an instrument must be congruent with the objectives being studied and validity and reliability must be established as acceptable for the purposes of the instrument. The standardization sample must be suitable and ease, as well as cost, of administration of the instrument must be weighed.

In summary, career education has become a major theme of education in Oregon. Therefore, it is necessary to measure the

effectiveness of these career education programs. Standardized tests can be very helpful in this process if they are judged suitable to the situation being measured.

Statement of the Problem

The Career Maturity Inventory Attitude Scale (hereafter referred to as the CMI Attitude Scale) is a standardized test designed by Crites in 1961. One of its stated objectives is to measure the effectiveness of career education programs (Crites 1973). The CMI Attitude Scale has been used extensively in Oregon and throughout the United States for this purpose. Some of the Oregon high schools which have used this instrument to measure the effectiveness of their career education programs are Springfield, Thurston, Burns, Ontario, La Grande, Vale, Nyssa, Pine Eagle, Prairie City, and Grant Union.

Several researchers have questioned various aspects of the CMI Attitude Scale (Hall 1962, Hollender 1964, Asbury 1968, Miller 1968, Shirts 1968, Hamby 1976). These researchers have suggested the CMI Attitude Scale may be sex biased, culturally biased, and irrelevant to today's youth.

Specifically in Oregon, Hamby (1976), in a study designed to determine the effectiveness of an intensive three-year career education and guidance program in two Oregon high schools, expressed

grave concern about particular items of the CMI Attitude Scale. She concluded that an instrument developed in 1961 may not have meaning for students brought up after the cultural revolution of the 1960's. Hamby's (1976) findings also suggested the instrument may not be sufficiently difficult for students who have been involved in career education programs for three years.

In summary, educational program planning and curriculum development must be based on the needs of the students to be served. Standardized tests are useful in assessing and evaluating student needs. It is necessary, however, that tests for these purposes be valid for the group involved.

Attitudes are not static. They reflect the beliefs of a dynamic society. Studies indicate that statements of career attitude made 17 years ago may not reflect current career attitudes. Furthermore, these studies also suggest the CMI Attitude Scale may be culturally biased as well as sex biased. An investigation of statements of career attitudes held by today's students is necessary for the development of instruments applicable to current educational programs. Further investigation of the CMI Attitude Scale is needed if it is to be a useful tool in measuring the career attitude maturity of a specific group.

Purpose of the Study

The major focus of this study was to verify the usefulness of the CMI Attitude Scale with Oregon twelfth grade students in measuring the effectiveness of career education programs.

Problems of the Study

This study focused on five problems.

Problem 1 - To ascertain the difference between career attitudes of 1977-1978 Oregon twelfth grade males and females as shown by scores on the CMI Attitude Scale.

Problem 2 - To ascertain the difference between career attitudes of 1977-1978 Oregon twelfth grade students of four cultural groups (Black, Hispanic, American Indian, and White) as shown by scores on the CMI Attitude Scale.

Problem 3 - To ascertain the distribution of scores of 1977-1978 Oregon twelfth graders on the CMI Attitude Scale.

Problem 4 - To ascertain if career attitudes as expressed in the CMI Attitude Scale are believed to be appropriate for Oregon twelfth graders.

Problem 5 - To ascertain the relationship between career attitudes of 1977-1978 Oregon twelfth graders as expressed on the CMI Attitude Scale and career attitudes as expressed on an external criterion of desired behavior for Oregon students.

Definition of Terms

American Indian Student - A student having origins in any of the original peoples of North America (School Level, Fall Report 1976-77).

Appropriate - As referred to in Problem 4 (p. 5), "appropriate" is defined to mean suitable, relevant, current.

Attitude - Predisposition toward an action or feeling.

Black Student - A student having origins in any of the Black racial groups but not of Hispanic origin (School Level, Fall Report 1976-77).

Career Education -

The total effort of public education and the community aimed at helping all individuals to become familiar with the values of a work-oriented society, to integrate these values into their personal value systems, and to implement these values into their lives in such a way that work becomes possible, meaningful, and satisfying to each individual (Hoyt et al. 1972, p. 1).

Career Maturity - That place, along a continuum of vocational development from exploration to decline, where an individual's maturity can be indicated by the similarity between his behavior and

that of the oldest individual in his vocational life stage (Crites 1961, p. 259).

Hispanic Student - A student of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race (School Level, Fall Report 1976-77).

White Student - A student having origins in any of the original peoples of Europe, North Africa, the Middle East, or the Indian subcontinent but not of Hispanic origin (School Level, Fall Report 1976-77).

II. REVIEW OF RELATED LITERATURE

The review of literature is divided into four sections. The development of the CMI Attitude Scale is presented in the first section. The remaining sections review studies using the CMI Attitude Scale.

Development of the CMI Attitude Scale

The CMI Attitude Scale is the result of several years of work by Crites. He began work on the Vocational Development Project at the University of Iowa in 1961. Of primary importance to the project was the development of an instrument which would objectively measure the concept of vocational maturity. Crites drew on the work of Ginzberg (1951), which defines occupational choice as a developmental process with distinct periods and upon Super's Career Pattern Study which conceptualizes vocational maturity as a multidimensional developmental process including both cognitive processes and attitudinal variables (Super 1955).

Drawing from these theories, Crites (1965) proposed a research model with four components: consistency of career choices, realism of career choices, career choice competencies, and career choice attitudes. The CMI Attitude Scale was formulated to measure the last component of the model. Crites (1973) noted the

name change from Vocational Development Inventory to Career Maturity Inventory was made to reflect the current emphasis on career education as a developmental process indicating progressive change.

Item Selection

Statements for the CMI Attitude Scale were selected from a pool of 1,000 rational and empirical items. This pool was developed from Crites' model of career maturity in adolescence as well as from statements made by clients to guidance counselors. Items selected were designed to evoke response tendencies in five dimensions of vocational attitude maturity:

1. Involvement in the choice process
2. Orientation toward work
3. Independence in decision making
4. Preference for career choice factors
5. Conception of the choice process

(Crites 1973, p. 12).

Westbrook (1969), in a review of the CMI Attitude Scale, criticized the test for not being designed to yield separate scores for each of the five variables listed above. If, as Crites suggested, the CMI Attitude Scale was to be used in the evaluation of effectiveness of career education programs, separate scores would be helpful in determining the strengths and weaknesses of the various areas of the programs being evaluated.

The initial standardization of the CMI Attitude Scale was done in Cedar Rapids, Iowa, in 1961-62. The subjects numbered 2,822 from the fifth through twelfth grade. Of this total, 275 were twelfth graders. In an early reference, Crites (1965) stated the high school population sampled was not representative of the total population of Cedar Rapids. Again referring to the population sample in a later reference, Crites (1973) disagreed with himself when he stated "the entire population of junior and senior high schools was tested" (p. 12). Hall (1962) further described the standardization sample, pointing out that only one of Cedar Rapids' high schools was used for standardization of the CMI Attitude Scale. At the time of the standardization, Hall reported, this high school was attended by students from upper middle-class families. In addition, the school ranked at the ninety-ninth percentile on national norms for the Iowa Test of Educational Development.

This original standardization included 100 items in two response formats: one a five-point Likert-type scale, the other a dichotomous true-false option. Fifty of the items on each test were stated in the first person, 50 in the third person. It was concluded that the true-false format gave better discrimination between grades than the scaling format; item type (first person or third person) had no effect upon differentiation between grades; and no

significant difference was found between the responses of males and females (Crites 1965).

The scoring key was derived from the responses of 51 percent of the twelfth graders of the standardization sample. In regard to the true-false format, Crites (1965) commented that most of the items would be marked false. Super (1969) criticized this aspect of the instrument. He did not believe maturity was defined by an increasingly negative attitude. Crites (1971) responded to this criticism by citing two studies which indicated a true response was more apt to be a guessing response. Reference to these two studies (Tyler 1955, Van de Castle 1962) was criticized by Shirts (1968). Shirts commented the studies cited by Crites were developed for purposes other than determining if an immature response was more apt to be positive.

There is also disagreement among researchers regarding the upper age or grade limit for use of the CMI Attitude Scale. Crites (1965) concluded that it was of adequate difficulty for twelfth graders. He found in the standardization sample only one percent of the twelfth graders achieved scores of 47 out of the possible 50. However, Hollender (1964) expanded on Crites' study by using 1,648 subjects, grades six through twelve in Cedar Rapids, Iowa. He noted no significant difference between the scores of eleventh and twelfth graders. Hollender (1964) also suggested the CMI Attitude

Scale be lengthened "since there is apparently insufficient ceiling for high aptitude students, particularly at the upper grade levels" (p. 47).

Further studies at the University of Iowa under the direction of Crites (1972) concluded the CMI Attitude Scale was not affected by response set or response style. No significant difference was found when 82 male college students were given instructions to answer as if they wanted to impress a prospective employer or were given standard instructions. Using free-choice response options at one testing, then retesting with a forced-choice answer sheet, Crites (1972) found the responses to the CMI Attitude Scale were related to discrimination learning processes.

Even though the items included in the CMI Attitude Scale were subjected to such analysis, several researchers (Hall 1962, Hollender 1964, Shirts 1968, Super 1969, Westbrook 1969) have criticized the selection procedures as well as the items included.

Reliability

Internal consistency estimates (Kuder-Richardson Formula 20) for the CMI Attitude Scale were calculated on the data from the standardization sample. The average coefficient was 0.74. Crites (1973) found this sufficiently high for a scale designed to measure related, not identical, clusters of vocational attitudes.

Crites (1973) was also satisfied with the test-retest reliability of the scale at 0.71 over a one-year period for the 1,648 subjects, grades six through twelve. Crites found this correlation to be high enough to establish measurement of the variable being quantified but still low enough to allow for maturational variance although he did not cite evidence supporting this conclusion. However, Brown (1976) indicated that measures such as attitude scales generally have reliabilities of 0.80 to 0.85 or higher. Thus, Crites' statement regarding reliability is subject to question.

Validity

Content validity was established as acceptable in a study using ten expert judges (doctoral students in psychology and education and Ph.D. psychologists and educators). These judges agreed that the response of the majority was the vocationally mature response on all but three items. The three items in contention were:

1. If I can just help others in my work, I'll be happy.
2. Choose an occupation which gives you a chance to help others.
3. I can't understand how some people can be so set about what they want to do (Hall 1962, p. 57).

Hamby (1976) indicated specific concern about these three items. She suggested the CMI Attitude Scale, developed in the early 1960's, may not have relevance to the youth of today.

Hamby was in agreement with Shirts (1968), who indicated the CMI Attitude Scale seemed to be based on a Puritan ethic, an ethic which more and more Americans are challenging. Shirts suggested a need for a measurement of vocational maturity which is more congruent with current thinking.

In summary, the CMI Attitude Scale was developed under the direction of Crites, in the early sixties at the University of Iowa. The standardization sample may not have been representative of the total population (Hall 1962, Crites 1965). Super (1969) has criticized the response format of the instrument saying maturity is not defined by an increasingly negative attitude. Hamby (1976) and Hollender (1964) have suggested the difficulty level of the CMI Attitude Scale may be inadequate for higher aptitude, upper grade students. Content validity of the test has been questioned by two researchers, both expressing concern that vocational attitudes in the American culture may have changed since the development of the CMI Attitude Scale (Shirts 1968, Hamby 1976). Although a large sample was used to standardize the CMI Attitude Scale and the format was developed through empirical research, questions now arise as to its usefulness with today's upper grade students.

Sex Differences

Two studies discussed the CMI Attitude Scale in relation to sex differences. Smith and Herr (1972) reported findings which

disagreed with those of Crites' (1973) report of the initial standardization of the CMI Attitude Scale. Smith and Herr tested 2,020 eighth and tenth graders in Altoona, Pennsylvania. These results indicated females scored significantly higher in vocational attitude maturity than males at both the eighth and tenth grade level. Crites (1973) reported the differences between the scores of male and female students were negligible. These differing conclusions indicate a need for further investigation of the CMI Attitude Scale.

Cultural and Socioeconomic Status

Studies have related the CMI Attitude Scale to several criteria of cultural and socioeconomic status. Cover (1968), in a study done in a metropolitan area in Oregon, reported nonsignificant findings on 162 male high school seniors between CMI Attitude Scale scores and family socioeconomic status. His study did find a significant correlation between school grades, scholastic ability, ability to state a post-high school decision and CMI Attitude Scale scores. He also found a negative significant correlation between CMI Attitude Scale scores and measures of alienation.

Asbury (1968) further suggested the CMI Attitude Scale may not be useful when examining socioeconomic factors and career attitude maturity. He found a low correlation between CMI Attitude Scale scores and occupational aspiration in a study of disadvantaged

eighth-grade boys in rural Kentucky. He suggested the lack of correlation may be due to the instruments used and criticized the CMI Attitude Scale by stating that ". . . several items on the Career Maturity Inventory seem to be measuring values rather than developmental attitudes" (p. 113).

Schmieding and Jensen (1968) studied the effects of an eight-week occupational unit on 78 midwestern American Indian students. The eleventh and twelfth grade Indian students were divided on a random basis into experimental and control groups. Thirty-nine Caucasian students from a nearby high school were used as a comparison group. The treatment included individual study of one or more occupations plus vocational and educational information as well as self-analysis materials regarding interests and aptitudes. The results indicated no significant difference in the students' vocational maturity as measured by the CMI Attitude Scale.

In studies involving socioeconomic status Miller's (1968) findings were in disagreement with both those of Cover (1968) and those of Schmieding and Jensen (1968). Miller discovered a significant correlation between low socioeconomic status and low CMI Attitude Scale scores of American Indian pupils in schools on reservations in and adjacent to North Dakota. Miller also noted the scores of the Indians were far less mature than those of non-Indians

at the same schools. He concluded the CMI Attitude Scale seemed to be culturally biased against Indians.

The studies discussed above suggest the CMI Attitude Scale may be culturally biased, because minority students seem to score differently than those of the majority culture.

External Criteria

Crites (1971) suggested the CMI Attitude Scale be used to evaluate career education and career guidance programs. The studies described below have used the instrument for this purpose.

Using three experimental groups, each composed of 52 Brigham Young University freshmen and one control group of 72 freshmen, Goodson (1969) determined significant differences between the experimental and the control groups. Group A received occupational and educational information. Group B received occupational and educational information plus one-half of each class period devoted to small group self-analysis work. Group C divided into small groups of six or seven students led by a university counselor, where occupational and educational information and self-analysis data were discussed. The students in the three experimental groups increased their CMI Attitude Scale scores significantly following seven 50-minute class periods.

The CMI Attitude Scale also was used to evaluate the effectiveness of career counseling in a large scale study in Minnesota. With 1,116 high school seniors as subjects, Tamminen and Miller (1968) obtained a correlation of 0.60 between the CMI Attitude Scale and variables including adequacy of guidance facilities, number of years of guidance in school, size of town, and scholastic aptitude.

The conflicting results of the studies described above indicate that the CMI Attitude Scale may be a useful instrument in some cases but is questionable when measuring the effectiveness of career education programs.

Summary

The following inferences have been derived from the review of literature:

1. Studies suggest the CMI Attitude Scale, standardized in 1961, may not be relevant to the attitudes of today's youth.
2. Studies suggest the CMI Attitude Scale may be sex biased.
3. Studies suggest the CMI Attitude Scale may be culturally biased.

Educational programs are accountable for producing change in students' behavior. Valid and reliable standardized tests are necessary tools of responsible educational decision makers for measuring the behavior changes of students. Therefore, if the

CMI Attitude Scale is to be used as an instrument to measure students' attitudes, it must be examined for appropriateness to today's programs.

Hypotheses of the Study

The following null hypotheses were derived from the review of the literature.

1. There is no significant difference between career attitudes of 1977-1978 Oregon twelfth grade males and females as shown by scores on the CMI Attitude Scale.
2. There is no significant difference between career attitudes of 1977-1978 Oregon twelfth grade students of four cultural groups (Black, Hispanic, American Indian and White) as shown by scores on the CMI Attitude Scale.
3. There is no significant interaction between the levels of sex and culture of 1977-1978 Oregon twelfth graders as shown by scores on the CMI Attitude Scale.
4. There is no significant relationship between attitudes of 1977-1978 Oregon twelfth graders as shown by scores on the CMI Attitude Scale and career attitudes as expressed on an external criterion of desired behavior for students in Oregon.

Problems 3 and 4 (p.5) were not dealt with in null hypotheses form. They will be discussed in descriptive form in Chapter IV.

III. DESIGN OF THE STUDY

This study was an investigation of the usefulness of the CMI Attitude Scale with Oregon twelfth grade students. The following sections are included in this chapter: selection of the population, instruments used in the study, collection of data, and analysis procedures.

Selection of the Population

The population of this study consisted of Oregon twelfth grade students during the 1977-1978 school year. A random sample of 398 students was drawn from this population. Of this total, 270 were White students. These 270 participants approximated the sample size of twelfth grade students in the CMI Attitude Scale standardization. The remaining 128 participants represented the three largest minority groups in Oregon: Black, Hispanic, and American Indian.

A quota sampling procedure (Downie and Heath 1974) was used for selecting schools from which the White participants were obtained. This procedure provided for random selection of schools rather than students. Anderson et al. (1975) indicated this method as appropriate for situations where the instrument may be administered with the greatest ease and consistency to existing natural clusters, such as classroom groups. The quota sampling procedure used schools categorized by size (less than 500 average daily

membership [ADM], 500-999 ADM, and 1,000 or more ADM) and by geographic region. The number of students selected from each category is shown in Table 1. The number of students needed from each category was based on the proportion of twelfth grade students in that cell. Schools were randomly selected from each cell and classroom groups were selected from each school until the necessary number of students in each cell was reached.

Table 1. Required Number and Percentage of Twelfth Grade White Students Included in the Sample by Geographic Region and School Size.

School Size	Geographic Region						Total	
	East		West		Metro		N	%
	N	%	N	%	N	%		
Less than 500 ADM	13	4.8	28	10.4	2	0.7	43	15.9
500-999 ADM	18	6.1	35	13.0	9	3.3	62	23.0
Greater than 1,000 ADM	10	3.7	66	24.4	89	33.0	165	61.1
Total	41	15.2	129	47.8	100	37.0	270	100.0

The procedure used for selecting minority participants differed slightly from that used for the selection of White participants. According to Gay (1976), a 10 percent sample of minority students from each of the largest minority groups in Oregon is considered adequate. As there are approximately 516 Black, 449 Hispanic and 311 American Indian twelfth grade students in Oregon (School Level,

Fall Report 1976-77), the sample size needed for each of these groups was 52, 45, and 31 respectively.

High schools which had five or more twelfth grade students from each desired minority group were randomly selected until the required sample size was reached. This allowed for logistic limitations as well as provided the widest range of schools from which to select the sample population. The sampling scheme for cultural background is shown in Table 2.

Table 2. Number and Percentage of Subjects by Race/Culture.

Ethnic Group	N	%
White	270	67.8
Black	52	13.1
Hispanic	45	11.3
American Indian	<u>31</u>	<u>7.8</u>
Total	398	100.0

Instruments Used in the Study

Two instruments were used in this study, the standardized CMI Attitude Scale and the Current Career Attitude List (hereafter referred to as the CCAL). The CCAL, to be used as an external criterion, was developed by the investigator using a modified Delphi procedure. In its development, panel members were given a list of

statements for reaction in two rounds rather than having the judges generate the list and react in three rounds.

CMI Attitude Scale

The CMI Attitude Scale (Appendix A) consists of 50 true-false items stated in both the first and third person. Items were developed to meet two criteria: (a) items which were taken from statements commonly made by guidance clients and (b) statements which fit Crites' theoretically devised Vocational Development Model. Selected items met both criteria. The scoring key was developed from the response format of 51 percent of the twelfth graders in the standardization sample.

Reliability of the CMI Attitude Scale was established by two methods. The average coefficient of internal consistency using the Kuder-Richardson Formula 20 was calculated at 0.74. Test-retest reliability was determined at 0.71 over a one school-year period.

Content validity was established by a panel of ten judges who agreed on all but three items that the majority response of the twelfth graders in the standardization sample was the vocationally mature response.

The twelfth graders in the standardization sample were from one high school in Cedar Rapids, Iowa. Approximately one-half of the twelfth graders were male, one-half female.

The procedures described above were considered adequate by Crites for a measuring instrument of this type. The CMI Attitude Scale has been used often in Oregon and throughout the United States to measure effectiveness of career education programs.

Current Career Attitude List

The CCAL (Appendix B) was developed by this investigator. The purpose of the CCAL was to serve as an external criterion for correlation with the CMI Attitude Scale.

Items for the CCAL were derived from an extensive study of career development literature (Career Education Matrix 1973, Gysbers and Moore 1974, Guidelines for Implementing Career Exploration in the Early Secondary School Years 1975, Implementing Career Awareness in the Elementary School 1975; Awareness / Exploration Curriculum Kit n.d.). Content validity was established by submitting 50 items to a panel of expert judges in two rounds using a modified Delphi technique. The panel of judges was composed of five career development specialists from the Oregon Department of Education and one vocational psychologist. After an initial telephone call to explain the project and request their assistance, the judges were mailed the first round. They were directed to accept or modify each of the 50 items. Modifications and word changes were accepted and 54 items were resubmitted to the judges for the second and final

round. In the second round, the judges were instructed to rate the importance of each item as a desired career education outcome for Oregon twelfth graders using a five-point Likert-type scale. The 50 items with the highest average ratings were then used to make up the proposed CCAL.

The proposed CCAL was then submitted to a group of six Oregon twelfth grade students for clarity of item intent and directions. No revisions were necessary. A pilot test of the final draft was conducted using 26 senior students from a school randomly selected from three Oregon counties: Washington, Multnomah, and Clackamas. The Spearman-Brown prophecy formula was applied to the results to determine internal consistency of the CCAL. Reliability was established at 0.74.

Collection of Data

The CMI Attitude Scale and the CCAL were completed by the sample population during the fall of 1977. An administrator from each of the schools selected was contacted by telephone and arrangements were made for the investigator to visit the school to administer the instruments. During the telephone call, a discussion schedule was used to explain the following details.

1. The purpose of the study would be to verify the usefulness of the CMI Attitude Scale with Oregon twelfth grade students.

2. Two instruments would be administered.
3. The investigator would administer both instruments.
4. Approximately 25 minutes would be needed to complete both instruments.
5. Participants would remain anonymous.
6. Participation of individuals would be voluntary.
7. The participating schools would receive a copy of the report when the project was complete.

During this conversation the school administrator was asked to select a classroom group of the required number of twelfth grade students of the desired cultural group to participate in the project. Schools selected for Black, Hispanic, or American Indian students participated in one of two ways:

1. A classroom group of minority students was administered the CMI Attitude Scale and the CCAL.
2. All twelfth grade students of the desired minority group were asked to meet in a specific room at the same time for administration of the instruments.

The school contact person determined which of the above methods was most convenient to the students.

The CMI Attitude Scale and the CCAL were administered by the investigator to the appropriate groups. The instruments were presented in alternate order to each of the participating groups so

responses would not be affected by length or response pattern of the instrument. The instruments were precoded with the same number for identification purposes and students were given one copy of the CMI Attitude Scale and one copy of the CCAL. The following conditions were announced to each group: (a) participants would remain anonymous and instruments would be identified by number only, and (b) participation would be voluntary. Each group was instructed to complete the personal data requested. The directions as stated on the front of the instrument were read aloud by the investigator.

Analysis Procedures

The procedures discussed in this section have been divided into two categories: (a) statistical and (b) descriptive.

Statistical Procedures

A two-way analysis of variance was used to determine retention of null hypotheses 1, 2, and 3 (Problems 1 and 2). Courtney and Sedgwick (1974) described the technique as a robust tool appropriately used to test differences between means. In order for results to be valid when using the F-statistic, the following criteria must be observed: equidistant interval data, common or equal variances, and a random sample (Courtney and Sedgwick 1974).

The F -statistic at the 0.05 level of significance was applied to the CMI Attitude Scale data to contrast differences for two independent variables, sex and culture. In instances where a null hypothesis was rejected, a multiple comparison analysis (LSD test) was utilized to ascertain where differences existed among the mean scores of the levels.

Hypothesis 4 (Problem 5) was tested by the Pearson product-moment correlation to determine the association between the CMI Attitude Scale and the CCAL. The t -test was applied at the 0.05 level of significance as the basis for retaining or rejecting the null hypothesis.

Descriptive Procedures

A distribution analysis was conducted on CMI Attitude Scale scores to describe the homogeneity of the sample (Problem 3).

To ascertain if career attitudes, as expressed on the CMI Attitude Scale, were believed to be appropriate for Oregon twelfth graders (Problem 4), the CMI Attitude Scale was presented by the investigator to 31 secondary teachers during the 1977 Oregon State University summer term. These teachers were enrolled in a class for secondary teachers of career education. A brief discussion of factors to consider when selecting standardized instruments preceded the presentation of the CMI Attitude Scale. This discussion

included several elements such as objectives, validity, and reliability of the instrument; standardization sample; ease of administration; and cost of administration. The teachers were reminded they would remain anonymous and were instructed to mark those items they believed were not relevant to Oregon twelfth grade students today. Their responses were tallied to determine specific CMI Attitude Scale items which the teachers believed to be irrelevant to Oregon twelfth graders. The data were analyzed in descriptive form.

IV. ANALYSIS OF DATA

This chapter presents data regarding the verification of the CMI Attitude Scale for use with Oregon twelfth grade students. The findings and discussion are divided into three sections. The first section deals with the analysis of the CMI Attitude Scale scores in relation to sex and cultural differences. The validity of the CMI Attitude Scale is discussed in the second section, and findings regarding the reliability of the CMI Attitude Scale are presented in the third section.

Sex Differences and Cultural Differences

A two-factor analysis of variance (ANOVA) was used to test the following null hypotheses:

1. There is no significant difference between career attitudes of 1977-1978 Oregon twelfth grade males and females as shown by scores on the CMI Attitude Scale.
2. There is no significant difference between career attitudes of 1977-1978 Oregon twelfth grade students of four cultural groups (Black, Hispanic, American Indian and White) as shown by scores on the CMI Attitude Scale.
3. There is no significant interaction between the levels of sex and culture of 1977-1978 Oregon twelfth graders as shown by scores on the CMI Attitude Scale.

Table 3 presents the results of the two-way analysis of variance for sex and culture on the CMI Attitude Scale scores.

Table 3. Two-way Analysis of Variance Data on the CMI Attitude Scale for Sex and Culture.

Sources of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F
Culture	3	966.43	322.14	9.47*
Sex	1	155.60	155.60	4.57*
Interaction	3	231.81	77.27	2.27
Error	391	13226.84	34.00	
Total	398	14665.05		

* $p < 0.05$

The CMI Attitude Scale scores differed significantly ($F = 4.57$; $ndf = 1, 391$; $p < 0.05$) for male and female subjects. Therefore, Null Hypothesis 1 was rejected. Significant differences ($F = 9.47$; $ndf = 3, 391$; $p < 0.05$) also were found for those scores of the various cultural groups. Thus, Null Hypothesis 2 was rejected.

No significant interaction ($F = 2.27$; $ndf = 3, 391$; $p < 0.05$) was found between the levels of sex and culture as shown by CMI Attitude Scale scores. Therefore, Null Hypothesis 3 was retained. Based on the findings of this study the variables of sex and culture appeared to be independent of each other.

Sex Differences

Mean scores and standard deviations by sex are shown in Table 4. Significant differences ($F = 4.57$; $ndf = 1, 391$; $p < 0.05$) were found between CMI Attitude Scale scores of the male and female

subjects. This finding agreed with that of Smith and Herr (1972) who reported females scored significantly higher than males on the CMI Attitude Scale at the eighth and tenth grades. It disagreed, however, with the findings of Crites (1973) who maintained that differences between the scores of the sexes were negligible.

Table 4. CMI Attitude Scale Mean Scores and Standard Deviations by Sex.

Sex	Mean Scores	Standard Deviation
Male	34.42	6.34
Female	35.98	5.75
Total	35.21	6.07

Female subjects may have scored higher on the CMI Attitude Scale because they are generally more mature at this age than their male peers. However, analysis of CCAL scores indicated that male and female subjects did not score differently ($t = 0.94$, $ndf = 397$, $p < 0.05$). This raises the question that perhaps the female subjects did not score higher on the CMI Attitude Scale because they were generally more mature than the male subjects.

Cultural Differences

Mean scores and standard deviations for the four cultural groups are shown in Table 5. The differences between the scores of the

various cultural groups were significant ($F = 9.47$; $ndf = 3, 391$; $p < 0.05$). Thus, the Least Significant Difference (LSD) test was computed to determine where differences existed among the different cultural groups. Table 6 shows the results of the LSD test. The comparison of the means for the four groups showed that Black and Hispanic subjects' scores were significantly different from those of the American Indian and the White subjects.

Table 5. CMI Attitude Scale Mean Scores and Standard Deviations of Four Cultural Groups.

Culture	Mean Score	Standard Deviation
White	36.14	5.66
Black	31.73	7.51
Hispanic	33.20	5.69
American Indian	35.97	4.96
Total	35.21	6.07

Table 6. Least Significant Difference Test Results for Differences between CMI Attitude Scale Scores of Four Cultural Groups.

Cultural Group	Ranked Mean Scores	Differences	Computed LSD	Decision
White	36.14			
American Indian	35.97	0.17	2.17	> 0.05
Hispanic	33.20	2.77	2.68	< 0.05
Black	31.73	1.47	2.33	> 0.05

There was no significant difference between mean scores of American Indians and mean scores of the Whites in this study. This finding disagreed with the findings of Schmieding and Jensen (1968) and the conclusion of Miller (1968). This fact may be explained by the investigator's observation that the American Indian subjects identified for this study seemed to be very much assimilated into the majority (White) culture. This observation was verified in discussions with the school counselors working with these students. The counselors expressed concern that very few of the students assigned to them actually identified with the Native American cultural heritage. The counselors attributed the lack of identification of American Indian subjects to the lack of clarity surrounding the definition of "American Indian student."

However, the findings of this study regarding the CMI Attitude Scale scores of Black students and Hispanic students were in agreement with the conclusions of Asbury (1968). Participants of minority cultural groups did score differently on the CMI Attitude Scale than did participants of the majority culture.

Content Validity of the CMI Attitude Scale for Twelfth Grade Students

Data relating to content validity of the CMI Attitude Scale were analyzed in two ways: (a) statistically and (b) descriptively.

Statistical Data

The Pearson product-moment correlation (Pearson r) was used to test Null Hypothesis 4:

There is no significant relationship between attitudes of 1977-1978 Oregon twelfth graders as shown by scores on the CMI Attitude Scale and career attitudes as expressed on an external criterion of desired behavior in Oregon.

A positive, but low correlation (Table 7) existed between participants' scores on the CMI Attitude Scale and the CCAL, an external criterion developed by the investigator as described in Chapter III. However, the correlation was significant ($t = 5.99$, $ndf = 397$, $p < 0.05$). This finding was to be expected as both instruments were designed to measure similar attitudes although the CCAL was developed to measure those outcomes specifically held by Oregon students.

Table 7. Pearson Product-Moment Correlation of CMI Attitude Scale Scores and CCAL Scores.

N	<u>CMI Attitude Scale</u>		<u>CCAL</u>		r
	Mean Score	Standard Deviation	Mean Score	Standard Deviation	
398	35.21	6.07	40.59	5.21	0.29*

* $t = 5.99$, $ndf = 397$, $p < 0.05$

Descriptive Data

Data were also collected to determine whether or not career attitudes as expressed on the CMI Attitude Scale were believed to be appropriate for 1977-1978 Oregon twelfth graders. Thirty-one teachers marked each CMI Attitude Scale item to indicate relevance to today's students. Scores for each item are shown in Appendix C. Thirteen items were marked as believed to be irrelevant to 1977-1978 Oregon twelfth graders by 30 percent of the teachers.

The findings indicated most career attitudes as expressed on the CMI Attitude Scale were believed to be relevant for twelfth graders today. It can be inferred that teachers who participated in the study did not agree with Hamby that today's students are more concerned with helping others than were the students brought up before the cultural revolution of the 1960's.

Reliability of the CMI Attitude Scale for Oregon Twelfth Grade Students

Reliability of the CMI Attitude Scale using the Spearman-Brown prophecy formula was computed to be 0.82. Additional data describing the distribution of scores are shown in Table 8. The distribution of scores, which is shown in Figure 1, ^{*} was

*The data shown in Figure 1 and in Appendix D were based on the total of 402 participants rather than 398 as shown elsewhere in this study.

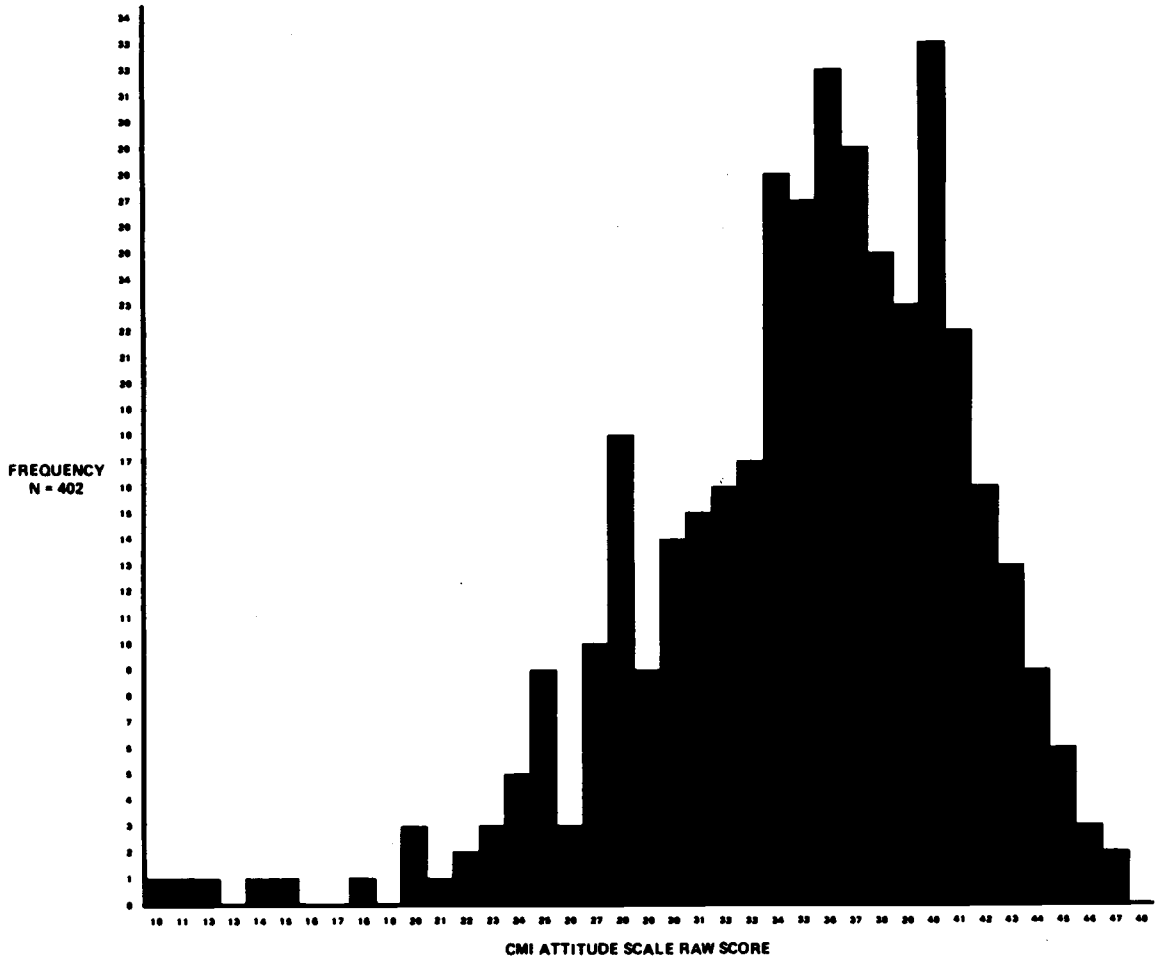


Figure 1. Frequency Distribution of CMI Attitude Scale Scores.

slightly negatively skewed with scores tending to be higher than would be found in a normal distribution. This exception might have been expected as one unit of career education was a graduation requirement in Oregon. Therefore, the participants were exposed to career education concepts at least during the latter part of their high school careers. One reason for low scores may have been that these students were new to Oregon.

Table 8. Mean, Standard Deviation, and Range of Scores on the CMI Attitude Scale.

Mean	Standard Deviation	Range	N
35.21	6.07	11-47	398

An item analysis (discrimination and difficulty) using a sample composed of the top 27 percent and bottom 27 percent of the tests also was conducted to provide further information. This analysis (Appendix D) indicated four items were not discriminatory. One of the nondiscriminating items, "If I can just help others in my work I'll be happy," has been of concern to other researchers (Hall 1962, Hamby 1976). Based on the findings of this study, these concerns appear valid.

Application of the two-way analysis of variance indicated a significant difference between mean scores of males and females as well as significant differences between the mean scores of the four cultural groups. The LSD test showed differences existed between the means of Whites and Hispanics, as well as Whites and Blacks. Significant differences also existed between the mean scores of American Indians and Hispanics, and between American Indians and Blacks. Scores between Whites and American Indians did not show significant differences.

Data relating to content validity of the CMI Attitude Scale for use with Oregon twelfth graders showed a positive, although low, correlation between the subjects' CMI Attitude Scale scores and their scores on an external criterion (CCAL) developed by the investigator. It was also found the participating teachers believed most of the CMI Attitude Scale items were relevant to Oregon twelfth graders.

Reliability of the CMI Attitude Scale was computed to be 0.82. Additional descriptive data showed the distribution of participants' scores on the CMI Attitude Scale to be higher than would be expected in a normal distribution but not unusual due to Oregon's career education graduation requirement.

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter contains three sections: summary, conclusions, and recommendations for further study.

Summary

Purpose

The purpose of this study was to verify the use of the CMI Attitude Scale with Oregon twelfth grade students. The CMI Attitude Scale is a standardized test used extensively in Oregon to measure effectiveness of career education programs. A review of the literature indicated this measuring instrument may be sex biased (Smith and Herr 1972), culturally biased (Hall 1962, Asbury 1968, Miller 1968), and not relevant to today's students (Shirts 1968, Hamby 1976).

Method

A quota sampling procedure was used to identify the subjects for this study which included 398 twelfth graders from the four largest cultural groups in Oregon: Black, Hispanic, American Indian, and White. Two instruments were used, the CMI Attitude Scale and the CCAL, an external criterion of desired career education outcomes for Oregon students developed by the

investigator. The two-way analysis of variance was selected as the appropriate statistic to test the hypotheses regarding sex and culture (Courtney and Sedgwick 1974). The LSD test was employed to analyze where differences occurred among the mean scores of the four cultural groups. The Pearson product-moment correlation was used to determine the relationship of scores made on the CMI Attitude Scale and the CCAL. The significance of the correlation was tested using the t-test. Data were also collected to assess teachers' beliefs regarding career attitudes as reflected in the CMI Attitude Scale, and to show the distribution of scores of the twelfth graders on the CMI Attitude Scale.

Findings

The findings of this study indicated the use of the CMI Attitude Scale with Oregon twelfth grade students for measuring effectiveness of career education programs to be questionable. Results showed that males scored significantly lower than females and that members of the various cultural groups included in the study scored differently from each other. White and American Indian participants scored significantly higher than did Black and Hispanic participants.

A positive, low correlation was found between participants' scores on the CMI Attitude Scale and the CCAL. As the high

school graduation requirements in Oregon include one unit of career education, this finding was not unexpected. The distribution of scores was found to be higher than that of a normal distribution. This may also be attributable to the career education graduation requirement. Researchers (Asbury 1968, Shirts 1968, Hamby 1976) have questioned the relevance of CMI Attitude Scale items but the Oregon teachers who participated in this study indicated their belief that most of the items are relevant to today's students.

Conclusions

The CMI Attitude Scale may seem to be a useful instrument when examining the base-line data provided by this study and the recommendations made by Oregon teachers regarding the relevancy of the CMI Attitude Scale items. However, when studying the data dealing with differences between scores of males and females, and differences between scores of the various cultural groups, the use of the CMI Attitude Scale to measure effectiveness of career education programs in Oregon becomes questionable.

Recommendations for Further Study

The following recommendations for further research were based on the conclusions of the study.

1. Further studies should be conducted concerning differences between career attitudes of White students and career attitudes of American Indian students in Oregon who are truly representative of their minority culture.
2. Further research should be done to develop valid, reliable instruments for use in measuring career education programs. Just as model education programs must be adapted to meet local needs and local situations, instruments should be developed to measure the specific objectives of the local career education programs.
3. Investigations of differences should be conducted between career attitudes of males and females of the various minority groups to determine the cultural factors which are related to career maturity.
4. The CMI Attitude Scale is not an appropriate measure of career education programs in Oregon and therefore should not be used for that purpose.

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APPENDICES

APPENDIX A

CAREER MATURITY INVENTORY ATTITUDE SCALE

I. Personal Data

Please fill in the information called for below.

1. Number _____
2. Sex (M or F) _____
3. Age _____
4. Grade in school _____
5. After high school plans (check one):
 - _____ a. continue education
 - _____ b. work full time
 - _____ c. school and work
 - _____ d. military
 - _____ f. other

II. Directions: There are a number of statements about career choice listed below. Career choice means the kind of job or work which you think you will probably be doing when you have finished all of your schooling. Read the statements and write your answers in the space provided. If you agree or mostly agree with the statement, write a T in the space before the statement. If you disagree or mostly disagree with the statement, write an F in the space before the statement.

- _____ 1. Once you choose a job, you can't choose another one.
- _____ 2. In order to choose a job, you need to know what kind of person you are.
- _____ 3. I plan to follow the line of work my parents suggest.
- _____ 4. I guess everybody has to go to work sooner or later, but I don't look forward to it.

- _____ 5. A person can do any kind of work he wants as long as he tries hard.
- _____ 6. I'm not going to worry about choosing an occupation until I'm out of school.
- _____ 7. Your job is important because it determines how much you can earn.
- _____ 8. Work is worthwhile mainly because it lets you buy the things you want.
- _____ 9. The greatest appeal of a job to me is the opportunity it provides for getting ahead.
- _____ 10. I often daydream about what I want to be, but I really haven't chosen a line of work yet.
- _____ 11. Knowing what you are good at is more important than knowing what you like in choosing an occupation.
- _____ 12. Your parents probably know better than anybody else which occupation you should enter.
- _____ 13. If I can just help others in my work, I'll be happy.
- _____ 14. Work is dull and unpleasant.
- _____ 15. Everyone seems to tell me something different; as a result, I don't know which kind of work to choose.
- _____ 16. I don't know how to go about getting into the kind of work I want to do.
- _____ 17. There is no point deciding on a job when the future is so uncertain.
- _____ 18. I spend a lot of time wishing I could do work I know I can never do.
- _____ 19. I don't know what courses I should take in school.
- _____ 20. It's probably just as easy to be successful in one occupation as it is in another.

- _____ 21. By the time you are 15, you should have your mind pretty well made up about the occupation you intend to enter.
- _____ 22. There are so many things to consider in choosing an occupation, it is hard to make a decision.
- _____ 23. I seldom think about the job I want to enter.
- _____ 24. It doesn't matter which job you choose as long as it pays well.
- _____ 25. You can't go very far wrong by following your parents' advice about which job to choose.
- _____ 26. Working is much like going to school.
- _____ 27. I am having difficulty in preparing myself for the work I want to do.
- _____ 28. I know very little about the requirements of jobs.
- _____ 29. The job I choose has to give me plenty of freedom to do what I want.
- _____ 30. The best thing to do is to try out several jobs, and then choose the one you like best.
- _____ 31. There is only one occupation for each person.
- _____ 32. Whether you are interested in a particular kind of work is not as important as whether you can do it.
- _____ 33. I can't understand how some people can be so certain about what they want to do.
- _____ 34. As long as I can remember, I've known what kind of work I want to do.
- _____ 35. I want to really accomplish something in my work--to make a great discovery or earn a lot of money or help a great number of people.
- _____ 36. You get into an occupation mostly by chance.

- _____ 37. It's who you know, not what you know, that's important in a job.
- _____ 38. When it comes to choosing a job, I'll make up my own mind.
- _____ 39. You should choose an occupation which gives you a chance to help others.
- _____ 40. When I am trying to study, I often find myself day-dreaming about what it will be like when I start working.
- _____ 41. I have little or no idea of what working will be like.
- _____ 42. You should choose an occupation, then plan how to enter it.
- _____ 43. I really can't find any work that has much appeal to me.
- _____ 44. You should choose a job in which you can someday become famous.
- _____ 45. If you have some doubts about what you want to do, ask your parents or friends for advice and suggestions.
- _____ 46. You should choose a job which allows you to do what you believe in.
- _____ 47. The most important part of work is the pleasure which comes from doing it.
- _____ 48. I keep changing my occupational choice.
- _____ 49. As far as choosing an occupation is concerned, something will come along sooner or later.
- _____ 50. I am not going to worry about choosing a job since you don't have anything to say about it anyway.

ANSWER KEY: All items are "false" with the exception of the following which are "true:" 2, 22, 38, 42, 45, 46, 47.

APPENDIX B

CURRENT CAREER ATTITUDE LIST

I. Personal Data

Please fill in the information called for below.

1. Number _____
2. Sex (M or F) _____
3. Age _____
4. Grade in school _____
5. After high school plans (check one):
 - _____ a. continue education
 - _____ b. work full time
 - _____ c. school and work
 - _____ d. military
 - _____ e. other

II. Attitude List

Directions: There are a number of statements about career choice listed below. Career choice means the kind of job or work which you think you will probably be doing when you have finished all of your schooling. Read the statements and write your answers in the space provided. If you agree or mostly agree with the statement, write a T in the space before the statement. If you disagree or mostly disagree with the statement, write an F in the space before the statement.

- _____ 1. I probably will have more than one occupation in my lifetime.
- _____ 2. In order to choose a job, I need to know what I am good at as well as what I like to do.
- _____ 3. Helping others may be an important part of my work.

- _____ 4. There are many alternatives and outcomes to consider in choosing an occupation and that makes decision making complex.
- _____ 5. When it comes to choosing a job, the final decision is mine.
- _____ 6. The "help wanted" section of the newspaper can provide me with information concerning jobs.
- _____ 7. Different kinds of pleasures come from working.
- _____ 8. Work is enjoyable for most people.
- _____ 9. The job I have influences my lifestyle.
- _____ 10. In choosing an occupation, it's important to discover if you enjoy working by yourself or if you like to work with others best.
- _____ 11. There are tests I can take that will help me discover which career I might explore further.
- _____ 12. There are tests I can take that will help me know if my interests and aptitudes are similar to those of people working in a specific occupation.
- _____ 13. Working while I'm still in school can be a good way to know what kind of work I like.
- _____ 14. I know of many jobs that I would be good at.
- _____ 15. It's important to plan for the occupation I want.
- _____ 16. What I do in my leisure time is often influenced by my work.
- _____ 17. The work I do is one way of contributing to society.
- _____ 18. One way I may be able to benefit society is through the work I choose.
- _____ 19. I need to plan thoughtfully to enter the occupation I choose.

- _____ 20. New information could cause me to reconsider my career goals.
- _____ 21. I want to learn all I can about an occupation before I decide it's the best one for me.
- _____ 22. My family, friends, and teachers influence the career decisions I make.
- _____ 23. I can plan for a job that I will like and will be good at.
- _____ 24. I know the requirements of the job I want.
- _____ 25. I know the requirements of the job I want but I still would like more information.
- _____ 26. There are several ways career goals can be reached.
- _____ 27. It's important to take time to think about what I believe in and why.
- _____ 28. My occupation can be a way of doing what I believe in.
- _____ 29. In choosing an occupation, it's important to know if I like to work best with people, data, or things.
- _____ 30. Some jobs require regular re-training.
- _____ 31. In choosing an occupation, I should consider whether I prefer to live in a city or in a less metropolitan area.
- _____ 32. My occupational choice may change over the years.
- _____ 33. I have talked to workers in the occupation I want about the educational requirements of the occupation.
- _____ 34. I have a plan for obtaining my career goal.
- _____ 35. I know how to fill out a job application form.
- _____ 36. The classes I'm taking in school help me in what I do outside of school.
- _____ 37. I know what I can do well.

- _____ 38. I know lots of ways to learn about occupations.
- _____ 39. Knowing what is important to me will help me choose an occupation I'll be happy in.
- _____ 40. It's important to most people to have jobs they like.
- _____ 41. I have planned my high school courses to prepare me for future occupational training.
- _____ 42. Trying out several jobs while I'm in school is a good way to find out what I will like to do.
- _____ 43. Work is an important part of life for most people.
- _____ 44. Training is necessary before entering most jobs.
- _____ 45. I know what people really do in the job I want.
- _____ 46. The courses I take in high school can have an effect on the training or education available to me after high school.
- _____ 47. I will spend many years of my life working.
- _____ 48. I know what it takes to do well in the work I want.
- _____ 49. I should investigate several occupations before deciding the one I want.
- _____ 50. I know several ways to find out which jobs are available.

ANSWER KEY: "True" is the correct choice for all items.

APPENDIX C

PERCENTAGE OF TEACHERS MARKING CMI ATTITUDE
SCALE ITEMS AS NOT RELEVANT

CMI Attitude Scale Item	Teachers Who Marked Item As Not Relevant N = 31 (%)	CMI Attitude Scale Item	Teachers Who Marked Item As Not Relevant N = 31 (%)
1	67.74	26	29.03
2	6.45	27	0
3	48.38	28	9.67
4	22.58	29	0
5	16.12	30	19.35
6	16.12	31	77.41
7	3.22	32	16.12
8	0	33	3.22
9	16.12	34	35.48
10	6.45	35	19.35
11	16.12	36	32.25
12	77.41	37	3.22
13	22.58	38	3.22
14	29.03	39	35.48
15	3.22	40	19.35
16	12.90	41	12.90
17	22.58	42	19.35
18	32.25	43	12.90
19	3.22	44	70.96
20	45.16	45	6.45
21	67.74	46	6.45
22	0	47	19.35
23	25.80	48	3.22
24	16.12	49	3.22
25	45.16	50	45.16

APPENDIX D

PERCENT RIGHT, DIFFICULTY INDEX, DISCRIMINATION
INDEX AND t VALUE OF CMI ATTITUDE SCALE ITEMS

Item	Percent Right	Difficulty Index	Discrimina- tion Index	t
1	95	0.95	0.25	5.19*
2	87	0.87	0.08	1.67
3	93	0.92	0.18	3.68*
4	83	0.83	0.33	7.02*
5	32	0.32	0.16	3.32*
6	85	0.85	0.34	7.25*
7	24	0.24	0.18	3.67*
8	37	0.37	0.31	6.44*
9	24	0.24	0.25	5.17*
10	57	0.57	0.43	9.49*
11	59	0.59	0.41	9.05*
12	93	0.93	0.32	6.78*
13	41	0.41	0.07	1.32
14	91	0.91	0.41	8.97*
15	68	0.68	0.47	10.60*
16	70	0.70	0.43	9.51*
17	86	0.86	0.51	11.88*
18	76	0.76	0.49	11.17*
19	77	0.77	0.36	7.69*
20	69	0.69	0.32	6.86*
21	76	0.76	0.25	5.20*
22	88	0.88	0.04	0.82
23	82	0.82	0.49	11.26*
24	93	0.93	0.45	9.88*
25	76	0.76	0.31	6.48*
26	47	0.47	0.21	4.25*
27	67	0.67	0.49	11.27*
28	67	0.67	0.43	9.42*
29	43	0.43	0.21	4.32*
30	44	0.44	0.20	4.10*

Item	Percent Right	Difficulty Index	Discrimina- tion Index	t
31	93	0.93	0.33	6.97*
32	60	0.60	0.34	7.33*
33	62	0.62	0.47	10.54*
34	76	0.76	0.21	4.29*
35	13	0.13	0.05	0.94
36	80	0.80	0.44	0.69*
37	83	0.83	0.37	7.86*
38	92	0.92	0.16	3.21*
39	47	0.47	0.28	5.85*
40	50	0.50	0.32	6.84*
41	86	0.86	0.32	6.69*
42	90	0.90	0.14	2.80*
43	81	0.81	0.46	10.48*
44	85	0.85	0.43	9.52*
45	90	0.90	0.10	2.04*
46	93	0.93	0.13	2.69*
47	89	0.89	0.12	2.37*
48	64	0.64	0.38	8.21*
49	46	0.46	0.42	9.18*
50	89	0.89	0.47	10.70*

*p < 0.05