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INTRODUCTION

Career development is a major concern to those involved in the career advancement of deaf people and it is commonly recognized that a high proportion of deaf individuals are concentrated in occupations below their capabilities. National leaders have repeatedly urged professionals to find "new vistas" for competitive employment for deaf people (Carney, 1972; Klein, 1970; Williams, 1972; Switzer, 1969). In response to the demand and the necessity for greater career opportunities, the Congress of the United States established the National Technical Institute for the Deaf (Public Law 89-36). The fundamental responsibility of this college is to provide the opportunity for post-secondary deaf students to prepare for and to pursue semi-professional and professional level educational programs that lead to successful employment in business, education, government, and industry (Frisina, 1968). But opportunity alone is not sufficient. For people whose role in society has traditionally been limited, "new vistas" imply the development of tools and techniques to assist them.

Career counseling is one of the areas in which new tools and techniques are needed. Students entering the National Technical Institute for the Deaf (NTID) are often vague and uncertain about careers, both as to selection and preparation and as to the options and responsibilities associated with eventual employment (Frisina, 1973). In the effort to meet these needs, career development counselors of NTID have employed the Career Maturity Inventory (CMI) developed by John Crites as part of their testing repertoire. This paper reports the results of a three-year longitudinal study of the CMI Attitude Scale and students who entered NTID during the summer of 1973.

Review of the Literature

During the past three decades, attention has been focused on the developmental characteristics of vocational choice. Vocational (career) development is now generally recognized as a part of the individual's development in much the same way as social, intellectual, and emotional development are recognized. The concept of vocational (career) maturity has emerged out of this developmental view and several surveys have been developed to measure career maturity (Osi- pow, 1973).

The Career Maturity Inventory (Attitude Scale), which was used in this study, has fifty true-false items that are intended to measure subjective reactions, feelings, and affect that an individual has towards making a career choice and entering the world of work. The Attitude Scale is especially useful in studying career development, screening for career immaturity, assessing guidance needs, evaluating career education, and testing in career counseling.
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With current approaches to career development being relatively new, little is known about the applicability of these theories and measurements to special populations. The limited research available on the career development of the deaf suggests there are career development lags when compared with a hearing population (Lerman and Guilfoyle, 1974; Lacey, 1975; Kersting, 1975).

Recognizing the language difficulties in standardized written tests used with the deaf population (Golladay, 1951; Bolton, 1976; Moores, 1976; Wolfram and Fasold, 1974), a revised form of the Attitude Scale was developed by the third author who has considerable experience in evaluating and editing materials for experiential appropriateness and readability for use by the hearing impaired.

GENERAL RESEARCH OBJECTIVES

The purpose of this study, then, was to investigate the utility of using the CMI Attitude Scale with deaf college students. The following questions were raised:

1. What effect does revising the test to reduce language problems (such as idioms, double-negatives, etc.) have on the responses of deaf students?
2. How do career choice attitudes (as measured by the CMI Attitude Scale) in a deaf population compare with the national (hearing) norms for the test?
3. Does performance on the CMI Attitude Scale improve over time?
4. Can scores on the CMI Attitude Scale be used to predict changes in academic major?
5. Can scores on the CMI Attitude Scale be used to predict grade point average?
6. Are CMI Attitude scores, related to occupational objectives?
7. Do routinely gathered student background variables (reading level, school experience, work experience, age at onset of deafness, parental socio-economic status) account for significant variation in the CMI Attitude scores?

METHOD

Instrumentation

Form A, containing the original items of the published CMI Attitude Scale, has a sixth grade reading level. Form B, the revised scale, was reviewed by the publishers of the CMI who indicated that it would measure the same dimensions as the original scale. Questionnaires accompanied CMI retests and were used to solicit self-report data on student satisfaction with academic major; any change of major and reasons therefore; and future vocational expectations. Data on age at onset of deafness, previous school experiences, reading level, grade point average, work experience, and parental socio-economic status were obtained from student records.

Examinee Population

The initial population for this study was composed of 149 students who entered NTID during the summer orientation program of 1973. These students, who took the test during the summer of 1973, were randomly assigned to two groups, one using the original version and the other the revised form.

Eight months later, eighty percent of the students (120) took the tests again and completed an accompanying questionnaire. Twenty-two months later (Winter 1976), thirty percent of the students (45) took the test and questionnaire again. A single sample comparison of means was conducted to check for sample bias. No significant difference ($Z = 0.83$) was found between the sample of 45 and the original population of 149 from the initial testing date. The longitudinal results reported herein are generated from data gathered from the sample of 45.

FINDINGS

The first objective of this study was to examine the effects of revising the published version of the test. Table I shows the fre-
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The second objective of the study was to compare the career choice attitudes of deaf students with the national (normally-hearing) norms. Table II presents the cumulative percentage ogives for deaf students in this study and for hearing students in grades 5-12 who participated in the study which generated the national norms. The sample of deaf students in this study clearly fall between the fifth and sixth grades on the chart.¹

¹The switch between the 10th and 11th grade curves is an anomaly which theoretically should not occur. However, its presence is noted and discussed by Crites (1973a) and does not directly affect this study.
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Given this low starting point for post-secondary students, there was concern as to whether these students' CMI scores would improve over time. Crites (1973b) indicates that scores should improve as a function of age. The sample of 45 students from the initial population were retested over a two and one-half year time span. The mean total scores of this group from the initial testing was 26.04 (sd = 4.65). Thirty months later their mean total score was 28.91 (ed = 4.56). The difference between these correlated means was significant at the .01 level \( t = 4.71 \).

The next objective was to evaluate the Attitude Scale as a screening tool for career immaturity by studying the relationship between CMI scores and career allied variables such as grade point average (GPA), changes in academic major, and future job expectations. Consistent with other studies, examination of GPA and total CMI scores over a two-year period showed practically no relationship \( r = .16 \). In terms of change of major and job expectations, however, the Attitude Scale did reveal some long range predictive utility.

At the end of the first year, there were no significant differences between students who scored in the highest and the lowest quartiles on the CMI Attitude Scale in terms of either variable. Relatively few students (19%) changed their major during the first year. But at the end of two and one-half years, there were significant differences between students in the highest and lowest quartiles on the Attitude Scale. Seventy percent of the upper quartile students had changed their major at least once during the period of the study as opposed to only nineteen percent of those in the lower quartile (probability = .013). Furthermore, all of the upper quartile students who had some idea about job expectations at the end of the first year were now able to give a specific job title. In contrast, while 40% of the lower quartile students moved in this direction, an equal number of those who had had some idea a year earlier now reported that they had no idea about their future jobs (probability = .023). Thus, while the upper quartile students were more likely to change their major over two and one-half years, they also were more likely to decide on a specific vocational objective in that time period than were the students who scored in the lowest quartile. Finding that students with higher scores changed their major more often than those with the lowest scores was not anticipated and will be discussed later.

The final objective of this project was to determine whether routinely gathered student background variables accounted for significant amounts of variation in CMI scores. These variables included entry reading level, the type of high school graduated from (residential, day, public, special program), previous work experience, age at the onset of deafness, and parental socio-economic status. Of these five variables, only entry reading level was significant.

The reading level of the entering students in this population was measured via the Comparative Guidance and Placement Program (CGPP) Reading and Sentence subtests. Students were subsequently divided into categories in accordance with the NTID Communications Profile (Crandall, 1975). Students in reading profile categories I, II, and III had an average CMI score of about 25. These students fell below the 15th percentile in reading when compared with normally hearing students entering two-year college programs. Hearing-impaired students in categories IV and V were above the 16th percentile on the CGPP and attained a mean score of 31.56 on the CMI Attitude Scale. This was significantly better \( F = 8.18, p = .001 \) then the mean score of the students in categories I-III.

In short, the findings suggest that altering the test to eliminate obvious language problems for hearing-impaired subjects improved test performances. Students entered between the 5th and 6th grade level and improved one grade level during the period of study. Further, it was found that the CMI did not yield short term prediction for grade point
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average, changes of academic major, or job expectations. However, a significant difference was uncovered between the highest and the lower quartile subjects over two and one-half years. At the end of the study, students in the highest quartile were more likely both to change their major and to clearly specify their future job expectations than were students in the lowest quartile. Finally, entry reading level was discovered to account for a significant amount of variation in CMI scores. Four other student background variables were not significant.

DISCUSSION

The fundamental reason for doing this study was to learn whether the test was useful in screening the students who were most in need of career guidance. The prevailing notion among counselors was that students with low scores on the test would change their majors more often than students with high scores on the test. The assumption was that students who changed their major were the least adequately prepared to make a choice originally, and therefore would benefit from a career guidance program.

This notion was not supported in the study. Students who scored in the upper quartile of the CMI Attitude Scale were more likely to change their major than students who scored in the lowest quartile. One explanation for this might be that the students who scored high on the test also had better reading skills and therefore may have had a greater number of educational options. Another possible explanation is that the CMI Attitude Scale was designed to measure only one of four dimensions in Crites' model of career maturity. It does not consider Career Choice Consistency, Realism, or Competency.

The significant difference in scores between students who took the published version of this test and those who took the revised version point out the merit in revising certain types of standardized tests for use with a hearing-impaired population. The findings of low correlations of CMI scores with GPA and socio-economic status were similar to the results of previous studies (Crites, 1973a; Super, 1974). The high correlation between reading ability and CMI scores stresses the importance of having adequate language abilities with which to assimilate information. Lerman and Guilfoyle (1974), in their studies of vocational maturity in deaf adolescents, found that voational information and planning were related to language competencies.

This study also shows a career development lag between a hearing-impaired population and the national (hearing) sample. Minority groups who have been part of CMI studies also have norms below the national sample. The Attitude Scale reflects middle-class values and questions have been raised (Moracco, 1974; Smith, 1976; Maynard, 1970) about its use with minority groups. However, young hearing-impaired adults who are in the career choice process are for the most part preparing themselves to work and live a life style associated with middle class values.

SUMMARY

The results of the study show that the CMI Attitude Scale can not be expected to screen out students who are unprepared to make informed career choices. It should be remembered that the test was not designed to measure all of the dimensions of career development. It can, however, be used as a counseling tool in a one-to-one situation and also provide information on group responses to various aspects of career choice attitudes which can be helpful in program planning.

The language revised version (Form B) proved to be more suitable for use with a hearing-impaired population. A significant relationship was also found to exist between reading ability and scores on the CMI. Variables such as socio-economic status, type of high school graduated from, GPA in college, and previous work experience were not significantly related to career maturity as measured by the CMI Attitude Scale. A developmental lag was noted between hearing and deaf populations.
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In order to impact on the problem of unemployment among the deaf population, more needs to be learned about the career development process among deaf people.

Programs should be designed to impact upon that career development process so the potential of deaf individuals can be more fully utilized.

BIBLIOGRAPHY


