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ABSTRACT

A total of 1,994 students (approximately 70% of those who participated in the American College Testing Program's Nationwide Study of Career Development) who were working more than half-time three years later responded to an extensive mailed questionnaire followup study seeking to describe the predictability of actual job choice from expressed vocational choice and confidence in choice. Both choices and occupations were categorized into Holland-type job clusters. Analysis involved the use of weighted hit rates and coefficient Kappa. Expressed vocational choices correctly predicted actual occupation two years out of high school for 38% of the total sample (males 40%, females 35%). When certainty level was added to expressed choice, hit rates were 43% for very sure choosers, 38% for fairly sure choosers, and 28% for not sure choosers. Each choice level proved significantly different from the others. Selected implications reported for counseling and research activities are as follows. For research: (1) Holland's typology may not be as powerful for explaining the early careers of semi- and unskilled workers as for managerial, skilled, and professional workers (further followup is suggested); (2) the expressed vocational choice variable demonstrated its viability and reliability via self-report; and (3) Vrooms force model may explain the dymanics of expressed vocational choice (since it was associated with predictability of choice). For counselors, a student's choice seems to indicate both a general direction and an implied prediction that exceeds change--at least within the six job clusters used in the study. Counselors can also infer from this study some employer requirements for entry into broad general groupings. (MEK)

Predicting Field of Job Entry from Expressed Vocational Choice and Certainty Level

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Abstract

The present study was designed to advance our knowledge about the predictability of career behavior from expressed vocational choice. Its purpose was to describe the predictability of actual job from expressed vocational choice and confidence in choice. Subjects were those members of a nationwide study of high school student career development who were working more than half time three years later (N = 1,994). Both choices and occupations were categorized into Holland-type Job Clusters. Analyses involved the use of weighted hit rates and coefficient Kappa. Expressed vocational choices correctly predicted actual occupation two years after high school for 38% of the total sample (κ = .216). Hit rates for males and females were 40% and 35%, respectively. When certainty level was added to expressed choice, hit rates were 43% for very sure choosers, 38% for fairly sure choosers, and 28% for not sure choosers. Each choice level was significantly different from the others. Implications for counseling and research activities, based on expressed choice and certainty level, are provided.

The authors wish to thank The American College Testing Program for making the data used in this study available to them.

Predicting Field of Job Entry from Expressed Vocational Choice and Certainty Level (2/12/80)

Expressed vocational choices have proven their potential usefulness for both counselors and researchers. The predictive validity and stability of expressed vocational choice have been studied among several populations over varying lengths of time. Whitney (1969) reviewed large-sample research findings and found that expressed choice predicted early career behaviors about as well as interest inventories. He concluded that given the advantages of accessibility and low cost, expressed vocational choice merits consideration as a bench mark for assessing the utility of other predictors. Holland and Gottfredson (1975), after studying the consistency of retrospective vocational aspirations concluded that they are powerful predictors of subsequent choices and jobs, when all are properly categorized, and cannot be ignored as superficial and unreliable.

Before predictive validity study findings can be fully utilized, distinctions must be made about sample composition--whether high school or college students, prediction criteria--whether later vocational choices or occupations actually entered, and length of time between measures of choice and the criterion. Whitney's review, for example, covered primarily studies using college student samples and later vocational choice as the criterion.

Studies involving the vocational choices of high school students appear to present some additional research variables to consider. Initially, the predictability of occupational entry from expressed vocational choice for high school students may vary according to the

occupational classification system used. Remstead (1958) compared three classification systems applied to both the 10th and 12th grade expressed choices and the occupation actually entered by 322 Wisconsin Counseling Study male subjects. These were an 11-category system based on the 1949 Dictionary of Occupational Titles (DOT) system, a 9-category system based on the Kuder Preference Record (Kuder), and a specially-devised 11-category system based on amount of training needed (Training). The proportion of students entering and staying for at least 6 months of the first 5 years after high school in occupations from the same category as their choice varied from 44% for both 10th and 12th grade choices (Training) to 55% for 10th grade choices (Kuder). Remstead concluded that the type of classification system used can definitely alter the results from any study using occupation of the subject as a variable.

The Roe (1956), Holland (1973), and Project TALENT (Flanagan, Shaycroft, Richards, & Claudy, 1971) systems for classifying occupations were compared for over 10,000 Project TALENT males in a study of vocational choice stability--the prediction of choices after high school from choices while in school (McLaughlin & Tiedeman, 1974). The authors concluded that vocational choice stability proved to be about the same for all three systems but decreased in all cases as the time interval over which it was measured increased. The simple proportion of correct predictions was usually higher for the Holland system but this was largely due to the fact that this system had fewer categories (6). However, measures of stability calculated from information theory and likelihood theory favored the systems with larger number of categories, i.e., Roe's 8 classifications and Flanagan's 10 classifications.

Kohout and Rothney (1964) used a modified DOT system to determine how consistent Wisconsin Counseling Study males (N = 321) were from expressed choices in high school through the first 10 years after graduation. Consistency of choice and actual occupational status were classified into specifically consistent (high school choice was pursued all 10 years), consistent by category (occupations changed but remained within same category as choice), and inconsistent (occupations didn't fall within same category as choice). Only about 7% of the subjects were specifically consistent, 14% were consistent by category, and the remainder were inconsistent. The rather low proportion of "hits" in predicting occupational entry may be due to the seemingly demanding criteria that subjects sustain their allegiance to an occupation or category for 10 years.

Wiggins and Weslander (1977) used the Holland 6-category system and the Kuder 10-category system to compare 12th grade expressed vocational choices to scores on the Vocational Preference Inventory (Holland, 1965) and the Kuder Preference Record (Kuder, 1962) as predictors of occupation held four years after high school. Two hundred males and 200 females were randomly selected from four classes of graduates from one high school. Using the proportion of accurate predictions in the Holland system as the criterion, the authors concluded that expressed choices were more predictive than inventories for males (74% to 65%) and about equally predictive for females (55% to 57%).

This limited review points to several conclusions about research on the predictability from high school students' expressed vocational choice. First, the choice of occupational classification system is important to the

results. Second, the time interval between choice and occupational role assessment seems to influence results (i.e., shorter intervals have yielded higher predictability than longer ones). Third, there may be differences in the predictability of males and females.

The present study was designed to advance our knowledge about the predictability of career behavior from expressed vocational choice. Previous findings were extended by employing a new combination of predictors and criterion with a special subject sample. Confidence in vocational choice was added to expressed choice as the combined predictors. The criterion was the actual job held about two years after high school graduation which was 3 years after providing expressed vocational choice. The sample was composed of people who entered the job market shortly after high school and with a minimum of post-high school education.

The puprose of the study, then, was to describe the predictability of actual job from expressed vocational choice and confidence in choice. Three specific questions were addressed: How frequently did people who were working half-time or more predict their Job Cluster three years prior when they were high school juniors? Are there differences between the frequency of accurate predictions by males and females? Did the addition of expressed confidence in choice improve the frequency of these accurate predictions?

Method

Subjects

Expressed vocational choices and levels of certainty were collected in 1973 for a national sample of high school juniors (N = 9,307) from 72 high schools as a part of the American College Testing Program's Nationwide

Study of Student Career Development (Prediger, Roth, & Noeth, 1974). Three years later a comprehensive follow-up study was undertaken by the Institute of Demographic and Economic Studies. Follow-up procedures involved mailing an extensive questionnaire to all subjects and soliciting responses through repeated mailings and telephone calls. Slightly less than 70% of the original sample responded.

The sample utilized for this study included only those follow-up respondents who were working more than 20 hours per week at the time of the follow-up in March, 1976. This procedure eliminated part-time workers who might be working chiefly to finance other pursuits such as school or travel. This criterion was met by a total sample of 1,994 which included 1,037 females and 957 males. The remainder of the follow-up sample were working less than half-time and/or were primarily attending post-secondary educational institutions.

Instruments

Expressed vocational choice and level of certainty were collected through the administration of the Assessment of Career Development (ACD) (ACT, 1974). Students wrote their first vocational choice in response to the following item: "Print the name of the job that you are thinking about most." Then they coded their response into the appropriate Job Family using the ACT Occupational Classificational System (ACT, 1974). A student who printed homemaker or professional athlete was instructed to mark another job choice. Students who chose occupations in the military were instructed to mark the Job Family approximating their preferred job speciality.

The ACT system allows all jobs to be categorized into 25 Job Families, i.e., related groups of jobs, which can then further be grouped into six

Holland-type Job Clusters (i.e., Business Contact, Business Detail, Technical, Science, Art, Service). Both Job Family and Job Cluster categories are independent and mutually exclusive so that any occupation was assigned to only one of each of these categories. Students were highly accurate in coding their choices into Job Families and, where they coded an incorrect Job Family, it was closely associated with the one they should have selected and generally within the same Job Cluster (ACT, 1974).

The ACD item which elicited certainty level asked "How sure are you that your first job choice will be the same in a year?" Students responded by checking "very sure," "fairly sure," or "not sure at all."

The item on the 1976 follow-up questionnaire that covered present occupation asked "What specific kind of job do you have?" Respondents wrote in their specific job title and then coded it using a list of 61 occupational areas. The coding was checked by editors upon receipt of the completed questionnaire. Follow-up occupational areas were directly translated into ACT Job Families and Job Clusters and merged with the base year data for analyses.

Data Analyses

Analyses involved an examination of how accurately high school juniors' expressed vocational choices and related certainty levels agreed with their occupations two years after high school graduation. Both expressed choices and later occupations were categorized by ACT Job Clusters. Agreement was estimated using two procedures: weighted hit-rate percentages and coefficient Kappa (Cohen, 1960). A "hit" was scored when the Job Cluster for expressed choice as a high school junior was the same

as the Job Cluster for the job held three years later. Weighting procedures were used to allow for comparisons across Job Clusters. Weights assigned were the proportion of hits to the number of people whose choices were in each Job Cluster.

The coefficient Kappa is an index of the proportion of agreement between two nominal variables after chance agreement has been removed. The maximum value that κ can take is 1.0 occurring only when there is perfect agreement. When obtained agreement equals chance agreement, $\kappa = 0$. Kappa offers the advantage of allowing a test for the significance of difference between two proportions of agreement. The conservative significance test offered originally by Cohen (1960) will be used even though another formula was provided elsewhere (Fleiss, Cohen, & Everitt, 1969). Thus comparable agreement indices can be estimated for predictions by sex groups and when subjects are grouped by level of choice certainty.

Results

Table 1 contains the percentage of choices and actual occupations

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Insert Table 1 about here

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when classified by the ACT Job Cluster system. The Kappa coefficient was .216 ($p < .001$) indicating that vocational choices and later occupations significantly exceeded chance agreement for the total sample.

Inspection of marginals and diagnosis in Table 1 reveals that many of the inaccurate predictions occurred within two Job Clusters: Science

and Art. Whereas science occupations were chosen by 13.3% of the sample only 2.5% actually entered this field. Likewise 8.7% chose art occupations but only 0.6% actually landed a job in art. It is apparent that for students who had not obtained some post-high school training, early entry into scientific or artistic occupations was not frequent.

Expressed junior year vocational choices, as shown in Table 2, correctly predicted the actual occupation 2 years after high school for 38% of the total sample. The Job Cluster entered was predicted by 40% of the males and 35% of the females. The Kappa coefficient was .138 for males and .146 for females (both $p < .001$). When the formula for standard error was applied (Cohen, 1960), there were no significant differences between the sex groups on their overall degrees of agreement. Thus neither males nor females were better predictors of their later occupational field.

Nevertheless, there were obvious sex differences in the weighted hit rate within two Job Clusters of expressed choices. The percentage of females whose vocational choice was Business Detail and who actually

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Insert Table 2 about here

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entered this Job Cluster was 67% whereas only 19% of male choosers entered Business Detail occupations. Conversely, 67% of the males who chose Technical occupations had actually entered them and only 16% of the females who chose Technical occupations were in such jobs 2 years after high school. All other proportions appear to be roughly similar.

Sex groups were combined for the analyses of agreements between choice and entry for three levels of certainty. The percentages of agreement for

"very sure" choosers was 43%; "fairly sure" choosers hit at 38%; and "not sure" choosers were 28% in agreement. A breakdown of percentage of hits for each certain level is contained in Table 3. The Kappa coefficients were .289, .217, .108 for the very sure, fairly sure, and not sure levels, respectively (all at $p < .001$). The "very sure" group was

Insert Table 3 about here

significantly higher ($p < .05$) than the "fairly sure" group and, in turn, the "fairly sure" group Kappa was significantly higher ($p < .01$) than the "not sure" group. Thus the more certain were the subjects' expressed choices, the more likely they were to enter the Job Cluster of their choice.

When occupations are classified into the 25 Job Families, four Families were found to have over 100 choosers of whom over 15% actually entered jobs in that Family. Table 4 included the four Families. Each family was

Insert Table 4 about here

chosen predominatly by one sex or the other, e.g., all choosers of Construction and Maintenance were male and all but 1 chooser of Clerical and Secretarial were female.

There is something to be learned from examining the remaining Job Familes (N = 3) chosen by 100 or more subjects. The Medicine and Medical Technologies Job Family was chosen by 152 but entered by 6, Education and Social Services were chosen by 217 but only had 10 actually enter, and Engineering and Other Applied Technologies were chosen by 103 but entered by 10 subjects. Not surprisingly most jobs in these Families require

college or technical school background, thus job opportunities may have been blocked by eligibility requirements. The noteworthy fact was the high proportion of youth who chose such occupations but, for whatever reason, were not able to enter the field early in their careers.

Discussion

How accurate, then, are students as predictors of their future career behaviors. The expressed vocational choices of 11th graders clearly exceed chance as a predictor of the Job Cluster actually entered. Males do not perform better than females in their proportion of hits. There were clear sex differences in the weighted hit rates (within Job Cluster) which reflect the sex ratio in the labor force. Does increased certainty of choice increase their likelihood of being accurate? If we accept the small increments in improved predictions as important, then the certainty information is helpful.

The results also help clarify the job market conditions faced by youth seeking employment immediately after high school. After all, job entry involves <u>both</u> students' choices and employers' selections. Obviously many who choose the sciences or arts are not able to enter their chosen field without further training or experience. Perhaps the groups who are most successful at early implementation of their choices are those who select unskilled or semi-skilled jobs typically held by workers of their sex. The facts in Table 2 suggest that youth who chose a Job Cluster dominated by the opposite sex, i.e., females who selected Technical jobs and males who selected Business Detail jobs, were considerably less likely to get into their chosen field than were opposite-sex choosers. The selected Job Family data in Table 4 also supported this conclusion.

The ACT classification systems based on Holland's categories (1973) provided a tool useful for classifying occupations and vocational choices. At the same time, the overall agreement was somewhat lower than those reported in previous studies using the Holland system to predict job entry (Wiggins & Weslander, 1977) and later vocational choices (McLaughlin & Tiedeman, 1974). Since the sample was limited to youth entering the labor market without advanced training or education, Holland's typology may not be as powerful for explaining the early careers of semi-skilled and unskilled workers as for professionals, managers, and skilled workers. Follow-up studies of the entire sample at appropriate time intervals are needed to answer this question.

The expressed vocational choice variable once again demonstrated its viability in research despite the limitations of this study. Why does vocational choice account for so much in vocational behavior research? After surveying considerable evidence, Baird (1976) concluded that a simple self-report can tap the structure of a psychological domain about as well as scaled instruments. This is especially likely when the domain has a coherent, well-integrated structure and the characteristic assessed is an important part of the domain. Under these circumstances, Baird argued, that the characteristic has numerous correlates and is likely to be assessable by relatively simple self-reports.

The domain tapped by vocational choice may have the requisite coherence. Vroom (1964) considered expressed vocational choice to be an indicator of a construct called force which is determined by the valence of the outcomes from entering an occupation and by the expectancy that an occupation will result in the preferred outcomes. Certainty level in this study is easily

translated as an expectancy estimate. Since it was associated with predictability from choice, perhaps Vroom's force model explains the dynamics of expressed vocational choice. Expressed vocational choices are moderately accurate predictors because they are indicators of the construct's valences and expectancies.

Thus, expressed vocational choices have promise for both counseling and research activities. For counselors, a student's choice seems to indicate both a general direction and an implied prediction that exceeds chance--at least within the context of the six Job Clusters. Predictability is obviously enhanced for youth who are more certain about their choices. At the same time, counselors can infer from this study some of the employer requirements for entry into broad occupational groupings. For researchers, vocational choices seem to top a coherent psychological domain, Vroom's force construct. Vocational choice process may be understood in greater detail through further research using measures of expectancy (e.g., certainty and valence--preference for outcomes) as well as vocational choices.

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Table 1

Percentages of 1973 Expressed Vocational Choice

by 1976 Actual Occupation

Vocational choice / Occupation job cluster	(1)	(2)	(3)	(4)	(5)	(6)	Total	Total N
Business Contact (1)	1.5	1.4	2.1	0.3	0.1	1.4	6.7	133
Business Detail (2)	2.6	11.1	3.0	0.4	0.0	2.5	19.5	388
Technical (3)	3.2	2.5	15.7	0.5	0.1	3.7	25.6	511
Science (4)	3.2	2.9	3.5	0.8	0.1	3.0	13.3	265
Art (5)	1.7	2.9	1.8	0.3	0.4	1.8	8.7	174
Service (6)	4.8	7.6	5.3	0.4	0.1	8.1	26.2	523
Total	16.9	28.3	31.3	2.5	0.6	20.4	100.0	
Total N	337	565	625	49	12	406	1994	

Table 2

Hit Rate Percentages by Sex Group

Job clusters	Females	Males	Total
Business Contact	28	20	23
Business Detail	67	19	57
Technical	16	67	61
Science	7	4	6
Art	2	8	5
Service	32	26	31
Weighted mean percent	35	40	38
Total N	1037	957	1994

Table 3

Hit Rate Percentages for Certainty Levels

Expressed vocational choice by job cluster	Certainty level: Very sure	Fairly sure	Not sure
Business Contact	33	24	18
Business Detail	64	60	37
Technical	67	62	53
Science	11	3	4
Art	9	3	0
Service	38	27	28
Weighted mean percent	43	38	28
Total N	657	888	383

Note. N = 1928 in this table as 66 individuals did not code certainty level as high school juniors.

Table 4

Choosers Who Entered the Same Occupations

When Catergorized by Job Family

Choice by cluster	Choice by family	N Choosers	N Entered	% Hits
Business Detail	Clerical & secretarial	245	137	56%
Technical	Construction & maintenance	100	31	31%
Technical	Machine operating, servicing & repair	129	58	45%
Social	Nursing & human care	155	29	19%