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Role of Counselee Experiences in the Interpretation of Vocational Interest Scores

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ABSTRACT

This study determined the validity of vocational interest scores for persons with high, medium, and low levels of experience appropriate to their predominant interests. The experiences and interests of a national sample of young adults (N = 1,380) were assessed concurrently with scales paralleling Holland's types. The degree of congruence between inventoried interests and occupation pursued 6 years later was found to increase as interest-appropriate experience increased. Occupational group members who had a high level of interest-appropriate experience (i.e., those with "verified interests") scored as expected on the interest inventory—in sharp contrast to those with a low level of interest-appropriate experience. The use of counselee experiences in the interpretation of interest scores is discussed.

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Vocational interest inventories are administered to more than 3.5 million persons each year (Tittle & Zytowski, 1978). Many of these persons may have had little experience with activities relevant to their predominant interests. When this occurs, it is reasonable to question whether interest scores have the same validity as when they are accompanied by relevant experiences. This study examined the validity of inventoried interests across three levels of agreement between experiences and predominant interests.

The relationship between interest score validity and experience apparently has not been studied previously. However, several studies have examined the relationship between inventoried interests and self-reported experiences (e.g., The American College Testing Program, 1974; Dressel & Matteson, 1952; Ewens, 1956; Matteson, 1955; Varca & Shaffer, 1982). Median correlations between parallel interest scales and experience scales have ranged from a low of .27 (Ewens, 1956) to a high of .76 (Dressel & Matteson, 1952). Other medians fell in the .40s and .50s. Such results support the common sense expectation of a moderate relationship between experiences and interests.

Given a moderate relationship between experiences and interests, high inventoried interest in a vocational area may not be accompanied by high experience. If interest-appropriate experience is low, a counselor may wonder whether the counselee's interest profile reflects little more than whim and fancy. Thus, it seems reasonable to hypothesize that the validity of interest scores increases as the amount of interest-appropriate experience increases.

This study addressed the above hypothesis through use of a validation model which holds that a person's interest scores and occupation should be congruent. (For example, social workers should score higher on a social service interest scale than any other scale; auto mechanics should score higher on a mechanical interest scale; and so on.) Degree of congruence between predominant interests and occupation was compared for persons with low, medium, and high levels of agreement between self-reported experiences and predominant interests. Interests and experiences were assessed 6 years prior to occupation.

Method

Sample

Early in 1973, interest and experience inventories were administered to a nationally representative sample of 9,296 high school juniors as part of a norming study conducted by The American College Testing Program (ACT). A report by Bayless, Bergsten, Lewis, & Noeth (1974) provides specifics on sample selection and testing procedures. The sample was surveyed late in 1978 and after one follow-up, there were 3,615 respondents—70% of those for whom addresses were still available and 39% of the initial group.

As reported elsewhere (Swaney & Prediger, 1985), respondents to the 1978 survey were representative of the initial sample of 9,296 across a broad range of variables—for example, academic ability, socioeconomic status, and career planning activities. Indices of overlap (Tilton, 1937) between the initial sample and the 3,615 respondents ranged from 97% to 100% (median of 99%) across the six interest scales used in the study. In general, the 3,615 high school juniors represented a broad cross-section of American youth.

For purposes of the study, employment (at the time of the 1978 survey) was defined as working more than 20 hours a week for the same employer for at least 3 months. Of the 1,855 survey respondents who met this criterion, 1,517 indicated at least minimal satisfaction with their work tasks. Of these, 137 reported an indefinite occupation (e.g., "other professional") and, hence, could not be included in the study. Together, the sample screens (months, hours, satisfaction, classifiable occupation) yielded a final sample of 1,380 employed persons (608 males, 772 females) who had worked at their current job for an average of 20 months (range: 3-70 months).

Variables

Interests. In 1973, all persons in the final sample had completed the Vocational Interest Profile, Alternate Form (VIP-A)—a 90-item inventory with six scales corresponding to Holland's (1973) six types. (See Figure 1 for titles and Holland's types. The VIP-A assesses preferences for work-related activities via a five-choice response format ranging from "dislike very much" to

"like very much." Scores on the six interest scales (15 items unique to each) are reported as stanines (0.5 *SD* units) based on national norms. Coefficient alpha reliabilities ranged from .81 to .92 (median of .90) across the six scales for a random sample of 930 juniors in the 1973 norming (ACT, 1974). Lamb and Prediger (1981) provide additional psychometric data.

Experiences. In 1973, all persons in the final sample also completed a 90-item inventory of career-related experiences ("activities") with six scales corresponding to Holland's (1973) six types. Examples of activity items (with Holland's types in parentheses) include: "Prepared a project for a science fair" (Investigative); "Took care of sick or elderly people" (Social); and "Worked out my own budget" (Conventional). During development of the inventory, the activities were screened for age-appropriateness by five school counselors.

When completing the experience inventory, students indicated how often they had done each of the 90 activities through use of one of the following response options (paraphrased): haven't done this; have done this once or twice; have done this several times. These response options were assigned one, two, and three points, respectively, for purposes of scoring.

Coefficient alpha reliabilities for the six experience scales (15 items unique to each) ranged from .74 to .89 (median of .79) for a random sample of 930 juniors in the 1973 norming (ACT, 1974). For the same group, correlations between the parallel interest and experience scales ranged from .34 to .62 (median of .54) for males and from .21 to .58 (median of .49) for females. Additional psychometric data are provided by ACT (1974).

Experience-interest agreement. Level of agreement between experiences and interests was determined in three steps. First, a student's three highest interest scores (to be called "interest pattern") were determined. Second, a student's six experience scores (expressed as *z*-scores based on national norms) were ranked from highest to lowest. Third, experience-interest agreement levels were defined as follows: High—Three highest experience areas are included in the interest pattern in any order; Medium—Two of the three highest experience areas are included in the interest pattern in any order; Low—One or none of the three highest experience areas are included in the interest pattern. This procedure for determining level of agreement between experiences and interests recognizes that counselors often take the interest profile pattern into account rather than just the highest interest score. Only three agreement levels were established in order to ensure adequate sample sizes for the analyses.

Current occupation. When they completed the 1978 survey, sample members indicated which of the 48 general occupational titles (e.g., biological scientist, office machine operator, engineer, retail sales clerk) most closely corresponded to their current occupations. For purposes of analysis, the 48 titles were allocated to 25 job families (ACT, 1976) through use of the expert-judgment assignments developed by Noeth and Jepsen (1981) in conjunction with the first author of the present study. Some examples of job family titles follow: Natural Sciences and Mathematics, Office Machine Operation, Engineering and Other Applied Technologies, Retail Sales and Services.

Interest-occupation congruence. The measure of congruence is based on the locations of a person's interests and occupation on two work task dimensions shown by Prediger (1976, 1982) to underlie Holland's (1973) hexagonal arrangement of six interest/occupational types. Figure 1 orients these dimensions, data/ideas and things/people, with respect to Holland's six types. Through a procedure described by Prediger (1981), each person's interest scores were converted to scores on the data/ideas and things/people dimensions. The two scores, which can be thought of as a location on Figure 1, were then converted to an angle by computing their arc tangent. Thus, a person's interests were summarized in terms of a direction (angle) on Figure 1.

Each of the 25 job families noted above can also be located on the data/ideas and things/people dimensions (Prediger, 1976). Thus, each sample member's occupation can be thought of as a location on Figure 1, the location being determined by the job family to which the occupation was assigned. As with interests, job family locations were expressed as angles.

Both the interests and the occupation of each sample member were thus summarized by angles ranging from 0-359 degrees. The interest-occupation congruence score was defined as the absolute distance in degrees between the two angles. Suppose, for example, that a civil engineer's previously measured interests are converted to data/ideas and things/people scores having a ratio of 1 to 2. Since both scores are positive, the engineer's interests are located between the Conventional and Realistic types in the upper right corner of Figure 1. The angle is 27 degrees. Civil engineers are included in ACT Job Family N (Engineering and Applied Technologies) which is located at the right of Figure 1, just below the horizontal axis. The angle is

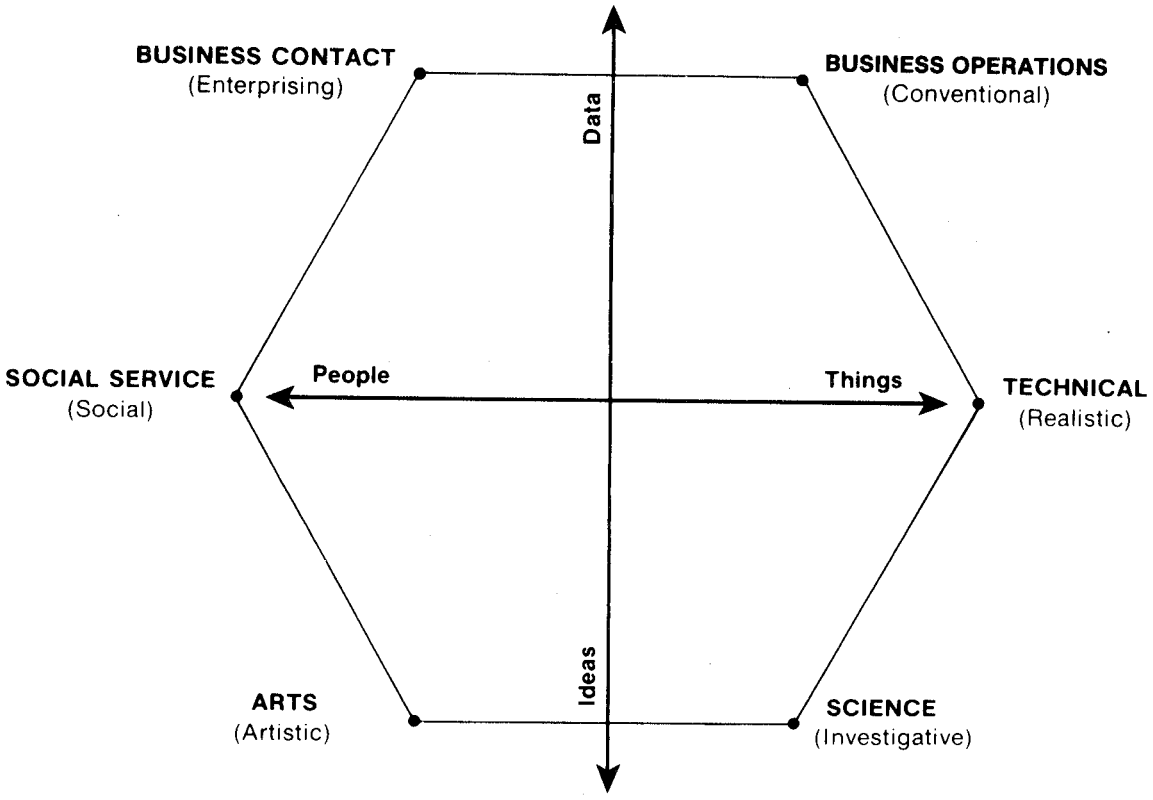

Figure 1. Relationship between interest scales and the data/ideas and things/people work task dimensions. (Holland's types corresponding to interest scales are shown in parentheses.)

354 degrees (or -6 degrees). Thus, the engineer's interest-occupation congruence score, the absolute distance between these two angles, is 33 degrees (6 degrees plus 27 degrees). With this measure, greater congruence is associated with *smaller* congruence scores (less distance between interests and occupation).

Results

As is commonly known, females and males tend to enter different occupations. Also, as shown by Prediger, Roth, and Noeth (1974), the career-related experiences of adolescent males and females differ substantially. For these reasons, the effect of experience-interest agreement level on interest-occupation congruence may differ for males and females. The possibility of a level-by-gender interaction was examined via a planned contrast analysis (Marascuilo & McSweeney, 1977, pp. 308-309) based on a one-way Kruskal-Wallis analysis of variance (ANOVA). (The congruence scores were highly skewed; thus the standard, two-way ANOVA test for interaction was inappropriate.) Because results of the contrast analysis did not approach statistical significance ($z = 0.14$), the data for males and females were combined in subsequent analyses.

Two types of analyses were conducted. The first examined interest-occupation congruence across the three levels of agreement (high, medium, and low) between experiences and predominant interests. Table 1 presents mean congruence scores for the total sample and for occupations grouped by Holland's types. A comparison of mean congruence scores across the three agreement levels (row-wise data) shows the expected pattern for the total group and for each of the five occupational groups. That is, greater congruence (smaller scores) is associated with greater experience-interest agreement. Congruence scores

TABLE 1

Mean Interest-Occupation Congruence Scores for Three Levels of Agreement Between Experiences and Interests

Occupational group	*n* for agreement level			Mean score for level			
	High	Med.	Low	High	Med.	Low	p^a
Realistic (R)	68	241	104	67	69	85	.03
Investigative (I)	24	88	41	44	68	67	.08
Artistic (A)	1	7	2	b	b	b	b
Social (S)	45	119	70	61	72	88	.01
Enterprising (E)	27	142	46	70	77	78	.87
Conventional (C)	55	208	92	61	71	84	.04
Total	220	805	355	62	71	82	.0001

Note. Smaller congruence scores indicate greater interest-occupation congruence. Standard deviations for the total sample were 48.0, 48.6, and 54.4 for high, medium, and low agreement levels, respectively.

[a]Statistical significance level (p) is based on a Kruskal-Wallace analysis of variance across the three agreement levels.

[b]Data for the Artistic group have been omitted due to its small size.

were compared across levels of agreement using a Kruskal-Wallis ANOVA. Results for the total group were highly significant:

$$\chi^2\ (2, N = 1{,}380) = 20.29,\ p < .0001.$$

Statistical significance levels for the five occupational groups are also provided in Table 1.

The second analysis of the relevance of experience to interest inventory validity used a different, more familiar, indicator of interest-occupation congruence. (Statistical significance tests were not run since the Kruskal-Wallis ANOVA demonstrated significance for the more refined measure of congruence.) Mean interest score profiles were developed for occupational group members with high and low levels of agreement between experiences and predominant interests. These mean profiles, presented in Table 2, can be used in two ways to assess interest score validity. First, one would expect that the interest scale most appropriate to an occupational group would rank first among the six scales (see rows in Table 2). Within the Realistic occupational group, for example, the Realistic interest scale ranks first when Realistic experiences are high. When Realistic experiences are low, however, the Realistic interest scale ranks third. In general, the expected patterns are found when experience-interest agreement is high but not when it is low.

Second, one would expect that the occupational group most appropriate to an interest scale would rank higher on that scale than the other occupational groups (see columns in Table 2). The column-wise data for the Realistic interest scale, for example, show that the Realistic occupational group ranks first when Realistic experiences are high. When Realistic experiences are low, however, the Realistic group ranks fourth.

Table 2 also shows better profile definition (see column labeled "difference") when experience-interest agreement is high. For example, the difference between the Realistic occupational group mean on the Realistic interest scale and the mean on the lowest interest scale is 1.4 stanine units when Realistic experiences are high. When Realistic experiences are low this difference drops to 0.3 units. For the high experience-interest agreement group, profile definition ranges from 1.4 stanines to 2.4 stanines, with a median of 2.1. In addition, the mean for the expected interest scale always ranks highest (see column labeled "rank"). For the low agreement group, profile definition ranges from 0.3 to 1.8 stanines, with a median of 0.5. The mean for the expected interest scale clearly ranks highest for only one of five occupational groups.

TABLE 2

Mean Interest Score Stanines by Level of Agreement Between Experiences and Interests

Occupational group[a]	Interest scale R	I	A	S	E	C	Rank[b]	Difference[b]	Highest scales
	High level of agreement (n = 220)								
Realistic (R)	5.6	4.7	4.4	4.2	4.5	4.6	1st	1.4	RIC
Investigative (I)	5.5	6.4	4.7	4.2	4.0	4.9	1st	2.4	IRC
Social (S)	3.6	4.9	4.9	5.7	5.3	5.1	1st	2.1	SEC
Enterprising (E)	4.5	4.7	4.9	5.5	6.0	5.6	1st	1.5	ECS
Conventional (C)	4.2	4.8	4.7	5.5	5.4	6.3	1st	2.1	CSE
Rank[c]	1st	1st	—	1st	1st	1st			
	Low level of agreement (n = 355)								
Realistic (R)	5.1	4.9	5.2	5.4	5.0	4.8	3rd	0.3	SAR
Investigative (I)	5.0	6.3	4.5	4.8	5.2	5.3	1st	1.8	ICE
Social (S)	5.3	5.8	5.4	5.3	4.9	5.0	3-4th	0.4	IARS
Enterprising (E)	5.4	4.9	5.5	5.2	5.4	5.3	2-3rd	0.5	ARE
Conventional (C)	5.3	5.1	4.9	4.6	5.1	5.3	1-2nd	0.7	RCIE
Rank[c]	4th	1st	—	2nd	1st	1-3rd			

Note. The mean for the interest scale appropriate to an occupational group is underlined. Data for medium level of agreement have been omitted to conserve space. They are available from the senior author.

[a]Artistic group has been omitted due to small size (n= 10).

[b]Rank of interest scale appropriate for occupational group; difference between its mean and lowest mean for other five scales ("differentiation").

[c]Rank of occupational group corresponding to interest scale.

Discussion

Study results support the hypothesis that the validity of interest scores (i.e., the congruence between inventoried interests and occupation pursued 6 years later) increases as interest-appropriate experience increases. Stated differently, persons are more likely to have interest scores in line with their subsequent occupation when they have had experiences in line with their predominant interests. These results were obtained for an age group that typically experiences major transitions in vocational development.

Study results provide, apparently for the first time, empirical evidence that everyday experiences mediate interest inventory validity. Yet few interest inventories help counselors interpret interest scores in light of experience. Without experience measures, counselors must conduct an informal evaluation of experiences. Perhaps interest inventory publishers should be more helpful in this regard.

The term "interest-appropriate experience," as used in this study, leaves room for at least two roles for experiences in the interpretation of interest scores. First, responses of "like" or "dislike" to interest inventory items may be based on general knowledge of (or stereotypes regarding) item content rather than personal experience. To the extent that experience is lacking, the likes and dislikes may be considered to be unverified. Conversely, when high interests are accompanied by high experience, one might speak of *verified interests.* ("I know first-hand that I like those activities.") One would expect verified interests to be more valid than unverified interests.

The second role for experiences might be as an indicator of what Super and Crites (1962) call "manifest interests" (p. 378). For example, high manifest interests (voluntary experiences) in a given vocational area might support high inventoried interests in the

sense that persons who have acted in accord with their interests in the past may continue to do so (i.e., they may explore and enter occupations in line with their interests). When high inventoried interests are accompanied by few related experiences, persons may be less likely to pursue their interests through the point of occupational entry. Thus, interest score validity (as defined here) may be lower.

Future studies should address the extent to which experiences are important as indicators of manifest interests as versus verified interests. It should be noted that both voluntary (manifest) and involuntary ("duty-bound") experiences were assessed in the present study, since both can serve to verify interests. Also, future studies should address the role of knowledge as an indicator of interest score validity. Peiser (1984), for example, determined the level of agreement between inventoried interests and information in the same fields—similar to "tested interests" (Super & Crites, 1962, p. 379). He found that interest scores have more validity as predictors of college major when information-interest agreement is high as versus low. These results suggest that experiences and knowledge may both be useful in verifying inventoried interests. Alternatively, knowledge may simply be an indicator of experience.

When a counselee's predominant interests are not accompanied by relevant experiences, study results clearly suggest caution in interest score interpretation. Hence, the counselor and counselee may wish to review the extent to which experience and knowledge were brought to bear on responses to items on the interest scales with the highest scores. Another approach would be to provide counselees with opportunities to engage in and evaluate the experiences they are lacking—and, thereby, evaluate their interests.

Not directly addressed by the study are the implications of experiences for low interests. Study results imply that when low interest scores are accompanied by considerable experience (e.g., when they are verified), the low scores have validity. However, if experiences are minimal, one might question the validity of low interest scores. In one sense, the scores are "valid," given experience to date. In another sense, they are "invalid" in that latent interests may develop if relevant experience is obtained. By implication, counselors working with counselees who have uniformly low interest profiles might concentrate the exploratory process on those interest areas for which experiences are also low. Once again, providing opportunities to engage in the experiences that are lacking may prove helpful.

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