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ABSTRACT

This paper examined student perceptions of occupational congruency using Holland's Realistic, Investigative, Artistic, Social, Enterprising, and Conventional personality and environmental types. Using the hexagonal arrangement of the types, congruency levels were established. Student perceptions were examined in the areas of activities, values, interests, traits, and competencies. It was hypothesized that students would perceive congruency with occupational types that corresponded to their personality types and that the degree of perceived congruency would parallel the levels empirically established from the hexagonal model. None of the hypotheses in the study was supported for the high school girls. However, the males tended to perceive occupational congruency overall -- the congruency within activities, values, interests, and traits -- differently according to the correspondence between their personality types and the types of the occupations presented to them. (Author)

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Report No. 156

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STUDENT PERCEPTIONS OF OCCUPATIONAL CONGRUENCY

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GERALD D. WILLIAMS

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Baltimore, Maryland

INTRODUCTORY STATEMENT

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through three programs to achieve its objectives. The Schools and Maturity program is studying the effects of school, family, and peer group experiences on the development of attitudes consistent with psychosocial maturity. The objectives are to formulate, assess, and research important educational goals other than traditional academic achievement. The School Organization program is currently concerned with authority-control structures, task structures, reward systems, and peer group processes in schools. The Careers and Curricula program bases its work upon a theory of career development. It has developed a self-administered vocational guidance device and a self-directed career program to promote vocational development and to foster satisfying curricular decisions for high school, college, and adult populations.

This report, prepared by the Careers and Curricula program, examines high school students' perceptions of occupational congruency.

ABSTRACT

This paper examined student perceptions of occupational congruency using Holland's Realistic, Investigative, Artistic, Social, Enterprising, and Conventional personality and environmental types. Using the hexagonal arrangement of the types, congruency levels were established. Student perceptions were examined in the areas of activities, values, interests, traits, and competencies. It was hypothesized that students would perceive congruency with occupational types that corresponded to their personality types and that the degree of perceived congruency would parallel the levels empirically established from the hexagonal model.

None of the hypotheses in the study was supported for the high school girls. However, the males tended to perceive occupational congruency overall, and congruency within activities, values, interests, and traits, differently according to the correspondence between their personality types and the types of the occupations presented to them.

INTRODUCTION

Holland's theory of careers proposes that occupational selection is a manifestation of personality (Holland, 1966; 1973, in press). He describes basic patterns of personality by using six types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. Occupational environments, mostly determined by typical attributes of people in occupations or fields of study (Astin & Holland, 1961; Astin, 1963), are described with the same six categories. In general, the theory states that people attempt to select environments which correspond to their personality needs; conversely, they tend to avoid environments which limit expression of their personal attributes.

Holland describes the relationship between a person's personality and his environment in terms of congruency, which is defined as the similarity between the person's personality type and the primary characteristics of his environment. Therefore, occupational congruency is a person-environmental interaction represented by the correspondence between one's personality type and the occupational type of his work or training environment.

Holland's concept of congruency has been investigated in studies of choice of college major, change of major, adult work histories, personal adjustment of college students, and college student satisfactions (Holland, et al., 1973, in press; Johnson & Moore, 1973; Nafziger, 1973, in press; Southworth & Morningstar, 1970; Walsh & Russell, 1969). However, few studies have examined student perceptions of occupational congruency within a framework of personality and environmental types (Hogan, Hall, & Blank, 1971; Elton, 1971).

This paper examines high school students' perceptions of occupational congruency by (a) proposing four different levels of congruency from Holland's et al. (1969) hexagonal arrangement of personality and environmental types, (b) developing an attitude instrument to measure perceived congruency in five areas (activities, values, interests, traits, and competencies), and (c) testing some hypotheses about differences of perceived congruency which might be expected using Holland's theory. In general, it was expected that high school students would perceive occupations to be congruent with their activities, values, interests, traits, and competencies.

The following sections present the model for deriving the proposed levels of congruency, explain and define some dimensions or areas of occupational congruency, and state the specific hypotheses to be examined.

Congruency Levels

Figure 1 presents Holland's hexagonal model of the interrelationships among the Realistic, Investigative, Artistic, Social, Enterprising, and Conventional personality types. The model graphically displays the relationship

Figure 1

between each personality type and every other category by the lengths of the interconnecting lines. Types are represented by letter codes (R, I, A, S, E, and C). The R type is most similar to I and C, less similar to A and E, and least similar to S. The general outline of a hexagonal configuration of the types has been demonstrated in several studies using different vocational interest inventories with college students, high school students, and men and women (Cole, Whitney, & Holland, 1971; Cole, 1972; Crabtree, 1971;

Edwards & Whitney, 1972; Nafziger & Helms, 1972).

Assuming that person-environmental relationships parallel the hexagonal arrangement, four different levels of occupational congruency can be postulated from the model:

Level 1. (Least congruent) Environmental one-letter code is opposite the person's one-letter personality code.

Level 2. Environmental one-letter code is neither opposite nor adjacent to the person's one-letter personality code.

Level 3. Environmental one-letter code is adjacent to the person's one-letter personality code.

Level 4. (Most congruent) Environmental one-letter code is identical to the person's one-letter personality code.

Areas of Congruency

Holland's (1973, in press) latest statement of his theory suggests that occupational congruency may consist of some psychological dimensions not elaborated upon in earlier statements (Holland, 1966). Five areas in particular - activities, values, interests, traits, and competencies - are outlined as salient features characteristic of person-environmental compatibility. In other words, one would infer a congruent situation when a person shared common interests, values, traits, etc., with most of the other people in his occupation or field of study. If most of these areas were not shared,

one would assume person-environmental incongruency.

Table 1 presents definitions of activities, values, interests, traits, competencies and congruency in general. Since the areas are often ambigu-

Table 1

ously defined and frequently used interchangeably in vocational research literature (See Crites, 1969; Katz, 1969, for a discussion of this issue), some terms used synonomously are presented also. The illustrative items in Table 1 are from the attitude instrument developed to measure the areas of perceived congruency.

Hypotheses

Levels of congruency were established according to the hexagon, and the following three hypotheses were examined:

1. Student perceptions of occupational congruency will differ depending upon the correspondence between their personality type and the type of an occupation to which they are asked to respond.

2. Student perceptions of occupational congruency within each domain, i.e., activities, values, interests, traits, and competencies, will also differ depending upon the correspondence between their personality type and the type of occupation.

3. The extent to which students perceive occupational congruency with selected types of stimulus occupations will parallel the order of congruency levels as established from the hexagonal model.

As a study of student perceptions of a person-environmental interaction, the present investigation is somewhat analogous to environmental press studies wherein the congruency levels represent an alpha, or objectively derived measure of congruency, and the students' attitude responses represent a beta measure, i.e., congruency as perceived and interpreted by the individual (See Mitchell, 1969; Murray, 1938).

Method

Subjects in the study were junior and senior boys (N=118) and girls (N=121) from two Catholic high schools in Baltimore, Maryland. High school juniors and seniors were selected on the assumption that they were likely to have given more thought to their occupational plans than younger students. Nine subjects who were either undecided about their future occupations or intended to enter military service after high school were omitted from the study.

In a group testing situation, subjects were asked for background information, their expected future occupations, and thirty Likert-type attitude items about two randomly assigned stimulus occupations. The students' expected future occupations were viewed as personality indices and were coded using Holland's classification system. The stimulus occupations presented to the students represented potential work environments and were coded in the same manner. Levels of congruency, i.e., the independent variable, were established by comparing the one-letter code of the stimulus occupations (environments) with the one-letter code of the students' expected future occupations (personality).

Six occupations representing Holland's six types were used as stimulus occupations: Carpenter (R), Medical Technologist (I), Designer (A), Beautician (S), Motel Manager (E), and Accountant (C). Each subject was pre-

sented with two occupations which were opposite types in the hexagonal model, i.e., R with S, C with A, and I with E. The order of presentation was reversed on half of the questionnaires. No occupational descriptions were provided for the students; only occupational titles were used. Consequently, it was assumed that a student's perception of occupational congruency would likely reflect an integration between his self-image and stereotypes he had of different occupations.

Student perceptions of occupational congruency in activities, values, interests, traits, and competencies, the dependent variables, were measured with an Occupational Attitude Questionnaire (OAQ). Thirty attitude items were written and scaled on an a priori basis using the definitions presented in Table 1. Scores of perceived congruency in each area were determined by summing responses (4 to 1) based upon the amount of agreement to the strongly agree to strongly disagree items. Half of the OAQ items were phrased in terms of person-similarity of traits, values, interests, etc. For example: "People in this occupation behave a lot like me," "People in this kind of work and I would value many of the same things," "I have interests similar to people who work in this occupation." The OAQ was analyzed in detail by examining item-scale correlations, correlations among the five subscales, and by factor analyzing the attitude items using the MINRES method (Harmon, 1967).

Each of the three related hypotheses in the study was examined separately for boys and girls. Multivariate analysis of variance (MANOVA) (Clyde, Cramer, & Sherin, 1966) was used to test for overall differences in perceived congruency by the congruency levels, i.e., the multivariate F-ratio, and perceived differences in each area were examined by the univariate F-ratios. Mean scores in activities, values, interests, traits and competencies were examined to see if their order of magnitude paralleled the proposed levels of

congruency. Because two stimulus occupations were presented to each subject, the second occupation provided a kind of study replication.

Results

The following sections present a brief description of the personality types of the subjects in the study, results of the OAQ item and subscale analyses, examination of the study hypotheses for males and females, and the results of the OAQ factor analysis.

Subjects in the Study

Table 2 contains percentage distributions of the personality types of the study subjects compared to distributions of a national sample of high school juniors and seniors. Neither the boys nor the girls in the study

Table 2

appeared representative of the personality code distributions of high school juniors and seniors nationally. The most prominant differences occurred in the Realistic and Investigative categories for the males and the Investigative and Conventional categories for the females.

The Occupational Attitude Questionnaire

Analysis of the attitude items in the areas of activities, values, interests, traits, and competencies resulted in discarding several items from final scoring of the instrument. Table 3 presents the item-subscale score correlations and the item-total score correlations for both males and females before the revised scoring. Items with correlations below .40 with

Table 3

the a priori scales or with the total scores of perceived congruency were discarded; the correlations were too low to suggest construct validity. Some of the items were particularly ambiguous, while others may have appeared to the subjects as more judgmental than descriptive person-environmental similarity. Also, item 7 in the competencies area may have been threatening to some students, regardless of how much they perceived congruency with the stimulus occupations. For most of the items in the OAQ, however, the generally higher item-subscale than item-total score correlations indicated moderate construct validity for the five areas.

Table 4 presents the perceived congruency subscale intercorrelations and Hoyt (1941) reliability estimates for males and females after the poorest items were omitted. The activities and interests areas were most highly

Table 4

correlated for both males and females; values and competencies were least correlated, although all of the subscales were more highly correlated than desirable for clear differentiation among the different areas. Given the number of items in each subscale and the length of the OAQ overall, the Hoyt reliability estimates were substantial and adequate for examining the study hypotheses using MANOVA procedures.

Hypotheses

Tables 5 and 6 present the perceived congruency subscale mean scores and standard deviations by each level of congruency with replications for boys and girls. Hypothesis 1 in the study was supported for the boys but not for the girls. Overall differences in perceptions of occupational congruency were indicated for the boys, i.e., their perceptions of overall

Tables 5 and 6

congruency were different depending upon the correspondence between their primary personality types and the type of an occupation to which they were asked to respond. With the exception of the competencies area of perceived congruency, Hypothesis 2 was also supported for the boys -- that is, the perceived congruency differed for activities, values, interests, and traits. Hypothesis 3 was not supported; the order of the mean scores in terms of magnitude did not parallel the order of the congruency levels. However, mean scores for Level 4 congruency were the largest in each area. If the students' personality types were identical to the type of occupation presented to them, they tended to perceive the environment as congruent with their own activities, values, traits, interests, and competencies.

None of the hypotheses was supported for the female sample. Since a significant ($p < .01$) interaction between the levels of congruency and the second stimulus occupation was found in the study, presenting the occupational types in pairs may have influenced the results.

OAQ Factor Analysis

Since the a priori scales on the OAQ were highly intercorrelated, the OAQ items were factor analyzed using the MINRES method (Harmon, 1967). Table 7 presents the OAQ items with the highest factor loadings on three factors of perceived occupational congruency. Male and female questionnaire responses

Table 7

were combined for the analysis. Three factors accounted for 51 percent of

the total item variance. The first factor accounted for 39.9 percent of the variance, and factors two and three accounted for 6.1 percent and 4.9 percent, respectively. Based upon the content of the highest loading items, the factors were labeled activities-interests, person-traits, and values-rewards. Thus, the areas suggested by the analysis were only partly similar to the a priori subscales.

Overall, the factors seemed to suggest a kind of what, who, and why of perceived person-environmental congruency. In other words, what one does on a job and his intrinsic interest in those activities may be paramount to his perceptions of occupational congruency. Who works in the occupation and their characteristics may be of secondary importance, at least for students with little or no actual work experience. Finally, the why area (values and possible rewards), was suggested as the least important area in perceived occupational congruency. While speculative, the results of the factor analysis suggested these priorities in how students might perceive occupational congruency.

Discussion

The present study examined student perceptions of occupational congruency using Holland's Realistic, Investigative, Artistic, Social, Enterprising, and Conventional personality and environmental types. Using the hexagonal arrangement of the types, congruency levels were established. Student perceptions were examined in the areas of activities, values, interests, traits, and competencies. It was hypothesized that students would perceive congruency with occupational types that corresponded to their personality types and that the degree of perceived congruency would parallel the levels empirically established from the hexagonal model.

None of the hypotheses in the study was supported for the high school girls.

However, the males tended to perceive occupational congruency overall, and congruency within activities, values, interests, and traits, differently according to the correspondence between their personality types and the types of the occupations presented to them. Mean scores of perceived congruency in activities, values, interests, traits, and competencies were all highest at congruency Level 4 for the males, but the rank order of the remaining mean scores did not parallel the order of the congruency levels. Such results suggested that many male students may perceive occupations as simply congruent or incongruent.

Factor analysis of the items in the Occupational Attitude Questionnaire (OAQ) indicated the possibility of three, rather than five, areas salient to student perceptions of occupational congruency. In a general way, the factors suggested a what, who, and why of congruency perceptions when students are presented with specific occupations. Activities of the occupation and intrinsic interest in those activities may be the best predictors of whether students will perceive the occupations as congruent with their own characteristics. Compatibility with the people in the occupations as perceived by similarity of interests, traits, etc., seemed less important. Finally, the projection of a supportive occupational environment and an occupation important to society seemed to indicate why students might perceive congruency with the occupations presented to them. Although tentative, the results of the OAQ factor analysis suggested some provocative areas for further research regarding student perceptions of occupational congruency. At the least, the results indicated more complex perceptions of occupations than would be typically assumed by most vocational interest inventories.

Some support for Holland's congruency concept was found in the present in-

vestigation, although the overall results seemed to indicate that students might perceive occupations as either congruent or incongruent with their personalities. The use of only occupational titles and subjects with little or no actual work experience, however, was a rigorous test of the concept of congruency. Even so, there were some indications that, with better assessment of occupational congruency perceptions and more stimulus occupations, the levels of congruency established from the hexagonal model can be useful for examining perceptions of person-environmental interaction.

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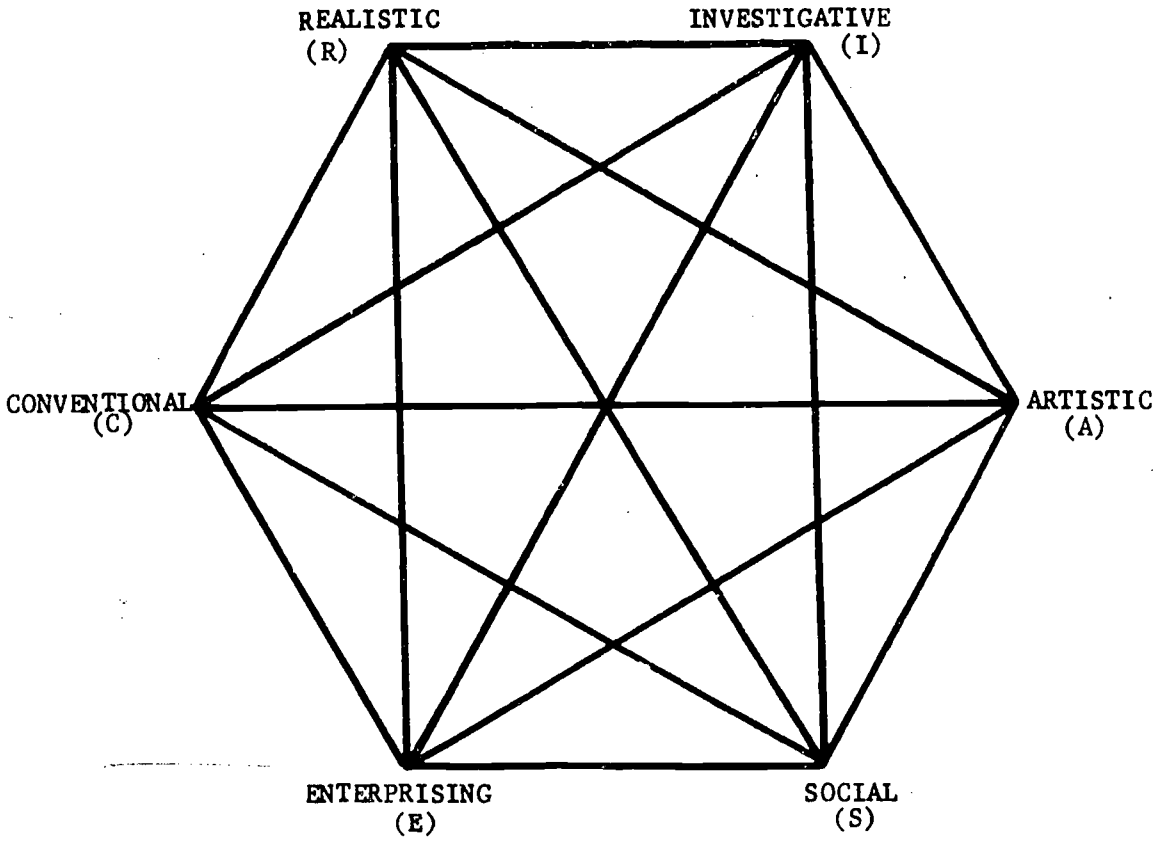

Figure 1. Holland's Hexagonal Model of the Relationships Among the Occupational Personality Types

Table 1

Areas of Congruency, Definitions, Similar Terms, and OAQ Item Examples

Concept	Definitions	Similar Terms	Item Examples
Congruency	degree of correspondence between one's personal attributes and the environment (mostly other people) in his surround	fit, match, compatibility, correspondence, similarity	----------
Activities	things one does on a job, including interactions with others, "work itself" tasks	tasks, duties, work, responsibilities	The activities in this kind of work would give me a lot of satisfaction
Values	worth ascribed to objects or activities, usually viewed as fulfilling certain needs	important, worthwhile, good, desirable	This is an important occupation in our society
Traits	enduring psychological characteristics of a person by which he can be described as different and/or similar to others	behaviors, personality, individuality, uniqueness	People in this occupation behave a lot like me.
Interests	attitude toward objects or activities, usually viewed as intrinsically appealing	involved, likes, dislikes, engaged	This would be an exciting occupation for me
Competencies	capacities to perform activities, fill certain roles and positions	qualifications, talents, skills, abilities	I could contribute a lot of ideas in this kind of work

Table 2

Percentage First-Letter Personality Codes from Expected Occupations of Study Sample Compared to 1968 National Sample of High School Juniors and Seniors[a]

Groups	First-Letter Personality Codes						N	X^2
	R	I	A	S	E	C		
Males								
Study Sample	18	32	6	18	17	9	116	
National Sample	39	18	8	13	15	7	1028	25.61**
Females								
Study Sample	1	22	10	39	8	20	114	
National Sample	6	4	5	42	5	38	644	62.20**

[a]Derived from National Longitudinal Survey of Work Experiences of Males and Females Ages 14 to 24 (See Parnes, et al., 1969).

**$p < .01$.

Table 3

CAQ Item Correlations with Subscales and

Total Score for Males and Females

Congruency Scale	Item	Scale		Total Score	
		M	F	M	F
Activities					
1.	The activities in this kind of work would give me a lot of satisfaction	.80	.76	.77	.69
8.	People in this kind of work enjoy the kinds of activities that I enjoy	.68	.56	.67	.48
12.	I wouldn't get much satisfaction from the activities in this kind of work	.73	.86	.64	.81
19.	The activities in this occupation would be frustrating to me	.69	.80	.60	.71
24.	People in this kind of work don't do the kinds of things that I like to do	.64	.67	.62	.66
29.	I would enjoy the daily activities in this kind of occupation	.83	.86	.82	.83
Values					
3.	I would oppose most of the same issues as people in this occupation[a]	.38	.28	.15	.12
10.	This is an important occupation in our society[b]	.68	.67	.57	.36
13.	People in this kind of work and I would value many of the same things	.67	.70	.67	.61
14.	I would feel very lonely in this kind of work	.67	.53	.56	.60
16.	I would be respected in this kind of work	.69	.59	.59	.43
28.	My outlook on the world is like that of people in this occupation	.65	.64	.61	.55
Traits					
4.	I have many traits in common with people in this occupation	.69	.67	.70	.66
11.	People in this occupation encourage each other to do a good job[b]	.54	.43	.42	.38
15.	People in this kind of work are friendly[a]	.31	.48	.15	.36
18.	My personality is similar to the typical worker in this occupation	.80	.69	.76	.64

Table 3 (Cont'd)

Congruency Scale	Item	Scale M	Scale F	Total Score M	Total Score F
Traits (Cont.)					
20.	People in this occupation behave a lot like me	.82	.73	.71	.56
23.	My characteristics are very different from those of people in this occupation	.77	.70	.71	.57
25.	People in this kind of work think of themselves the way I think about myself[b]	.66	.48	.59	.26
Interests					
2.	I could really get involved with the tasks in this kind of work	.83	.78	.77	.73
5.	I have interests similar to the people who work in this occupation	.71	.79	.70	.78
17.	This would be an exciting occupation	.83	.84	.79	.80
21.	People in this occupation would be interesting friends	.70	.59	.67	.59
27.	I would like to train for this occupation	.85	.85	.79	.78
30.	I would like more information about this occupation	.83	.83	.75	.74
Competencies					
6.	People in this occupation have talents similar to my own	.68	.72	.64	.64
7.	I would be afraid of losing my job in this occupation[a]	.47	.48	.24	.31
9.	I could contribute a lot of ideas in this kind of work	.79	.78	.69	.64
22.	I could be a leader in this occupation	.79	.76	.65	.61
26.	I could be very successful in this occupation	.84	.84	.76	.76

Note. --Correlations computed with items included in scale and total scores.

[a] OAQ items omitted from final scoring for males and females

[b] OAQ items omitted from final scoring for females only

Table 4

Perceived Congruency Subscale Intercorrelations with Hoyt Reliability Estimates for Males and Females

Subscales	1	2	3	4	5	6[a]
1 Activities		.73	.72	.86	.72	.89
2 Values	.77		.58	.71	.58	.74
3 Traits	.79	.78		.68	.60	.73
4 Interests	.89	.76	.79		.77	.89
5 Competencies	.76	.64	.67	.79		.77
6 Total Score	.90	.81	.83	.90	.79	
Hoyt r_{tt}						
Males	.83	.72	.81	.88	.82	.95
#Items	(6)	(5)	(6)	(6)	(4)	(27)
Females	.85	.59	.76	.87	.82.	.95
#Items	(6)	(4)	(4)	(6)	(4)	(24)

Note.-- Males (N=234) below diagonal; females (N=240) above the diagonal.

[a]Corrected correlations, i.e., each subscale score correlated with the sum of the other four subscale scores.

Table 5

Perceived Congruency Subscale Mean Scores and Standard Deviations by Each Level of Congruency with Replication - Males

Test	Congr. Lvls	Activities $\bar{X}$	Activities SD	Values $\bar{X}$	Values SD	Traits $\bar{X}$	Traits SD	Interests $\bar{X}$	Interests SD	Competencies $\bar{X}$	Competencies SD	No. of. Subjects
1	1	13.31	4.2	12.56	3.5	12.94	3.5	13.69	4.4	9.56	3.4	16
	2	14.55	3.4	12.82	3.1	13.82	3.5	13.58	4.6	9.91	3.0	33
	3	13.60	4.9	12.50	3.8	13.55	4.5	13.14	5.3	9.02	3.6	42
	4	15.87	5.0	14.30	3.1	16.00	5.1	17.04	5.8	10.70	3.5	23
2	1	14.74	3.2	13.39	2.7	14.13	3.4	14.04	3.8	9.87	2.9	23
	2	12.93	4.5	12.29	3.1	13.14	3.7	12.31	4.6	9.21	3.5	42
	3	14.21	4.5	12.76	3.5	14.21	4.2	13.91	5.2	10.06	3.3	33
	4	16.63	4.3	14.31	3.5	15.06	4.2	16.56	4.4	10.81	2.7	16
Univar. F (3, 220)		3.25		2.85		2.64		5.98		1.49		multiv.F = 1.67
p less than		.023		.038		.050		.001		.217		.052

Perceived Congruency Subscale Mean Scores and Standard Deviations by Each Level of Congruency with Replication - Females

Test	Congr. Lvls	Activities $\bar{X}$	Activities SD	Values $\bar{X}$	Values SD	Traits $\bar{X}$	Traits SD	Interests $\bar{X}$	Interests SD	Competencies $\bar{X}$	Competencies SD	No. of Subjects
1	1	14.26	5.0	10.11	2.9	8.93	2.9	13.52	4.6	8.19	3.2	27
	2	15.18	4.3	10.50	2.5	9.38	2.4	15.63	5.1	9.98	2.9	40
	3	15.00	4.0	10.03	2.4	8.91	2.3	14.39	4.2	9.70	2.6	33
	4	14.31	4.3	10.75	2.4	8.75	2.9	16.00	4.7	10.31	3.2	16
2	1	15.56	4.1	11.00	2.1	8.81	2.6	15.88	5.0	10.63	3.2	16
	2	14.30	4.8	10.52	2.2	8.82	2.4	14.52	4.9	9.00	2.8	33
	3	13.85	4.0	9.93	2.0	8.78	2.3	13.63	4.2	9.45	2.4	40
	4	15.74	3.9	11.00	2.1	9.93	2.8	15.22	4.9	9.93	3.7	27
Univar. F (3, 224)		.36		1.57		.69		1.30		.76		multiv. F = .99
p less than		.783		.199		.557		.276		.509		.460

Table 7

Occupational Attitude Questionnaire Items with Highest Loadings for Three Factors - Males and Females Combined

Factor Loadings	Item No.	OAQ Item
Factor I- Activities/Interests		
.78	2.	I could really get involved with the tasks in this kind of work
.77	29.	I would enjoy the daily activities in this kind of occupation
.74	26.	I could be very successful in this occupation
.73	27.	I would like to train for this kind of work
.73	1.	The activities in this kind of work would give me a lot of satisfaction
Factor II - Person/Traits		
.69	20.	People in this occupation behave a lot like me
.59	23.	My characteristics are very different from those of people in this occupation[a]
.56	8.	People in this kind of work enjoy the kinds of activities that I enjoy
.54	18.	My personality is similar to the typical worker in this occupation
.54	24.	People in this occupation don't do the kinds of things that I like to do[a]
Factor III - Values/Rewards		
.55	10.	This is an important occupation in our society
.52	11.	People in this occupation encourage each other to do a good job
.52	16.	I would be respected in this kind of work

[a] Item scored in the opposite direction.