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CONGRUENCY, ACHIEVEMENT, AND THE SELF DIRECTED SEARCH

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Abstract

Holland's construct of congruency and its relationship to level of academic achievement were tested through the *Self Directed Search* (SDS). The study was designed to validate the following theoretical assumptions made by Holland: a) individuals seek occupational environments consistent with their personal orientation; b) individuals experience greater success when personality and environment are in congruence. Students were administered the SDS and the resulting summary code was compared for congruency using Holland's *Occupations Finder*. Results indicated that subjects' programs were congruent with their SDS summary codes. Significant relationships were found between congruent and non-congruent frequencies, and between academic achievement and congruency.

Résumé

A l'aide du *Self Directed Search* (SDS), cette recherche vise à mettre à l'épreuve la notion de congruence proposée par Holland ainsi que sa relation avec le rendement scolaire. Il s'agit donc de vérifier les postulats suivants: a) les individus cherchent des environnements qui correspondent à leur orientation personnelle; b) les individus parviennent à des succès accrus lorsque leur personnalité est en harmonie avec leur environnement. Des étudiants répondent au SDS et, à l'aide du code sommaire qui en résulte, la congruence par rapport à l'environnement est établie en utilisant le *Occupations Finder* de Holland. Les résultats indiquent que les concentrations d'études dans lesquelles les sujets sont inscrits sont congruentes avec leur code sommaire au SDS. On trouve aussi des relations significatives entre les fréquences de congruence et d'incongruence de même qu'entre le rendement scolaire et la congruence.

Various aspects of Holland's theory of vocational choice (Holland, 1966, 1973) have been researched and validated in the

fifteen years since its inception. Published studies have been concerned with topics such as: personality constructs as predictors of stability of choice (Villwock, Schnitzen, & Carbonari, 1976); congruency of personality types and VPI scores (Giles, 1975); validity of the hexagonal model in occupational workers (Mount & Muchinsky, 1978); consistency of self-perception and personality type (Wall,

Osipow, & Ashby, 1967); prediction of occupational consistency and change (Elton & Rose, 1970); validity of the SDS and the COII (Fitzsimmons & Melnychuk, 1979); work groups and need satisfaction (Lucy, 1971).

The wide range of research is indicated by the above reported studies. Most of the research has been concerned with populations of college students or working adults. One purpose of the study reported here was to validate Holland's theory for high school students in selected occupational environments, in particular Canadian vocational high school students. A second purpose is to investigate the relationship between congruency and achievement, which Holland's theory would predict to be positive. This has received surprisingly little attention by researchers to date; 'surprisingly' in view of the widespread concern in the literature with other predictors of academic achievement.

Congruency and Environment

Congruency is the closeness with which the personality type matches its corresponding environment. An individual's relationship to the environment is determined by the degree of congruence or compatibility; the highest degree of congruence being the situation in which the personality type exactly matches the environment, such as a social person in a social environment. The next degree of compatibility to that of the personality type in an adjacent environment such as a realistic person in a conventional environment. A high degree of incongruence occurs when a personality type is in an opposite environment such as a realistic person in a social environment. Different levels of congruence can be obtained by using one, two or three letter codes for types and environments such as an RI personality type in an RI environment. Congruence between the person and environment leads to more positive interactions and greater satisfaction, achievement and stability, while negative interactions caused by incongruence could result in dissatisfaction, ineffective functioning and leaving the environment.

Methodology

In brief, the study involved: classifying the programs of study in a vocational high school; administering the Self-Directed Search

(SDS) to the student population; obtaining the congruency between SDS scores and study programs; and examining the relationship between congruency and achievement of students.

Program Classification

Eight programs of study in three occupational environments were classified according to Holland's *Occupations Finder* (1977). The three-digit codes for each program were as follows:

Realistic Environment:

Automotives	R I E
Building Construction	R C I
Welding	R I S

Social Environment:

Beauty Culture	S A C
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Conventional Environment:

Accounting	C E S
Business Machines	C S A
Typing	C S A
Shorthand	C S A

Subjects

The subjects consisted of 157 students in eight vocational programs. There were 72 students in the Realistic environment programs, 24 in Social environment programs, and 61 in Conventional environment programs. Initial analysis revealed no noticeable differences between male and female students; therefore they were treated alike in the subsequent data analysis.

The Self Directed Search

The SDS is an extension of the Vocational Preference Inventory (VPI), and assesses the six personality types according to the typology. The SDS is the result of Holland's exploration into the various correlates of personal orientations.

The 1970 edition is a simulation of the vocational experience, combining assessment, scoring, profiling, diagnostic formulations using the summary code and an occupational file. Responding to separate sections for Activities, Competencies, Occupations, Self Ratings which are combined and scored in the Summary section, the individual is able to find and compare his resemblance to each of the personality types. The SDS is designed to be self-administered, self-scored, and self-interpreted. It may be administered to individuals or to groups. Through the use of the accompa-

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ning *Occupations Finder* (1977), it provides the person with a means of relating and comparing personality types to occupational environments. The inventory, according to Holland (1972), has good reliability and validity, a claim which is supported by numerous research studies. (e.g. Fishburne & Walsh, 1976; Gottfredson & Holland, 1975; O'Neill & Magoon, 1977).

Procedure

The administration of the SDS was conducted during regularly scheduled classes.

Instructors did not discuss the instrument or purpose of the inventory or study prior to the administration of the instrument.

Upon completion, each inventory was checked and the scores, consisting of three-letter codes, were recorded.

Final grades were obtained from the subject teachers at the end of the school term upon completion of the course of study.

Results

SDS Data – Congruency

The present study employed the scale method proposed by Holland (1972) to determine the degree of congruency between subjects summary code, achievement score and occupational aspiration. This scale is illustrated in Table 1. The degree of congruency is tabulated in numbers ranging from 0-6, with 6 being the highest degree of congruency. This results in a precise numerical measure of congruency in contrast to a commonly employed system of defining congruence according to correspondence between the first letter of the summary code and the first letter of the occupational environment code (Mount & Muchinsky, 1978). This method, however, does not make allowances for possible variation of arrangements using the three dominant letters of the personality profile. This situation is illustrated in the example of an individual whose summary code of

Table 1
Degree of Agreement between Occupational Environment
and Subjects' SDS Code

Degree of Agreement		Occupational Environment Code	SDS Summary Code
6	Are they exactly alike?	RIE	RIE
5	Are the first two letters in the same order?	RIA	RIS
4	The first three letters are the same, but are they out of order?	REI ERI RIE	IER REI EIR
3	Is the first letter in each code the same?	SIA	SER
2	Do the first two letters of one code match any two letters in the other?	RIC CES ASE	IER SCR ESI
1	Does the first letter of either code match any other letter in the other code?	SEA	AIR
0	The first letter of one code is not included in the other code	IRE	SEA

IER is compared to an occupational environment code of REI. According to the method utilizing first letter congruency this individual would be classified as being incongruent with the occupational code. When employing the scale model this individual would be classified a number 4 in congruency, a score indicating an above average degree of congruency.

Overall Results. The congruency data for programs of study and occupational environments is given in Table 2.

Table 2
Summary of Congruency Data for Occupational Environments and Programs of Study

Occupational Environment	Program of Study	N	Mean Congruency	Range (L-H)
Realistic	Automotives	40	3.6	1-6
	Building Construction	21	2.5	1-3
	Welding	11	4.5	3-6
Total		72	3.4	1-6
Social	Beauty Culture	24	3.0	2-6
Total		24	3.0	2-6
Conventional	Accounting	14	2.9	1-5
	Business Machines	17	3.6	1-6
	Shorthand	16	4.5	2-6
	Typing	14	3.5	2-6
Total		61	3.6	1-6

The overall mean congruency for the scales representing the Realistic, Social and Conventional occupational environments was in the 3.0 to 3.6 range, indicating above average congruency for the environments measured. Overall range of degrees of congruency was found to be between 1 and 6. Such a span indicates a wide range of varying degrees of congruency for the subjects, but also indicates that all the students tested were at least slightly compatible with their occupational environment, since none of the subjects had a score of zero congruency or complete incompatibility.

Within the Realistic environment the highest degree of congruency was found for the subjects enrolled in the Welding program of study. This group reported a 4.5 degree of congruency, which is well above the average

range of 3.0. Within the Conventional environment the subjects enrolled in the Shorthand program of study also reported an above average degree of congruency in the 4.5 range.

Subjects enrolled in the Building Construction and Accounting programs of study were the only two groups indicating below average degrees of congruency ranging from 2.5 to 2.9.

The widest range of congruency scores ranging from 1 to 6 was found in the subjects enrolled in the Automotives and Business Machines programs of study. The most narrow

range of congruency ranging from 1 to 3 was found in the Building Construction program of study. This distribution reflects scores in the average to low range, indicating overall low degrees of compatibility. A narrow range of 3 to 6 indicating an above average range of compatibility was reported for the subjects enrolled in the Welding program of study.

A possible explanation for the low degree of congruency for the students enrolled in the Building Construction program of study may be that this subject area attracts students with a variety of non-specific but related interests in such occupations as Real Estate Salesperson, Farmer, Architecture, Designer. The low degree of congruency for the subjects enrolled in the Accounting program may be that this

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group was compared to the occupation of Accountant rather than Secretary. When this group's personality profile was compared to the occupation of Secretary the mean congruency score was in the average range, contrary to the score of 2.9 degrees of congruency obtained in comparison to the occupation of Accountant.

With the exception of the Building Construction and Accounting programs of study these results indicate overall general support for the theoretical position that students in the selected subject areas have personality profiles similar to the members of the intended occupation.

Realistic Occupations. The distribution of congruency score frequencies among the occupations representative of the Realistic environment is reported in Table 3. Inspection of the table reveals that there is a high ratio

Table 3
Relationship of Congruency to Programs of Study
In Realistic Environment

Program	Congruent	Non-Congruent	Total
Automotives	39	1	40
Building Construction	16	5	21
Welding	11	0	11
Total	66	6	72

$$X^2 = 9.32, p < .01$$

of congruent to non-congruent frequencies. High ratio of congruent scores is evident for the Welding and Automotive programs. A lower ratio is reported for Building Construction. Overall results for the Realistic occupations indicate a significant difference at the .01 level of significance in the distribution of congruent and non congruent frequencies.

Conventional Occupations. The distribution of congruency score frequencies among the occupations representative of the Conventional environment is reported in Table 4. Results reveal a lower overall ratio of congruent to non-congruent frequencies with the exception of the Shorthand program which indicates a high ratio of congruent frequencies. Overall results for the conventional environment report no significant relationship of congruent to non-congruent frequencies.

Table 4
Relationship of Congruency to Programs of Study
in Conventional Environment

Program	Congruent	Non-Congruent	Total
Business Machines	11	6	17
Accounting	10	4	14
Shorthand	15	1	16
Typing	9	5	14
Total	45	16	61

$$X^2 = 4.72, n.s.$$

Social Occupations. Only one occupation (Beauty Culture) representative of the Social environment was measured, therefore no further breakdown was necessary.

Environment and Congruency. The relationship between the Realistic, Conventional, Social environments and congruency data for the total number of subjects involved in the study is reported in Table 6. Inspection of this table reveals that there is a high ratio of congruent and non-congruent frequencies. A high ratio of congruent to non-congruent scores is evident for the Realistic environment and a lower ratio for the Social environment. Overall results for the three environments represented in this study indicates a significant relationship between congruent and non-congruent frequencies at the .01 level of significance.

Table 5
Relationship of Congruency
to Occupational Environments

Occupational Environment	Congruent	Non-Congruent	Total
Realistic	66	6	72
Conventional	45	16	61
Social	12	12	24
Total	123	34	157

$$X^2 = 19.63, p < .01$$

Achievement and Congruency

The relationship between achievement and congruency for the Realistic, Conventional, Social environments is reported in Table 6.

achievement category. Such a distribution indicates a probable significant relationship between achievement and congruency.

A significant relationship between achieve-

Table 6
Relationship of Achievement and Congruency
in Occupational Environments

	High Congruency	Low Congruency	Total
Realistic			
High Achievement	10	2	12
Low Achievement	2	2	4
Total	12	4	16
Social			
High Achievement	2	3	5
Low Achievement	5	5	10
Total	7	8	15
Conventional			
High Achievement	12	3	15
Low Achievement	5	8	13
Total	17	11	28

$X^2 = 5.04, p < .05$ (Conventional Data)

For the purpose of data analysis subjects were selected according to high achievement and low achievement. High achievement students were those students in the top third of their respective classes. Low achievement students were those in the lower third of their respective classes. High and low congruency students were selected in a similar manner. High congruency students were those students that were in the 5 to 6 range in degrees of congruency. Low congruency students were those students in the 1 to 2 range in degrees of congruency.

The Realistic and Social environment distributions do not have sufficient frequencies to apply the Chi-square (X^2) test of independence. Inspection of Table 6 indicates that within the Realistic environment 10 of the 16 subjects are in the High Congruency - High

achievement and congruency was found for the Conventional environment. The data indicated that the distribution of frequencies is significant at the .05 level of significance, with 12 of the 15 High Achievement students also in the High Congruency category.

The relationship between achievement and congruency for all the subjects in this study is illustrated in Table 7. The overall relationship between achievement and congruency was found to be significant at the .05 level of significance. The relationship between high achievement and high congruency is evident upon inspection of the table. Of the 32 high achievers only 8 students were low congruency students compared to 24 high congruency students. A similar relationship is evident for low achievement, low congruency students.

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Table 7
Relationship of Achievement and Congruency
for all Subjects in Study

	High Congruency	Low Congruency	Total
High Achievement	24	8	32
Low Achievement	12	15	27
Total	36	23	59

$$X^2 = 5.24, p < .05$$

In determining a significant relationship between high achievement and high congruency, the theoretical assumption that individuals will be more successful in a compatible environment is supported.

Conclusions

Personality and Congruency. Results of the data were generally supportive of the theoretical assumption that the personality profiles of students preparing for specific occupations are similar to those of the members of the intended occupation. The overall mean congruency for the Realistic, Social and Conventional scales indicated congruency between the SDS codes and the programs of study. Highest degrees of congruency were found for the Welding and Shorthand students. Congruency levels below the average range were reported for the students in Building Construction and Accounting programs. In consideration of the consistent supportive findings for the other programs of study it may be speculated that the Building Construction students sampled in this study have made an incorrect choice, according to Holland, in that their personality profiles are incompatible with their environment. A more plausible explanation may be that these students have not yet fully crystallized their occupational interests and have selected this program because of lack of other alternatives or related interests. Inconclusiveness of the research results for Accounting students may not be in Holland's model, but in the selection of the occupational environment code representative of Accountant rather than Secretary.

Congruency and Achievement. Overall results for the total number of subjects representative of the Realistic, Social, and Conventional scales indicate a significant

relationship between congruency and academic achievement. This was also true for the Conventional Environment and showed a strong tendency in the Realistic Environment. These results imply that there is a positive relationship between high achievement and high degrees of congruency and low achievement and low degrees of congruency.

Holland's theory provides concepts that are useful in making more precise predictions about an individual's vocational and educational behavior. Relevant to this study are the two theoretical assumptions that: individuals seek occupational environments which are consistent with their personality and that individuals will be more successful in their interaction with the environment if there is a high degree of person-environment congruence. These theoretical concepts have important implications for understanding the non-intellective factors relating to student achievement. Knowledge of the relationship between student personality and environment congruence may be a useful tool in assisting students in selecting appropriate programs of study. Such increased understanding of the student would be of special relevance for the vocationally unsure and unsuccessful student. More successful matching of student and environment may contribute to greater personal success and help reduce some of the problems of underachievement, student drop-outs, lack of motivation, and dissatisfaction.

Further studies involving greater numbers of students and studies investigating selected programs of study are recommended. Other research investigating the interrelationship of person, environment, congruence, student stability, motivation, and satisfaction may provide counsellors with useful insight to meet the challenge of ensuring that students are

matched with programs in which they can achieve satisfaction and success.

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