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ABSTRACT

The construct of self-implementation in occupational choice among a population of post high school vocational-technical students was investigated. Results supported the self-implementation construct in the study population but revealed differences in male and female response patterns, some of which had been attributed to self-esteem in previous studies. The findings indicate a need for consideration of differences in male and female perceptions of the relationship of self and occupational constructs by those assisting students with career awareness, exploration, or preparation experiences. An 18-item bibliography is included. (Author)

THE INTERRELATIONSHIPS BETWEEN SELF-CONCEPTS AND OCCUPATIONAL CONCEPTS OF POST-HIGH SCHOOL VOCATIONAL-TECHNICAL STUDENTS

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INTRODUCTION

The rapidly expanding number of occupations over the years, the degree of specialization inherent in these occupations and the educational and training alternatives which have resulted have made the problem of occupational choice increasingly difficult for the individual.

The development and maintenance of a high standard of living in the industrial society has demanded increasingly efficient utilization of both human and educational and training alternatives and the establishment of a series of prerequisite skills, knowledges, abilities and characteristics. This in turn has complicated the career choice problem by essentially forcing the individual to make a series of choices over time, many of which may be seen by the society or the individual as more or less irreversible.

The increasing complexity of career choice has focused attention on the choice process in recent years. The "matching men and jobs" approach which developed in the early twentieth century remains today as the central core of vocational guidance (Barry and Wolfe, 1962) but the increased interest in career choice and development is indicated by the number of career development and choice theories proposed in recent years. Reviews of theoretical career choice proposals by Schutz (1959) and Hoppock (1967), and more recent reviews by Osipow (1968) and Crites (1969) demonstrate the extent of such theory building activity.

Even more recently, the public schools have begun to recognize a guidance responsibility to students beyond the "college vs. non-college" level. Evidence of this change is the growth of career education programs in the schools. Most career education programs have as their central focus the facilitation of the individual's career development as evidenced by increasing realism of choice of educational and training alternatives, and in turn occupational and career alternatives. Career education programs might then be educational program translations of one or more of the prevail-

ing theories of career choice and development. The underlying assumption would be that one or more of the choice theories provide an adequate base upon which to build curricula.

Many career education programs have embraced the idea of self-implementation along the lines as proposed by Donald E. Super (1963), possibly as an outgrowth of increasing concern for the individual. Super has proposed the following:

> In stating an occupational preference, a person puts into occupational terminology his ideas of the kind of person he is: in entering an occupation, he seeks to implement his self-concept; and in stabilizing in an occupation he attempts to achieve self-actualization (p. 1).

It is the integration of the psychology of the self and vocational development and choice theory that provided the conceptual framework for this study.

Recently, however, questions have been raised about the generalizability of career development theories and the self-implementation construct. Westbrook (1969, p. 25) stated, "Unfortunately since many of the studies of self-concept have been carried out using small and unrepresentative samples of nurses and teachers, generalization of the findings of self-concept research cannot be made to a wide range of occupations." Osipow also noted the restricted populations upon which the self-implementation construct has been tested (1968):

> Most of the findings of research support the idea that occupational choice represents the implementation of the self-concept. It is unfortunate, however, that many of the studies of the self-concept aspect of the theory (Super's) were based on samples of nurses and teachers. Certainly, samples of teachers and nurses, and students in these fields, are relatively easy to obtain, but because of the nature of these occupations and the commitment to the satisfaction of social needs, such groups may be more concerned with implementing self-concepts than might be a group of railroad engineers, mechanics, salesmen, or assembly line workers (p. 142).

The typical test of the self-implementation construct has dealt with college students in preparation for professional level occupations. There is considerable evidence, however, that not only is this population of individuals different along several dimensions from those aspiring to less than professional level occupations, the occupations themselves vary considerably in terms of training requirements, technical level, and need reinforcer patterns (Borgen, Weiss, Tinsley, Dawis, and

Lofquist, 1968). Can the notion that self-implementation is an important factor in occupational choice be generalized to a broader range of occupations? There is little or no research to indicate that it can or cannot. This, then, was the first of three central questions of this study. Is there evidence for self-implementation by those selecting other occupations; in particular, will certain proposed interrelationships between self and occupational concepts be found among students in preparation for both skilled and technical level occupations?

In addition to the restriction of research to one level of the occupational spectrum and the resultant restriction to a somewhat narrow range of individual characteristics, past study populations have also typically been restricted with regards to sex. Research has tended to select one occupation (either a "male" or "female" occupation) and test the self-implementation construct within that sex-restricted population. Rose and Elton (1971) in a study of sex effects in occupational choice stated that most studies have controlled their samples for sex, thus leading counselors to the implicit conclusion that the findings are applicable to both males and females. The fact that the study of female career development has been largely neglected in this culture was cited by Mulvey (1968). Osipow (1968) pointed out that masculine based tests and theories do not provide a useful vehicle for the understanding of the career development of women.

Wolfson (1972) cited five factors which tend to serve as obstacles to the construction of a general theory of career development for women: (1) focus on marriage, (2) the unpredictability of future roles, (3) the lack of work orientation, (4) a lack of vocational identity, and (5) the absence of realistic occupational-vocational planning. These same five factors which may constitute at least partially the difference between female and male career patterns may also serve to inhibit the generalizability of the self-implementation construct to women. Grundfest (1968) postulated that the translation of self-concepts into vocational terms is distinctly different for girls than it is for boys. Super's theory in particular was cited by Resnikoff (1969) as pertaining to middle class males. He said that

Super has not adequately focused on the career development of women.

Therefore a second central question of this study was whether or not the proposed interrelationships between self and occupational concepts may be found not only among students aspiring to skilled and technical level occupations but also among both males and females.

In addition to the problems of restriction of study populations in terms of both sex and level, some evidence has recently been reported indicating that the degree to which self-implementation is a factor in occupational choice may be related to self-esteem. Korman (1966) proposed that self-esteem acts as a moderator variable in the relationship between self-concepts and occupational choices in such manner that high self-esteem individuals would make occupational choices predictable from the self-incorporation model but that the choices of low self-esteem individuals would be less predictable from that model. Korman found support for this moderator relationship in terms of perceived personality characteristics, perceived important needs, and perceived abilities.

Oppenheimer (1966) found that self-esteem was positively related to the degree of agreement between self-concepts and occupational preferences. Resnick, Fauble, and Osipow (1970) found that college students exhibiting high self-esteem show more advanced vocational crystallization than those with low self-esteem.

A third central question of this study was related to the proposal that self-implementation may be a factor in occupational choice primarily among only those individuals having high self-esteem or self-regard. Is there evidence for the proposed interrelationships of self and occupational concepts among not only students aspiring to both technical and skilled level occupations and among both males and females, but also among the members of those populations having low self-esteem as well as those having high self-esteem? Are certain interrelationships of the self and occupational constructs different for these two self-esteem groups?

Several writers have stated that there are not one but many "self-concepts" (Wrenn, 1963; Super, 1963; Armstrong, 1964). Based upon the research of these

individuals and in particular Armstrong's 1964 study of prospective teachers, four constructs were proposed in the present study: (1) the general self-concept (GSC), the most general view an individual has of himself (2) the vocational self-perception (VSP), the view an individual has of himself in a particular vocational role, (3) the typical worker perception (TWP), the view that an individual has of the typical worker in his chosen occupation, and (4) the ideal self-concept (ISC), the view an individual has of the kind of person, in general, he would like to be. These four constructs were operationally defined in the present study as the responses an individual makes to the instrument used in the study after receiving four different sets in instructions.

THE PROBLEM

The central questions proposed earlier provided the framework of the problem of this study: to investigate certain proposed interrelationships between three self constructs and one occupational construct within a study population of students aspiring to skilled and technical level occupations. An investigation of these interrelationships was proposed as a test of the generalizability of the construct of self-implementation in vocational decision making to populations of both males and females, students aspiring to technical as well as skilled level occupations, and to low and high self-esteem individuals.

HYPOTHESES

A set of research questions were formulated which were operationalized as four hypotheses for the present study. These hypotheses, in terms of expected relationships, were:

1. The three self constructs and one occupational construct, namely, the general self-concept (GSC), the vocational self-perception (VSP), the typical worker perception (TWP), and the ideal self-concept (ISC), are distinct.

In mean score terms the expected relationship was:

$$M(GSC) \neq M(VSP) \neq M(TWP) \neq M(ISC)$$

2. The general self-concept, the vocational self-perception, and the ideal self-concept are related to each other in the following manner:

$$M(GSC) < M(VSP) < M(ISC)$$

3. The degree of congruence of the vocational self-perception and the typical worker perception will be greater for males than for females and greater for persons aspiring to technical occupations than for those aspiring to skilled level occupations. In mean discrepancy score terms:

   3a. $M|TWP\text{-}VSP, \text{ males}| < M|TWP\text{-}VSP, \text{ females}|$

   3b. $M|TWP\text{-}VSP, \text{ technical}| < M|TWP\text{-}VSP, \text{ skilled}|$

4. The relationship between the general self-concept, the typical worker perception and the ideal self-concept will be different for low self-esteem individuals than for high self-esteem individuals. This relationship was expressed as two sub-hypotheses, one related to each self-esteem classification:

   4a. For low self-esteem individuals: $M|ISC\text{-}TWP| < M|TWP\text{-}GSC|$

   4b. For high self-esteem individuals: $M|TWP\text{-}GSC| < M|ISC\text{-}TWP|$

SUBJECTS

The study sample consisted of 387 male and female vocational-technical students who were in the first weeks of either technical or skilled level programs in four Minnesota post-high school vocational-technical institutes. The students were from 22 classes and were enrolled in ten curricula which had been purposively sampled to provide both male and female students aspiring to both technical and skilled occupations. The number of subjects in each curriculum and totals for each cell of the design are presented in Table I.

TABLE I

The Total Study Sample

Technical Level	Sex	Curriculum Area	N
Technical	Male	Drafting and Design	42
		Electronics Technology	35
		Optical Technology	30
		Total	107
	Female	Medical Lab Assistant	30
		Practical Nursing	29
		Secretarial	47
		Total	106
Skilled	Male	Carpentry	37
		Welding	49
		Total	86
	Female	General Clerical	58
		Cosmetology	30
		Total	88

PROCEUDRE

A modified version of Bills Index of Adjustment and Values (IAV) was administered to subjects under four different sets of instructions designed to elicit descriptions of the four constructs under investigation. Thest booklets were devised which administered the tasks in each of the 24 possible orders.

The basic analysis procedure employed was a three-way analysis of variance with repeated measures on one factor. In order to test the hypotheses of the study, the basic three-way ANOVA was followed by selected post-hoc mean comparisons. The testing of one hypothesis which dealt with a comparison of absolute differences required separate t-test for difference between means from correlated samples.

The basic method of analysis was that outlined by Winer (1971, pp. 514-603) for a three factor experiment with repeated measures on one factor. The three factors were (1) technical level, represented by "A" and having two levels, technical and skilled, (2) sex, represented by "B" and having two levels, male and female, and (3) constructs, represented by "C", the repeated measures factor with four repeated measures, the general self-concept (GSC), the vocational self-perception (VSP), the typical worker perception (TWP), and the ideal self-concept (ISC).

This model has implicit in it homogeneity assumptions on the variance-covariance matrices of the basic cells of the design. If these assumptions are not met, Winer suggests the use of a conservative (negatively biased F-test such as that proposed by Greenhouse and Geisser (1959). Examination of these matrices revealed that the assumption of homogeneity for both self-esteem groups was definately questionable.

The lower limit suggested by Greenhouse and Geisser was adopted for use in determining the F values for tests of within subject effects, namely the C (constructs) effect and the A by C, B by C, and A by B by C interactions (technical level by constructs, sex by constructs, and technical level by sex by constructs). The conservative F values were determined by dividing both the numerator and denominator degrees of freedom for a given F ratio by the degrees of freedom in the repeated measure (in this case, three). Post-hoc mean comparisons were conducted using the Newman-Keuls method but modified as suggested by Tukey in order to make the tests more conservative.

The more conservative procedure was adopted under the same reasoning which was used to determine that the Greenhouse-Geisser conservative tests should be used to test main effects. The Newman-Keuls procedure as presented by Winer (1971) with the Tukey conservative modification is cited as having the property that all tests of differences between pairs of means have a level of significance which is at most equal to alpha. The Tukey procedure is sometimes referred to as the honestly significant difference procedure.

One hypothesis required the use of a separate t-test for the difference between means for correlated samples. This test could not be considered to be "conservative" in the same sense as the previous procedures.

RESULTS

Tables II and III present the results of the basic three way ANOVA in each of the self-esteem groups. The results of the Newman-Keuls (Tukey modification) tests on all possible ordered pairs of means for males and females in both high and low self-esteem groups are presented in tables IV through VII.

TABLE II

Three-Way Analysis of Variance of the Scores on Four Constructs of Vocational-Technical Students in the High Self-Esteem Group

Source of Variation	df	Sums of Squares	Mean Square	F
Within Subjects				
C (between constructs)	3	13099.902	4366.634	47.899**
AC (construct by technical level interaction)	3	257.812	85.938	0.943
BC (construct by sex interaction)	3	1654.312	551.438	6.049*
ABC (construct by sex by technical level interaction)	3	291.671	97.224	1.066
CS(AB) (constructs by subject within groups - error)	456	41570.551	91.163	

*p<.05
**p<.001

TABLE III

Three-Way Analysis of Variance of the Scores on Four Constructs of Vocational-Technical Students in the Low Self-Esteem Group

Source of Variation	df	Sums of Squares	Mean Square	F
Within Subjects				
C (between constructs)	3	144147.319	48049.106	278.837*
AC (construct by technical level interaction)	3	1112.250	370.750	2.152
BC (construct by sex interaction)	3	7550.550	2516.850	14.606*
ABC (construct by sex by technical level interaction)	3	825.719	275.329	1.579
CS(AB) (construct by subject within groups - error)	468	80645.662	172.320	

*p<.0005

TABLE IV

Newman-Keuls Tests of Differences Between Ordered Pairs of Means on the Four Constructs for Males in the High Self-Esteem Group

Construct	$\bar{X}$	GSC	TWP	VSP	ISC
General Self-Concept	197.987	---	3.423	4.334*	10.257**
Typical Worker Perception	201.410		---	0.911	6.834**
Vocational Self-Perception	202.321			---	5.923**
Ideal Self-Concept	208.244				---

*p≤.05, conservative test
**p<.01, conservative test

TABLE V

Newman-Keuls Tests of Differences Between Ordered Pairs of Means on the Four Constructs for Females in the High Self-Esteem Group

Construct	$\bar{X}$	GSC	VSP	TWP	ISC
General Self-Concept	209.372	---	7.115*	12.359*	14.269*
Vocational Self-Perception	216.487		---	5.244*	7.154*
Typical Worker Perception	221.731			---	1.910
Ideal Self-Concept	223.641				---

*p<.01, conservative test

TABLE VI

Newman-Keuls Tests of Differences Between Ordered Pairs of Means on the Four Constructs for Males in the Low Self-Esteem Group

Construct	$\bar{X}$	GSC	VSP	TWP	ISC
General Self-Concept	185.512	---	16.124*	16.312*	42.524*
Vocational Self-Perception	204.238		---	0.188	26.400*
Typical Worker Perception	217.800				26.212*
Ideal Self-Concept	226.762				---

*p<.01, conservative test

TABLE VII

Newman-Keuls Tests of Differences Between Ordered Pairs of Means on the Four Constructs for Females in the Low Self-Esteem Group

Construct	$\bar{X}$	GSC	VSP	TWP	ISC
General Self-Concept	185.512	---	18.726*	32.288*	41.250*
Vocational Self-Perception	204.238		---	13.562*	22.524*
Typical Worker Perception	217.800			---	8.962*
Ideal Self-Concept	226.762				---

*p<.01, conservative test

The testing of hypothesis 3 which involved the congruency of constructs, required that absolute difference scores be calculated for each subject and that the relevant means of these difference scores be compared. In a comparison of this type, an unbiased estimator of the variance of the contrast is not available directly from the ANOVA calculations. For this reason, the variances of the absolute difference scores over the subjects involved in the contrast were calculated and the F_{max} test of homogeneity of variance was conducted in each case. The results of these F_{max} tests indicated that the samples could be considered to come from populations with equal variances in each of the analyses. Therefore, the assumption was made that the variances could be pooled to devise a variance term for the contrast in each of the cases. The Newman-Keuls procedure with the Tukey conservative modification was again used to test the significance of difference between the means of the absolute differences proposed by Hypotheses 3a and 3b. Tables VIII and IX report the results of these tests.

TABLE VIII

Newman-Keuls Tests of the Difference Between Mean Discrepancy Scores for Hypothesis 3a

Sex	N	S_p(pooled variance)	M|VSP-TWP|	Difference Between Means
		High Self-Esteem		
Males	78	120.63	11.58	
Females	78		10.15	1.43
		Low Self-Esteem		
Males	80	201.63	17.06	
Females	80		19.48	2.42

TABLE IX

Newman-Keuls Tests of the Difference Between Mean Discrepancy Scores for Hypothesis 3b

Technical Level	N	S_p(pooled variance)	M|VSP-TWP|	Difference Between Means
		High Self-Esteem		
Technical	78	115.85	9.68	
Skilled	78		12.05	2.37
		Low Self-Esteem		
Technical	80	196.14	16.19	
Skilled	80		20.56	4.37

Since the comparisons required by hypothesis 4 were based upon discrepancy scores calculated on pairs of constructs within the same individual, the covariances of the discrepancy scores were of concern. For this reason, the test statistic employed was the t-test for the difference between means for correlated samples. The tests were conducted separately for males and females using the direct difference method. The results of these tests are reported in Table X.

TABLE X

Tests of the Difference Between Mean Discrepancy Scores for Hypotheses 4a and 4b

Hypothesis	D	S_D	t
4a. (Males)	-4.22	3.092	-1.36
4a. (Females)	19.675	2.88	6.83*
4b. (Males)	-0.95	1.41	-0.68
4b. (Females)	-6.14	1.34	-4.58*

*$p < .005$

Summary of Results:

Hypothesis One: $M(GSC) \neq M(VSP) \neq M(TWP) \neq M(ISC)$

High Self-Esteem:

Males: M(GSC) and M(TWP) as well as M(TWP) and M(VSP) were not found to be significantly different. All other pairs of means were found to be significantly different from each other.

Females: M(ISC) and M(TWP) were not found to be significantly different. All other pairs of construct means were found to be distinct.

Low Self-Esteem:

Males: M(TWP) and M(VSP) were not found to be distinct. All other pairs of means were found to be significantly different from each other.

Females: All pairs of means were found to be significantly different from each other.

Directional Relationship of the Constructs

Hypothesis Two: M(GSC)<M(VSP)<M(ISC)

High Self-Esteem Group:

Males: Directional relationship confirmed

Females: Directional relationship confirmed

Low Self-Esteem Group:

Males: Directional relationship confirmed

Females: Directional relationship confirmed

The Similarity or Congruency of Constructs

Hypothesis 3a. M|TWP-VSP, males|<M|TWP-VSP, females|

High Self-Esteem Group: Directional relationship of congruencies not confirmed

Low Self-Esteem Group: Directional Relationship of congruencies not confirmed

Hypothesis 3b. M|TWP-VSP, technical|<M|TWP-VSP, skilled|

High Self-Esteem Group: Directional relationship of congruencies not confirmed

Low Self-Esteem Group: Directional relationship of congruencies not confirmed

Hypothesis 4a. For low self-esteem individuals: M|ISC-TWP|<M|TWP-GSC|

Males: Directional relationship of congruencies not confirmed

Females: Directional relationship of congruencies confirmed

Hypothesis 4b. For high self-esteem individuals: M|TWP-GSC|<M|ISC-TWP|

Males: Directional relationship of congruencies not confirmed

Females: Significant directional relationship of congruencies found but in opposite direction from that predicted

DISCUSSION AND IMPLICATIONS

The results of this study indicate that vocational-technical students' perceptions of the three self-constructs and one occupational construct are distinct in terms of their descriptions of the constructs on the 49 adjectives included in the modified IAV. The differences noted in the distinction of the general self-concept, the vocational self-perception, and typical worker perception for male and female vocational-technical students is a finding which merits further research. Although tests of the degree of congruency of the typical worker perception and vocational self-perception did not reveal significant differences between males and females, these tests eliminate directionality of the constructs for individuals, apparently an important factor.

Differences between males and females again were clearly evident in the results of tests which were expected to reveal differences related to self-esteem. It was found that female vocational-technical students of both high and low self-esteem perceive the typical workers in their chosen occupation to be more congruent with their ideal self-concepts than with their general self-concepts, while these differences were not found for males, of either high or low self-esteem. The expectation that vocational choices of high self-esteem individuals might be an attempt to implement the already adequate self-concept whereas vocational choice among low self-esteem persons might more nearly be an attempt to "become" or self actualize was not verified but rather appears to be a phenomenon related to sex rather than or in conjunction with self-esteem.

The question of whether females may perceive themselves as less than adequate in the work role may be partially answered in terms of vocational self-perception mean scores. Females typically described themselves higher on this construct than male descriptions of their vocational self-perceptions. It would thus appear that the self-implementation of self-actualization question may more nearly be along the sex rather than the self-esteem dimension.

These results suggest that male vocational-technical students tend to elect a training program leading to employment in an occupation in which they perceive workers to be no higher or lower than themselves in that same occupation. In the case of female vocational-technical students, however, the results indicated a consistent tendency to elect training programs leading to occupations in which the typical worker was perceived to be higher than one's self in the particular occupation.

The fact that low self-esteem females perceived the typical worker in the chosen occupation to be distinct from their self-concept whereas high self-esteem females did not perceive this difference indicates that self-esteem may be a factor within a given sex. A parallel finding for males was that high self-esteem males did not perceive a difference between their general self-concept and the typical worker in the chosen occupation whereas low self-esteem males did perceive these constructs to be distinct. The research design did not allow for a significance test of a possible sex by self-esteem interaction. It is felt that future research should explore this question.

The failure to find a technical level by construct interaction as well as no significant difference in the congruency of the vocational self-perception and the typical worker perception of students enrolled in technical or skilled curricula indicate that within the limitations of the study's instrumentation, students aspiring to differing levels of employment did not have significantly different perceptions of the constructs under investigation.

The question of generalizability of the self-implementation construct to vocational-technical students is partially answered by the finding of predicted distinctness and directional relationships of constructs in the study sample. Additionally, the lack of a technical level by construct interaction indicates constant relationships among the constructs regardless of technical level. This of course does not imply that the interrelationships between the constructs would remain constant if the technical level dimension were extended into the professions.

It is concluded that there is sufficient evidence of relationships between self and occupational constructs in the vocational-technical student sample to support the construct of self-implementation among these students. It is also concluded that the most fruitful avenue of research, and one of the most pressing problems for career education programs to address, is the apparent differences between male and female perceptions of self and occupational constructs. Since there does appear to be a vocational self-perception distinct from the general self-concept in both males and females of both high and low self-esteem, career education advocates would be well advised to research the question of how the vocational self is formed. What information and experiences affect this self-perception and how does the individual decide what has vocational relevance?

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