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Bingham, Rosie Phillips

THE CONCURRENT VALIDITY OF TWO MEASURES OPERATIONALIZING HOLLAND'S THEORY USING A SAMPLE OF COLLEGE DEGREE BLACK WOMEN

The Ohio State University

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THE CONCURRENT VALIDITY OF TWO MEASURES
OPERATIONALIZING HOLLAND'S THEORY USING
A SAMPLE OF COLLEGE DEGREED BLACK WOMEN

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Rosie Phillips Bingham, B.A., M.A.

* * * * *

The Ohio State University

1977

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This study is the results of the combined efforts of my husband, family, friends, and teachers. Words are not enough but from my heart thanks to each of you. Special thanks to my adviser, Dr. W. Bruce Walsh, who provided me with the necessary guidance and inspiration to complete this work.
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Chapter I

INTRODUCTION

Recent meetings of the American Psychological Association reveal increased interest in the applicability of psychology to the general population. Applied psychology is the direct result of the usefulness of its theories. Osipow (1973) maintains that a good theory facilitates the understanding and conceptualizing about various events. Vocational theories are attempting to provide understanding and explanations about individuals' occupational choices. Men, women, and students from various life styles and subcultures spend a great deal of their lives attempting to determine the most appropriate and satisfying occupation. As a result of the interest of lay and professional individuals, vocational theories, concerned with why individuals make certain occupational choices, seems to be an appropriate area to study.

Osipow (1973) summarized and categorized the major vocational theories as trait-factor, sociological, self-concept, and vocational choice and personality theories. He has indicated that the classifications serve as guides to clarify the varying array of theories in the vocational literature.

The trait-factor approach assumes that there is a "best-fit" between an individual and a job. The theory holds
that each job requires a person with certain personality traits. If the job and the individual can be matched appropriately, then the individual should be successful and satisfied in that particular job. Further discussion of this view can be found in Parsons (1909), Hull (1928), and Kitson (1925).

The sociological career development theory has also been called the reality or accident theory. The theorists in this area believe that an individual's occupational choice is greatly influenced by the environment and the culture, and many factors over which he has little or no control. Writers such as Caplow (1954), and Hollingshead (1949) affirm that the individual's greatest concern should be to learn how to cope effectively with the given circumstances.

The third area of vocational theories reviewed by Osipow (1973) has been categorically termed self-concept theory. The theories are epitomized by the writings of Rogers (1951), Super (1957), and Ginzberg, et al (1951). Generally, the theories state that as an individual grows older his self-concept becomes more specific and clear; each person develops a library of job images which he compares with his own self-image and he attempts to make an occupational decision. The individual's final job choice is directly related to the similarity of his self-concept and the vocational concept of a possible job choice.

Finally, Osipow (1973) reviewed a group of vocational theories which he labeled the personality approach to career development. The personality theorists hypothesize that an
individual selects an occupation to satisfy his needs. The range in this area includes Anne Roe's (1957) need hierarchy, Hoppock's need reduction, and various other empirical studies of personality factors (Small, 1953; Schaffer, 1953). Holland's theory (1965) of personality types and occupational environments is also a part of this category.

In general, the vocational theories tend to be broad in scope and therefore, suggest that in order to study their usefulness and applicability empirical studies need to be performed using a variety of populations.

Fishburne (1973) summarized Osipow's (1968) review of the research stimulated by vocational theory. According to Fishburne, the great majority (approximately 68%) of the studies cited by Osipow were done with adolescent and college students. Only 19% of the studies were done using college graduates in the world of work, and about 8% of the studies used groups which were unspecified. Approximately 1.6% of the studies used samples of non college graduates. O'Brien (1974) has noted the great shortage of studies using non college populations. A recent review of the literature has indicated very little research in the vocational area using a sample of college degreed Black women. For Black women (college educated and non college degreed) only six studies were discovered. These findings suggest a possible shortcoming of the theories' applicability to Black women.
Holland's theory (1974) suffers from the above shortcomings. Holland (1973a), however, has acknowledged the narrowness of his samples and has warned against overgeneralization. Holland, nonetheless, suggests that "there is as much risk in creeping empiricism as in idle speculation."

Thus, the main purpose of this study is to investigate the applicability of Holland's theory of career with a sample of college degreed Black women who have entered a working environment.

OVERVIEW OF HOLLAND'S THEORY

John Holland (1962) developed a theory of vocational behavior which suggested that an expression of vocational choice is an expression of personality. He seems to have based much of his theory on Lewin's early formulation that behavior is a function of the person and the environment \[ B = (P,E). \]

By including Lewin's postulation Holland's theory expanded the trait-factor approach to vocational choice, as well as integrated general influences of need theory, role theory, self theory, social learning theory, and sociology (Carkhuff et al. 1967).

Essentially, Holland postulates that an individual's personality represents a total interaction of his heredity and various social, cultural, economical, environmental and personal forces. As a result of these varying forces each individual develops preferred mode for completing his life's tasks. Holland therefore, posits the following assumptions:
1. In our culture, most persons can be categorized as one of six types: Realistic, Investigative, Social, Conventional, Enterprising, and Artistic.

2. There are six types of environments which can be classified as: Realistic, Investigative, Social, Conventional, Enterprising, and Artistic.

3. People seek environments which are most able to allow them to express their interests, values, and attitudes and which let them exercise their skills and abilities as they solve their interpersonal problems and tasks.

4. A person's behavior is the result of an interaction between his personality and environment in which he acts (Holland, 1973a).

Thus Holland described six model personality orientations and six same named environmental orientations. Holland discusses the characteristics of each in similar psychological terms.

The Realistic type is masculine, physically strong, unsociable, aggressive, has good motor coordination and skills; lacks verbal and interpersonal skills; prefers concrete to abstract problems, sees himself as aggressive and masculine with conventional political and economic goals; rarely performs creatively in the arts or sciences. Such men prefer occupations such as mechanic, electrician, fish and wildlife specialist, crane operator and tool designer (Campbell and Holland, 1972).

The Realistic environment would have corresponding characteristics:

This environment is explicit, physical, and concrete in nature. Effective solutions often require mechanical ingenuity and skill, persistence, and physical movement from place to place, often outdoors. The Realistic environment demands only minimal interpersonal skills, because most of the tasks it sets can be accomplished by superficial and casual relationships that frequently require only stereo-typed conversations. Tasks frequently call for simple sets of action. The explicit quality of the environmental demands make "success" and "failure" almost immediately obvious (Holland, 1966a).
The remaining personality types are as follows:

Investigative: This category includes those who are task-oriented, introspective and asocial; prefer to think through rather than act out problems; have greater curiosity about the need to understand physical world; enjoy ambiguous work tasks; prefer to work independently; have unconventional values and attitudes. These men tend to choose occupations such as astronomer, biologist, chemist, writer of technical articles, and zoologist.

Social: This type is sociable, responsible, feminine, humanistic, religious, needs attention; has verbal and interpersonal skills, avoids intellectual problem solving, physical exertion, and highly ordered activities; prefers to solve problems through feelings and interpersonal manipulations of others. Vocational preferences include clinical psychologist, missionary, high school teacher, marriage counselor and speech therapist.

Conventional: Conventional men prefer structured verbal and numerical activities; are conforming and prefer subordinate roles; are effective at well-structured tasks, but avoid ambiguous situations and problems involving interpersonal relationships and physical skills; identify with power; value material possessions and status. Vocational preferences include bank examiner, bookkeeper, financial analyst, quality control expert, statistician, and traffic manager.

Enterprising: This type has verbal skills for selling, dominating, leading; sees himself as strong, masculine leader, avoids well-defined language or work situations requiring long periods of intellectual effort; differs from Conventional type in that he prefers ambiguous social tasks and has an even greater concern for power, status, and leadership; is orally aggressive. Chooses occupations such as: business executive, political campaign manager, real estate salesman, stock and bond salesman and television producer.

Artistic: The artistic model is asocial; avoids problems that are highly structured or require gross physical skills; resembles Investigative type in being introspective and asocial but differs in having a greater need for individual expression, less ego strength; is more
feminine and suffers more frequently from emotional disturbances; prefers dealing with problems through self-expression in artistic media. Vocational preferences include artist, author, composer, writer, musician, dramatic coach, and symphony conductor (Campbell and Holland, 1972).

These formulations have been operationalized with the Vocational Preference Inventory (VPI), the Self-Directed Search (SDS), and more recently, the Strong-Campbell Interest Inventory (1974).

Holland assumes that neither a personality type nor an environmental model exists in pure form. Rather he speculates that each personality type and model environment contain characteristics from the other types of environments. However, each individual tends to have a dominant personality type, reflecting one primary type more than toward the others. Actually, each individual would have a hierarchy of scores such that his high point would reveal the type he is most like, down to the sixth point which would be least like him. In his recent formulations Holland has decided that the three point code an individual receives on the VPI and the SDS provide more information than a single score. The first score would be most characteristic of the individual, the second score second most characteristic, and so on (Holland, 1971).

To lend more depth to the theory and provide more information about vocational selection Holland (1959, 1966a, 1973) has included the concepts of congruence/incongruence, consistency/inconsistency, and homogeneity/heterogeneity.
Congruency/incongruency describes the interaction of the person and the environment. Either persons or environments may be consistent/inconsistent and/or homogeneous/heterogeneous.

The concepts of consistency/inconsistency refer to the relationship of the person and the environment. A person/environment combination is consistent when the high point code of each have very similar traits and are therefore compatible. For example, Investigative-Realistic is a consistent code because the two possess some common traits--unsociability, an orientation toward things rather than people, self-depreciation and masculinity. The Realistic-Artistic code would represent an inconsistent pair.

Homogeneity measures the dominance of one code or orientation in a person or environment over the others. The greater the distance between the high point code and the low point code the more homogeneous the person or the environment is said to be.

A person and his environment are considered congruent when both have the same high point code. For example, a person with a Realistic personality type working in a Realistic occupation would tend to be congruent. However, if a Realistic personality were working in a social occupation the interaction would tend to be incongruent.

It logically follows that there are many possible combinations of consistent, congruent, and homogeneous types and models. However, Holland concludes that where the person and the
environment are congruent, consistent and homogeneous then the individual will be more achieving, stable, and satisfied.

The primary purpose of this study was to explore the concurrent validity of Holland's theory for employed college degreed Black women. The VPI and SDS were administered to samples of college degreed Black women who were reasonably well established in occupational environments representative of each of Holland's model vocational environments. The study attempted to determine if the two inventories which operationalize the theory would distribute a sample of college degreed Black women in a comparable fashion according to their preferences and personalities. A secondary purpose of this study was to explore the relationships between same named scales for the VPI and the SDS.
Chapter II

REVIEW OF THE LITERATURE

Introduction

The research of Holland's theory of career is voluminous. The research has investigated such things as various personal characteristics and traits, attitudes, stability of vocational choice, and environmental influences. Due to the number of studies the following review will consist of sections on the validity of the VPI, the validity of the SDS, occupational levels, National Merit and other college samples, employed adults (male and female), and a final section on Black samples. The review will conclude with a summary of the major findings of the reviewed material.

Validity of the VPI

The VPI is an inventory designed to measure and categorize individual's occupational interests. It consists of 160 occupational titles to which an individual responds "like or dislike". If one has no strong feelings about a given title he simply ignores it. Holland and his associates have done several studies investigating the concurrent and predictive ability of VPI. Holland and his associates have done a series of longitudinal and cross sectional studies which have provided
modest support for the concurrent validity of the six personality/vocational types (Realistic, Investigative, Social, Conventional, Enterprising, and Artistic). The studies generally included multiple dependent variables and multiple methods of defining types. The longitudinal studies included: 1) a one or two year follow-up study of vocational choice (Holland, 1963) and 2) a four year prediction study of vocational choice and achievement. (Holland, 1963) and 3) a one year assessment study of change in major field (Holland Nichols, 1964). The cross sectional studies generally explored the following areas:

1. Vocational image and choice (Holland, 1963)
2. Self-description and vocational preference (1963c)
3. Coping behavior, competencies and vocational preference (Holland, 1963d) and finally

Analyzation of the results of the studies revealed a good deal of ambiguity and confusing conclusions. There appeared to be five overall conclusions or results which one might consider. First, Holland's six personal-vocational orientations (Realistic, Investigative, Artistic, Social, Conventional and Enterprising) seemed to have systematically different correlations with the following concepts: family background, inventoried personality characteristics, self ratings of traits and skills and identifications with famous people, patterns of academic and non-academic achievement, hobbies and extracurricular activities, vocational choice, and educational aspirations. Second, consistency and congruence in personality/environmental
interactions appeared to lead to various predictable outcomes, personal stability, stability of college major and vocational choices, vocational and academic achievement and, certain creative performance. Third, sometimes the characteristics of one type overlapped the characteristic of another type, indicating a need for further refinement and development of this theory. Fourth, doubt was cast on the hypothesis that level of vocational choice was a function of an individual's personal estimate of his abilities and personal awareness by two factors: 1) The National Merit Sample was probably not a representative sample because of their high aptitude which tended to inflate the upper extreme of the career hierarchy, and 2) occupational level was not really examined because the researchers used the college major as a measure of vocational choice.

Fifth, there appeared to be a sexual bias. Of several studies of the correlation of Cattell's 16 Personality Factor Questionaire (16PF) and the scales of the VPI, only 27 percent of the correlations were significant for females at the five percent level, while 47 percent were significant for males. While female responses on the VPI categorized them as predicted by the theoretical model, their classification showed greater ambiguity than that for the males of the six types. Stability of vocational choices was characteristic for only the social type. Predictive studies have tended to demonstrate mixed results. In one of Holland's (1963) studies he was able to correctly
identify 45 percent of the vocational choices and college majors for men, but only 36 percent for the women. However, in a 1963 longitudinal study Holland accurately predicted 28 percent of senior year male college majors from freshman VPI codes and 27 percent of senior females. As a result of these ambiguous results Holland determined that his theory must be extended and expanded in some way to account for the women's patterns of vocational choice and stability. Holland's 1968 longitudinal study, using more general typical college student sample, employed the high point VPI code on six occupational scales for men and eight occupational scales for women from test scores taken during each student's freshman year. Holland did a comparative eight month follow-up. The results for the sexes were much more consistent. Holland found that correct predictions for men ranged from a low of 21.5 percent for Artistic to a high of 51.4 percent for Investigative predictions. The results for Women ranged from a low 0 percent for Realistic predictions to a high 81.9 percent for Social. Another interesting feature of this study revealed that when the student's expressed vocational choice was used instead of the VPI code correct predictions for both sexes increased to between 63.3 percent and 71.2 percent.

Other studies have explored Holland's theory in relation to such things as self-description and some personality traits. Wall, Osipow, and Ashby (1967) used a self description method to categorize 86 male college students into each of Holland's
six types. They found that the types differed among themselves in terms of vocational interests. The authors found that "Not only did the personality types differ in the SVIB group scores, but in many cases, the personality types had high group scores where they were expected, and low ones where low scores were expected." (p. 203).

In a more complex, but well executed study, Williams (1972) studied the correlations of specific personality value, vocational values and personality traits with each of Holland's six personality types. Using the process of discriminant analysis, Williams correctly classified the field of study of 93 out of 145 students using the Alport, Vernon, Lindzey Study of Value scores, and 83 out of 145 students using their 16 personality factor scores.

In a further analysis of the difference between personality traits of the six Holland types Folsom (1969) investigated 1,003 college males and females using the College Student Questionnaire. He compared the students along seven scales of the CSQ. He found the following results:

1. The Investigative male differed significantly from the Realistic male on the Liberalism scale.
2. The Artistic male differed from all types except the Social on the Cultural Sophistication scales.
3. The Enterprising male along with the Social male differed from the Realistic and the Conventional male on the Cultural Sophistication scale.
With women Folsom (1969) found these differences:

1. The Artistic female differed from the Realistic female on the Peer Independence scale.

2. The Realistic females differed significantly from the Artistic and Enterprising females on the Cultural Sophistication scales.

Most recently, Wakefield and Cunningham (1975) found that the VPI and the Edwards Personal Preference Scales are "related though not duplicative personality measures, consistent with the theoretical views underlying the two instruments."

Thus, the evidence convincingly supports the validity of the VPI as a measurement of the various types and their relationship to other inventories and vocational/educational choices.

Using a college sample, Osipow, Ashby and Wall (1966) conducted a critical test of the validity of Holland's theory. They sampled 135 college students and predicted that the students would choose occupations in categories consistent with the personality types they selected as most descriptive of themselves. First, the students were provided with descriptions of the six personality occupational orientations and asked to rand order them according to how the description best fit them. Next, they were asked to rate the description based on how much the description was like them. Therefore, a measure of the order with which each subject identified with each of the six types was obtained and a measure of the strength of that identification was also obtained. Previous information on each student's vocational preference was also
available. Excluding the conventional type, after a comparison was made of the rank order of personality descriptions and vocational choices it was concluded that students chose occupations congruent to their personality types. The sample was then divided into groups of decided college majors and undecideds and tentative. A comparison was then made between a student's vocational choice and the strength with which he identified with the personality descriptions. In the undecided group the sample was too small to show meaningful results; among the tentative group there was no interaction between choice category and personality description, but in the decided group the Realistic, Social, Enterprising, and Artistic groups rated the personality description differently from their occupational preference. The results caused Osipow, et al. (1966) to conclude that in spite of the fact that many students chose occupations consistent with Holland's theory, many did not.

Holland and his associates (1971) expanded his theory to demonstrate that the six personality types can be represented geometrically with a hexagon. This expansion was the result of VPI data from samples of two year college students and employed adults combined with Holland's original data on a four year sample (Holland, 1966). Holland used his 1966 procedure to assign occupations to the various categories. For major categories and sub-major categories, however, he used the hexagonal model. Thus, major categories were sequenced as follows: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. Sub-categories were arranged
so that second letters followed in clockwise order starting from the major category's code. For example, the arrangement of Realistic-Social (RS), Realistic-Investigative (RI), Realistic-Conventional (RC), Realistic-Enterprising (RE), Realistic-Artistic (RA) would be (RI, RA, RS, RE, RC).

![Hexagonal Model Diagram]

Figure 1: Hexagonal Model

If a subject exhibits a profile code which is reasonably consistent with the hexagonal model he might be expected to have a reasonably stable career pattern. Cole, Whitney, and Holland (1970) studied the mathematical relationship between the six VPI scales and the results substantiated Holland's postulation for his vocational classification. The results suggested that adjacent categories tend to be more psychologically closely related than distant categories.
Wakefield and Doughtie (1973) provided further support for Holland's (1971) hexagonal model through a study they undertook at the University of Houston. They administered the VPI to 373 freshmen and used a factor analytic technique to examine the results. They employed the Pearson Product Moment technique to investigate the correlations for each pair on the scale. When the authors compared their results with those of Holland, et. al. (1971) they discovered that 45 of 54 comparisons were consistent with Holland's model. The authors concluded that the data provided support for Holland's theoretical model and provided "evidence that the first six scales of the VPI yielded measures that were interrelated in the fashion Holland's model predicted." Yom, et. al. (1975) compared the results of the Wakefield and Doughtie (1973) study to results obtained from a sample of black students. The results were very similar to those for white students. The author concluded that the VPI measures the same variable for both the black and white sample.

In conclusion, research on the VPI has included investigated relationships between personal orientation as measured by the VPI and any other inventories on educational choices, the range of personal orientation of a variety of social categories and groups, correlations between the VPI scales scores and self-ratings or self-descriptions on traits which the various scales are presumed to measure, relationship of VPI scale scores with various external criteria, and sophisticated statistical studies of the factor structure of the VPI.
The resulting correlations have sometimes been low but they seem to support the rationale underlying the development of the instrument.

**Self-Directed Search (SDS)**

The Self-Directed Search is a fairly recent operationalization of Holland's theory of personality types, consequently fewer studies using the SDS have been conducted. Holland developed the SDS as a result of his belief in his theory and his belief that one of the most efficient ways to determine an individual's vocational preference was to ask him directly. The validity of the SDS has been the subject of several interesting studies. O'Connell and Sedlacek (1971) performed a test retest reliability study of summary codes on the SDS using a sample of 65 college freshmen. Over a seven to ten month period, using the Pearson Product Moment, the Spearman Rho and average common elements, the researchers found the results to be respectively .75, .92, and .87. Holland (1972) also reported reasonably high reliability coefficients for individual scales of the SDS based on Kuder-Richardson 29 for both men and women (.53 to .87).

The Self-Directed Search has been found to have results similar to those of the VPI when testing the hexagonal model. Edwards and Whitney (1972) sampled 358 men and 360 women in order to perform a structural analysis of Holland's personality types using the SDS. Their results offered additional support for the hexagonal model as well as support for the organization of the SDS.
The SDS was designed to be an effective low-cost guidance tool for individuals seeking vocational information. Much of the research using the Self-Directed Search has been concerned with the individuals' ability to correctly use the instrument and with their satisfaction. One of the most comprehensive studies to date investigating the effectiveness of the SDS was conducted by Zener and Schnuelle (1972). They sampled 1,092 high school students from the 10th, 11th, and 12th grades. The students were divided into three treatment groups: 1) Group one took the regular published form of the SDS in its entirety; 2) Group two did not have the Self-Direction; and 3) Group three received no treatment. The results were to be determined along several criteria: (a) student's perception of the effectiveness of the SDS versions; (b) their understanding of the theory; (c) student satisfaction with and certainty about their vocational plans; (d) the number and the appropriateness of vocational choices; (e) their need for specific information about occupations and training; (f) increases in information seeking behavior; (g) knowledge about chosen job and; (h) vocational maturity. Zener and Schnuelle (1972) reported the following results:

1. **Student Evaluation.** The SDS was evaluated as moderately positive and the evaluation was not affected by the self-directed aspect of the SDS.

2. **Understanding of Holland's Theory.** Students taking the regular published version of the SDS demonstrated a better understanding of Holland's theory than students in either the non-self-directed or control groups.
3. **Number and Appropriateness of Considered Occupations.** Students taking either version of the SDS were considering more occupational alternatives than the control group on the day after the SDS. This difference was still present three weeks later. The occupations listed by the students taking the published version of the SDS were more consistent with their SDS summary codes than were those occupations listed by students taking the non-self-directed version.

4. **Satisfaction and Certainty About Vocational Plans.** Students taking either version of the SDS reported feeling more satisfied with their current occupational choice. Students taking the published version reported less need to see a counselor immediately.

5. **Need for Information About Specific Jobs and Training Programs.** The control group expressed greater need than the groups taking either version of the SDS.

6. **Information Seeking Behavior-Knowledge of Chosen Occupation-Vocation Maturity.** No effects among the three groups. (p. 35).

Some doubt might have been cast on the SDS's efficiency as a completely self-administered instrument by the research investigation conducted by Gelso, Collins, Williams and Sedlacek (1973). In their study (N = 221) they found that when subjects took the SDS entirely on their own most of them made errors. About 50 percent made errors which affected their summary code and about 20 percent made errors which resulted in an incorrect high point code. Further investigation revealed that errors occurred most often when the subjects were not interested in or only minimally interested in knowing more about vocations or academic majors. Errors also occurred when the suggested occupations seemed unreasonable.
Lewis and Sedlacek (1972) designed a study to investigate the influence of an artifact such as level of education on the resulting code of the SDS. They divided a group of students from the University of Maryland who had previously taken the SDS (1970) into two groups. One group (the High Group) was composed of students whose fathers had earned an undergraduate college degree. The group (the Low Group) was composed of students whose fathers had only completed a high school degree. The groups were composed in terms of their dream codes. The results indicated no significant difference in the overall dream codes of the two groups. There were indications of some possible parental influence because the low group obtained more conventional and fewer artistic summary codes and on the average obtained summary code occupations that required less formal education.

Several researchers at the University of Maryland have conducted studies investigating satisfaction or dissatisfaction with the SDS. In the studies a Likert item to which subjects were to respond from strongly agreed to strongly disagree was placed at the end of the instrument. The statement read "My summary code occupations seem reasonable to me." In the first study Collins and Sedlacek (1972) had over four thousand incoming freshmen complete the SDS and the statement. From the group they obtained 485 subjects who responded "strongly agree" and 343 who responded "strongly disagree" with the Likert item. They found that the satisfied group (strongly agree group) received more artistic and
investigative codes. The dissatisfied group tended to receive more conventional codes as well as greater percentage of codes from which there were no titles listed in the Occupations Finder.

The next study compared the vocational planning of Black and White students. Kimball, Sedlacek, and Brooks (1973) took samples of 143 Black and 141 White students who took the SDS during their summer orientation at the University of Maryland. The groups were compared along the following three dimensions: 1) the first, second and third letter codes; 2) the summary codes after the competencies section had been omitted, and 3) response to the Likert statement "My summary code occupations seem reasonable for me." The results indicated that White students tended to have more occupations from the Realistic and Investigative orientation whereas Black students more often chose occupations from the Social category. Omitting the competencies sections appeared to make little difference. And finally Black students and White students were about equally satisfied with the results from the SDS.

Recently, Holland and Nafziger (1975) correlated the scales of the SDS with the scales of the Kuder, the Thurstone Temperment Schedule, the Bennett, and the Minnesota Paper Form using small samples of high school students. The results indicated support for the concurrent validity of the SDS.

Research on the SDS to date has been limited primarily because of the newness of the instrument. The research, however, does indicate that the instrument is generally reliable and
valid. There appear to be some problems with the self administration aspect of the SDS. And, finally, the research also suggests a possible need for some revision in the number of occupations listed in the Occupations Finder.

**Occupational Levels**

In Holland's theoretical frame of reference occupational choice is a function of personal orientation, however, the level at which one works in a given occupation is determined by intelligence and self-evaluation. Holland (1959) defined self evaluation as the relative "worth" an individual ascribed to himself measured by such instruments as the Sims Status Scale and the Occupational Level Scale of the SVIB. In 1973 Holland redefined his concept of occupational level such that the more a person's resemblance to personality pattern ESAICR the greater the expected vocational aspiration and eventual achievement.

The research on this portion of Holland's theory has been primarily conducted using the original formulation. Holland (1962), using a sample of National Merit Scholars tested the level hierarchy by predicting a relationship between the students' college major and their SVIB-OL score and their SAT Math score. The results generally supported Holland's theory, however, the relationship was supported more for females than for males.

Stockin (1964) added a dimension to the occupational level research when he attempted to determine if vocational level could be predicted from the sum of one's intelligence
and self-evaluation. His sample was composed of a group of senior high school suburban boys. Their IQ scores were taken from the school file and placed in a quartile rank. Self-evaluation was measured with the Sims Status Scale, Attitude Toward Education Scale and the Socio-economic Expectation Scale. The Self-Evaluation score was determined by averaging quartile ranks of scores on each of the measures. The average was then taken of the IQ score and the self-evaluation score. The occupational level scores were then compared to the student's vocational preference level which had been classified according to Roe's system (1956). The results of the data once again supported Holland's formulation. Nearly all the predictions which were incorrect were only off one level. One limitation of this study, however, is that it was based on postdictions.

Fortner (1970) tested the level hierarchy using a sample of 400 high school senior females. She used the subject's IQ, the Sims Status Scale, and the Wage Earner's occupational level of choice. The results indicated a positive relationship between predicted level of occupational choice and actual level.

In an extension of the research to a working sample Hughes (1972) studied employed males. He used the Quick Word Intelligence Test (QW), the Sims Occupational Rating Scale, and the SVIB-OL to predict the subjects' occupational level. The scores of the subjects were divided into top, middle, and bottom third within the sample. The Sims and the SVIB-OL scores were ranked and then averaged to yield the predicted
occupational level. The subjects' occupations were classified according to Roe's system (1956). Next, the classifications were divided into pairs 1 and 2, 3 and 4, 5 and 6, such that three levels then existed. The results were highly significant when predicted occupational levels were compared to actual levels.

These studies indicated some tentative support for Holland's formulation of Occupational Levels. Further research is needed to determine if the Occupational Level can be extended to a variety of populations.

National Merit and Other College Samples

A large volume of the research investigation Holland's research was done with college students, particularly National Merit students. Holland's research in the late fifties and early sixties was almost exclusively conducted using National Merit samples. In 1960 Holland used a sample of 783 male and 394 female high school National Merit finalists to investigate correlationship of scale scores from the VPI with scale scores from the Sixteen Personality Factor Questionnaire (16 PF). In a comparative analysis of the results there were distinct sex differences. Forty-seven percent of the correlates were significant for males, while only 28 percent were significant for females. Holland extended the research on his theory by using a subset of the 1958 National Merit finalists to investigate personality variables related to the model orientations. He studied the correlates scales from the VPI,
the 16 PF, and the National Merit Student Survey, a ten variable achievement inventory. Once again Holland's results indicated significant correlations between the VPI and the 16 PF. The correlates with the NMSS were not as high as those with the 16 PF, they were in the predicted direction.

Holland has performed several one and two year follow-up studies on the National Merit Samples. As discussed above, he tested the concurrent validity of the VPI scale high point code as predictors of college majors and vocations and found them to be only moderately efficient. However, of further interest from the follow-up studies, is Holland's research on student's high point codes and their relationship to father's and mother's education, father's occupation, father's and mother's attitudes, birth order, and family size. Here again the results indicated some distinct sex differences. The findings revealed that daughter's high point code was unrelated to any of the variables. Son's high point code was related only to the father's occupation. There was a relationship between the father's personal orientation and their goals and income expectations for their children. The attitudes of mother's did not present as clear a picture.

Holland performed numerous other studies with National Merit Samples. He investigated such things as coping behavior competencies (1963d), vocational images (1963c), and stability of vocational choice (1963a). The findings have been rather diverse, however, several summary statements can be made:
1. There are indications that the six personal orientations (Realistic, Investigative, Social, Conventional, Enterprising, and Artistic) differ in relation to several factors including characteristics of personality inventories, identification with famous people, family background, and vocational choice.

2. Congruency and consistency in personality/environmental relationships seem to lead to certain predictable outcomes, including stability of college major and vocational goals, personal stability, creativity, and academic and vocational achievement.

3. The National Merit Sample of career choices perhaps does not provide representative information concerning the career hierarchy because of their high aptitude.

4. Occupational level was not actually a focal point as a result of the substitution of college major as a measure of vocational choice.

One of the major early criticisms of Holland's work was that it was not representative of broader populations. Holland and his associates subsequently expanded their research to include various college samples. Much of the pertinent data concerning college students was presented in the sections on the validity of the VPI and the SDS. The research is, therefore, only summarized here. Several areas have been explored: 1) Occupational levels (Stockin, 1964; Schutz and Blocher, 1961). 2) Development of personality types (Barclay, Stilwell and Barclay, 1972). 3) Characteristics and traits of the personality types (Holland, 1968; Osipow and Ashby, 1968; Elton and Rose, 1970). 4) Personality patterns (Holland, 1968; Wall, Osipow, and Ashby, 1967; Edwards and Whitney, 1972). 5) Occupational stereotypes

Holland's 1968 study employed a very large sample of 1576 men and 1571 women to examine the concurrent and predictive validity of the VPI. The results were similar to and supportive of results obtained with National Merit samples. The sample for this study was composed of freshmen college students representing 28 universities and colleges and a wide variety of socio-economic backgrounds and abilities. The students were typed and sybtypied according to their high point scores on the six VPI scales. The freshmen scores were subsequently compared to the senior year vocational choice. Holland also compared the students on 22 dependent variables including life goals, self ratings, personality, and attitudinal variables. The results indicated: 1) people with similar codes have similar characteristics; 2) the results for women were higher than those for men and finally; 3) the results were more explicit and substantial than in previous research.

Supportive of Holland's findings is the research done by Elton and Rose (1970); Kelso (1969); and Patterson, Morrow, and Patterson (1971). Elton and Rose (1970) used the American College Test (ACT) and the Omnibus Personality Inventory to differentiate across types. Kelso (1969) found that students did possess traits as indicated by the descriptions of their theoretical types and often they selected courses consistent with their types. Kelso (1969) employed the California Psychological Inventory (CPI) on a sample of 188 males.
Patterson, et. al. (1971) administered the Edwards Personal Preference Schedule (EPPS), the 16 PF, the Minnesota Multiphasic Personality Inventory (MMPI), the Tennessee Self Concept Scales, and the FIRO-B, to a group of occupational therapy students (N = 109), representing the Social categories. Though the study was somewhat modest and limited, the results did indicate that occupational therapy students to resemble the theoretical descriptions of the Social category.

As in the section on validity the research findings did indicate that the theoretical personality typologies were valid constructs. Cole, Whitney, and Holland (1971) have mathematically analyzed the relationships among the six scales of Holland's VPI. The results substantiate the hexagonal model previously discussed. The findings also indicated that each type can be characterized by different backgrounds, values, needs, traits, etc. The relationships between types were in some ways predictive of educational and vocational choice and adjustment (cf. Holland, 1973).

**Employed Adults**

The extension of Holland's theory to general college populations rather than the more restricted National Merit samples did increase the generalizability of the theory. Questions one might ask of even these more general samples are:

1. Are college students representative of the employed populations?

2. Are college majors stable enough to represent actual vocational choices or actual job entires?
Finally, the question inherent in the two above:

3. Does Holland's theory apply to working individuals?

Holland (cf. 1973) has stated that individuals must resolve different vocational tasks and problems at different developmental stages. Therefore, it would appear that the decision one might make about academic success could be different from the decision necessary for actual occupational success.

There have been relatively few studies of Holland's theory conducted using adult samples. The situation is explained because: 1) adult samples are more difficult to obtain as well as slightly more expensive; 2) Holland's theory is just recently receiving prominence. There were other research studies dealing with working populations, however, for purposes of the present investigation this review is limited to the research completed on the validity of John Holland's theory.

Employed Males

In recent years there have been several studies which suggest that the personality typology can be extended to the working population (Fishburne and Walsh, in press; Gaffey and Walsh, 1974; Huges, 1972; Lacey, 1971; O'Brien and Walsh, in press; Osipow, 1970; and Salome, 1968). The results from the studies have not always been as impressive as those with college samples, but they do provide interesting and supportive data.
Salome (1968) performed one of the earliest studies of Holland's theory. He selected a sample of 159 rehabilitation counselors in an attempt to correlate their VPI codes with satisfaction scores. He hypothesized that the more an individual's job resembles his personality type the greater would be his expressed satisfaction. Salome found that most of the counselors did have VPI codes in the predicted direction, however, all other hypotheses were not supported.

Osipow (1970) investigated the correlation between VPI codes and work roles within the religious occupation. His sample included clergymen and seminary students. He employed the VPI and a workrole checklist which included the following roles: administrator, preacher, reformer, teacher, artist and musician. The roles had been identified with one of Holland's typologies: Artistic, Social, Investigative, Enterprising and Conventional. The results indicated that the clergymen and the seminary students were likely to have a social orientation, which is consistent with Holland's theory. However, there were no significant personality differences correlated with the various roles.

In a more direct test of the concurrent validity of Holland's theory Lacey (1971) studied 210 men who were well established in their occupation. In this study he used the VPI and three other instruments designed to assess need and concomitant satisfaction with the job situation. He divided the sample into six groups representing Holland's six personality orientations: 1) Realistic-project engineers;
2) Investigative-research chemist and computer programmer; 3) Social-High school teacher; 4) Conventional-actuaries; 5) Enterprising-bank executive and insurance company executive; and 6) Artistic-College English professors and music teachers. After performing a one way analysis of variance, Lacey found that the Investigative, Artistic, Social, Enterprising and Conventional scales, significantly differentiated the eight occupational groups. The chemist, actuary, college English, music professor and the high school teacher had the highest mean score in their representative personal orientation category; however, engineers and bank and insurance executives did not. Even though computer programmers and research chemists should have scored high on the Investigative scale they fell behind engineers, actuaries, and the college English and music professors. In accordance with Holland's theory the masculinity and status scales significantly differentiated the groups. The results of the vocational needs and satisfaction assessment proved to be somewhat ambiguous and only partially successful. Lacey, nonetheless, concluded that the evidence was very supportive of Holland's theory.

Gaffey and Walsh (1972) extended the research on the concurrent validity of Holland's theory by using not only the VPI, but the SDS, and Holland scales, Sets I and II on a sample of 153 college educated males who had been employed at least one year. Gaffey divided the sample into six groups representing Holland's six categories: Realistic-Industrial
engineers; Investigative-medical doctors; Social-ministers; Conventional-morticians; Enterprising-insurance salesmen and real estate salesmen; Artistic-artists and art teachers. The sample was from the states of Ohio, Pennsylvania, Maryland and Massachusetts. A one way analysis of variance revealed that all the scales of the Holland Scales I and II, all the scales for the SDS, five of the occupational scales of the VPI, and four of the non-vocational scales of the VPI differentiated the groups. The Pearson Product Moment correlation technique was used to assess the relationships among all possible combinations of the same named scales of the instruments. The results of this study, along with the similar study done by Lacey (1971) suggests strong support for the concurrent validity of Holland's theory for working groups. Additionally, "The evidence strengthens the assumption (Holland, 1973) that types may be assessed by any of the methods used here with about equal results for research and practical purposes." (Gaffey and Walsh, 1974).

In another of the series of studies being conducted by Walsh and his associates, Fishburne and Walsh (in press) investigated a group of 126 non-college educated males. They also employed the VPI and the SDS. The sample was divided into the six vocational orientations based on job titles in the Occupations Finder (Holland, 1972). The groups were as follows: barbers (Realistic); bartenders (Social); electronic technicians (Investigative); photographers (Artistic); gas
station managers (Enterprising); and accounting clerks (Conventional). The statistical analysis was similar to that used by Lacey (1971) and approximately the same as that used by Gaffey and Walsh (1974). The results of the study suggested that two scales of the VPI, Artistic and Conventional, and four scales of the SDS, Investigative, Artistic, Social, and Conventional, differentiated the groups according to Holland's theory. The results of this study were similar to those of Lacey (1971) and Gaffey and Walsh (1974). An interesting speculation, however, is that the SDS might be a more efficient instrument for use with non-college educated persons than the VPI.

O'Brien and Walsh (in press) further broadened the investigation of Holland's theory with their study of its applicability to 121 non-college degreed black male workers. They tested the concurrent validity of Holland's theory using the following groups: Realistic-maintenance men; Investigative-X-ray technicians and laboratory technicians; Artistic-musicians and entertainers; Social-youth leaders; Enterprising-salespersons; and Conventional-inventory clerks. The data were analyzed using multivariate analysis of variance. The results indicated that four scales of the SDS (Realistic, Artistic, Enterprising and Conventional) and four scales of the VPI (Realistic, Artistic, Enterprising and Conventional) successfully differentiated the groups according to Holland's theory. Once again the SDS seemed to be the more efficient measure for the non-degreed population. The results were interpreted to
be supportive of Holland's theory for employed non-college
degreed black men.

Hughes (1972) added a different dimension to the research
when he tested the hypothesis that employed men possess the
personality orientation appropriate to their job. He sampled
400 National Guardsmen and classified them into one of the six
Holland categories based on the Occupations Finder (Holland,
1970) and then assigned them to one of the three levels
according to Roe's (1956) classification. Hughes (1972)
investigated the participants scores on the SVIB, the 16 PF,
the VPI, a self rating personality scale, the Quick Word
Intelligence Test (QW), the Sims Occupational Rating Scale,
and a personal information sheet. The range of agreement
between personality and actual jobs was from 14% to 42%.
The VPI results yielded the highest percentage of appropriate
personal orientations 42%, however, using self-ratings, only
6% had appropriate personal orientations. The results were
not very supportive of Holland's theory in working populations.
But there were indications that the occupational level
predictions were accurate.

A couple of other studies on the theory under considera-
tion on working populations have revealed interesting
differences. Morrison and Arnold (1974) looked at intragroup
differences or similarities among a Realistic sample of 268
male workers employed in an extracting plant. The authors
gave the Life History Items instrument (Glennon, Albright and
Owens, 1966) to Realistic men from four departments.
Questionnaire, which is a self-developed instrument using questions regarding role choice and job satisfaction (Holland, 1962). The results indicated that: 1) the effects of homogeneity, consistency, congruence and role choice upon achievement and satisfaction were not very significant when analyzed individually; 2) all but 45 of the subjects had VPI profiles congruent with Holland's theoretical hypotheses; and 3) the results overall were supportive of Holland's constructs regarding employment adjustment.

Harvey and Winfield (1973) sampled 61 women who were mixed by educational level, number of years working, marital and socio-economic status. The women (who had a mean age of 40.7) were participants in an adult testing and guidance program. In order to test the validity of Holland's theory for this population the women were administered the VPI, the SVIB for women, the Edwards Personal Preference Schedule, the Allport, Vernon, Lindzey Study of Values and Differential Aptitude Test. Correlational measure indicated a positive relation with criterion tests in the predicted direction for only three of the types: Intellectual (Investigative), Conventional, and Enterprising. There were a number of significant relationships found for the Realistic, Social and Artistic types, but a large number of the expected relationships did not occur. This was a small sample, however, and generalization should be made very cautiously.

The final study in this section was conducted by Horton and Walsh (in press). Horton and Walsh investigated the concurrent validity of Holland's theory for college degreed
women. They administered the VPI and the SDS to 179 women who had been categorized according to the six vocational personality orientations. The groups were as follows: Realistic-engineers (N = 41); Investigative-physicians (N = 38); Artistic-architects (N = 25); Social-ministers (N = 20); Enterprising lawyers (N = 32); and Conventional-certified public accountants (N = 23). The authors used multivariate analysis of variance and post hoc analyses to determine the results. The data revealed that four scales of the SDS (Artistic, Social, Enterprising, and Conventional) identified occupational groups consistent with Holland's theory (Architects, Ministers, Lawyers, and Accountants). Four scales on the VPI (Realistic, Artistic, Social, and Conventional) also identified occupational groups consistent with Holland's theory and its applicability to college degree working women.

The results of these three studies indicate further support of the validity of Holland's constructs. Some of the correlations were low, some expected results did not occur, and some of the samples were small. However, the results were generally supportive, thus, suggesting a need for further research.

**Black Samples**

Research with black samples using Holland's theory has been most limited. To date there are only two studies directly investigating any aspect of the theory with blacks (Kimball,
Sedlacek and Brooks, 1973; and O'Brien and Walsh, in press). Kimball et al. investigated the vocational interests of a group of black and white students using the Self-Directed Search. They also investigated the students' satisfaction with the instrument's use as a vocational and educational planning tool. The results revealed that blacks choose Social occupations more often than white, but whites choose occupations from the Realistic and Investigative categories more often than do blacks. The results also indicated that the two groups were equally satisfied with the SDS and the authors concluded the instrument was equally valuable for both races.

The only validity study with the black population as a major focus was conducted by O'Brien and Walsh (in press). This study was reviewed above, therefore, only the results are repeated here. The authors found that VPI and the SDS did differentiate between the groups classified according to Holland's typology. The authors also concluded that the SDS might be a more efficient measure for non-college degreed populations.

Other research with black samples has been primarily descriptive and included such things as expectancy, aspiration and aptitude.

Hagar and Elton (1971) reported a study of 5,384 black students from 19 predominantly black four year colleges and 1,956 black and 95,820 white students from 200 predominantly white four year colleges. The results indicated that teaching and social service were selected by black males more often than white males. In a smaller sample, using the SVIB, Hagar
SUMMARY

The research has evidenced consistent support for the concurrent and predictive validity of the SDS and the VPI. Research on Holland's theory has been conducted using high school samples, college students, employed adults (men, women and black males). The results indicate the theory has applicability to all these groups, even though some of the findings are mixed. There is some evidence to suggest that the SDS might be more efficient for working populations than the VPI.

Because of the limited amount of work that has been conducted on working samples, women, and blacks one must hesitate in making very serious or firm judgements. In recent years researchers have begun to focus more on these groups and consequently the outlook is bright for more complete information about various subgroups and vocational theory.
Chapter III

METHODOLOGY

The primary purpose of this study was to examine the concurrent validity of Holland's vocational choice theory for employed college degree Black women.

Sample

The sample included 6 groups of 93 volunteer college degree Black women who fitted in each of Holland's six personality categories: Realistic, Investigative, Enterprising, Social, Artistic, and Conventional. The occupational groups representing the categories were as follows: Realistic--Engineers (N = 11), Investigative--Physicians (N = 15), Enterprising--Lawyers (N = 18), Social--Social Workers (N = 18), Artistic--English Teachers (N = 15), and Conventional--Business Teachers (N = 16).

These occupational groups were selected from the Occupations Finders, Holland's 1970 job topology section of the Self-Directed Search. Only those Black women with at least a Bachelor of Arts, Bachelor of Science, a comparable degree or at least three years of college were included in the study. Each subject had worked at least one or more
years in her present occupation.

Subjects were obtained via personal contacts, liaison persons or professional organizations. The subject's working environment was not of concern in this study.

Subjects were introduced to the instruments via introductory and explanatory letters. Each individual was then encouraged to complete the instruments in her home or at her work location or other place of contact. Order effects were controlled for by alternating the sequence of presentation of the VPI and the SDS. In the first package of material the VPI was presented first and the SDS second. The order was reversed in the next set.

Procedure

Due to the small number of college degreed Black women in several of the categories, subjects were solicited from as many states as possible. The subjects were primarily from the states of Ohio, Michigan, Illinois, Tennessee, Arkansas, Alabama, Georgia, California, New York, Maryland and Washington, D.C. The researcher delivered the test material in all accessible areas. In all other cases the material was mailed to the participant. An initial letter was sent to possible subjects soliciting their service. A response card was included for individuals to return if they were willing to participate in the study. The initial letter, with the purpose of the study, gave a brief description of the design and explained the method by which the respondent's name was obtained. The initial letter was revised when several
participants stated that it was not clear (See Appendix D). The instruments and a cover were then forwarded to potential subjects who returned the card. The cover letter again explained the purpose of the study, how to take the instruments, and the confidential nature of the study. A numbering system was used to keep the data properly divided.

**Instruments**

Each subject was administered a brief questionnaire, the Self-Directed Search and the Vocational Preference Inventory. The questionnaire was used to collect biographical data and included information such as kind of job, length of time in current job, previous employment, age, type of degree, college or university and a job satisfaction question.

The Vocational Preference Inventory (VPI) consists of 160 occupational titles to which the subject responds like or dislike. There are eleven scales: six personal-vocational; Realistic, Investigative, Enterprising, Social, Artistic, and Conventional; and five nonvocational scales; Self-control, Masculinity, Status, Infrequency, and Acquiescence (Holland, 1965). The VPI scales have reliability coefficients of internal consistency ranging from .76 to .89. Test-retest reliability coefficients vary from .50 to .89 for the six VPI scales. A comprehensive review of validity studies was presented in Chapter II. In general, the VPI scales show evidence of construct and predictive validity.
The Self-Directed Search (SDS) is an extension of the VPI. The SDS is an assessment booklet which is divided into four sections, Activity Scales, (6 scales -- 11 items each), Competency scales, Occupational scales, and a Self-Estimates portion. The instrument reduces the vocational scales into their six personal correlates. There are a total of 228 items in the booklet. The SDS was constructed as a logical description of the predictors of vocational and personal orientations. The instrument has (internal consistency) reliability coefficients (Kuder-Richardson 21) ranging from .53 to .87 (Holland, 1971). Two recent studies have demonstrated test-retest reliability coefficients ranging from .75 to .92 with a seven to ten month lapse using 65 freshmen (O'Connell and Sedlacek, 1971 and Zener and Schnuelle, 1972). A comprehensive review of validity studies can be found in Chapter II. In summary, findings indicated that the SDS is a valid instrument.

Hypotheses and Statistical Tests

1) There are significant differences between the mean scores for the six groups (Engineers, Physicians, Lawyers, Social Workers, English Teachers and Business Teachers) on each of the scales for the VPI and the SDS.

2) There is a significant relationship between the same names scales for the total occupational group on the Vocational Preference Inventory and the Self-Directed Search.
The first hypothesis was tested across all scales (12) for the two inventories by means of multivariance analysis of variance for unequal numbers. This procedure included a univariance analysis for each of the 12 scales. Significant univariate F tests were examined by means of the Turkey (b) procedure (Winer, 1971) in order to identify specific group differences.

The second hypothesis was tested for the same named scales across the two inventories by means of the Pearson Product Moment Correlation.
Chapter IV

RESULTS

This study investigated two hypotheses relative to the concurrent validity of Holland's vocational theory. The first hypothesis explored differences between mean scores across six occupational groups on each of the scales of the Vocational Preference Inventory and the Self-Directed Search. The second hypothesis investigated the relationship between the same named scales for the total occupational group on the VPI and the SDS.

In order to report the findings this chapter will be divided into two sections. The first section will contain results on scale discrimination among occupational groups. The second section will contain results on the intercorrelations among the same named scales across the two instruments.

Scale Discrimination Across Occupational Groups

The results of the multivariate test ($F = 7.03 \ p .001$) for the main effect of groups across the 12 scales on the two instruments was significant. The results indicated that there were some basic group differences across the 12 scales.

The results of the 12 univariate analyses of variance did generally support the first hypothesis. However, further investigation indicated that the Realistic scale and the
Enterprising scale on the VPI were not significant at the .05 level and therefore failed to discriminate adequately among the groups. Table 1 summarizes the analysis of variance tests for occupational groups on the six VPI scales. Two of the four scales (Investigative and Artistic) discriminated at the .05 level of significance. The Social and Conventional scales discriminated at the .001 level of significance.

**TABLE 1**

Summary of the Analysis of Variance Tests on the Six Vocational Scales of the Vocational Preference Inventory for the Six Occupational Groups

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</tr>
</thead>
<tbody>
<tr>
<td>Realistic</td>
<td>0.114</td>
<td>1.837</td>
</tr>
<tr>
<td>Investigative</td>
<td>0.005</td>
<td>3.629b</td>
</tr>
<tr>
<td>Artistic</td>
<td>0.004</td>
<td>3.746b</td>
</tr>
<tr>
<td>Social</td>
<td>0.001</td>
<td>6.641a</td>
</tr>
<tr>
<td>Enterprising</td>
<td>0.067</td>
<td>2.146</td>
</tr>
<tr>
<td>Conventional</td>
<td>0.001</td>
<td>4.850a</td>
</tr>
</tbody>
</table>

* = significant .01 level
b = significant .05 level

Table 2 summarizes the analysis of variance results for the SDS. The F tests indicate that all six of the scales (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) discriminate among the six occupational groups at the .001 level.
TABLE 2
Summary of the Analysis of Variance Tests for the Six Scales of the Self-Directed Search for the Six Occupational Groups

<table>
<thead>
<tr>
<th>Source</th>
<th>P</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic</td>
<td>0.001</td>
<td>8.654a</td>
</tr>
<tr>
<td>Investigative</td>
<td>0.001</td>
<td>22.502a</td>
</tr>
<tr>
<td>Artistic</td>
<td>0.001</td>
<td>8.079a</td>
</tr>
<tr>
<td>Social</td>
<td>0.001</td>
<td>7.023a</td>
</tr>
<tr>
<td>Enterprising</td>
<td>0.001</td>
<td>5.987a</td>
</tr>
<tr>
<td>Conventional</td>
<td>0.001</td>
<td>39.336a</td>
</tr>
</tbody>
</table>

*a = significant .01 level.

To determine which groups differed from one another the data were submitted to multiple comparisons through the use of the Tukey (b) test. Table 3 summarizes the analyses of all possible combinations of occupational groups on the four significant scales of the Vocational Preference Inventory.

Multiple comparisons of groups on the Investigative scale demonstrated the Physician group to be significantly different from the Business Teacher group (p .01).

An analysis of all possible combinations of groups on the Artistic scale showed the Business Teachers differed significantly from the English Teacher group (p .05) and the Social Worker group (p .05).
<table>
<thead>
<tr>
<th>Scale</th>
<th>p .05</th>
<th>p .01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigative</td>
<td>English Teachers-Business Teachers</td>
<td>Physicians-Business Teachers</td>
</tr>
<tr>
<td>Artistic</td>
<td>Business Teachers-Social Workers</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td>Social Workers-Engineers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social Workers-Physicians</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social Workers-Lawyers</td>
</tr>
<tr>
<td></td>
<td>Social Workers-Business Teachers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social Workers-English Teachers</td>
<td></td>
</tr>
<tr>
<td>Conventional</td>
<td></td>
<td>Business Teachers-Physicians</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Business Teachers-Lawyers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Business Teachers-Social Workers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Business Teachers-English Teachers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Business Teachers-Engineers</td>
</tr>
</tbody>
</table>
In analyzing all possible combinations of groups on the Social scale the Social Worker group was found to be significantly different from the remaining five groups. Engineers (p .01), Physicians (p .01), Lawyers (p .01), Business Teachers (p .05), and English Teachers (p .05).

Multiple comparisons of groups on the Conventional scale indicated that the Business Teacher group differed significantly from the Physician (p .01), Lawyer (p .01), Social Worker (p .01), English Teacher (p .01), and from the Engineer (p .05) groups.

Table 4 reports the means and standard deviations for the six occupational groups on the six scales of the Vocational Preference Inventory. On the Realistic scale Engineers had the highest mean score, as predicted by Holland's theory, while Business Teachers obtained the lowest score. On the Investigative scale Physicians scored highest, in accordance with Holland's predictions, while Business Teachers again scored lowest. Further substantiating Holland's predictions, English Teachers obtained the highest mean score on the Artistic scale and Business Teachers scored lowest. Results from the Social scale indicated that Social Workers scored highest, as the theory predicted, while Engineers obtained the lowest mean. On the Enterprising scale Holland's theory was once again supported as Lawyers achieved the highest score and Physicians the lowest. Finally on the Conventional scale, in accordance with theoretical predictions, Business Teachers scored highest and Lawyers scored lowest.
<table>
<thead>
<tr>
<th>Scale</th>
<th>Engineers (N=11)</th>
<th>Physicians (N=15)</th>
<th>English Teachers (N=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Realistic</td>
<td>3.091</td>
<td>3.534</td>
<td>1.933</td>
</tr>
<tr>
<td>Investigative</td>
<td>2.364</td>
<td>2.767</td>
<td>6.000</td>
</tr>
<tr>
<td>Artistic</td>
<td>3.636</td>
<td>3.880</td>
<td>5.667</td>
</tr>
<tr>
<td>Enterprising</td>
<td>5.182</td>
<td>3.763</td>
<td>2.400</td>
</tr>
<tr>
<td>Conventional</td>
<td>2.455</td>
<td>2.911</td>
<td>1.267</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scale</th>
<th>Social Workers (N=18)</th>
<th>Lawyers (N=18)</th>
<th>Business Teachers (N=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Realistic</td>
<td>1.611</td>
<td>2.146</td>
<td>1.000</td>
</tr>
<tr>
<td>Investigative</td>
<td>2.611</td>
<td>2.873</td>
<td>4.167</td>
</tr>
<tr>
<td>Artistic</td>
<td>7.389</td>
<td>4.408</td>
<td>6.167</td>
</tr>
<tr>
<td>Enterprising</td>
<td>4.500</td>
<td>3.585</td>
<td>5.278</td>
</tr>
<tr>
<td>Conventional</td>
<td>2.222</td>
<td>3.405</td>
<td>1.722</td>
</tr>
</tbody>
</table>
Table 5 provides a summary analysis of all possible combinations of the occupational groups on the six scales of the Self-Directed Search. Multiple comparisons of groups on the Realistic scale demonstrated that the Engineer group differed significantly from the Business Teacher (p .01), Social Worker (p .01), Lawyer (p .01), Physician (p .01), and English Teacher (p .01) groups.

An analysis of all possible combinations of groups on the Investigative scale revealed that Physicians were significantly different from the Lawyer (p .01), English Teacher (p .01), Social Worker (p .01), and Business Teacher (p .01) groups. On the same scale it was also demonstrated that the Engineer group was significantly different from the English Teacher (p .01), Social Worker (p .01), Business Teacher (p .01), and Lawyer (p .05) groups. Further, on the Investigative scale the Lawyer group was significantly different from the Social Worker, (p .01), Business Teacher (p .01), and English Teacher (p .05) groups.

When all possible combinations of groups were examined for the Artistic scale the following results were observed: the Business Teacher group differed significantly from the Social Worker, English Teacher, and Physician groups at the .01 level. Also the Business Teacher group differed significantly from the Lawyer and Engineer Groups at the .05 level.
TABLE 5
Summary of the Tukey (b) Analysis of All Possible Combinations
Of the Occupational Groups on the Scales of the Self-Directed
Search Which Had Significant F Tests

<table>
<thead>
<tr>
<th>Scale</th>
<th>p .05</th>
<th>p .01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investigative</td>
<td>Lawyers-English Teachers</td>
<td>Engineers-Business Teachers</td>
</tr>
<tr>
<td></td>
<td>Lawyers-Engineers</td>
<td>Engineers-Social Workers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engineers-Lawyers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engineers-Physicians</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engineers-English Teachers</td>
</tr>
<tr>
<td>Artistic</td>
<td>Business Teachers-Lawyers</td>
<td>Physicians-Business Teachers</td>
</tr>
<tr>
<td></td>
<td>Business Teachers-Engineers</td>
<td>Physicians-Social Workers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Physicians-English Teachers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Physicians-Lawyers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lawyers-Social Workers</td>
</tr>
<tr>
<td>Social</td>
<td>Social Workers-Business Teachers</td>
<td>Lawyers-Business Teachers</td>
</tr>
<tr>
<td></td>
<td>Social Workers-Lawyers</td>
<td>Business Teachers-Physicians</td>
</tr>
<tr>
<td>Enterprising</td>
<td>Lawyers-Engineers</td>
<td>Social Workers-Engineers</td>
</tr>
<tr>
<td></td>
<td>Lawyers-Social Workers</td>
<td>Social Workers-Physicians</td>
</tr>
<tr>
<td></td>
<td></td>
<td>English Teachers-Engineers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lawyers-Physicians</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lawyers-Business Teachers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lawyers-English Teachers</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
<td>p .05</td>
<td>p .01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The fourth comparison for the SDS scale analyzed all possible combinations on the Social scale. The results indicated that the Social Worker group differed significantly from the Engineer (p .01), Physician (p .01), and Lawyer (p .05), and Business Teacher (p .05) groups. The results also indicated that the English Teacher group was significantly different from the Engineer Group (p .01).

On the Enterprising scale an analysis of all possible combinations indicated that the Lawyer group was significantly different from the Physician (p .01), Business Teacher (p .01), English Teacher (p .01), Engineer (p .05), and Social Worker (p .05) groups.

In the last comparison of scales on the SDS, the analysis of the Conventional scale showed the Business Teacher group to be significantly different (p .01) from all of the other vocational groups.

The means and standard deviations for the six occupational groups on the six scales of the Self-Directed Search are reported in Table 6. The results generally support the predictions suggested by Holland's theory. On the Realistic scale Engineers had the highest mean score while Business Teachers had the lowest. On the Investigative scale Physicians scored the highest and Business Teachers scored the lowest. The results on the Artistic scale deviated somewhat from the predictions made by Holland's theory. Social Workers achieved the highest mean score on this scale, however, English Teachers had the second highest mean score which was only .051 points from the predictions made by Holland's theory. Social Workers
TABLE 6
Means and Standard Deviations for the Six Occupational Groups
on the Six Scales of the Self-Directed Search

<table>
<thead>
<tr>
<th>Scale</th>
<th>Engineers (N=11)</th>
<th>Physicians (N=15)</th>
<th>English Teachers (N=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Realistic</td>
<td>6.909</td>
<td>4.253</td>
<td>2.000</td>
</tr>
<tr>
<td>Investigative</td>
<td>8.182</td>
<td>2.639</td>
<td>9.933</td>
</tr>
<tr>
<td>Artistic</td>
<td>6.000</td>
<td>3.464</td>
<td>6.133</td>
</tr>
<tr>
<td>Enterprising</td>
<td>6.000</td>
<td>3.899</td>
<td>4.333</td>
</tr>
<tr>
<td>Conventional</td>
<td>3.636</td>
<td>2.618</td>
<td>2.867</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scale</th>
<th>Social Workers (N=18)</th>
<th>Lawyers (N=18)</th>
<th>Business Teachers (N=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Realistic</td>
<td>1.444</td>
<td>1.854</td>
<td>1.556</td>
</tr>
<tr>
<td>Investigative</td>
<td>1.944</td>
<td>1.924</td>
<td>5.333</td>
</tr>
<tr>
<td>Artistic</td>
<td>7.774</td>
<td>2.942</td>
<td>5.167</td>
</tr>
<tr>
<td>Social</td>
<td>13.000</td>
<td>1.906</td>
<td>10.500</td>
</tr>
<tr>
<td>Enterprising</td>
<td>6.500</td>
<td>2.503</td>
<td>9.169</td>
</tr>
<tr>
<td>Conventional</td>
<td>2.722</td>
<td>2.539</td>
<td>3.111</td>
</tr>
</tbody>
</table>
achieved the highest mean score on this scale, however, English Teachers had the second highest mean score which was only .051 points from the Social Worker group mean. Business Teachers obtained the lowest mean score on the Artistic scale. Results from the Social scale indicated that Social Workers obtained the highest mean score and Engineers had the lowest. Lawyers had the highest mean score on the Enterprising scale and Physicians the lowest. On the final comparison for the Conventional scale Business Teachers had the highest mean score and Social Workers had the lowest.

Table 7 through 12 summarize the rank order of the mean scores for the 12 scales across the two instruments. On the Realistic scale Engineers, Physicians, English Teachers, and Business Teachers held the same positions on both scales of the Vocational Preference Inventory and the Self-Directed Search. Social Workers and Lawyers only varied by one rank.

### TABLE 7
Rank Order of the Mean Scores for the Realistic Scale Across the Two Instruments

<table>
<thead>
<tr>
<th>Scale</th>
<th>VPI</th>
<th>SDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Physicians</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>English Teachers</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Social Workers</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Lawyers</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Business Teachers</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

6 = highest ranking
1 = lowest ranking
On the Investigative scale Physicians and Business Teachers held consistent positions on both instruments. English Teachers, Social Workers, and Lawyers varied by only one rank, while Engineers varied by three ranks.

On the Artistic scale only the Business Teachers maintained consistent positions on both instruments. Four of the groups (Engineers, Physicians, English Teachers, and Social Workers) varied by one rank, while Lawyers varied by two ranks.

TABLE 8
Rank Order of the Mean Scores for the Investigative Scale Across the Two Instruments

<table>
<thead>
<tr>
<th>Scale</th>
<th>VPI</th>
<th>SDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Physicians</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>English Teachers</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Social Workers</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Lawyers</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Business Teachers</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

6 = highest ranking
1 = lowest ranking
TABLE 9
Rank Order of the Mean Scores for The Artistic Scale Across the Two Instruments

<table>
<thead>
<tr>
<th>Scale</th>
<th>VPI</th>
<th>SDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Physicians</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>English Teachers</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Social Workers</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Lawyers</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Business Teachers</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

6 = highest ranking  
1 = lowest ranking

Rank order on the Social scale indicated that Engineers, Physicians, English Teachers, and Social Workers, maintained consistent positions on both instruments. However, Lawyers and Business Teachers varied by one rank.

TABLE 10
Rank Order of the Mean Scores for the Social Scale Across the Two Instruments

<table>
<thead>
<tr>
<th>Scale</th>
<th>VPI</th>
<th>SDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Physicians</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>English Teachers</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Social Workers</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Lawyers</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Business Teachers</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

6 = highest ranking  
1 = lowest ranking
Physicians and Lawyers were the only groups which showed the same positions on both instruments on the Enterprising scale. All other groups varied by only one rank.

On the Conventional scale Engineers, English Teachers, and Business Teachers held consistent positions on both instruments, while Physicians, Social Workers, and Lawyers varied one rank.

**TABLE 11**
Rank Order of the Mean Scores for the Enterprising Scale Across the Two Instruments

<table>
<thead>
<tr>
<th>Scale</th>
<th>VPI</th>
<th>SDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Physicians</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>English Teachers</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Social Workers</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lawyers</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Business Teachers</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

6 = highest ranking  
1 = lowest ranking
TABLE 12
Rank Order of the Mean Scores for the Conventional Scale Across the Two Instruments

<table>
<thead>
<tr>
<th>Scale</th>
<th>VPI</th>
<th>SDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Physicians</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>English Teachers</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Social Workers</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Lawyers</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Business Teachers</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

6 = highest ranking
1 = lowest ranking

Table 13 summarizes the highest mean score for each occupational group across the VPI and the SDS. The two instruments generally discriminate very effectively with one exception. The VPI tends to more effectively discriminate the English Teachers on the Artistic Scale. The appropriate group having the highest mean score was identified on all other scales of the two instruments.
### TABLE 13

**Summary of the Highest Mean Score for Each Occupational Group Across the Two Instruments**

<table>
<thead>
<tr>
<th>Scale</th>
<th>VPI</th>
<th>SDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic (Engineers)</td>
<td>Engineers</td>
<td>Engineers</td>
</tr>
<tr>
<td>Investigative (Physicians)</td>
<td>Physicians</td>
<td>Physicians</td>
</tr>
<tr>
<td>Artistic (English Teachers)</td>
<td>English Teachers</td>
<td>Social Workers</td>
</tr>
<tr>
<td>Social (Social Workers)</td>
<td>Social Workers</td>
<td>Social Workers</td>
</tr>
<tr>
<td>Enterprising (Lawyers)</td>
<td>Lawyers</td>
<td>Lawyers</td>
</tr>
<tr>
<td>Conventional (Business Teachers)</td>
<td>Business Teachers</td>
<td>Business Teachers</td>
</tr>
</tbody>
</table>

**Relationship of the Same Named Scales**

Table 14 shows a matrix with the correlations of the six same named scales appearing on the diagonal. In order to test the second hypothesis scores for the total occupational groups on the vocational scales of the Vocational Preference Inventory and summary scales of the Self-Directed Search were intercorrelated. The correlations for the six same named scales ranged from a high of 0.6033 between the Artistic Scales to a low of 0.3851 between the Enterprising scales. All six of the correlation coefficients were significant (p < 0.01). These findings tend to support the second hypothesis.
Summary

Four of the six vocational scales of the Vocational Preference Inventory and all six of the scales of the Self-Directed Search significantly differentiated the occupational groups. The Realistic and the Enterprising scales on the VPI failed to show significance for main effects of groups. Therefore, the first hypothesis was accepted for the four significant scales (Investigative, Artistic, Social, and Conventional) of the VPI and all six significant scales (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) of the SDS.
<table>
<thead>
<tr>
<th>SDS Scales</th>
<th>Realistic</th>
<th>Investigative</th>
<th>Artistic</th>
<th>Social</th>
<th>Enterprising</th>
<th>Conventional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic</td>
<td>0.5350*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investigative</td>
<td>0.2585*</td>
<td>0.5210*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artistic</td>
<td>0.2734*</td>
<td>0.2595*</td>
<td>0.6033*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>-0.3095*</td>
<td>-0.2175</td>
<td>-0.0918</td>
<td>0.3851*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enterprising</td>
<td>-0.1620</td>
<td>-0.1156</td>
<td>-0.0442</td>
<td>-0.0682</td>
<td>0.3586*</td>
<td></td>
</tr>
<tr>
<td>Conventional</td>
<td>-0.1267</td>
<td>-0.2210</td>
<td>-0.2654*</td>
<td>-0.0064</td>
<td>-0.0222</td>
<td>0.5222*</td>
</tr>
</tbody>
</table>

* p .01
CHAPTER V

DISCUSSION

This study was designed to measure the concurrent validity of the Vocational Preference Inventory and the Self-Directed Search. These two instruments were designed by John Holland and associates to operationalize his theory of vocational choice. One of the major premises of Holland's theory is that an individual will select a vocation consistent with his personal style. Therefore, the VPI and the SDS were administered to samples of college degreed Black women who were reasonably well established in an occupational environment representative of each of Holland's model vocational environments. A second purpose of the study was to explore the relationship between same named scales on the two instruments. Since the VPI and the SDS were designed to operationalize Holland's theory it was expected that the results would be positive.

A multivariate analysis of variance design across all 12 scales of the two inventories differentiated the occupational groups. The test for the main effects of groups on the occupational scales of the VPI was shown to be significant for four of the six scales. On the Investigative scale the representative group (Physicians) was differentiated from the
group of Business Teachers. The Physician group was not further differentiated from other groups, however, this group did achieve the highest mean score on the Investigative scales. The results on the Investigative scale of the VPI were generally consistent with the hexagonal model of Holland's theory. (See Appendix F). The hexagonal model posits that certain groups should cluster at the lower end. Physicians and English Teachers were at the higher end, thus supporting the hexagon model. However, contrary to the model Engineers were at the lower end.

On the Artistic scale English Teachers differed significantly from Business Teachers. The Business Teacher group was also significantly differentiated from the Social Worker group. Support for the ability of this scale to discriminate was also evidenced by the English Teachers receiving the highest mean score. Social Workers clustered at the higher end of the scale, while the Business Teachers were at the lower end. However, Lawyers were at the higher end of the scale and Physicians were at the lower end. In order to satisfy the hexagonal model the order should be reversed.

As was expected the Social scale differentiated the Social Worker group from all other groups and this group scored highest on the rank order of means. The results were consistent with the hexagonal model since the Social Workers and English Teachers clustered at the higher end of the scale and Engineers and Physicians clustered at the lower end.
The Conventional scale peaked with the representative group (Business Teachers) evidencing the highest mean score. This scale also differentiated Business Teachers from all other groups. Support for the hexagonal model was mixed. English Teachers, who should have scored lowest on the scale, were at the higher end along with engineers. Lawyers were also at the lower end of the scale when the results were analyzed.

The Enterprising and Realistic scales of the VPI did not significantly differentiate among groups. However, Lawyers did receive the highest mean score on the Enterprising scale and Engineers received the highest mean on the Realistic scale.

In the analysis of the Self-Directed Search the test for the main effect of groups was found to be significant for all six scales (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional). The Tukey (b) analysis of all possible combinations of occupational groups was completed to locate specific group differences.

As predicted by Holland's theory the Realistic scale significantly differentiated the Engineer group from all other groups. Adding further support to the theory, the Engineer group reflected the highest rank mean score. The hexagon model is somewhat unsupported on this scale because it would predict that Business Teachers and Physicians would cluster around the Engineer group. However, though the Physicians were at the higher end of the scale, the Business Teachers ranked lowest.
The Investigative scale evidenced several significant differentiations. Lawyers differed significantly from Business Teachers, Social Workers, English Teachers, Engineers and Physicians. Engineers differed significantly from Business Teachers, Social Workers, and English Teachers. Physicians were the representative group on this scale and showed the highest mean score and were differentiated from Lawyers, English Teachers, Social Workers, and Business Teachers. Relative support was provided for the Hexagonal model as Engineers clustered around the Physicians group, however, the English Teachers, which also should have been clustered near the Physician group, were at the lower end of the scale.

The Artistic scale of the SDS only differentiated the representative group (English Teachers) from the Business Teacher group. In addition the Business Teachers were differentiated from all other groups. While the rank order of means for the English Teachers and the Business Teachers support the hexagonal model, it was the Social Worker group which earned the highest mean score. This result suggested that on the Artistic scale of the SDS English Teachers and Social Workers might be similar.

As could be expected from the above data the Social scale significantly differentiated all groups except English Teachers. The Social Workers had the highest mean score. The hexagonal model was completely satisfied with appropriate groups clustering at the high and low ends.
The Enterprising scale was effective in discriminating Lawyers from all other groups, with the Lawyer group earning the highest mean score. However, the hexagonal model would predict that the Conventional group (Business Teachers) would be adjacent to the Lawyers. There was an inversion with the Engineer group. Other aspects of the model were consistent with the actual findings.

On the conventional scale, Business Teachers appropriately averaged the highest score and were significantly different from all other groups. The hexagonal model was supported with some exception. The English Teachers were predicted to cluster at the lowest end of the scale, however, this group scored high, while Lawyers scored on the lower end of the scale.

In summary, with the exception of the Realistic scale and the Enterprising scale of the Vocational Preference Inventory, the findings support Holland's theory. Four scales of the VPI and all six scales of the SDS distribute the six occupational groups in the arrangement consistent with Holland's theory. The study provided support for the concurrent validity on four scales of the VPI and six scales on the SDS. The evidence also tends to support Holland's premise that individuals seek occupational environments consistent with their personality orientation.

The correlational analysis between the same named scales of the two instruments showed them to be significantly related. The correlation coefficients for the vocational scales of the VPI and the same named summary scales of the SDS were in the predicted direction.
The results of this study are generally the same as those of previous studies on the concurrent validity of the VPI and the SDS. Of particular interest is how these results compare with the results obtained by Horton (1975) and O'Brien (1975). The Horton study suggested that the SDS might be a more effective instrument to use with samples of college degreed women. The O'Brien study suggested the SDS and the VPI might be equally effective to use with samples of noncollege degreed Black male workers.

The present study used a sample of college degreed Black women. Since only four scales of the VPI differentiated among occupational groups while all six scales of the SDS significantly differentiated among occupational groups, the findings tend to suggest that the SDS may be a more effective instrument for this population. This generalization may be only true for the occupations included in this study.
CHAPTER VI

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

This study was undertaken to measure the concurrent validity of Holland's theory as operationalized by the Vocational Preference Inventory and the Self-Directed Search. The two instruments were administered to samples of college degreed Black women who were reasonably well established in an occupational environment representative of Holland's model vocational environments. Several studies have been conducted to investigate the concurrent validity of Holland's theory and the results have tended to be quite favorable. However, only one study has been done using Black samples and none using college degreed Black samples. Given Holland's theoretical statement and the instruments operationalizing the theory, the professional world of work seemed an appropriate place to explore the theory. A second purpose of the study was to explore the relationships between same named scales on the VPI and the SDS.

A sample of 93 college degreed Black women were selected from six different occupational environments. Each subject was asked to respond to the Vocational Preference Inventory, the Self-Directed Search and a biographical questionnaire. All
subjects except one engineer had college degrees and at least one year of work experience. One engineer had only three years in college but did have the requisite work experience.

A multivariate analysis of variance across the 12 scales of both instruments was used to explore occupational group differences. The Tukey (b) was used to further specify group differences. The Pearson Product Moment correlation coefficient was used to examine the relationships among same named scales across the two instruments.

**Major Findings and Conclusions**

Several of the more significant findings and conclusions from this study are reported below:

1) Four vocational scales of the Vocational Preference Inventory (Investigative, Artistic, Social, and Conventional) significantly differentiated among occupational groups (p .05).

2) The Realistic scale and the Enterprising scale of the VPI did not significantly differentiate among the occupational groups (p .05).

3) Each occupational group, when compared to the other five occupational groups, reported their highest mean score on the scale consistent with Holland's theoretical predictions.

4) All six scales (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) of the Self-Directed Search significantly differentiated the occupational groups (p .01).

5) Five of the six occupational groups, when compared to the other five occupational groups, reported their highest
mean score on the scale consistent with Holland's theoretical predictions.

6) The Artistic scale of the SDS failed to differentiate the English Teacher group as predicted by Holland's theory.

7) The results of the investigation of the relationship between same named scales across both instruments showed support at the .01 level of significance between the scales of the Vocational Preference and the Self-Directed Search. The findings were positive and in the predicted direction.

8) In general, the results tend to support the concurrent validity of the VPI and the SDS for the sample of college degree Black women.

Limitations

There are several very obvious limitations with this study which suggest any generalizations should be made with caution.

The sample size is very small and select. The small sample size may be attributable to college degree Black women only recently moving into many of these traditionally male dominated occupations, therefore, providing a small population from which to sample. Generalization to populations differing from the sample should be made with caution.

The study is cross-sectional rather longitudinal, therefore, as in previous studies in this milieu, no statement can be made about the development of a personal orientation.
Implications

The major implication of the findings is that Holland's theoretical model is applicable to college degreed Black women. This study further substantiates Holland's theory with college educated adults in the world of work.

Another implication of the study is that the Self-Directed Search may be a more effective instrument for college degreed Black women. Only four scales of the Vocational Preference Inventory significantly differentiated the occupational groups. All six scales of the Self-Directed Search effectively differentiated among the occupational groups.

Generally, the results of the study imply that the Vocational Preference Inventory and the Self-Directed Search are effective operational definitions of Holland's theory and that the theory, at least for this sample, is valid for college degreed Black women.
# Table 15: Summary of the Demographic Characteristics of Occupational Groups

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>Engineers (N=11)</th>
<th>Physicians (N=15)</th>
<th>English Teachers (N=15)</th>
<th>Social Workers (N=18)</th>
<th>Lawyers (N=18)</th>
<th>Business Teachers (N=16)</th>
</tr>
</thead>
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<tr>
<td><strong>Years in Present Job:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>3 - 5</td>
<td>3</td>
<td>1</td>
<td>8</td>
<td>6</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>6 - 10</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>More than 10</td>
<td>4</td>
<td>8</td>
<td>5</td>
<td>8</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><strong>Age:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>35.5</td>
<td>42.8</td>
<td>32.1</td>
<td>34.8</td>
<td>28.3</td>
<td>32.2</td>
</tr>
<tr>
<td>Range</td>
<td>24-56</td>
<td>27-61</td>
<td>24-48</td>
<td>21-59</td>
<td>23-60</td>
<td>24-41</td>
</tr>
<tr>
<td><strong>Educational Level:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 yrs. college</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B.A. or B.S.</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>9</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Post B.A.</td>
<td>5</td>
<td>15</td>
<td>12</td>
<td>9</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td><strong>Number of Other Jobs Held:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>5</td>
<td>9</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>One</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>10</td>
<td>6</td>
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<td>Two</td>
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<td>2</td>
<td>1</td>
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<td>2</td>
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</tr>
<tr>
<td>Three or More</td>
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<td>5</td>
<td>1</td>
<td>1</td>
<td>4</td>
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</tbody>
</table>
Appendix B

VOCATIONAL SURVEY - BIOGRAPHICAL QUESTIONNAIRE

1. Please give the title of your present job (be specific):

2. Length, in years, of employment in present job:_______

3. Age:_____

4. Last school grade completed (Place an X on appropriate line):

   ___1-6       ___Some college but less than 1 year
   ___7-9       ___1-2 years of college
   ___10-12     ___3-4 years of college

   If you attended college, please give the name of the college:

   __________________________________________

5. Total length of employment in present occupation (if you have changed jobs but all jobs have been the same but for different employers, count that as the total time).

   ___Less than one year   ___Four years
   ___One year            ___Five years
   ___Two years           ___Six to ten years
   ___Three years         ___More than ten years

6. Employment, for a period of six months or more, in an occupation(s) other than your present occupation (Place an X on the appropriate line):

   ___I have never been employed in an occupation other than the one in which I am now employed.
   ___One other occupation  ___Three other occupations
   ___Two other occupations ___More than three other occupations

   If you have been employed in another occupation, please list the last occupation you were employed in prior to
the occupation you are presently in, give specific job title:

_____________________________________________________________________

7. How did you select your current occupation (place an X on the appropriate line):

___I had planned on going into this occupation when I was still in school.

___It was by chance that I am in this occupation.

___I considered other occupations before selecting the one I am in now.

___Other, please describe_____________________________________________

_____________________________________________________________________

8. At the present time (Choose one):

___I am thinking about entering another occupation.

___I do not know if I will stay in this occupation but plan to give it a few more years before making a decision to change.

___I expect to stay in this occupation unless something better comes up.

___I will remain in this occupation until I retire.

9. Are you generally satisfied with your occupation?

___Yes    ___No

(Fishburne, 1973)
Appendix C

Dear Madame:

I am attempting to locate college degreed black women to participate in a research study for my doctoral thesis. My name is Rosie Bingham and I'm a Ph.D. candidate in the Counseling Psychology area at Ohio State University. Your name was referred to me through your professional organization.

As you probably know most vocational theories have been operationalized using white male populations. Recent investigations of John Holland's theory of vocational choice have attempted to expand the theory to include other populations, college degreed white women, non-college degreed white men and non-college degreed black men. Holland basically believes that an individual will select an occupation which expresses his/her personality orientation. My study will investigate the concurrent validity of Holland's theory with college degreed black women. We anticipate another study of non-college degreed black women.

Participation in the study will only involve a very small amount of your time. There will be two short instruments, The Vocational Preference Inventory and the Self-Directed Search, which only require that you respond "like" or "dislike" to a list of occupations and activities.

While your participation will help to substantiate or weaken an entire theory, your participation will be completely confidential. If you desire, the results of the study will also be made available to you.

If you are not willing to participate, please return the enclosed card.

Your help is sincerely appreciated.

Rosie Bingham
Dear

My name is Rosie Phillips Bingham and I am a Ph.D. candidate in the Counseling Psychology area at The Ohio State University. Your name was referred to me either by a mutual friend or through your professional organization. I am attempting to locate a considerably large number of college degreed black women to participate in a research study for my doctoral thesis; therefore, please excuse my need to send you a form letter.

As you probably know, most vocational theories have been operationalized using white male populations. Recent investigations of John Holland's theory of vocational choice have attempted to expand the theory to include other populations, college degreed white women, non-college degreed white men, and non-college degreed black men. Holland basically believed that an individual will select an occupation which expresses his/her personality orientation. He theorized that people in this culture are oriented toward primarily one of six personal/vocational patterns; Realistic, Investigative, Social, Artistic, Enterprising, or Conventional. To investigate the concurrent validity of Holland's theory with college degreed black women, I am asking women from the following representative groups to participate: Engineers (R), Doctors (I), Social Workers (S), English Teachers (A), Lawyers (E), and Business Teachers (C). Your occupational title places you in the group.

Participation in the study will only involve a very small amount of your time. There will be two short instruments, The Vocational Preference Inventory and the Self-Directed Search, which only require that you respond "Like" or "Dislike" to a list of occupations and activities.
While your participation will help to substantiate or weaken an entire theory, your participation will be completely confidential. If you desire the results of the study will also be made available to you.

If you are not willing to participate, please return the enclosed information. However, if you can help I would be just that much closer to graduation! If you have a friend who would like to participate, please enclose her name and address and I will be more than happy to send her a package of material.

Your help is sincerely appreciated.

Thank you,

Rosie Bingham

RPB/kys

Enclosures
Dear

This is the packet of materials you have so graciously consented to complete for me. I hope you will find it interesting and not too time consuming.

You will note in the "Self-Directed Search Booklet" several pages have been "X"ed out. We are not concerned with those pages because they would require that you score the instrument. I will be doing that work. You begin on page 4 and end on page 9.

The "Vocational Preference Inventory" requires that you respond on the answer sheet to both sides.

If you desire further information about the theory enclose a note in your returned package and I will respond.

Thank you for your time and help.

Sincerely,

Rosie P. Bingham
APPENDIX F

FIGURE 2
A Hexagonal Model for Interpreting Inter and Intra Class Relationships on the VPI

FIGURE 3
A Hexagonal Model for Interpreting Inter and Intra Class Relationships on the SDS
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BIBLIOGRAPHY


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