A TEST OF HOLLAND'S HEXAGONAL MODEL OF OCCUPATIONAL CLASSIFICATION USING AN INNER-CITY HIGH SCHOOL POPULATION

by

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DEDICATION

This manuscript is dedicated to all those individuals who have provided me with inspiration and guidance throughout my life and career. I am especially indebted to my wife, Jean, and my daughters, Leslie and Stephanie, for without their love and support this manuscript could not have been completed. I also owe a special thanks to my parents, Mr. and Mrs. Ferguson B. Meadows, Sr.
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Chapter 1

THE PROBLEM

THEORIES OF CAREER DEVELOPMENT

Theories of career development are typically placed into four categories. Perhaps the oldest theoretical approach, which has been known by a variety of names, is commonly known as the trait-factor approach. This system assumes that a straightforward matching of an individual's abilities and interests with the world's vocational opportunities can be accomplished, and once accomplished, solves the problem of vocational choice for that individual (Osipow, 1968).

A second approach might be best described as a sociological model of career development. This approach considers that circumstances beyond the control of the individual have significant influence on career choice. The task confronting the individual is the development of techniques to cope with his environment (Osipow, 1968).

A third approach is the self-concept approach, such as that advocated in recent times by Super (Osipow, 1968). The central theses of this approach are: (1) individuals develop more clearly defined self-concepts as they grow older, although concepts vary to conform with the changes in one's view of reality as correlated with aging; (2) persons develop images of the occupational world which they compare with their self-image in trying to make career decisions; and (3) the adequacy of the eventual career decision is based on the similarity between
an individual's self-concept and the vocational concept of the career eventually chosen (Osipow, 1968).

A fourth category might be called the personality approach to the study of career development. The general hypothesis underlying the personality approach is that workers select their jobs because they see the potential for the satisfaction of their needs (Osipow, 1968). It is from this fourth category that a theory of vocational choice, Holland's Career Typology Theory, was selected.

With the ever-increasing popularity and need for career education, there seems to be a need for a theory that is easy to understand and one that can be easily implemented. Holland's theory has been proven to have merit when applied to highly gifted and talented students. The purpose of this study is to determine if Holland's theory is valid when applied to an inner-city high school population.

Holland's theory of vocational choice represents a combination of two streams of thought in vocational psychology, one of them popular and the other novel. The popular conception is an elaboration of the hypothesis that career choices represent an extension of personality and an attempt to implement broad personal behavioral styles in the context of one's life work. The novel feature is the notion that persons project their views of themselves and the world of work onto occupational stereotypes (Osipow, 1968).

BACKGROUND OF HOLLAND'S THEORY

Holland's theory of vocational choice consists of several basic ideas and their more complex elaborations. According to Holland, people
can be characterized by their resemblance to each of six personality types: realistic, investigative, artistic, social, enterprising, and conventional. The more closely a person resembles a particular type, the more likely he is to exhibit the personal traits and behaviors associated with that type. Second, the environments in which persons live can be characterized by their resemblance to six identical model environments: realistic, investigative, artistic, social, enterprising, and conventional. Finally, the pairing of persons and environments leads to outcomes that can be predicted and understood from knowledge of the personality types and the environmental models. Essential outcomes include vocational choice, vocational stability and achievement, educational choice and achievement, personal competence, social behavior, and susceptibility to influence (Holland, 1973).

Essentially, Holland's theory assumes that at the time of vocational choice the person is the product of the interaction of his particular heredity with a variety of cultural and personal forces including peers, parents and significant adults, social class, American culture, and physical environment (Peters and Hansen, 1966). Thus, according to Holland, a person will seek an occupation in harmony with his personality type.

Holland's conception of career development grew from his experiences as a vocational counselor in educational, military, and psychiatric settings. He observed that most persons view the vocational world in terms of occupational stereotypes. Instead of concluding that such stereotyping confuses people and causes vocational counselors extra difficulty, Holland turned the stereotyping process to his advantage by
assuming that it is based on the individual's experiences with work, thus being based on reality and possessing a high degree of accuracy and utility. Holland further hypothesized that where the individual possesses little knowledge about a particular vocation, the stereotype he holds reveals much information about him, much in the manner that a projective test presumably exposes personality dynamics (Osipow, 1968). Thus Holland set out to develop a list of occupational titles that would be useful as a device onto which a person could project his preferred life style.

In 1959, an a priori classification of six categories was proposed (Holland, 1959). The six original classifications were: Motoric, Intellectual, Supportive, Conforming, Persuasive, and Esthetic. Later, Holland (1966a, 1966b) defined the major categories of the classifications as realistic, intellectual, social, conventional, enterprising, and artistic, in terms of the Vocational Preference Inventory (VPI) scales having the same name. The VPI is a brief inventory of a person's interests consisting of 160 occupational titles (Holland, 1965). People take the inventory by indicating the occupations they "like" or "dislike." Each occupational title is assigned a scale or category. Thus, the VPI scales consist of six groups of occupations, one group for each scale or occupational class.

In 1969, Holland further revised his occupational classification. The VPI was still the main instrument used but the categories were arranged according to a hexagonal model (Figure 1). The hexagonal model was discovered when it was noticed that the intercorrelational matrix for the VPI scales used in the classification can be approximated by the
Figure 1

A Hexagonal Model for Defining the Psychological Resemblances among Types and Environments.
(Source: Holland, et al., 1969)

This geometric model arranges student occupational aspirations according to their psychological relatedness, thereby making the classification more useful for vocational guidance and research in careers. In the hexagonal model, the main categories are arranged as follows: realistic, investigative, artistic, social, enterprising, and conventional (proceeding around the hexagon in a clockwise direction), so that adjacent categories are most closely related. In general, close relationships are represented by short distances on the hexagon.

Osipow (1968) indicated that investigations based on Holland's theory are impressively extensive. Osipow further stated that there is considerable evidence to indicate that personal orientations exist much as Holland has described them. However, there are several shortcomings to the theory that Holland himself has pointed out. The applicability of the theory to women is limited and the theory must be revised to account for the vocational development of women.

Walsh (1973) indicated that the research based on the theory seems to support the existence of the personality types and environmental models as elaborated in the original theoretical formulation. It should be noted, however, that most of the initial studies testing the theory have been conducted on samples of talented high school and college students.

STATEMENT OF THE PROBLEM

The problem of this study is an attempt to determine the extent to which Holland's Vocational Preference Inventory is applicable to an
inner-city high school population. For the purpose of this study, the following questions have been formulated.

1. What are the relationships between the occupational classifications of Holland's theory when an inner-city high school population is used?

2. What is the relationship between the occupational classifications of Holland's national sample and the occupational classifications of an inner-city high school population?

3. What is the relationship between the rank ordering of the intercorrelations of the occupational classifications of Holland's national sample and the rank ordering of the intercorrelations of the occupational classifications of an inner-city high school population?

4. What are the dominant personality types of an inner-city high school population as measured by Holland's Vocational Preference Inventory?

NEED FOR THE STUDY

There have been a number of studies conducted to test the validity of Holland's hexagonal model (Holland, 1962, 1963 a, 1963 b, 1964 a, 1968; Holland and Nichols, 1964; Holland, Whitney, Cole, and Richards, 1969). Most of the studies used highly talented high school and college students as a sample. Crabtree (1971) assessed rural high school and college students with the Vocational Preference Inventory and obtained results similar to those of Holland and others. Parsons (1971) applied Holland's theory of vocational choice to investigate the occupational mobility of men age 45-59.
To date, there has not been any work done on the validity of Holland's hexagonal model as it applies to an inner-city high school population. Justification for the need to further test Holland's theory can be summarized as follows:

1. To date, there have not been any studies conducted to determine the applicability of Holland's theory to inner-city high school students. Thus, there is a need for more information about the model, and this information could be gathered by testing the model using different populations. Additionally, Holland has suggested that his theory needs to be tested using different populations.

2. Extending Holland's theory to include inner-city high school students could be helpful to counselors and teachers by providing them an additional tool to aid them in career exploration activities.

3. Extending Holland's theory to include inner-city high school students might provide such students with a model to assist them in making appropriate career choices.

4. Historically, inner-city high school students have scored differently on tests than non-inner-city students. It would seem appropriate to validate the usefulness of an instrument before making general statements about its applicability.

5. Inner-city students tend to have the highest reported dropout rates. Additional assistance in the area of career exploration might help reduce this high drop-out rate, or at least provide alternatives if students do drop out.
Prediger, Roth, and Noeth (1974) conducted a study to assess and summarize core aspects of the career development of American youth. A nationally representative sample of approximately 32,000 eighth, ninth, and eleventh graders in two hundred schools participated in the study. One of the major findings of the study was that the majority of the students (73%) indicated a need for assistance in making career plans. In sharp contrast to the students' indicated need for assistance in making career plans was the amount of help they actually received. Half of the eleventh graders and slightly more eighth graders indicated that they received little or no help in career planning (Prediger, Roth, and Noeth, 1974).

If the above is true nationally, then it can be assumed that the problem is at least as prevalent in inner-city high schools. Thus, extending Holland's theory to include inner-city high school students could provide teachers, counselors, and students with a career exploration instrument which can be easily administered, scored, and interpreted.

DEFINITION OF TERMS

For the purposes of this study the following terms have been defined:

1. Career Development--a process covering an individual's total work-life, which includes all work and work-related activities (paid or non-paid), and includes initial training for an occupation, retraining, and leisure time activities.

2. Vocational Preference Inventory (VPI)--an instrument developed by Holland to assess the personality types of his
theory of vocational choice.

3. Hexagonal Model—a geometric figure developed by Holland to display the relationships among the personality types of the VPI.

4. Inner-City Schools—schools generally located in slum areas, of low income, high transiency, high delinquency, both Black and White students.

5. Holland's National Sample—subjects tested in the sixth revision of the VPI which included a sample of employed adults (majority were college graduates), National Merit Finalists, college freshmen, research personnel (engineers, technicians), salesmen, and Black college students.

LIMITATIONS OF THE STUDY

1. This study was not intended to be representative of all non-college populations, but one different from those previously tested by Holland and others.

2. This study was not intended to be representative of all inner-city high school environments. While the data are appropriate for the establishment of local norms, their use in formulating generalizations would be limited.

3. One other limitation of the study involved the readability of some of the items for a few of the students. Although this was overcome to some extent by allowing the students to ask about the pronunciation of the terms they could not read, it is possible that some students did not seek
assistance for some of the words they did not understand.

**ORGANIZATION OF THE REMAINDER OF THE STUDY**

Chapter 2 is concerned with a review of the literature related to Holland's theory. The review of the literature includes the basic assumptions underlying Holland's theory, the development of the Vocational Preference Inventory, the development of the theory, the personality types, and subtypes. Additionally, Holland's conception of occupational level, the environmental models, and a description of inner-city school students are included. Chapter 3, Research Methodology, includes the population used in the study, the instrument, procedure for administration, hypotheses, and an analysis of the data. In Chapter 4 the findings of the study are presented. Chapter 5 includes a summary, conclusions, implications, and recommendations for further research.
Chapter 2

REVIEW OF LITERATURE

INTRODUCTION

This chapter includes the basic assumptions underlying Holland's theory, the development of the Vocational Preference Inventory (VPI), and the development of the theory. Also included in this chapter is a discussion of the personality types and subtypes, Holland's definition of occupational level, and the environmental models. A section describing the inner-city school student and his environment is also included.

ASSUMPTIONS OF HOLLAND'S THEORY

Four working assumptions constitute the central bases of Holland's theory. These assumptions indicate the nature of the personality types and environmental models, how the types and models are determined, and how they interact to create the phenomena the theory is meant to explain. These assumptions are outlined in Making Vocational Choices: A Theory of Careers (Holland, 1973).

The first assumption, according to Holland, is that in the American culture, most persons can be categorized as one of six types: realistic, investigative, artistic, social, enterprising, and conventional. The description of each type is given later on in this chapter. The description of each type is both a summary of what is known about people in a given occupational group and a special way of comprehending this
information. It is a theoretical or "ideal" type. A type is a model against which the real person can be measured. Each type is the product of a characteristic interaction between a variety of cultural and personal forces, including peers, parents, social class, culture, and the physical environment (Holland, 1973).

Secondly, Holland believes there are six kinds of environments that correspond to the six personality models. These environments are realistic, investigative, artistic, social, enterprising, and conventional. Each environment is dominated by a given type of personality. For example, realistic environments are dominated by realistic types—that is to say that the largest percentage of the population in a realistic environment resembles the realistic type. Likewise, a social environment is dominated by social types.

Because different types have different interests, competencies, and dispositions, they tend to surround themselves with people who are similar types, and to seek out problems that are congruent with their interests, competencies, and outlooks. Thus, where people congregate, they create an environment that reflects the types they are, and it becomes possible to assess the environment in the same terms as personality types are determined (Holland, 1973). A description of the environmental models will be detailed later in this chapter.

A third assumption that Holland makes is that people search for environments that will permit them to exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles (Holland, 1973). Realistic types seek realistic environments, social types seek social environments. To a lesser extent, environments
also search for people through friendships and recruiting practices. For example, people search for people much like themselves when making friendships and recruiting for positions (Holland, 1973).

A fourth assumption of Holland's is that a person's behavior is determined by an interaction between his personality and his environment. If one knows a person's personality pattern and the pattern of his environment, one can, in principle, use his knowledge of personality types and environmental models and forecast the outcomes of such a pairing. Such outcomes include choice of vocation, job changes, vocational achievement, personal competence, and educational and social behavior (Holland, 1973).

Holland (1973) discusses several secondary assumptions that supplement the four key assumptions. The secondary assumptions are:

Consistency. Within a person or environment, some pairs of types are more closely related than others. For example, realistic-investigative have more in common than conventional-artistic. Degrees of consistency or relatedness are assumed to affect vocational preferences—realistic-investigative should be more predictable than realistic-social.

Differentiation. Some persons or environments are more closely defined than others. For example, a person may closely resemble a single type and show little resemblance to other types, or an environment may be largely dominated by a single type. In contrast, a person who resembles many types or an environment that is characterized by about equal numbers of the six types would be labeled undifferentiated or poorly defined.

Congruence. Different types require different environments. For instance, realistic types flourish in realistic environments because such an environment provides the opportunities and rewards a realistic type needs. Incongruence occurs when a type lives in an environment that provides opportunities that are foreign to the person's preferences and abilities—for instance, a realistic type in a social environment.

Calculus. The relationships within and between the types or environments can be ordered according to a hexagonal model—the
shorter the distance between any two types, the greater their similarity (Holland, 1973, pp. 4-5).

The secondary concepts of Holland's theory have two purposes: to improve the predictions obtained by the main concepts and to substitute degrees of consistency, differentiation, and congruence for the all-or-none definitions of the same concepts provided earlier (Holland, 1960).

These four assumptions serve as the basis for the development of the remainder of this chapter. First, the development of the theory is discussed from its early beginnings to the present; secondly, the personality types and related research are explored; third, the environmental models and related research are included; and finally, Holland's idea of vocational choice and the interaction between personality and environment are covered.

DEVELOPMENT OF THE VOCATIONAL PREFERENCE INVENTORY

It is difficult to pinpoint the exact beginning of Holland's theory. Holland has indicated that his present types are somewhat analogous to the types proposed earlier by Adler (1939), Fromm (1947), Jung (1933), Sheldon (1954), Spranger (1928), and others not identified.

The notion of assessing environments by characterizing the people in a particular environment came from Linton (1945), who suggested that a major portion of the force of the environment is transmitted through other people. The typology thus became a method for engineering Linton's idea; that is, by calculating the distribution of types within an environment the environment will be known.

The development of Holland's theory has spanned some fifteen years. Perhaps the earliest study (Holland, 1958) was the study which
introduced the Vocational Preference Inventory, then known as the Holland Vocational Preference Inventory (HVPI). Essentially the HVPI was a personality inventory which used occupational titles for content.

The rationale for the inventory is summarized by the following points:

The choice of an occupation is an expressive act which reflects the person's motivation, knowledge, personality, and ability.

The interaction of the person and his environment creates a limited number of favorite methods for dealing with interpersonal and environmental problems.

The development of adequate adjustive techniques requires accurate discriminations among environments.

The total number of preferred occupations is a function of the number of personality variables.

The inability to make discriminations among occupations is indicative of conflict and disorganized self-understanding.

Interest inventories are personality inventories (Holland, 1965, pp. 2-4).

The first form of the inventory was established by constructing eight a priori scales: Physical Activity, Intellectuality, Responsibility, Conformity, Verbal Activity, Emotionality, Reality Orientation, and Acquiescence.


At this time it would be explanatory to describe the Vocational
Preference Inventory as it is now, and a definition and explanation of the personality types are given later on in this chapter. To assess an individual's personality orientations, Holland has developed the VPI. The rationale for the development of this instrument is based on the assumption that preferences for occupations are expressions of personality. To the degree an individual prefers a large number of occupations associated with a particular personality orientation, his favored coping behaviors for dealing with interpersonal and environmental problems may be inferred. In this sense, a person's choice of an occupational title on the VPI tells us something about his or her understanding, motivation, and knowledge of that occupation. Under certain conditions, the inability to make discriminations among occupations is seen to indicate conflict and personal problems (Walsh, 1973). Thus, according to Holland (1965), interest inventories are in effect personality inventories, and an individual's vocational preferences represent a major facet of his or her personality.

In its present form the VPI is composed of 160 occupational titles. It is self-administering; individuals simply record their preferences for occupations on an answer sheet. Although the primary purpose of the VPI is to assess personality, it may also be used as a conventional interest inventory as well as to stimulate occupational exploration by the person taking it (Holland, 1965).

Initially, the VPI scales were developed on an a priori basis. The forms and revisions that followed the original instrument were consequences of a series of rational empirical steps. The sixth revision is composed of eleven scales: the six model orientations, realistic, investi-
gative, artistic, social, enterprising, and conventional; the additional scales of Self-Control, Masculinity, and Status; and two response set scales entitled Infrequency and Acquiescence (Holland, 1965).

The Self-Control Scale measures the inhibition of impulses to act out motivation, thinking, or fantasy. High scorers on this scale tend to be inhibited, constricted, passive, and responsible. Low scores indicate impulsiveness and a tendency to act out.

On the Masculinity Scale, high scores indicate frequent choice of conventionally masculine occupational roles. The low scores suggest conventionally feminine choices. This scale may be seen as assessing the degree of a person's identification with the conventional or stereotyped gender roles of our society.

The Status Scale purports to assess an individual's concern for prestige and power. In addition, this scale attempts to provide an estimate of the individual's self-esteem and self-confidence.

The Infrequency Scale is similar to what might be considered a personal effectiveness scale. Low scorers on this scale have realistic perceptions of the occupational world, report high vocational aspirations, and indicate confidence in their abilities and personality. High scorers report atypical vocational preferences suggesting possible negative self-attitudes.

The primary purpose of the Acquiescence Scale is to detect avoidance behavior. However, high scores on this scale are considered to indicate a sociable, cheerful, active, frank, and conventional outlook about the vocational world. Low scores suggest an unsociable, passive, defensive, and unconventional outlook.
There have been a number of studies conducted to assess the validity and reliability of the VPI. These studies are discussed in Chapter 3.

DEVELOPMENT OF THE THEORY

In an early study Holland (1962) used the VPI with two large samples of bright high school students (National Merit Finalists) over one- and two-year periods. Using VPI scale scores, vocational choice, or choice of major field to define a student's type, Holland found that a broad range of personal characteristics was associated with the types. This study also uncovered major shortcomings: (1) the findings for a particular type often overlapped those for a similar type, and (2) the findings of an earlier study (Holland, 1959) were not sufficiently explicit or comprehensive to cope with the wealth of information that the data for this study presented.

In a second study, Holland (1963) conducted a four-year longitudinal study of the vocational choice and achievement of a single high aptitude sample. In this study as in earlier ones, Holland used National Merit Finalists (N = 592) as his sample. This study was different from the first in two ways: first the time interval was longer (first to fourth year of college) and secondly the scales of the Strong Vocational Interest Blank were used.

The results of this study suffered from many of the same limitations as the original statement of the theory. First, the ambiguous portions of the original statement did not permit a rigorous testing of most of the hypotheses. On the other hand, the major hypotheses about
model orientations and motivation to achieve appeared to be helpful in organizing information about vocational choice. Additionally, the person's high-point code on the Strong or VPI was at best a crude index for classifying him, since it used only a small part of the total information in a profile (Holland, 1968). One positive result of this study was that it was demonstrated that the scales of the Strong Vocational Blank can be used in the occupational classification scheme of Holland's theory.

A third study (Holland, Nichols, 1964) was conducted to study changes in major fields over a one-year period. Again in this sample National Merit Finalists (332 boys and 181 girls) were assessed at the end of their senior year in high school and again at the end of their freshman year in college.

Students were first classified by their initial major field preference into one of six groups according to Holland's occupational classification. At the end of the student's freshman year the student's initial preference was then compared with his present preference for major field. If a student expressed an interest in an identical field both times he was classified as a "non-changer" and coded 1. If a student expressed an interest in another major field, but one falling within the same class as his original major, he was classed an "intra-class changer" and coded 2. If a student expressed a preference for a second major field in a different class he was called an "inter-class changer," and coded 3. Thus through coding it was possible to give numerical weights to the degree of stability in a student's study plans. In general, the results indicated that change in major field is a func-
tion of a rather large number of personal variables and achievements. Holland did demonstrate that remaining in a given field (classified according to typology) appears to be related to having personal attributes commonly associated with those of the typical student; leaving a field is related to dissimilarity between a student's attributes and those of the typical student. For example, boys who left realistic fields (largely engineering in this instance) appeared to be irresponsible, original, tolerant of ambiguity, and complex in outlook. In contrast, boys who remained in realistic fields were responsible, unoriginal, intolerant of ambiguity, and simple in outlook.

In a following report, Holland (1963-64) studied a sample of National Merit Finalists (360 boys and 278 girls) to test some hypotheses about types. An analysis of the data showed that students who were classified as different types according to their VPI scores described themselves in ways similar to scale scores. For example, boys who were classified as investigative on the VPI described themselves as being analytical, curious, hard-headed, imaginative, intellectual, mechanical, not popular, quiet, reserved, scholarly, and scientific. Similar results were obtained when types were studied for their reactions to stress, competencies in various fields, and most enjoyable activities. Boys with high scores on the realistic scale of the VPI said that they "most enjoy working with their hands, tools, or instruments"; that they would find it frustrating to "take patients in mental hospitals on recreational trips"; that they believed their "greatest ability lies in the area of mechanics"; and that they are "most incompetent in the area of human relations" (Holland, 1963-64).
In a fifth study Holland (1964) using a sample of 1437 National Merit Finalists, correlated VPI scores with self-ratings, life goals, and achievements. The results indicated that student characteristics were associated with the personality types.

In a sixth study Holland (1968 b) used a large sample of college freshmen from twenty-eight colleges with a wide range of academic ability and social status (1576 men and 1571 women). Though this sample was not a representative one, it did permit a large scale test of the theory with a relatively normal group rather than National Merit Finalists. Students were categorized as types and sub-types according to their VPI scores and then compared on twenty-two dependent variables including competencies, life-goals, self-ratings, and personality and attitudinal variables.

The results of this study were much the same as earlier studies, though the following differences were found: (1) The results for women were more positive than those for men. In all earlier studies the reverse had been true. (2) The overlapping among types remained but seemed less pronounced than before. (3) The statistical tests revealed that people with similar codes have similar characteristics.

In another study Walsh and Lacey (1969) attempted to determine if male senior college students assigned to one of Holland's personality types (using college major as the criterion) perceived themselves as having changed in a direction consistent with the profile of that type during the college years. An analysis of the data seemed to indicate that for three of the groups (engineering, chemistry, and fine arts), perceived change was associated with the personality type.
A further investigation of Holland's theory was conducted by Folsom (1969). The purpose of this study was to determine the accuracy of the descriptions of Holland's personality types. The null hypothesis tested was that no significant differences would be found between the personality types when their mean scores were compared on the College Student Questionnaire. The original sample consisted of 1281 University of Maine students who had taken the College Student Questionnaire during summer orientation. The CSQ contains a section listing sixty-nine possible college majors. Three judges independently categorized these sixty-nine college majors into the six personality classifications proposed by Holland. The results of the analysis of variance indicated that with the exception of the enterprising type, Holland's descriptions of the personality types were generally consistent with the ways in which students classified within the types described themselves on the CSQ scales (Folsom, 1969).

Cowan (1971) extended Holland's occupational classification to all titles in the Dictionary of Occupational Titles (D.O.T.). Holland, Sorenson, Clark, Nafziger, and Blum (1971) applied Holland's occupational classification to a representative sample of adult work histories. The most significant result of this study was that realistic categories appeared to be the best predictors of vocational choice.

Cole, Whitney, and Holland (1971) did a mathematical analysis of the relationships among the six scales of the VPI. The results of this study gave further support to Holland's hexagonal model in that it demonstrated that groupings of occupations did exist as suggested by Holland and others.
A more recent development in Holland's theory was the merger of Holland's typologies with the Strong Vocational Interest Blank (Campbell and Holland, 1972). Six Vocational Preference Inventory Scales were formulated for the Strong Vocational Interest Blank. This was done by using the definitions of the personality types and the occupational titles formulated by Holland. Campbell's scales, composed primarily of occupational titles in the Strong Vocational Interest Blank, are similar to corresponding scales on the VPI.

In a sample of seventy-six occupations, the Campbell form of the VPI and the sixth revision of the VPI agreed on the main classifications of an occupation about 84 percent of the time. The next two letters of the profile were rarely identical, but most of the occupations received the same three highest letters of the VPI scale. An explanation of profile (personality pattern) is given later in the chapter.

There have been other studies that are related to the investigation of Holland's theory. In 1967, Wall, Osipow, and Ashby attempted to determine if there is any relationship between SVIB scores and Holland's personality types. The sample for the study consisted of 186 male freshmen at the Pennsylvania State University. Data were collected concerning Holland's personality types, students' self-descriptions according to personality types, and the first through fifth vocational choices of the students. The results confirmed the expected relationship between SVIB scores and Holland's personality types.

Perhaps the study most similar to the one presently being conducted was undertaken by Crabtree (1971). The Crabtree study tested the validity of Holland's theoretical model to determine if it had validity
when applied to a rural high school population.

The subjects of this study were 1431 seniors (759 males and 672 females) in the Lawrence, Pike, and Scioto County school systems in southern Ohio. The population from which the sample was taken was totally small town or rural in nature. The instrument used to determine the occupational classifications was the Vocational Preference Inventory.

The results of the study as reported by Crabtree (1971) indicated that the hexagonal configurations obtained by Crabtree were similar to Holland's theoretical model. A principal components analysis revealed that Crabtree's study gave a higher percentage of trace on the first three factors (82 and 81 percent for males and females) as compared to Holland's study (78 and 76 percent) (Crabtree, 1971).

The rank order of the relationships among the six scales were about the same for both Holland's and Crabtree's studies. Pictorially, the two hexagonal models were similar. There were, however, some differences in the relationships between the occupational classifications (Crabtree, 1971). In summary, Crabtree (1971) indicated that the results obtained were similar to those of Holland's sample, and that the findings of his study gave positive support to certain areas of Holland's theory.

One other study conducted by Peck (1970) attempted to test Holland's theory of vocational choice with community college students. The study conducted by Peck attempted to answer two questions:

1. Is Holland's theory of vocational choice applicable to students of a community college?

2. Is Holland's Vocational Preference Inventory (VPI) a useful
instrument to help the counselor implement the theory?

The subjects of the study were 318 students (193 male, 125 female) at Lane Community College, Eugene, Oregon. To answer question one, six null hypotheses were formulated to test the relation between the six types of vocational choice for the students.

In answer to question one, the data in the study indicated a strong relation between personality type and vocational choice for community college students. In this respect, Holland's theory was considered applicable to community college students.

In response to the second question, "useful" was defined as the effectiveness with which the VPI predicted the type. No hypotheses were formulated because of the exploratory nature of the question. However, the data pertinent to this question were analyzed by coefficient of contingency. It was determined that the VPI was an effective instrument in predicting the type of vocational choices made by the students.

In another community college study, Reed (1969) analyzed the performance of Central Virginia Community College (CVCC) on the VPI. The primary results were that both male and female CVCC students were dissimilar to the students in the national normative sample.

Holland also developed the Self-Directed Search (SDS) (Holland, 1970). The SDS is an inventory-type tool that is easily self-administered, self-scored, and self-interpreted. To make use of the SDS, one merely fills out the assessment booklet and obtains a three-letter code. He then goes to the occupational classification booklet and finds the occupations that correspond to the three-digit code. The occupational classification booklet also gives the level of education required for
the particular occupation and the Dictionary of Occupational Titles number.

The results of the research conducted by Holland and others tend to indicate the following:

1. That the personality types do indeed exist.
2. That students tend to describe themselves in ways that are consistent with their VPI scores.
3. That the VPI has moderate predictive validity over short intervals.
4. That students who remained in a specific field had attributes similar to those of the typical student, and that leaving the field is related to dissimilarity between a student's attributes and those of the typical student.
5. The results of earlier studies indicated that the finding for a particular type often overlapped those for a similar type.
6. That the high point code on the VPI or the Strong was not sufficient for classifying an individual.
7. That generally the findings for men were more positive than for women, though there were some exceptions.
8. That people with similar codes have similar characteristics.
9. That the constructs of the VPI were similar to the constructs of other interest inventories, notably the Strong Vocational Interest Blank.
THE PERSONALITY TYPES

According to Holland there are six personality types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. These types are assumed to represent the common outcomes of growing up in our culture. Each type is assumed to develop according to the following formula: To some degree, types produce types. Although parental attitudes play a minor and complex role in the development of a child's interests, the assumption here is that each parental type provides a large cluster of environmental opportunities, as well as some deficits which extend well beyond parental attitudes. For example, realistic parents (their child rearing attitudes aside) engage in characteristic realistic activities in and out of the home; surround themselves with particular equipment, possessions, materials, and tools; and select realistic friends and neighbors. At the same time, realistic parents tend to ignore, avoid, or reject some activities and types more than others. For instance, realistic parents will be expected to reject social activities, people, and situations. In short, parents create characteristic environments that include attitudes as well as a great range of environmental experiences (Holland, 1973).

In addition, children create their own environment to a limited degree by their demands upon parents and by the manner in which parents react to and are influenced by children (Bell, 1968). Presumably, the more a child resembles a particular parent, the more reward he will receive—so parent-child relationships, like other personal relationships, may demonstrate that types are attracted to types (Holland, 1973).
Holland assumes it is possible to characterize people by the degree of their resemblance to one or more personality types, the individual's dominant orientation being the product of his or her life history, the common outgrowth of growing up in our culture (Holland, 1973). Holland has described each type in terms of a theoretical model orientation. A given model orientation is presented in terms of individuals' adaptive behaviors, needs, motives, self-concepts, life-histories, and educational and vocational goals. Thus, an individual's personality pattern is identified by his or her resemblances to each of the six orientations. An individual's personality type is said to be reflected by the orientation that he or she most closely resembles (Walsh, 1972). The following are the descriptions of the theoretical model orientations (Holland, 1973).

The Realistic Type--The realistic person is one who perceives himself as having mechanical and athletic ability. He prefers activities involving motor coordination and skill, and prefers acting out problems as opposed to thinking things out. He attempts to avoid activities which require social competencies, and may appear to be shy, conforming, frank, masculine, and uninvolved (Holland, 1973).

The Investigative Type--The investigative person prefers thinking through as opposed to acting out problems. He perceives himself as being scholarly, intellectually self-confident, and having mathematic and scientific ability. The investigative person has an aversion to situations requiring social or persuasive competencies, and is apt to show himself to be analytical, cautious, curious, critical, and reserved (Holland, 1973).
The Artistic Type--The artistic person prefers situations which will enable strong self-expression. The artistic person dislikes structure and prefers activities emphasizing physical skills. The artistic person is more feminine than masculine and is apt to show himself to be complicated, disorderly, emotional, original, feminine, and idealistic (Holland, 1973).

The Social Type--The social type prefers teaching or therapeutic roles. The social type perceives himself as liking to help others, understanding of others, and having teaching ability. He perceives himself as lacking in mechanical ability, and is apt to show himself to be cooperative, helpful, friendly, feminine, generous, sociable, and idealistic (Holland, 1973).

The Enterprising Type--The enterprising type is verbally skilled and uses these skills to manipulate and dominate people. The enterprising person perceives himself as aggressive, popular, self-confident, sociable, and possessing leadership and speaking abilities. Enterprising types dislike structure and are apt to show themselves to be adventurous, ambitious, argumentative, domineering, impulsive, and talkative (Holland, 1973).

The Conventional Type--The conventional person has a great concern for rules and regulations. He prefers activities such as record-keeping, filing materials, reproducing materials, etc. The conventional person has an aversion to free, exploratory, or unsystematized activities. The conventional type perceives himself as conforming, orderly, and having clerical ability. He is apt to show himself to be conforming, conscientious, defensive, inflexible, obedient, and prudish (Holland, 1973).
A person's personality pattern is his profile of resemblances to the personality types. Subtype is a name for a particular personality pattern. Personality patterns and subtypes may consist of two to six variables or types. The number of variables used is a matter of convenience, number of subjects, and judgment (Holland, 1973). Table 1 illustrates how the six scales of the VPI define a person's personality pattern and how that pattern is coded for research or clinical use.

A further explanation of how a person's personality subtype is defined can be drawn from Table 1. For example, subject "A" with the personality pattern ESIC (Enterprising, Social, Conventional) scored highest on the Enterprising Scale, followed by the Social and Conventional Scales. By using the Occupations Finder it could be determined that occupations typical of this personality profile would be administrative assistant, employment interviewer, government official, sales manager, or insurance investigator. The same process can be applied to the personality patterns of subjects "B" and "C".

OCCUPATIONAL LEVEL

Another concept introduced by Holland is that of "level of occupational choice." Occupational level is intelligence plus self-evaluation (Holland, 1959). To simplify this idea, the formula for the level of occupational choice was revised in terms of personality patterns. At present the closer a person's resemblance to an identified personality pattern, Enterprising, Social, Artistic, Investigative, Conventional, Realistic, the greater his expected vocational aspiration and eventual
Table 1

The Coding of Interest Inventory Scales for the Study of Types and Subtypes

<table>
<thead>
<tr>
<th>Subject</th>
<th>Real.</th>
<th>Int.</th>
<th>Art.</th>
<th>Soc.</th>
<th>Ent.</th>
<th>Con.</th>
<th>Personality Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7</td>
<td>2</td>
<td>8</td>
<td>13</td>
<td>14</td>
<td>12</td>
<td>ESC</td>
</tr>
<tr>
<td>B</td>
<td>9</td>
<td>12</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>IRE</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>4</td>
<td>10</td>
<td>7</td>
<td>6</td>
<td>2</td>
<td>ASE</td>
</tr>
</tbody>
</table>

VPI Scale Scores (Holland, 1973)

Note: Numbers represent each subject's score on each scale of the VPI.
achievement (Holland, 1966 b). There have been a number of studies conducted to test the validity of this concept (Stockton, 1967; Hughes, 1971; Holland, 1962). All of the studies have supported the idea of level of vocational choice.

THE ENVIRONMENTAL MODELS

To predict behavior efficiently, Holland argues that it is necessary to assess the environment as well as the personality (Walsh, 1973). To accomplish this task, six model environments have been proposed to characterize the common social and physical environments in our culture. The model environments correspond to the personality types (Holland, 1973).

Just as real people can be assessed by comparing them with personality types, real environments are assessed by comparing them with models—that is, with the descriptions of hypothetical environments. The personality type reflects vocational choices. An environmental model may be defined as the situation or atmosphere created by the people who dominate a given environment. For instance, a social environment would be dominated by social types (Holland, 1973).

Because the personality types and the environmental models share a common set of contracts, it is possible to classify people and environments in the same terms and thus predict the outcome of pairing people and environments. More explicitly, what will happen when a particular person is put into a particular environment can be predicted.

The descriptions of the model environments parallel the formulations for the personality types in that both focus on activities, com-
petencies, perceptions, and values, and thus a description of the various models will not be included.

The Environmental Assessment Technique was developed to assess the different environments. The EAT involves taking a census of the occupations, training preferences, or vocational preferences of a population. These preferences or occupations are categorized according to one of the six environments. This classification results in a six-variable profile similar to that of the personality types. The absolute numbers for each type are then converted to percentages of the total population for the particular environment. An example of how the EAT is used is given in Table 2. The profile for this population would be CERSIA (Conventional, Enterprising, Realistic, Social, Intellectual, Artistic).

There have been a number of studies conducted to test the validity of the EAT. Astin and Holland (1961) discovered that the description of a college obtained from the College Characteristic Index could be predicted by using the EAT. In another study Astin (1965) looked at the effect of different college environments on the vocational choices of high aptitude students. The results provided further support to the EAT in that in this particular study the student's career choice seemed to conform to the dominant career choice in his college environment.

While Astin has conducted extensive studies into the validity of the EAT, there have been a number of other studies that in one way or another looked at the EAT. Richard, Seligman, and Jones (1970) studied
Table 2
The Environmental Assessment Technique

<table>
<thead>
<tr>
<th>Type</th>
<th>Number (Subjects)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic</td>
<td>20</td>
<td>10%</td>
</tr>
<tr>
<td>Investigative</td>
<td>8</td>
<td>4%</td>
</tr>
<tr>
<td>Social</td>
<td>12</td>
<td>6%</td>
</tr>
<tr>
<td>Conventional</td>
<td>128</td>
<td>64%</td>
</tr>
<tr>
<td>Enterprising</td>
<td>28</td>
<td>14%</td>
</tr>
<tr>
<td>Artistic</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td></td>
</tr>
</tbody>
</table>

Holland, 1973, p. 34
profiles for undergraduate and graduate environments. Richard, Bulkeley, and Richards (1971) characterized the faculty and curriculum of ninety-four two-year colleges, with results similar to Holland's findings.

There seems to be much evidence that the environmental models that Holland discusses do exist; however, there seems to be a need for the EAT to be tested using different populations.

INNER-CITY SCHOOL STUDENTS

It is important that any study dealing with inner-city students should include a description of such a student. Any attempt to describe the child of the central city is full of pitfalls. Individual differences exist here as in any segment of society. With the understandable emphasis on the plight of Blacks, it is important to note that other groups—Puerto Ricans, southern mountain whites, Mexicans, and Chinese—reside in such areas. Both among and within these groups wide variations appear. Many of the so-called "culturally deprived" families are not culturally deprived. They are merely poor. They need more money, better housing, more dignified jobs, and increased respect as human beings regardless of race or origin (Levenson, 1968).

The model for all social relationships begins with the family unit. The home and the immediate neighborhood represent the real world for most young children. The inner-city child is also a product of his family unit. Within most families the child's first learning is on a highly personal basis. The child's early learning is centered upon adapting to his environment. Because the child is instinctively ego-centric, he tries to adjust the environment to his wishes rather than
adapting to it. He attempts (and may succeed) in altering certain family patterns to fit his particular needs. But the lower-class family is not usually child-centered. The pattern of family life is often such that the child cannot assert himself and is not allowed to participate in the making of family decisions (Levenson, 1968).

In the lower socioeconomic family unit, marginal employment is frequently teamed with dependency on public welfare. Life is a constant struggle for economic security. Such a family has too much difficulty living from day to day to concern itself with the decision-making development of its youngsters (Levenson, 1968).

A large number of children live with one parent or both, and in many cases with additional adults and children who are in some way related. They usually live in crowded, substandard housing, in which a private bathroom or their own bed is a luxury.

The adults in the household are usually poorly educated and often an aunt or grandmother plays the role of substitute parent while the parents are out earning the essentials for survival. The household usually lacks a firm routine and very early in the child's experience close supervision is relaxed; and the peer group of the street assumes the role of socializing agent and source of values (Levenson, 1968).

Because of their struggle for existence, the lower socioeconomic family often places different values upon education and work than do most middle-class families. The inner-city student learns that education as a means to occupational success has little value as an end in itself. He learns that his parents view work in terms of security and immediate gratification of consumer desires. The notion that achieve-
ment is eventually rewarded is not widespread in the inner-city (Levenson, 1968).

To suggest that the lower-class family has no strengths would be incorrect, for the child who grows up in the overcrowded, multi-adult home is usually free from the anxiety about competition and the search for individual worth found in the middle-class home. The child learns to give mutual aid, to become cooperative, and to enjoy other members of his family because he does not have to compete with them. These same strengths that he receives from the home, however, are barriers when he goes to school. Lack of competitiveness, clannishness, lack of self-discipline, and lack of individuality make his school experience more difficult (Levenson, 1968).

Considering what has just been said concerning the inner-city school student, it would appear that one of the differences between the inner-city school student and the white middle class is that of motivation. Such students have not internalized the motivation to achieve academically and may not have learned to work for delayed gratification rewards (Karnes, Zehrbach, and Jones, 1971). They may have difficulty waiting to be paid for work accomplished over a two-week period and prefer day-to-day payment for work completed. This tendency is reinforced by the fact that they have few reserves to draw upon in an emergency.

If, as counselors, we are to alter the motivational patterns of the disadvantaged, we must better understand the development of such patterns. Maslow (1954) suggests that motivation arises from the individual's need to develop. Hierarchically, needs seem to be organized
from the physiological need at the base through needs for safety, belonging, love, self-respect, and self-esteem, to self-actualization at the top. Inner-city youth tend to function at the lowest two or three levels. According to Maslow's theory, if basic needs are met, actualization takes place. If these needs are not met, development will be curbed at some lower level. The relative frequency of unmet need among inner-city school students results in the frequent impairment of the motivational system and the failure of many disadvantaged youth to develop beyond the belongingness level.

Strodtbeck (1965) suggests that parental teaching, the "hidden curriculum" of the home, plays an important part in motivation. Maslow's theory suggests that, to a great extent, the satisfaction of needs lower in the hierarchy can be attained in an essentially impersonal environment, but perhaps it is more reasonable to assume that if an individual is to progress fully through the hierarchy, he must receive supportive, encouraging feedback from others. For the most part, the inner-city school student does not receive this encouraging feedback.

Motivational factors associated with sex role can significantly affect the achievement of an individual. Disadvantaged males often view academic achievement as a feminine accomplishment and may deliberately resist achievement and motivation to maintain a masculine identity and to win acceptance by peers (Waller, 1969). If individuals are to develop the motivation to achieve, considerable attention will have to be given to the milieu in which motivation develops. Wilson (1959), in a study in the San Francisco-Oakland Bay area, investigated the aspiration level of disadvantaged Black high school students placed with
middle-class students as compared with Black students placed in a segregated school. His findings revealed that those attending school with middle-class students were more likely to aspire to college education than those attending segregated schools.

There are a number of other factors that to one degree or another affect the lives and the educational process of inner-city students. Among these factors are self-concept, social behavior, language, intellectual functioning, and physical fitness. Perhaps the two factors which have a more profound affect on inner-city students are the family and motivation, and these two are involved with one another. If an intervention strategy is to be proposed, perhaps one which involves assisting the family in motivating children is appropriate.

SUMMARY

Holland first presented his theory in 1959 and it has been through several revisions over the years. There has been extensive research conducted by Holland and others that lends support to the theory.

In an early monograph Holland (1962) assessed two large samples of National Merit Finalists over one- and two-year periods. Using the Vocational Preference Inventory to define a student's type, he found a broad range of personal characteristics was associated with the types. These characteristics generally supported Holland's idea of personality type. Though the findings of this study were generally supportive of Holland's personality stereotypes, one major deficiency was revealed, that types sometimes overlapped.

In a second study (Holland, 1963) the Strong Vocational Interest
Blank was used to assess types. The results of this study were similar to the results found in the earlier study. One important result was that the types could be assessed using a different instrument (Strong Vocational Interest Blank) and obtaining similar results.

In a third report Holland studied changes in major field over a one-year period, senior year in high school to end of freshman year in college. Remaining in the original field was associated with having characteristics common to that field, and leaving a given field was associated with having characteristics dissimilar to that field. The findings of this study cannot be totally accepted because of the small size of the sample (322 boys and 181 girls).

A fourth report (Holland, 1963-64) was conducted to compare types as determined by the Vocational Preference Inventory, with self-descriptions given by the students. An analysis of the data indicated that the students described themselves in ways that were consistent with their personality types.

A fifth report by Holland (1964) was a one-year longitudinal study with results similar to that of earlier studies. The sixth study by Holland (1968 b) was the only study in which he used a sample other than National Merit Finalists. In this study a sample of college freshmen with a wide range of academic ability and social status was used. The results of this study were similar to that of earlier studies with the exception that the correlations for women were higher than those for men. In all previous studies the reverse was true.

While Holland's theory appears to be quite useful when applied to National Merit Finalists and college students, there has not been much
work done with the non-college segment of the population. Crabtree (1971) assessed personality types of rural high school seniors. The findings of that study were similar to the studies conducted by Holland.

There is a need for further research with Holland's theory with a variety of populations, for example, Black students, inner-city, and rural poor. A number of studies needs to be conducted in each of the above-mentioned areas in order to more fully validate or disprove the applicability of Holland's theory to such populations.

The primary instruments used in the development of the theory were the Vocational Preference Inventory to assess the personality types and the Environmental Assessment Technique which was used to assess the environmental types. Holland also developed the Self-Directed Search, which is a self-administered, self-scored, and self-interpreted instrument used to arrive at a three-digit code that corresponds to the personality types.

The Strong Vocational Interest Blank has also been used to assess types, but most of the research has been conducted using the VPI. The results of the research on Holland's theory seem to indicate the following:

1. The personality types do exist as Holland suggested.
2. The environmental models exist as suggested by Holland.
3. Vocational choice is a result of the interaction between personality and environment.
4. If a person changes his vocational choice it is usually in the same classification or an adjacent classification.
5. In regard to the environmental models, it appears that the
EAT is a useful instrument for assessing educational and occupational environments.

Though there is much evidence to support the major premises of Holland's theory, it is not without its weaknesses.

1. The theory is not as valid for women as for men. There needs to be some revision of the theory to more adequately account for the vocational development of women.

2. Holland's theory does not adequately explain the process of personality development.

3. The theory does not fully explore the influence of parents on vocational choice, though Holland does indicate that some relationship exists.

4. Tests of the theory have been conducted on exceptionally talented (National Merit Finalists) high school and college students. There needs to be more research conducted on the non-college segment of the population.

In attempting to further validate Holland's theory the present study is an attempt to test the validity of Holland's hexagonal model when applied to an inner-city high school sample. To make this study approximate as much as possible the earlier studies of Holland, the procedure used is much the same as the procedure used by Holland and his associates. Chapter 3 deals with the specifics of the procedure used in this study.
Chapter 3

RESEARCH METHODOLOGY

INTRODUCTION

Chapter 3 includes a discussion of the population used in the study, the instrument used for collecting the data, hypotheses, and analysis of the data. Additionally, limitations of the study and the data collection procedures are included.

POPULATION OF THE STUDY

The population of the study consisted of sophomores from the two high schools in Region I of the Baltimore City Schools System. The schools were both single-sex schools, Eastern High School (males) and City College High School (females). A total of 492 students were tested (218 males, 274 females). The total enrollment for sophomores in the two schools was reported at 692, but due to a high rate of absenteeism, only 492 were present on the day the testing was conducted.

The racial composition of the population was entirely Black. The mean age of the males was 15.7 years and the mean age of the females tested was 15.2. The occupations of the parents ranged from unskilled to professional; however, a large percentage of the parents were employed in low-paying unskilled jobs or were unemployed.

As far as high school curriculum was concerned, 62% of the males listed college prep as their curriculum, while 20% of the females listed
college prep. Approximately 15% of the males and 12% of the females were in the vocational education curriculum, with the remainder in the general curriculum.

Sophomores were chosen for the study because they are at the stage where career planning is of prime importance. According to Super, between the ages of 14-18, individuals are required to formulate ideas about work which are appropriate. A person is also required to develop occupational and self-concepts which will help to mediate tentative vocational choices by means of relevant educational decisions (Osipow, 1968).

Ginzburg, Ginsburg, Axelrod, and Herma (1951) advocate a theory of vocational choice which has three major periods. The three major periods are Fantasy, Tentative, and Realistic. The population for this study would be identified as falling into the tentative period. The tentative period occurs between the ages of 11 and 18 and is divided into three stages. The stage in which the population for this study coincides is the value stage. It is during the value stage that students become aware of the uses to which they may put their skills and abilities (Osipow, 1968). However, according to the theory espoused by Ginzburg, Ginsburg, Axelrod, and Herma (1951), low-income students are likely to go through the tentative stage and enter the realistic stage much quicker than the more affluent adolescents who may go to college. This happens mainly because poorer children are faced with the task of earning a living sooner and partly because the cultural values they are exposed to encourage an early assumption of an adult role (Osipow, 1968). Thus, it would be important for such students to have a valid instrument to assist
in vocational exploration.

Additionally, using sophomores as the population could enable investigators to conduct a follow-up study in two years to determine stability of the scores from the first test administration.

INSTRUMENT USED IN THE STUDY

The Vocational Preference Inventory (VPI) was the instrument to which the population of this study responded. The VPI is a personality inventory composed entirely of occupational titles. A person takes the inventory by indicating the occupations which are liked or disliked (Holland, 1965, p. 1).

The primary purpose of the VPI is to assess personality; however, the VPI can be used for several other purposes: (1) as an interest inventory; (2) as an inventory to assess the personality types within a theory of vocational choice; and (3) as a technique to stimulate occupational exploration among high school and college students (Holland, 1965, p. 1). The most desirable use of the VPI is as a brief screening inventory for high school and college students and employed adults.

The rationale for the VPI was discussed in Chapter 2; therefore, this section will be concerned with the norms, reliability, and validity of the instrument.

**Norms**

The VPI has been administered to a wide range of typical and atypical persons. Holland (1965) suggests that the VPI would be most useful if users establish local norms and use the eighteen reference
groups as comparison groups. The normative sample for the sixth re-
vision of the VPI (Holland, 1965) (the revision against which the pres-
ent study was compared) consisted of college graduates, National Merit
Finalists, college freshmen, research personnel, security salesmen, and
Black college students.

Reliability

The present scales of the VPI, with the exception of the Infre-
quency, Masculinity, and Status Scales, have moderate to high homo-
geney of content (Holland, 1965). The retest reliability coefficients
of the third and sixth revisions suggest that the VPI has moderate to
high reliability (Holland, 1965). Low scale reliabilities were reported
over a four-year interval in contrast to the high reliabilities for
shorter intervals. Such differences are not explicable but they may be
due to the following: (1) the four-year reliabilities were obtained in
the administration of two national mail surveys, the short-term reli-
bilities were obtained in supervised test sessions; or (2) the VPI may be
unreliable over long intervals of time (Holland, 1965).

Validity

There have been a number of studies conducted to establish the
validity of the VPI. The studies were conducted to validate the eleven
scales of the VPI and the rationale for the VPI. Along with attempting
to validate the rationale, Holland was also concerned about the predic-
tive usefulness of the VPI, for it is possible for an inventory to have
construct validity but little practical value (Holland, 1965).

In order to fully validate the VPI, the various scales were cor-
related with scales measuring similar constructs. For example, the masculinity scale (VPI) is significantly correlated with the femininity scale from the 16 personality Factor Scale, the California Personality Inventory, and the Minnesota Multiphasic Personality Inventory. Further, these correlations were always found to go in appropriate directions, and the masculinity scale (VPI) in three of four studies was most highly correlated with the masculinity-femininity scale of these inventories rather than some other scale (Holland, 1965).

Second, the VPI was administered to a great range of educational, occupational, and hospitalized groups. This was done to determine if the VPI described these groups in ways consistent with common psychological knowledge. It was shown that the VPI did in fact discriminate between the various groups mentioned (Holland, 1965).

Third, people who were administered the VPI were asked to rate themselves on traits which the various scales were purported to measure. Again, people described themselves in ways that were consistent with the scales of the VPI.

Finally, scores on the VPI were correlated or examined for their relationship to various external criteria, for example, supervisory ratings, occupational status, choice of vocation or major field, psychiatric or non-psychiatric status. In these studies Holland determined if these important social outcomes were related to the appropriate scales.

The result of these studies has been a sharpening of the constructs that each scale is supposed to assess, but in no instances have the scales undergone radical empirical revision. The results support the validity of the original rationale underlying the construction and
interpretation of the inventory (Holland, 1965).

In a series of studies of vocational choice, the VPI has been found to be predictive of choice of major field and vocation over one- and two-year periods; however, the evidence was not indicated that the VPI is predictive of vocational choice or major field over an extended period.

PROCEDURE FOR THE ADMINISTRATION OF THE VOCATIONAL PREFERENCE INVENTORY

Tenth-grade students from two schools comprised the population for this study, one all-male school and one all-female school. The males were administered the inventory in the morning and the females were asked to respond to the inventory in the afternoon.

The males were called to the cafeteria over the intercom system by the principal. When the students were seated, they were given an explanation as to why the testing was being done. Following the explanation of the purpose of the testing, a brief explanation of the VPI was given. The directions for responding to the inventory were read, and the students were asked to begin.

HYPOTHESES

From the research questions stated in Chapter 1, the following hypotheses have been derived for the study:

1. There are significant relationships between the occupational classifications of Holland's theory when an inner-city high school population is used.

2. There are significant relationships between the inter-
correlations of the occupational classifications of Holland's national sample and intercorrelations of the occupational classifications of an inner-city high school population.

3. There is a significant relationship between the rank ordering of the intercorrelations of the occupational classifications of Holland's study and the rank ordering of the intercorrelations of the occupational classifications of an inner-city high school population.

4. There are dominant personality types in an inner-city high school population as measured by Holland's Vocational Preference Inventory.

ANALYSIS OF DATA

In order to test the above-stated hypotheses, the data were treated by the following statistical tests. The data from the answer sheets were coded on opscan sheets and a card deck was punched from the opscan sheets.

The data were analyzed separately for males and females. First, the data were treated by the correlation program BMD03D, correlation with item deletion (Health Science Computing Facility), from the Virginia Polytechnic Institute and State University Computer Center. This gave the correlation matrix for the six scales of the VPI (realistic, investigative, artistic, social, enterprising, and conventional). This program made it possible to test the first hypothesis, that there are significant relationships between the occupational classifications of Hol-
land's theory when an inner-city high school population is used. The correlation program BMDO3D also aided in testing the second hypothesis, that there are significant relationships between the intercorrelations of the occupational classifications of Holland's study and the intercorrelations of the occupational classifications of an inner-city high school population. To further test the second hypothesis, Kendall and Spearman Correlation coefficients were obtained using the Statistical Packages for the Social Science program (Nie, Bent, and Hull, 1970).

A BMDO8M principal components factor analysis (Health Science Computing Facility) was run on the correlation matrix for this study and on the correlation matrix of Holland's national sample. The results of these programs were compared for similarities and differences. This procedure yielded another measure by which the second hypothesis could be compared.

The third hypothesis, that there is a significant difference between the rank ordering of the intercorrelations of the occupational classifications of Holland's study and the rank ordering of the intercorrelations of the occupational classifications of an inner-city high school population, was tested by ranking the pairs of correlated scales from high to low and comparing the resulting rank order with the rank order of Holland's study. The pairs of rank orderings were treated using Spearman's coefficient of rank correlation (Ferguson, 1971).

The fourth hypothesis, that there are dominant personality types in an inner-city high school population, was tested by using the SPSS program Codebook (Nie, Bent, and Hull, 1970) and the means printed out from the correlation matrix. In addition to giving the mean score on
each variable, the SPSS program Codebook also gave information relative to the mode, median, variance, range, and skewness of each variable. Codebook also printed out a histogram on each variable. Where possible, hypotheses were tested at the .05 level of significance.

SUMMARY

The population of this study consisted of 492 sophomore students (218 males, 274 females) from Region I of the Baltimore City Schools System. The racial composition of the population was entirely Black, and a large percentage of the parents were employed in low-paying unskilled jobs or were unemployed.

The VPI was the instrument used in the study. The primary purpose of the VPI is to assess personality; however, the VPI can be used as an interest inventory. The VPI is composed entirely of occupational titles, and an individual responds to the VPI by indicating a like or dislike for the occupations listed.

A number of hypotheses were being tested in this study. In order to test the hypotheses the data were treated by the following statistical tests:

1. BMD03D correlation with item deletion,
2. BMD08M principal components factor analysis,
3. Kendall and Spearman correlation coefficients,
4. Spearman coefficient of rank correlation, and
5. SPSS program Codebook.

The first hypothesis, that there are significant relationships between the occupational classifications of Holland's theory when an in-
ner-city high school population is used, could not be statistically tested because there is no statistical test to determine relationships between correlation matrices. However, a visual comparison of the data displayed on the hexagon could be accomplished.

The fourth hypothesis, that there are dominant personality types, could not be tested at any level of significance; however, a visual comparison of the means made it possible to select the three outstanding variables.
Chapter 4

FINDINGS OF THE STUDY

In this study 218 male and 274 female high school sophomores from Region I of the Baltimore Public School System served as the population to test Holland's hexagonal model of occupational classification. The Vocational Preference Inventory (VPI) was administered to the students during the month of January, 1975. The results of the VPI provided each subject with a score on each of the following scales: Realistic, Investigative, Social, Conventional, Enterprising, and Artistic.

In order to test the first hypothesis, that there are significant relationships between the occupational classifications of Holland's theory when an inner-city high school population is used, the data were treated by the correlation program BMD03D (Health Science Computing Facility). This treatment resulted in a correlation matrix (Table 3, p. 55). The data from the correlation matrix were placed on a hexagonal model (Figure 2, p. 56, males, and Figure 3, p. 57, females). Next the data were treated by Kendall Tau and Spearman correlation coefficients using the Statistical Package for the Social Sciences correlation program (SPSS, 1970). The Kendall Tau was done to account for the significant number of tied ranks. The results of the Kendall Tau correlation coefficients are presented in Tables 4 (males, p. 58) and 5 (females, p. 59). The results of the Spearman correlation coefficients are presented in Tables 6 (males, p. 60) and 7 (females, p. 61). All pairs of correlated scales for both the Kendall Tau and Spearman correlation
Table 3

Correlation Matrix for Inner-City High School Sophomores, Male and Female*

<table>
<thead>
<tr>
<th></th>
<th>R</th>
<th>I</th>
<th>S</th>
<th>C</th>
<th>E</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic</td>
<td>.61</td>
<td>.39</td>
<td>.57</td>
<td>.56</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td>Investigative</td>
<td>.52</td>
<td>.40</td>
<td>.42</td>
<td>.40</td>
<td>.54</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>.40</td>
<td>.48</td>
<td>.53</td>
<td>.55</td>
<td>.49</td>
<td></td>
</tr>
<tr>
<td>Conventional</td>
<td>.56</td>
<td>.46</td>
<td>.59</td>
<td>.67</td>
<td>.40</td>
<td></td>
</tr>
<tr>
<td>Enterprising</td>
<td>.54</td>
<td>.40</td>
<td>.61</td>
<td>.75</td>
<td>.57</td>
<td></td>
</tr>
<tr>
<td>Artistic</td>
<td>.43</td>
<td>.49</td>
<td>.50</td>
<td>.49</td>
<td>.56</td>
<td></td>
</tr>
</tbody>
</table>

*Male correlations are below the diagonal and female correlations are above the diagonal.
Figure 2

A Hexagonal Model Displaying the Occupational Classifications for Inner-City High School Sophomore Males
Figure 3

A Hexagonal Model Displaying Occupational Classifications for Inner City High School Sophomore Females
# Table 4

Kendall Correlation Coefficients for Inner-City High School Male Sophomores*

<table>
<thead>
<tr>
<th>VARIABLE PAIR</th>
<th>VARIABLE PAIR</th>
<th>VARIABLE PAIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>REALIST WITH INVEST</td>
<td>0.3800</td>
<td>REALIST WITH SOCIAL</td>
</tr>
<tr>
<td>REALIST WITH ENTER</td>
<td>0.4250</td>
<td>REALIST WITH ARTISTIC</td>
</tr>
<tr>
<td>INVEST WITH CONVENT</td>
<td>0.3581</td>
<td>INVEST WITH ENTER</td>
</tr>
<tr>
<td>SOCIAL WITH CONVENT</td>
<td>0.4383</td>
<td>SOCIAL WITH ENTER</td>
</tr>
<tr>
<td>CONVENT WITH ENTER</td>
<td>0.5994</td>
<td>CONVENT WITH ARTISTIC</td>
</tr>
</tbody>
</table>

N = 218

* All correlation coefficients significant at .001 level.
Table 5
Kendall Correlation Coefficients for Inner-City High School Female Sophomores

<table>
<thead>
<tr>
<th>VARIABLE PAIR</th>
<th>VARIABLE PAIR</th>
<th>VARIABLE PAIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>REALIST WITH INVEST</td>
<td>REALIST WITH SOCIAL</td>
<td>REALIST WITH CONVENT</td>
</tr>
<tr>
<td>0.4827</td>
<td>0.3596</td>
<td>0.4660</td>
</tr>
<tr>
<td>REALIST WITH ENTER</td>
<td>REALIST WITH ARTISTIC</td>
<td>INVEST WITH SOCIAL</td>
</tr>
<tr>
<td>0.4523</td>
<td>0.4114</td>
<td>0.3574</td>
</tr>
<tr>
<td>INVEST WITH CONVENT</td>
<td>INVEST WITH ENTER</td>
<td>INVEST WITH ARTISTIC</td>
</tr>
<tr>
<td>0.3443</td>
<td>0.3369</td>
<td>0.4192</td>
</tr>
<tr>
<td>SOCIAL WITH CONVENT</td>
<td>SOCIAL WITH ENTER</td>
<td>SOCIAL WITH ARTISTIC</td>
</tr>
<tr>
<td>0.3965</td>
<td>0.4220</td>
<td>0.3796</td>
</tr>
<tr>
<td>CONVENT WITH ENTER</td>
<td>CONVENT WITH ARTISTIC</td>
<td>ENTER WITH ARTISTIC</td>
</tr>
<tr>
<td>0.5252</td>
<td>0.3104</td>
<td>0.4500</td>
</tr>
</tbody>
</table>

N = 274

* All correlation coefficients significant at .001 level.
Table 6
Spearman Correlation Coefficients for Inner-City High School Male Sophomores*

<table>
<thead>
<tr>
<th>VARIABLE PAIR WITH VARIABLE PAIR WITH VARIABLE PAIR WITH</th>
<th>VARIABLE PAIR WITH</th>
</tr>
</thead>
<tbody>
<tr>
<td>REALIST WITH INVEST 0.5022</td>
<td>REALIST WITH SOCIAL 0.4147</td>
</tr>
<tr>
<td>REALIST WITH ENTER 0.5571</td>
<td>REALIST WITH ARTISTIC 0.4476</td>
</tr>
<tr>
<td>INVEST WITH CONVENT 0.4714</td>
<td>INVEST WITH SOCIAL 0.5108</td>
</tr>
<tr>
<td>SOCIAL WITH CONVENT 0.5722</td>
<td>SOCIAL WITH ARTISTIC 0.4892</td>
</tr>
<tr>
<td>CONVENT WITH ENTER 0.7477</td>
<td>CONVENT WITH ARTISTIC 0.4669</td>
</tr>
</tbody>
</table>

N = 218

* All correlation coefficients significant at .001 level.
Table 7
Spearman Correlation Coefficients for Inner-City High School Female Sophomores*

<table>
<thead>
<tr>
<th>VARIABLE PAIR</th>
<th>VARIABLE PAIR</th>
<th>VARIABLE PAIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>REALIST WITH INVEST</td>
<td>0.6007</td>
<td>REALIST WITH SOCIAL</td>
</tr>
<tr>
<td>REALIST WITH ENTER</td>
<td>0.5747</td>
<td>REALIST WITH ARTISTIC</td>
</tr>
<tr>
<td>INVEST WITH CONVENT</td>
<td>0.4454</td>
<td>INVEST WITH ENTER</td>
</tr>
<tr>
<td>SOCIAL WITH CONVENT</td>
<td>0.5286</td>
<td>SOCIAL WITH ENTER</td>
</tr>
<tr>
<td>CONVENT WITH ENTER</td>
<td>0.6644</td>
<td>CONVENT WITH ARTISTIC</td>
</tr>
</tbody>
</table>

N = 274

* All correlation coefficients significant at .001 level.
coefficients are significant at the .001 level.

The results of treating the data by the Kendall Tau and Spearman correlation coefficients support the hypothesis that there are significant relationships between the occupational classifications of Holland's theory when an inner-city high school population is used.

According to Holland (1969), "close relationships are represented by short distances on the hexagon." A violation occurs when any scale displays a correlation that is higher than the adjacent scales. An example of this can be seen on the Realistic scale in Figure 2, p. 56. According to Holland's model, the Realistic scale should be correlated with the Conventional and Investigative scales. However, the hexagon displayed in Figure 2 shows the Realistic and Enterprising scales having a higher correlation than the Realistic and Investigative scales. This is an obvious violation of Holland's model in that the Realistic scale is correlated higher with a scale farther than the adjacent scales.

For the male and female populations, twenty-six out of thirty possible relationships were consistent with Holland's model. For the male subjects the following relationships were inconsistent according to Holland's model: Realistic-Enterprising; Artistic-Conventional; Artistic-Enterprising; and Social-Conventional. For the female subjects the following inconsistencies, according to Holland's model, were noted: Realistic-Artistic; Artistic-Enterprising; Social-Conventional; and Enterprising-Realistic.

To test the second hypothesis, that there are significant relationships between the intercorrelations of the occupational classifications of Holland's model and the intercorrelations of the occupational
classifications of an inner-city high school population, the data from the previous correlation matrix were used. The data from the correlation matrix were placed on a hexagonal model (Figures 2 and 3, pp. 56 and 57) for visual comparison with Holland's model. A visual comparison of the two hexagonal configurations (male and female) from the present study, when compared against Holland's model, revealed higher intercorrelations among the six scales (realistic, investigative, artistic, social, enterprising, and conventional) with the exception of the correlation between the Artistic and Enterprising scales. This was true for both males and females. Because of the high degree of similarity between the two hexagonal models, the second hypothesis was verified by visual comparison.

The correlation matrices of this study were also treated by the program BMD08M (Health Science Computing Facility), principal components factor analysis. Principal components factor analysis was run in order to do the following:

1. Compare the factor loadings from the present study with factor loadings from Holland's study.
2. To determine the number of entities the data from this study and the data from Holland's study were actually measuring.
3. To determine the percentage of the variance accounted for with the first three potential factors of the present study and the first three dimensions of Holland's study.

The results of the principal components factor analysis for the present study are presented in Table 8 (males, p. 64) and Table 9 (females, p. 65), and the results of Holland's study are presented in Table 10 (p. 66).
Table 8
Principal Components Factor Analysis for Inner-City High School Male Sophomores

<table>
<thead>
<tr>
<th>Factors</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eigenvalues</td>
<td>3.63 0.68 0.61 0.49 0.34 0.22</td>
</tr>
<tr>
<td>Cumulative Proportion of Total Variance</td>
<td>0.60 0.71 0.82 0.90 0.96 1.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic Scale</td>
</tr>
<tr>
<td>Investigative Scale</td>
</tr>
<tr>
<td>Social Scale</td>
</tr>
<tr>
<td>Conventional Scale</td>
</tr>
<tr>
<td>Enterprising Scale</td>
</tr>
<tr>
<td>Artistic Scale</td>
</tr>
</tbody>
</table>
Table 9

Principal Components Factor Analysis for Inner-City High School Female Sophomores

<table>
<thead>
<tr>
<th>Factors</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eigenvalues</strong></td>
<td>3.57</td>
</tr>
<tr>
<td><strong>Cumulative Proportion of Total Variance</strong></td>
<td>0.59</td>
</tr>
</tbody>
</table>

**Loadings**

- Realistic Scale: 0.797
- Investigative Scale: 0.727
- Social Scale: 0.726
- Conventional Scale: 0.785
- Enterprising Scale: 0.822
- Artistic Scale: 0.765
Table 10
Principal Components Factor Analysis
of Holland's National Sample

<table>
<thead>
<tr>
<th>Factors</th>
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<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eigenvalues</td>
<td>2.67</td>
<td>1.13</td>
</tr>
<tr>
<td></td>
<td>0.98</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>0.42</td>
<td>0.25</td>
</tr>
<tr>
<td>Cumulative Proportion of Total Variance</td>
<td>0.44</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>0.79</td>
<td>0.88</td>
</tr>
<tr>
<td></td>
<td>0.95</td>
<td>1.00</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Loadings</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic Scale</td>
<td>0.594</td>
<td></td>
</tr>
<tr>
<td>Investigative Scale</td>
<td>0.554</td>
<td>0.323</td>
</tr>
<tr>
<td>Social Scale</td>
<td>0.735</td>
<td>-0.080</td>
</tr>
<tr>
<td>Conventional Scale</td>
<td>0.710</td>
<td>-0.496</td>
</tr>
<tr>
<td>Enterprising Scale</td>
<td>0.803</td>
<td>-0.437</td>
</tr>
<tr>
<td>Artistic Scale</td>
<td>0.568</td>
<td>0.334</td>
</tr>
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</table>
A comparison of the principal components factor analysis between this study and Holland's national sample indicated the following:

1. Both have high positive loadings on the first factor of the principal components factor analysis (Table 9, males; Table 10, females).

2. The loadings on the first factor for this study were higher than the loadings on the first factor of Holland's study. This can be explained in part by the fact that two factors showed up on Holland's study and only one factor showed up on the present study.

3. In this study 82% of the variance was accounted for in the first three potential factors, while the first three potential factors of Holland's study accounted for 79% of the variance.

4. Two factors showed up as the result of treating the data from Holland's study by factor analysis, while one factor showed up as a result of factor analyzing the data for this study.

There is no definite explanation for two factors showing up as a result of treating Holland's sample to principal components factor analysis. However, the following explanation is given as a possible reason. The second factor of Holland's study loaded heavily on the Investigative variable. Since the sample Holland used included a majority of college graduates, and the Investigative scale had the highest mean score in most groups in the sample used by Holland, the second factor might be a product of the sample.
The third hypothesis, that there are significant relationships between the rank ordering of the intercorrelations of the occupational classifications of Holland's study and the rank ordering of the intercorrelations of an inner-city high school population, was tested by ranking the pairs of correlated scales from high to low. Comparisons were then made between the rank ordering of the correlated scales of the present study and the rank ordering reported by Holland. The pairs of rank orderings were then treated by Spearman's coefficient of rank correlation (Ferguson, 1971). The results of this treatment are presented in Tables 11 (males, p. 69) and 12 (females, p. 70). Data presented in both tables reveal that all rank order correlations were significant at the .01 level; hence, there is a significant relationship between the rank order correlations. The significant relationships between the rank ordering of Holland's study and the present study lend additional support to Holland's model when applied to this inner-city high school population.

The fourth hypothesis, that there are dominant personality types in an inner-city high school population as measured by the VPI, was tested first by observing the mean scores from Table 13 (p. 71), which presented the derived means and standard deviations. According to the mean scores, Realistic, Enterprising, and Conventional were the three highest variables for the male subjects, and Social, Artistic, and Conventional were the three highest variables for the female subjects. Ranking the variables from highest to lowest according to mean scores results in the following profiles: RECAIS (realistic, enterprising, conventional, artistic, investigative, social) for males, and SACERI (social,
Table 11
Correlations, Rank Order, and Rank Correlations of Holland's Intercorrelations and the Intercorrelations of Inner-City High School Male Sophomores

<table>
<thead>
<tr>
<th>Pairs of Correlated Scales</th>
<th>Correlations</th>
<th>Rank Order</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Holland</td>
<td>Inner-City</td>
</tr>
<tr>
<td>C-E</td>
<td>.68</td>
<td>.75</td>
</tr>
<tr>
<td>E-S</td>
<td>.54</td>
<td>.61</td>
</tr>
<tr>
<td>R-I</td>
<td>.46</td>
<td>.52</td>
</tr>
<tr>
<td>S-A</td>
<td>.42</td>
<td>.50</td>
</tr>
<tr>
<td>C-S</td>
<td>.38</td>
<td>.59</td>
</tr>
<tr>
<td>C-R</td>
<td>.36</td>
<td>.56</td>
</tr>
<tr>
<td>E-A</td>
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<td>.56</td>
</tr>
<tr>
<td>A-I</td>
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<td>.49</td>
</tr>
<tr>
<td>E-R</td>
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<td>.94</td>
</tr>
<tr>
<td>S-I</td>
<td>.30</td>
<td>.48</td>
</tr>
<tr>
<td>R-S</td>
<td>.21</td>
<td>.40</td>
</tr>
<tr>
<td>C-I</td>
<td>.16</td>
<td>.46</td>
</tr>
<tr>
<td>R-A</td>
<td>.16</td>
<td>.43</td>
</tr>
<tr>
<td>E-I</td>
<td>.16</td>
<td>.40</td>
</tr>
<tr>
<td>C-A</td>
<td>.11</td>
<td>.49</td>
</tr>
</tbody>
</table>

\[ \rho = .80; \ p < .01 \]

R = Realistic
I = Investigative
S = Social
C = Conventional
E = Enterprising
A = Artistic
Table 12
Correlations, Rank Order, and Rank Correlations of Holland's Intercorrelations and the Intercorrelations of Inner-City High School Female Sophomores

<table>
<thead>
<tr>
<th>Pairs of Correlated Scales</th>
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<th>Rank Order</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Holland</td>
<td>Inner-City</td>
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<td>.67</td>
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<tr>
<td>E - S</td>
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<td>.55</td>
</tr>
<tr>
<td>R - I</td>
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<td>.61</td>
</tr>
<tr>
<td>S - A</td>
<td>.42</td>
<td>.49</td>
</tr>
<tr>
<td>C - S</td>
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<td>.53</td>
</tr>
<tr>
<td>C - R</td>
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<td>.57</td>
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<tr>
<td>E - A</td>
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<td>.57</td>
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<td>A - I</td>
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<td>.94</td>
</tr>
<tr>
<td>E - R</td>
<td>.30</td>
<td>.56</td>
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<tr>
<td>S - I</td>
<td>.30</td>
<td>.40</td>
</tr>
<tr>
<td>R - S</td>
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<td>.39</td>
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<tr>
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<td>.42</td>
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<tr>
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<td>.52</td>
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<tr>
<td>E - I</td>
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<td>.40</td>
</tr>
<tr>
<td>C - A</td>
<td>.11</td>
<td>.40</td>
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</table>

*rho = .73, p < .01*

*R = Realistic
I = Investigative
S = Social
C = Conventional
E = Enterprising
A = Artistic*
Table 13
Means and Standard Deviations of the Vocational Preference Inventory for Inner-City High School Sophomores

<table>
<thead>
<tr>
<th>Scale</th>
<th>Males</th>
<th>Females</th>
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<td>Mean</td>
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<tr>
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<td>3.61</td>
</tr>
<tr>
<td>Investigative</td>
<td>3.87</td>
<td>3.79</td>
</tr>
<tr>
<td>Social</td>
<td>3.66</td>
<td>3.20</td>
</tr>
<tr>
<td>Conventional</td>
<td>4.24</td>
<td>3.54</td>
</tr>
<tr>
<td>Enterprising</td>
<td>4.65</td>
<td>3.33</td>
</tr>
<tr>
<td>Artistic</td>
<td>3.93</td>
<td>3.21</td>
</tr>
</tbody>
</table>
artistic, conventional, enterprising, realistic, investigative) for females.

As a further check on the dominant personality types of an inner-city high school population, the SPSS (1970) program Codebook was run. The resulting means and standard deviations are presented in Table 14, (p. 73).

A combination of the three dominant personality types for males suggests a variety of occupations such as crane man, grader, truck driver, tractor operator, or fork lift operator. The three highest variables from the female population suggest such occupations as cosmetologist, electrologist, hair stylist, or manicurist. Thus the dominant personality types derived from this sample support the presence of dominant personality types and provide evidence in favor of the fourth hypothesis.

SUMMARY

Four hypotheses were tested in this study. The first hypothesis was tested to determine if there was a significant relationship between the occupational classifications of Holland's theory and the occupational classifications of an inner-city high school population. The results of testing this hypothesis indicated higher correlations among the occupational classifications of this study than the study conducted by Holland. Additionally, out of thirty possible relationships, twenty-six were consistent with Holland's model.

The second hypothesis, that there are significant relationships between the intercorrelations of the occupational classifications of Holland's model and the intercorrelations of the occupational classi-
<table>
<thead>
<tr>
<th>Scale</th>
<th>Males</th>
<th></th>
<th>Females</th>
<th></th>
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<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
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<td>3.61</td>
<td>2.79</td>
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<tr>
<td>Investigative</td>
<td>3.87</td>
<td>3.79</td>
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<tr>
<td>Social</td>
<td>3.67</td>
<td>3.20</td>
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<td>4.24</td>
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<tr>
<td>Enterprising</td>
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<td>3.33</td>
<td>4.43</td>
<td>2.87</td>
</tr>
<tr>
<td>Artistic</td>
<td>3.93</td>
<td>3.21</td>
<td>4.69</td>
<td>3.71</td>
</tr>
</tbody>
</table>

Table 14
Means and Standard Deviations SPSS Program
Code Book for Inner-City High School Sophomores, Males and Females
fications of an inner-city high school population, was tested by treating the data to Kendall and Spearman correlation coefficients and principal components factor analysis. The results of the Kendall and Spearman correlation coefficients indicated that all the pairs of correlated scales were significant at the .001 level of significance. The results of the factor analysis indicated high positive loading on the first factor of the principal components factor analysis for the present study and Holland's study. Additionally, as a result of treating the data to principal components factor analysis, two factors showed up in Holland's study and one factor showed up in the present study. A possible explanation for the second factor in Holland's study was that the second factor was a product of the sample used.

A third hypothesis, that there is a significant relationship between the rank ordering of the intercorrelations of the present study and the rank ordering of the intercorrelations of Holland's study, was tested by treating the two rank orderings to Spearman's coefficient of rank correlation. The results indicated that the rank correlations were significant at the .01 level of significance, thus supporting the hypothesis that there is a significant relationship between the rank ordering of the intercorrelations of the present study and Holland's study.

The fourth hypothesis, that there are dominant personality types in an inner-city high school population, was determined by looking at the means derived from the correlation program EMDO3D and the SPSS program Codebook. The results indicated that the three highest variables for the male subjects were Realistic, Enterprising, and Conventional, and the three highest variables for the female subjects were Social,
Artistic, and Conventional.
Chapter 5

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS FOR FURTHER RESEARCH

SUMMARY

The purpose of this study was to determine the extent to which Holland's hexagonal model of occupational classification could be applied to an inner-city high school population.

The Vocational Preference Inventory (VPI) was administered to 492 inner-city high school sophomores. The results of the VPI yielded scores on the following scales: Realistic, Investigative, Social, Conventional, Enterprising, and Artistic. The resulting scores were treated by the correlation program BMD03D (Health Science Computing Facility) correlation with item deletion, BMD08M (Health Science Computing Facility) principal components factor analysis, and Spearman and Kendall correlation coefficients.

The first hypothesis, that there are significant relationships among the occupational classifications of an inner-city high school population were treated by Spearman and Kendall Tau correlation coefficients. The results indicated that the intercorrelations between the occupational classifications of the present study were significant at the .001 level. Thus the relationships among the six scales on the VPI exist beyond the chance level, as analyzed from the data of the study.

In order to test the second hypothesis, that there are significant relationships between the intercorrelations of the occupational
classifications of Holland's model and the intercorrelations of the occupational classifications of an inner-city high school population, the data were further treated by the correlation program BMD03D (Health Sciences Computing Facility), correlation with item deletion. This treatment resulted in a correlation matrix (Table 3, p. 55). The data from the correlation matrix were placed on a hexagonal model and then visually compared with Holland's hexagonal model (p. 5). A visual comparison of the two models revealed higher correlations among the six scales of the present study than in Holland's study. The similarities between the two models lend further support to Holland's theory and to the notion that Holland's model is appropriate for the population being tested. The data from both studies were treated by principal components factor analysis. The results depicted high positive loadings on the first factor of both studies, lending further support to Holland's theory and the applicability of Holland's model to the population being tested.

In order to test the third hypothesis, that there are significant relationships between the rank ordering of the intercorrelations of the occupational classifications of Holland's study and the rank ordering of the intercorrelations of an inner-city high school population, the rank ordering of the intercorrelations of the occupational classifications of the present study and Holland's study were treated by Spearman's coefficient of rank correlation. The results indicated that the rank order correlations were significant at the .01 level. This third similarity between the two sets of data further supported Holland's theory and the applicability of the theory to the population of the present study. The results of statistically treating the first three hypotheses supported
the applicability of Holland's theory to the population being tested.

In order to test the hypothesis that there are dominant personality types in an inner-city high school population as measured by the VPI, the SPSS program Codebook was used to determine the dominant variables of the population being tested. The three dominant variables for the male subjects were Realistic, Enterprising, and Conventional. The three dominant variables for the female subjects were Social, Artistic, and Conventional.

CONCLUSIONS

The findings of this study have led to the following conclusions:

1. That the VPI is an appropriate instrument to be used for the assessment of interests for inner-city Black students. This presents counselors and teachers of inner-city school students an additional instrument which can be used as an aspect of a career education approach. Properly applied, the uses of this instrument can lead to a variety of student learning activities, including career reality testing, exploration, and decision making.

2. That there is a need for the implementation of a career education program for the subjects of this population. From the apparent limited awareness of a variety of occupational categories, it seems that the subjects of this study are lacking knowledge about potential opportunities which exist for them.

3. That the lack of knowledge about the world of work might be
caused by the scarcity of appropriate models in the home and community.

4. That there is a need to help inner-city school students to fulfill the basic needs (according to Maslow), before the higher-level needs associated with an education or career choice can be met. It would appear that guidance and career education programs at present lack effectiveness or emphasize concerns other than career development.

5. That there is a need to develop the curriculum for inner-city high school students which incorporates career guidance processes in ways relevant to student interests, abilities, and opportunities.

IMPLICATIONS

The results of the present study were similar to the findings of Holland and others. The first three hypotheses tested indicated support of Holland's theory and also seemed to indicate that Holland's theory presents an appropriate model to use with inner-city high school students. The results of treating the data from both studies by principal components factor analysis identified two factors from Holland's study and one factor from the present study. This indicated that only one entity was being measured in this study and two entities were being measured in Holland's study. The major implication to be noted here is that the model possibly does not discriminate among the six variables being tested.

There are several implications that can be drawn from the results
of testing the fourth hypothesis, that there are dominant personality types in an inner-city high school population. The results indicated that the three dominant personality types for the male subjects were Realistic, Enterprising, and Conventional, and for female subjects, Social, Artistic, and Conventional. The combination of the three variables suggests a limited number of occupations for both male and female subjects.

These results suggest a number of implications for career guidance. First, inner-city students tend to have limited knowledge concerning the world of work and the number of occupational opportunities available. There is a need for a career education program to facilitate students' awareness of the possible opportunities and confidence in their potential to handle jobs outside the realm of semi-skilled or unskilled occupations.

The results may suggest a lack of models both in the home and in the immediate community. If all the individual sees are garbage workers, truck drivers, and junkies, then it would be expected that his occupational aspirations would be limited. The need for a parental model is particularly important, and in the case of many inner-city students, there may not be a parental model at home. In many instances the father does not live with the family, the mother works, and there is no one to give the student any encouragement to broaden his occupational outlook.

Referring back to Maslow's hierarchy of needs in Chapter 2, many inner-city students seem to be so busy trying to satisfy the basic physiological needs that they do not have time to fulfill the higher
level needs which would be associated with getting an education and planning for a meaningful career.

The ideas alluded to in the above-mentioned statements have implications for the counselors, teachers, and administrators who work with such students. Counselors need a thorough knowledge of the instruments by which inner-city students are being assessed. The counselor should have the necessary skills to interpret results of these instruments to students, teachers, parents, and administrators. Counselors also need to know what the home environment is like, whether or not there is a father-figure in the home, and whether or not he presents a positive image. Where viable models do not exist, counselors, teachers, and administrators have the responsibility to introduce such models, through group guidance activities, classroom activities, or assemblies for the entire student body.

In addition to the lack of proper models, there is also the problem of motivation. Counselors and teachers have to deal with this problem in order to determine ways to stimulate students to be motivated. Counselors and teachers will have to determine what is relevant for the students with whom they are working and adapt learning activities so that there is educational relevancy to career planning.

The finding that the Realistic variable was the dominant variable for the male population is consistent with the way in which inner-city male students tend to be characterized. Because of the inner-city male's struggle for existence, he tends to see life in a practical way. The inner-city male considers himself to be masculine and possessing athletic prowess. With this in mind, it would seem to imply a need to
structure such students' curriculum so that their interests, competencies, and abilities can be met. A similar situation exists with regard to the female subjects of this study. The dominant variable for the female group was found to be the Social variable, which implies that the subjects listed in this category are people-oriented. Thus, they should be provided the opportunity to develop their particular interests and abilities through social interaction learning experiences.

RECOMMENDATIONS FOR FURTHER RESEARCH

1. Additional inner-city high school populations which are integrated should be assessed to determine if the findings support the results of the present study and can therefore be generalized to other situations. Such studies need to be conducted in order to further explore the validity of Holland's model when used with an inner-city high school population. Results of studies of this nature could lend credence to the generalization that Holland's model is appropriate when applied to an inner-city high school population.

2. A two- or three-year follow-up of this study should be conducted to determine if the results are stable over a period of time. Holland (1965) indicated that the VPI has moderate predictability over one- and two-year periods. Such a study would yield information relative to the predictability of the VPI for inner-city high school students. Counselors could then have additional assurance of the applicability of
the VPI as an appropriate instrument for assisting inner-city high school students in matters of career choice.

3. An attempt should be made to modify the VPI so that it could be administered to elementary school students. Holland (1965) recommends that the VPI be administered to individuals over fourteen years of age. Since career education involves the total life spectrum, it would be appropriate to have an instrument to assess the interests of elementary school students. Validating the VPI on such a population would give teachers and counselors a valuable tool to assist them in career exploration activities. The potential of an earlier awareness of career horizons could be a stimulating factor for student motivation and for more appropriate and realistic career development.

4. A study should be conducted using the same or a similar population in which a comparison would be made between students' expressed vocational choice and their high point codes on the VPI. Holland (1963-64) and Wall, Osipow, and Ashby (1967) conducted similar studies. The results of conducting such a study on an inner-city high school population would yield information relative to whether or not the VPI is measuring students' actual vocational choice. Such a study could do two things: (1) provide additional support for Holland's theory and (2) provide a realistic tool for use by inner-city high school students in career exploration.

5. A further study could be conducted to look at the relation-
ship between parental influence on students' occupational choice. Such a study could also look at the relationship between parental desire for their children's occupational choice and the child's actual occupational choice. One of the problems that exists with inner-city students is the lack of a model in the home environment. It would be interesting to see if the occupation of one or both parents has any relationship with the student's score on the VPI.

6. Studies should be conducted in differential approaches to preparing counselors and teachers for providing career guidance for inner-city school populations. Such studies might include inculturation activities as well as practical and meaningful approaches in the career guidance of inner-city school children.

7. A study should be conducted in which the population is assessed using the VPI, then exposed to a career education program, and following the treatment reassessed using the VPI. In addition to exposing the population to a meaningful career education program, it would be possible to determine whether or not the career exploration activities were effective in broadening the occupational horizons of the students.

8. Since the results of this study indicate that inner-city school students tend to have a limited knowledge concerning the world of work, a study should be conducted which involves trying different methods of implementing a career
education program for inner-city school students.

9. A study could be conducted which involves introducing appropriate models to inner-city school students via classroom guidance activities, group guidance, or school-wide assemblies. The results of this study suggest that inner-city students tend to have limited knowledge concerning the world of work. The lack of appropriate models might be a contributing factor to such lack of knowledge.

10. A study could be conducted to attempt to develop an appropriate delivery system for counselors, in order that they could have guidance in interpreting relevant test information to students, teachers, parents, and administrators.

11. A study could be conducted to determine ways in which inner-city students could be stimulated to take a more active part in the educational process. Because of the scarcity of appropriate models, and the absence of parental guidance at home, the problem of stimulating inner-city students to be motivated often falls on the teacher, counselor, or administrator. The results of such a study might provide teachers, counselors, and administrators with valuable information relative to motivating the students with whom they work.
A. BOOKS AND MONOGRAPHS


Abe, C., and Holland, J. L. A Description of College Freshmen: II. Students with Different Vocational Choices. ACT Research Report No. 4. Iowa City: The American College Testing Program, 1965 (b).


B. JOURNALS AND PERIODICALS


C. REPORTS, PAPERS, UNPUBLISHED DISSERTATIONS


O'Connel, T. J.; Sedlacek, W. E. "The Reliability of Holland's Self-Directional Search for Educational and Vocational Planning." Counseling Center, Maryland University, College Park, Maryland, 1969.


APPENDIX

THE OCCUPATIONS FINDER

For Use with
The Self Directed Search
A Guide to Educational and Vocational Planning
by John L. Holland, Ph.D.

CONSULTING PSYCHOLOGISTS PRESS
577 College Avenue, Palo Alto, California 94306

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THE OCCUPATIONS FINDER

The 456 occupations in this classification include all of the most common occupations in the United States. They are arranged in the form used by the codes (R, I, A, S, E, C).

Realized occupations (R) include skilled trades, technical and some service occupations.

Investigative occupations (I) include scientific and some technical occupations.

Artistic occupations (A) include artistic, professional, and literary occupations.

Social occupations (S) include educational and social welfare occupations.

Enterprising occupations (E) include managerial sales occupations.

Conventional occupations (C) include office and clerical occupations.

The three-letter codes provide descriptions of occupations. For example, the code of ESC for salesmen means that salesmen resemble people in Enterprise occupations most of all, that they resemble people in Social occupations somewhat less, and less in Conventional occupations still less. In this way, the codes provide a brief summary of what an occupation is like by showing its degree of resemblance to three occupational groups.

There are a few combinations of the code letters which do not occur at all, or which occur very infrequently. In such cases a person may use a two-letter rather than a three-letter code and study the nature of all the occupations with that code.

The single digit indicates the level of general educational development an occupation demands. Levels 5 and 6 mean college training is necessary. Levels 3 and 4 mean high school and some college, technical, or business training is needed. Levels 1 and 2 mean that an occupation requires only elementary school training or no special training at all. In general, these levels are only estimates and should not be regarded as precise requirements.

The six-digit number is from the Dictionary of Occupational Titles (DOT), which can be found in most libraries and employment and counseling offices. The DOT contains descriptions of occupations and estimates of interests and aptitudes associated with each occupation.

Using the six-digit code and the DOT, it is possible to extend one's understanding of any occupation listed and the process is a very important part of The Self-Directed Search. A further step might involve locating a place which employs workers in a particular occupation and observing the work, talking to the employees about their jobs and to the supervisors or employment officers about job qualifications, training, and opportunities.

Unless a person is unusually well-informed about the world of work, there will be many occupations in The Occupations Finder that he has never heard of, some that sound humorous, and some that he is "sure" he would never enjoy, even though he has little knowledge of what the occupation is like. One should not reject an occupation until he fully understands it.

Additional useful information about occupations can be obtained from the Occupational Outlook Handbook, U.S. Department of Labor, Bureau of Labor Statistics, which is published every two years. (See your counselor or library, or write Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402, and enclose a check for $8.25.) This handbook provides a wide range of information about occupations, income, training, and employment trends.

REALISTIC OCCUPATIONS

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<tr>
<td>CODE: R: Forester 040.081</td>
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<tr>
<td>Industrial Arts Teacher 061.228</td>
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<td>Skilled Tradesmen*</td>
<td>5</td>
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<td>Radio Operator 023.187</td>
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REALISTIC OCCUPATIONS

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<tr>
<td>Not elsewhere classified.</td>
<td>4</td>
<td>Lock Fixer 663.280</td>
<td>4</td>
</tr>
</tbody>
</table>

*Not elsewhere classified.
REALISTIC OCCUPATIONS (Continued)

CODE: RSL (cont.)
- Foreman (530.132)
- Ship Pilot (197.133)
- Telemarketer (506.587)

CODE: RES
- Fish and Game Warden (579.168)
- Railroad Engineer (910.363)
- Cattle Rancher (413.811)
- Crane and Hoist Operator (520.564)
- Railroad Brakeman (910.584)
- Stock Clerk (223.387)
- Fisherman (431.844)

CODE: RCI
- Surveyor (081.166)
- Instrument Mechanic (710.261)
- Motion Picture Projectionist (900.352)
- Typewriter Repairman (833.281)
- Carpenter (860.381)
- Painter (House, Building, Equipment) (840.761)
- Rodman (016.587)

CODE: RCS
- Installer Repairman (822.381)
- Tower (785.361)
- Sheetmetal (185.361)
- Tile Setter (681.781)
- Bricklayer (681.361)
- Bus Driver (913.463)
- Cement Mason (644.664)
- Dressmaker (753.361)
- Furnaceman (538.762)
- Mail Carrier (233.368)
- Meter Reader (239.568)
- Miner (550.781)
- Sealer (911.857)
- Plasterer (942.781)

CODE: RCE
- Crane Operator (691.583)
- Grader (589.667)
- Truck Driver (905.563)
- Tractor Operator (929.563)
- Fork Lift Operator (922.563)

INVESTIGATIVE OCCUPATIONS

CODE: IAB
- Economist (050.068)
- Internist (Physician) (700.168)

CODE: IAR
- Anthropologist (055.068)
- Astronomer (021.068)
- Pathologist (700.168)
- Physicist (023.061)
- Chemist (022.061)

CODE: IRC
- Production Planner (012.166)
- Medical-Laboratory Assistant (078.381)
- Repairman, TV (720.281)

CODE: IER
- Biologist (041.061)
- Oceanographer (071.108)
- Zoologist (071.108)
- Optometrist (078.068)

CODE: ISA
- Physiologist (070.108)
- Psychiatrist (070.108)
- Psychologist (045.068)
- Medical Technologist (078.381)

CODE: RES
- Bacteriologist (041.061)
- Radiologist (041.061)

COD: IES (cont.)
- Entomologist (704.168)
- Research Analyst (011.281)

CODE: IEC
- Actuary (020.168)

CODE: ICR
- Quality Control Technician (019.281)
- Computer Operator (213.382)
- Equipment Repairman (620.281)
- Research Assistant (199.364)

CODE: IRA
- Geologist (024.061)
- Mathematician, Statistician (020.068)
- Surgeon (070.108)
- Meteorologist (025.068)
- Weather Observer (025.288)

CODE: IRE
- Agronomist (040.061)
- Animal Scientist (040.061)
- Botanist (041.061)
- Horticulturist (040.061)
- Natural Scientist (023.061)
- Oceanographer (024.061)
- Zoologist (041.061)
- Biologist (041.061)
- Engineer, Aide (007.181)
- Veterinarian (073.108)
- Geographer (009.068)
- X-Ray Technician (078.388)

COD: IRC
- Administrator, Engineer (002.061)
- Aeronautical Engineer (002.061)
- Chemist (006.061)
- Dentist (072.108)
- Electrical Engineer (003.061)
- Metallurgical Engineer (011.061)
- Test Engineer, Aircraft (002.061)
- Engineer* (007.061)
- Chemical Laboratory Technician (022.281)
- Radio or Television Engineer (003.081)
- Aerospace Engineering Technician (022.381)

ARTISTIC OCCUPATIONS

CODE: ABE
- Advertising Man (184.068)
- Advertising Manager (164.118)
- Business Manager, Singer (159.048)
- Public Relations Man (165.068)
- Fashion Model (297.388)

CODE: AIR
- Decorator (298.381)
- Architect (001.061)
- Artist (144.061)
- Photographer (143.062)
- Photolaboratory (872.382)
- Graphologist (870.281)

SOCIAL OCCUPATIONS

CODE: SEC
- Director Social Service (195.118)
- Compensation Advisor (199.118)
- Domestic Director (043.061)
- Employment Representative (196.282)
- Funeral Director (157.108)
- Interviewer (156.286)

CODE: SES
- Claim Adjuster (241.168)
- Production Expeditor (271.168)
- Health & Welfare Coordinator (166.168)

CODE: SEI
- Educational Advisor (099.118)
- Training Director (189.118)
- Environmental Health Engineer (179.118)
- Food Service Manager (319.138)
- Historian (052.068)
- History Teacher (081.225)
- Homes Service Representative (278.258)

*Not elsewhere classified.
### SOCIAL OCCUPATIONS

| CODE: BEA | ED | Building Inspector (106.186) | 5 | Personnel Director (106.118) | 5 | Building Inspector (106.186) | 5 |
| CODE: BNC | ED | Community Recreation Administrator | 4 | School Superintendent (106.118) | 5 | County Supervisor (106.258) | 5 |
| CODE: BCC | ED | Recreation Director (187.118) | 5 | School Superintendent (106.118) | 5 | County Supervisor (106.258) | 5 |
| CODE: BCD | ED | Business Agent, Labor Union (197.118) | 5 | Personnel Director (106.118) | 5 | Building Inspector (106.186) | 5 |

### ENTERPRISING OCCUPATIONS

| CODE: EAB | ED | Lawyer, Judge, Attorney (110.118) | 6 | Sporting Goods Salesman (296.358) | 4 | Sporting Goods Salesman (296.358) | 4 |
| CODE: EAR | ED | Radio Announcer (150.148) | 5 | Route Salesman (225.358) | 3 | Route Salesman (225.358) | 3 |

### CONVENTIONAL OCCUPATIONS

| CODE: CRI | ED | Timekeeper (215.488) | 3 | Calculating Machine Operator (216.488) | 3 | Calculating Machine Operator (216.488) | 3 |
| CODE: CRB | ED | Billing (219.300) | 3 | Key Punch Operator (213.352) | 3 | Key Punch Operator (213.352) | 3 |
| CODE: CRE | ED | Sewing Machine Operator (187.782) | 3 | Time Study Analyst (212.186) | 3 | Time Study Analyst (212.186) | 3 |
| CODE: CDS | ED | Accounting Machine Operator (187.782) | 3 | Library (213.782) | 3 | Library (213.782) | 3 |
| CODE: CFI | ED | Accountant (215.300) | 3 | Credit (215.300) | 3 | Credit (215.300) | 3 |

*Not elsewhere classified.*
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<th>Code: CBI</th>
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<td>Reservation Agent (812.368)</td>
<td>Data Processing Worker</td>
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<td>Traffic Checker (818.368)</td>
<td>Mail Clerk (332.266)</td>
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<td>Code: CBI</td>
<td>Code: CBI</td>
<td>Code: CBI</td>
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<tr>
<td>Bookkeeper (210.368)</td>
<td>Finance Expert (020.188)</td>
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<tr>
<td>Cashier (211.368)</td>
<td>Personnel Secretary (201.368)</td>
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<td>Code: CSA</td>
<td>Code: CES</td>
<td>Code: CES</td>
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<tr>
<td>Secretary* (201.368)</td>
<td>Accountant (160.188)</td>
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<tr>
<td>Medical Secretary (201.368)</td>
<td>Credit Manager (188.188)</td>
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</tr>
<tr>
<td>Library Assistant (248.368)</td>
<td>Clerk* (209.368)</td>
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</tr>
<tr>
<td>Religious Affairs Clerk (249.368)</td>
<td>Clerk-Slignographer (202.368)</td>
<td>3</td>
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</tbody>
</table>

*Not elsewhere classified.
THE VOCATIONAL PREFERENCE INVENTORY

Developed by John L. Holland, Ph.D.

This is an inventory of your feelings and attitudes about many kinds of work. Fill out your answer sheet by following the directions given below:

1. Show on your answer sheet the occupations which interest or appeal to you by blackening Y for "Yes."
2. Show the occupations which you dislike or find uninteresting by blackening N for "No."
3. Make no marks when you are undecided about an occupation.

1. Aviator
2. Private Investigator
3. YMCA Secretary
4. Detective
5. Post Office Clerk
6. Route Salesman
7. Electronic Technician
8. Humorist
9. Photographer
10. Interplanetary Scientist

11. Airplane Mechanic
12. Meteorologist
13. Foreign Missionary
14. Bookkeeper
15. Speculator
16. Poet
17. Deep Sea Diver
18. Newspaper Editor
19. Nursery School Teacher
20. Lawyer

21. Fish and Wildlife Specialist
22. Biologist
23. High School Teacher
24. Quality Control Expert
25. Buyer
26. Symphony Conductor
27. Wrecker (Building)
28. Narcotics Inspector
29. Elementary School Teacher
30. School Principal

31. Power Station Operator
32. Astronomer
33. Juvenile Delinquency Expert
34. Budget Reviewer
35. Stock & Bond Salesman
36. Musician
37. Prize Fighter
38. Diplomat
39. Experimental Laboratory Engineer
40. Crane Operator

41. Master Plumber
42. Aeronautical Design Engineer
43. Speech Therapist
44. Traffic Manager
45. Manufacturer's Representative
46. Author
47. Fireman
48. Army General
49. Interior Decorator
50. Novelist

51. Power Shovel Operator
52. Anthropologist
53. Marriage Counselor
54. Statistician
55. Television Producer
56. Commercial Artist
57. Wild Animal Trainer
58. U.N. Official
59. Sculptor
60. Automobile Mechanic

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<td>61.</td>
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<td>Zoologist</td>
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<td>63.</td>
<td>Physical Education Teacher</td>
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<td>Court Stenographer</td>
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<td>Hotel Manager</td>
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<td>66.</td>
<td>Free-Lance Writer</td>
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<td>67.</td>
<td>Stunt Man (Motion Picture)</td>
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<td>68.</td>
<td>Criminal Lawyer</td>
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<td>Professional Athlete</td>
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<td>Carpenter</td>
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<td>Construction Inspector</td>
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<td>Chemist</td>
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<td>Playground Director</td>
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<td>Bank Teller</td>
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<td>Business Executive</td>
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<td>Banker</td>
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<td>Motorcycle Driver</td>
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<td>88.</td>
<td>Police Judge</td>
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<td>Referee (Sporting Events)</td>
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<td>91.</td>
<td>Filling Station Attendant</td>
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<td>92.</td>
<td>Writer of Scientific or Technical Articles</td>
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<td>93.</td>
<td>Social Science Teacher</td>
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<td>94.</td>
<td>Inventory Controller</td>
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<td>Master of Ceremonies</td>
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<td>Blaster (Dynamiter)</td>
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<td>Director of Welfare Agency</td>
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The vita has been removed from the scanned document.
A TEST OF HOLLAND'S HEXAGONAL MODEL OF OCCUPATIONAL CLASSIFICATION
USING AN INNER-CITY HIGH SCHOOL POPULATION

by

Ferguson Booker Meadows, Jr.

(ABSTRACT)

John L. Holland has developed a theory which states that people can be characterized by their resemblance to each of six personality types: realistic, investigative, artistic, social, enterprising, and conventional. Holland further indicates that the environments in which people live can be characterized by their resemblance to six model environments which correspond to the six personality types. Finally, the pairing of persons and environments leads to predictable outcomes relative to vocational choice, vocational stability and achievement, educational choice, and susceptibility to influence.

The purpose of this study was to determine the extent to which Holland's model of occupational classification could be applied to an inner-city high school population.

In order to determine the applicability of Holland's model to the population being tested, four hypotheses were formulated.

1. There are significant relationships between the occupational classifications of Holland's model when applied to an inner-city high school population.

2. There are significant relationships between the intercorrelations of the occupational classifications of Holland's national sample and the intercorrelations of the occupational
classifications of the present study.

3. There is a significant relationship between the rank ordering of the intercorrelations of the occupational classifications of Holland's study and the rank ordering of the intercorrelations occupational classifications of the present study.

4. There are dominant personality types in an inner-city high school population as measured by the Vocational Preference Inventory.

The subjects for the study were 492 high school sophomores (218 male, 274 female) from Region I of the Baltimore Public School System.

To test the first hypothesis, data collected by the VPI were treated by the correlation program BMDOJD. This treatment resulted in a correlation matrix. The data were then displayed on a hexagonal model. The relationships among the scales on the hexagon were treated by Spearman and Kendall correlation coefficients. The results indicated that the relationships were significant at the .001 level.

The second hypothesis required a comparison of the hexagon which resulted from testing the first hypothesis with Holland's hexagonal model. The results revealed higher correlations among the six scales of the present study than for Holland's study.

The third hypothesis was tested by treating the rank ordered correlations from the present study and Holland's model with the Spearman coefficient of rank correlation. The results indicated that the two rank orderings were significant at the .01 level.

The fourth hypothesis was tested by using the SPSS program Codebook. The results yielded means and standard deviations for male and
female subjects. This made it possible to determine the three highest variables for male and female subjects. The dominant variables for the male subjects were Realistic, Enterprising, and Conventional, and for female subjects, Social, Artistic, and Conventional.

The results of statistically treating the data from this study revealed similarities between Holland's findings and the findings of this study. Thus, it could be suggested that the VPI is an appropriate instrument to use with inner-city high school students.