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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

THE RELATIONSHIPS AMONG OCCUPATIONAL STEREOTYPES, CERTAIN PERSONALITY DIMENSIONS, AND VOCATIONAL PREFERENCES OF ADOLESCENTS

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MELVYN A. HOLLANDER

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1968

THE RELATIONSHIPS AMONG OCCUPATIONAL STEREOTYPES, CERTAIN PERSONALITY DIMENSIONS, AND VOCATIONAL PREFERENCES OF ADOLESCENTS

APPROVED BY

DISSERTATION COMMITTEE

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THE RELATIONSHIPS AMONG OCCUPATIONAL STEREOTYPES, CERTAIN PERSONALITY DIMENSIONS, AND VOCATIONAL PREFERENCES OF ADOLESCENTS

CHAPTER I

INTRODUCTION

The world of work is becoming exceedingly complex, to the extent that there are now between 20,000 and 25,000 separate occupations (U. S. Department of Labor, 1965). Because of these many opportunities, it is impossible for an adolescent in our contemporary society to experience or interact with more than a small sample of work situations. Consequently, information about occupations is more likely to be derived from indirect means such as vicarious exposures to the discussions of others, printed reading material, and other forms of mass media. Occupational stereotypes can thus develop, to direct work experience and influence attitudes towards various occupations.

It follows, therefore, that stereotypes provide a basis for adolescents to use in deciding which occupations to explore. Hence, a scientific investigation of the

phenomenon of occupational stereotypes may be essential to the understanding of the vocational choice process in adolescents.

The purpose of this study was the identification of adolescent stereotypes for a number of occupations, as related to specified personality dimensions. An attempt was also made to determine if adolescents make vocational choices based on the similarity of the occupational stereotype to their self-description.

Background of the Study

Holland (1959) has proposed a theoretical model of vocational choice from which the problems of this study were derived. Holland's theory assumes that, at the time of a vocational choice, a person is the product of the interaction of hereditary, cultural, and personal forces. From these forces he develops a hierarchy of orientations for dealing with daily environmental demands. These orientations include such variables as interpersonal skills, values, interests, and aptitudes.

Associated with these orientations are different physical and social environments. In essence, the theory states that vocational choice is a process by which a person "searches" for those environments congruent with his hierarchy of coping orientations. Six types of orientations and/or environments have been proposed by Holland (1959).

These types, hereafter referred to as categories, include: realistic, intellectual, social, conventional, enterprising, and artistic models. A brief account of each is given in Table 1.

TABLE 1

PERSONALITY DESCRIPTIONS DEFINING EACH TYPE

Category	Personality Description*
Realistic	Masculine, physically strong, unsociable, aggressive...lacks verbal and interpersonal skills...prefers concrete to abstract problems...having conventional political and economic values.
Intellectual	Task-oriented, intraceptive, asocial; prefers to think through rather than act out problems; needs to understand...enjoys ambiguity.
Social	Social, responsible, feminine, humanistic, religious; needs attention; has verbal and interpersonal skills; avoids intellectual problem solving...orally dependent.
Conventional	Prefers structured numerical and verbal activities and subordinate roles; is conforming; avoids ambiguity...values material possessions and status.
Enterprising	Verbal skills for selling, dominating, leading...great concern for power and status...prefers ambiguous social tasks ...oral aggressive.
Artistic	Asocial; avoids problems which are structured or require gross physical skills... intraceptive...less ego strength, is more feminine...need for individualistic self expression.

*Formulations are from Holland (1963a).

This theory allows for predictions about the kinds of occupations that people in each of the six model categories should choose. For example, physicians would be intellectual types, as would zoologists, geologists, chemists, and astronomers. Additionally, individuals characterized as conventional would gravitate towards such occupations as accountant, librarian, secretary, and bank teller (Holland, 1965).

According to the theoretical framework, vocational choices among occupations within each of these major categories are a function of self-evaluation and intellectual ability to satisfy the demands of the chosen environment. Choices between and choices within each category are influenced by the person's ability to differentiate kinds of jobs. Such information held by an individual can thus be construed as a stereotype of an occupation.

One of the major contributions of Holland's theory is a typology of occupations in terms of personality descriptions. It conveys the premise that, since occupational classes are construed as types of people, the occupational choice process becomes a function of personality. It then follows that a person's interests, occupational knowledge, and interaction with environments provide information about his personality. The simplicity of Holland's formulations

is that six lists of occupations serve as indices of personality types, environments, and occupational classes.

Many scientific studies have tested and elaborated upon the original hypotheses (Holland, 1959). The earliest reports were notably longitudinal (Austin & Holland, 1961; Holland, 1962; Holland & Nichols, 1964) and were concerned with the prediction of high aptitude students' vocational choices from environmental and personal information. A technique called the Environmental Assessment Technique was developed by Austin and Holland (1961) in order to evaluate college environments. The total enrollment, average intellectual ability of the student population, and the distribution of curricula into the six model types were assessed in constructing the test.

One of Holland's reports (1962) studied two student samples over one-year and two-year periods. The purpose was to classify these students, determining correspondence to the six model types. Subsequently, predictions of choice of college major, stability of choice, and achievement were made. It was concluded that the data supported the hypotheses.

A more complex investigation was conducted by Holland (1963d). The inclusion of the Environmental Assessment Technique permitted the analysis of student-college interactions. The findings suggested that when a student and his

college were classified as the same type, the probability was significantly greater that the student would become a leader and achieve in the environment. During the four-year interval of this report, predictions of major field of study and stability were also supported.

In an extension of this study, Holland and Nichols (1964) tested the hypothesis that students remaining in a particular curriculum will resemble the typical student in this field relative to the dimensions of aptitudes, achievements, and personality. The results seemed to reflect the general conception that students leave fields for which they do not have the prerequisite abilities or interests. Additionally, this study served to specify the personality dimensions that were correlated with stability of choice.

A number of other studies were cross-sectional, using only the student as a data source and disregarding the environment. Of particular significance was Holland's (1963a) investigation in which he examined the effects of student perceptions on vocational images. The stereotypes of six occupations, one representing each of the model types, were derived by asking students to complete sentence stems like the following: "Engineers are _____." Single adjectives were given as completions, and frequency distributions were tallied.

These data provided literal, as opposed to interpretative, summaries of each occupational stereotype. These summaries indicated that student stereotypes tend to be consistent with the theoretical formulations of the model type they represent. This evidence further suggested that student occupational stereotypes have some validity.

Many diversified theories of vocational choice have been proposed, ranging from socio-economic to psychoanalytical explanations (Bordin, Nachmann, & Segal, 1963; Brill, 1949; Ginzberg, Ginsburg, Axelrad, & Herma, 1951). The question arises as to the reasons for selecting Holland's theory for this present study. These reasons are two-fold. First, Holland has been the only major theorist who has incorporated the concept of stereotypes in his formulations and then demonstrated its validity by scientific experimentation. Borow (1964) referred to this contention when he discussed Holland's theory as an outstanding example of occupational personality and stereotype research.

Secondly, Holland's theory is more explicit and amenable to experimental analysis than are most of the other contemporary ones. For example, many theorists believe that a person makes a choice in terms of how he views himself. The advantage of Holland's theory lies in the fact that it is the only one to explain how particular self-conceptions are related to particular types of vocational choices.

Consideration must also be given to the rationale behind selecting the need scales of the Adjective Check List (ACL) to measure occupational stereotypes and self-descriptions (Gough & Heilbrun, 1965). It is recalled that Holland's conceptual definition of each model type is represented by such variables as interpersonal skills, values, interests, physical-motor aptitudes, intelligence, and needs (see Table 1). Consequently a decision had to be reached as to which of the above variables would be most meaningful in terms of testing the hypotheses of this study.

Inasmuch as other theorists besides Holland consider needs to be a critical focal point in the vocational choice process, this variable was selected for experimentation. One of the more recent and promising need theories was developed by Bordin, Nachmann, and Segal (1963). The basic assumption was that different occupations afford different opportunities for the gratification of needs. Further, it was proposed that complex work activities retain the early infantile configuration of needs. Other theories that incorporate the concept of needs are Roe (1957) and Hoppock (1957).

Further substantiation of the rationale comes from a number of stereotype investigations which define this concept as a pattern of manifest needs exhibited by typical workers in a given occupation (Dickinson, 1954; Dipboye & Anderson, 1961; Gonyea, 1961; Merwin & DiVesta, 1959).

Using an instrument with phrases representing each of Edwards (1954) needs, Dipboye and Anderson (1961) found similarities and differences among and between the stereotypes of eight occupations. This instrument was administered to high school seniors. In another study (Gonyea, 1961) a list of thirty occupations selected from Holland's Vocational Preference Inventory (1965) were grouped by college students according to perceived similarity. The data were factor analyzed and the clusters labeled. Gonyea found that each of these clusters represented certain underlying needs.

Need for the Study

A review of the literature provides ample evidence that stereotypes play an important role in occupational exploration and choice. These studies have been concerned primarily with two areas: one covering the attributes that people believe workers possess; and one relating self-descriptions to stereotypes of workers in most and least preferred occupations.

Baer and Roeber (1964) argued that the stereotype investigations have been restrictive and limited in their scope. They claim that "unfortunately the study of stereotypes have been confined to those of college students, but stereotypes influence career development in all youth, employment bound as well as college bound [p. 18]."

Others have also been aware of this dilemma. For example, Isaacson (1966) recognized the importance of investigating adolescent stereotypes. He emphasized that vocational choice is a gradual process that has its origins in early childhood. Over time and through experience a person hopefully acquires self-understanding and information regarding the world of work. According to Isaacson, one of the most critical periods in this process is adolescence.

Following this same line of reason, Borow (1964) stated that youth make a series of occupational plans, even with the presence of social restrictions and limited work opportunities. In general, these plans are conscious, but the motives are not understood. Borow theorized that these plans may represent an unconscious "search" for harmonious psychosocial environments of the type which Holland proposes.

The assumption that children can and do make vocational choices is essential for the validity of the present study. That is, to have stereotypes of the world of work, adolescents must engage in various types of occupational exploration varying from reading to part-time employment. Since part of the experimental procedure calls for each subject to make vocational choices, this population must be capable of making such choices.

Of the major theories of vocational choice, only those of Roe, Ginzberg, and Super have been validated using pre-adolescent and adolescent populations. Roe (1957) viewed vocational choice as a predisposition toward perdominately person or non-person work environments. These predispositions are largely determined by the parent-child relationship and its early pattern of satisfactions and frustrations. With the exception of Green and Parker (1965), all other studies of the theory used the reminiscences of adults about childhood experiences. Green and Parker found that seventh grade boys showed orientations towards people when a positive relationship was established with either parent. On the other hand, negative parent-child relationships determined non-person orientations in girls. An extension of this line of research using elementary school and college populations was conducted by Parker, Green, Lambert, and Porter (1967).

One of the earliest theories of vocational choice was that of Ginzberg (1952). Three basic elements were developed: occupational choice is a process; the process is largely irreversible; compromise is an essential aspect of each choice. The process begins with fantasy choices (before age 11) and continues with tentative choices between ages 11 and 17. The last period consists of realistic choices and occurs between 17 and young adulthood.

O'Hara (1962) asked 4th, 5th, and 6th grade boys and girls to tell what kind of persons they wanted to become and the reasons for the choice. The data provided evidence for Ginzberg's three choice periods. In another research investigation using 6th graders, Davis, Hagan, and Strouf (1962) found the majority of choices to be tentative which would substantiate Ginzberg's theory.

Super (1953) suggests that when an individual chooses an occupation, he is attempting to develop and implement a certain self-concept. This theory has generated a large body of research. Many of the reports were concerned with pre-adolescent and adolescent populations (Gribbons, 1964; Gribbons & Lohnes, 1964; Gribbons & Lohnes, 1965; Super, 1961).

No study is cited in the literature that systematically investigated the occupational stereotypes of subjects younger than high school seniors. Only high school seniors and college students have been used to date. Furthermore, there has been no attempt to evaluate both aforementioned areas -- stereotypic attributes and perceived similarity of stereotypes to self-descriptions -- within the framework of the same study. Consequently, the present study was designed to incorporate both areas of investigation, employing an adolescent tenth grade population as subjects.

This present study also attempts to elaborate upon Holland's work. Holland's researches have neglected to use a wide sample of students. In fact, his research program consists of using only finalists from the National Merit Scholarship program. Consequently, generalization of the findings to either younger and/or more heterogeneous populations remains unanswered.

Hypotheses

Holland's research with vocational images (1963a) suggested that National Merit Scholars have acquired stereotypes of some validity as measured by open-ended sentences. This present study used an adolescent population in an effort to determine the degree of consistency in the descriptions of six stereotypes with the theoretical formulations of each type (see Table 1). Instead of tabulating sentence completion adjectives as did Holland, it was decided to analyze the need scales of the ACL. It appeared to the present investigator that Holland's conceptual definitions of each model type could be translated in terms of needs. Accordingly, the following hypotheses were derived:

1. An auto mechanic was characterized as having the configuration of: High need -- aggression; high need -- heterosexuality; low need -- affiliation; and low need -- intraception.

2. A scientist was characterized as having the configuration of: High need -- achievement; high need -- endurance; high need -- change; and high need -- intraception.
3. A teacher was characterized as having the configuration of: High need -- affiliation; high need -- exhibition; and high need -- nurturance.
4. A bank teller was characterized as having the configuration of: High need -- deference; high need -- order; low need -- autonomy; low need -- aggression; and low need -- change.
5. A business executive was characterized as having the configuration of: High need -- achievement; high need -- autonomy; high need -- dominance; high need -- endurance; high need -- exhibition; low need -- abasement; and low need -- deference.
6. An artist was characterized as having the configuration of: High need -- autonomy; high need -- abasement; high need -- intraception; low need -- affiliation; low need -- endurance; and low need -- order.

The list of ACL need scales and their definitions can be found in Appendix II.

Holland's theory also states that vocational choice involves a "search" for one or more of six occupational envi-

ronments which satisfy one's coping orientations. The present study attempts to test this theory directly with an adolescent population. The ACL was administered to obtain self-descriptions and stereotypic descriptions of the one most preferred occupation and the one least preferred occupation. In order to ascertain preferences, the Occupational Preference List (OPL) was constructed (see Appendix III). The OPL contains six occupations, representative of each of Holland's environmental categories. Three hypotheses were derived from the administration of the ACL and the OPL. They are:

7. An adolescent most preferred an occupation for which he held a stereotype positively related to his self-description.
8. Conversely, an adolescent least preferred an occupation for which he held a stereotype bearing no relation to his self-description.
9. An adolescent selected the one most preferred occupation and the one least preferred occupation from different environmental categories.

Review of the Literature

The problem of stereotypes of other people is not a new one for the field of psychology. As long ago as 1922 Walter Lippman made the remark that human behavior is

guided by "pictures in our heads," as contrasted with external reality. In describing this phenomenon, Lippman coined the term "stereotype." There is much conjecture as to the first experimental study of stereotypes. However, many authorities believe that Rice's (1926) investigation of the misidentification of photographs paved the way for variations on the stereotype theme.

One of the major and earlier theories of vocational choice explaining the role of stereotypes was that of Bordin (1943). He proposed: "In answering a Strong Vocational Interest Test an individual is expressing his acceptance of a particular view or concept of himself in terms of occupational stereotypes [p. 53]." Furthermore, the corollaries of this assumption stated that the degree of clarity of an interest type is positively related to both the degree of acceptance of the stereotype as self-descriptive and the degree of knowledge of the "true" stereotype. Partial confirmation of this view was obtained by Bordin and Wilson (1953). The authors reported both self-concept and measured vocational interests underwent changes as a result of a learning experience.

Most of the stereotype studies of the 1950's were confined to the area of industrial relations (Haire & Grunes, 1950; Haire, 1955). The effect of generalization from one stereotypic attribute of personality to another was

systematically investigated by Haire and Grunes (1950). Data presented by these authors confirmed the hypothesis that perception of a person in the role of a factory worker modified the view of other aspects of this person.

Another variable in the domain of occupational stereotypes, the characteristics of the perceiver, was found to exert an influence (Haire, 1955). He found substantial differences in the stereotypic descriptions of the same occupation according to whether the subjects were labor union or management personnel.

Thus far, an historical overview has been presented. The remainder of this review is focused on the two major concerns of the present study: the measurable stereotypes of a selected group of occupations; and the relationship between self-descriptions and stereotypes of the most versus the least preferred occupations.

A diversity of approaches has been employed in measuring occupational stereotypes. In a recent work Ulrich, Hechlik, and Roeber (1966) cited several examples. They include open-ended sentences, checklists of needs taken from the Edwards Personal Preference Schedule, and rating scales (Edwards, 1954). The present investigator added the methodology of adjective check lists to the review of the literature.

The technique of choosing from a list of adjectives those that describe worker characteristics was used in the studies of Stagner (1950) and Walker (1958). Stagner selected 100 college students and asked them to choose which of twenty adjectives were most applicable to factory workers and business executives. Qualitatively different stereotypes were obtained. The factory worker had the unfavorable image of being "ignorant" and "lazy," while the business executive was seen as "grasping" and "calculating."

Walker (1958) set out to determine the effects of such variables as sex of subject and political affiliation on the stereotypes of ten occupations. The findings suggested that each occupation could be clearly differentiated by adjective descriptions. However, no significant differences were found between sexes, or between political sympathizers.

Holland (1963a) used open-ended sentences with 638 National Merit Scholars about to enter college. Each was asked, by mail, to complete sentences like the following: "Engineers are _____." for six occupations. These occupations were: engineer, physicist, teacher, accountant, business executive, and artist. Inasmuch as completions tended to be single adjectives, frequency distributions of these words were derived. Holland stated that the stereotypic descriptions of the six occupations were consistent with the theoretical models they represented. The

results further suggested that the students clearly differentiated each occupation. For example, artists were characterized as "temperamental," while no other occupation was characterized by this term.

To obtain a measure of occupational stereotypes, Dipboye and Anderson (1961) constructed their own instrument. It consisted of 70 phrases, each representative of one of the 14 manifest needs proposed by Edwards (1954). The sample of 448 high school seniors were instructed to select the five phrases best representative of a high school teacher, scientist, elementary school teacher, and school principal. These data were presented in graphic profiles of need strength. Student percepts suggested that, among other things, engineers and scientists have higher needs for achievement and lower needs for socialization than do the educator group.

Two studies have been cited in the literature that were designed to explore the usefulness of a series of rating scales (Beardslee & O'Dowd, 1962; Ulrich, Hechlik, & Roeber, 1966). In the earlier study, Beardslee and O'Dowd presented a questionnaire to 170 Wesleyan undergraduates in order to rate 15 occupations and 34 scales. The scales were classified into four types: social position, life style, personality, and social participation. When the scale values for each occupation were calculated, it was

found that doctors and lawyers were anchored at the desirable end of most scales. In contrast, accountants and artists had the most unfavorable images.

Ulrich, Hechlik, and Roeber (1966) refined the rating scales of Beardslee and O'Dowd (1962) to incorporate social factors, economic factors, personal factors, working conditions, and job preparation. Of the 55 scales in their instrument, nine functioned as "validity" scales. The six occupations used were: auto mechanic, lawyer, librarian, linguist, model, and school counselor. The authors summarized their results to the effect that lawyers and school counselors were held in esteem, whereas the auto mechanic and model were associated with such attributes as "not neat" and "irresponsible" respectively.

A survey of the literature reveals that some research has been generated from the proposition that self-descriptions are most congruent with descriptions of the stereotype of workers in occupations selected as vocational preferences. Four of these studies have used specific occupational groups as subjects (Simons, 1967; Englander, 1960; Pallone & Hosinski, 1967; and Morrison, 1962).

Simons (1967) reported that a significant correlation existed between the self-concepts of high school seniors selecting engineering as a major in college and their stereotype of engineers. A similar positive relationship to the

group stereotype of engineers was found. Similar results were obtained by Englander (1960) using a college population. Specifically, Englander selected elementary education, secondary education, and non-education majors to make forced-choice Q sorts regarding descriptive terms about an elementary school teacher. Each group was found to be statistically different from the others regarding congruency of self-descriptions and stereotype of an elementary school teacher. Evidence was presented as predicted, that the greatest degree of consistency was characteristic of elementary education majors.

An investigation of the occupational choice process of both nursing and teaching students was conducted by Morrison (1962). He obtained Q sorts of self-descriptions, of a preferred occupational role, and an occupational role not preferred. Results from both samples indicated a greater congruence between self-descriptions and perceptions of their preferred occupation than between self-descriptions and an occupation they did not prefer.

Pallone and Hosinski (1967) extended this line of research with nurses to include the variable of degree of professional training. Although the aforementioned theory of congruence with respect to vocational choice was supported, no significant differences were found between pre-professional and professional nurses.

Tests of hypotheses derived from Bordin's (1943) theory of vocational choice were undertaken by Schutz and Blocher (1960) and Blocher and Schutz (1961). In the earlier study the authors asked 135 high school seniors to select one occupation from a list of 45 titles scored on the Strong Vocational Interest Blank which they most desired as a future career.

In order to evaluate the degree of correspondence to occupational stereotypes, an instrument was developed. This instrument consisted of ten short paragraphs, each being a sketch of the stereotype assumed to be representative of one of Strong's group scales. Using this device, each subject was instructed to select the character sketch most descriptive of himself. Results revealed that significantly more students selected the character sketch of the group scale from which they also made their vocational choice, than was expected by chance alone.

Blocher and Schutz (1961) asked each subject to describe himself and his ideal self on an adjective check list. In addition, selection of most and least preferred occupations from the list of 45 used in the former study was obtained. The procedure also called for each subject to describe both most and least preferred occupations on this adjective check list. Analysis of these data showed that the mean similarity score between self-descriptions and most

preferred stereotype was significantly greater than the score between self and least preferred stereotype. The same relationship held with ideal self-perceptions and stereotypes.

Although Holland has not formally tested his theory of vocational choice with respect to stereotypes, some of his researches in combination lend support. An analysis of vocational images using open-ended sentences was previously cited (Holland, 1963a). The same population was used in a later study by Holland (1963b) in order to obtain self-descriptions. These descriptions were derived from an adjective check list of 182 words. In summarizing these two studies Holland (1963c) compared the results. He stated: "A student's image of a vocation is, to some degree, consistent with his self-ratings and personality. For example, students usually 'see' engineers as practical, hardworking, useful, etc., and students with realistic preferences characterize themselves as practical, hardworking, and enduring [p. 24]."

In summary, a review of the literature suggests two propositions: occupational stereotypes can be measured by a variety of instruments; and a positive relationship exists between the stereotype of a preferred occupation and self-description. With regard to measuring stereotypes, it has been found that such instruments as open-ended sentences, adjective check lists, and rating scales clearly differen-

tiate job titles across such dimensions as personality, status, life style, and working conditions. The survey also reveals that the positive relationship between preferred occupational stereotype and self-description holds, regardless of the specific occupational group used as subjects.

CHAPTER II

METHOD

Subjects

The subjects for this study were 54 high school sophomores attending Putnam City High School in Oklahoma City, Oklahoma. The school administration authorized use of an entire study hall class of 75 for purposes of the research. The research was explained to these students and volunteers were requested. Seventy-two per cent (54 students) of the study hall class consented to participate. The experimental student population was Caucasian, predominantly middle class, and made up of both boys and girls. The designation "middle class" was made by school officials and accepted by the present investigator. Additional evidence of the "middle class" designation appeared when the fathers' occupations were found to range from unskilled labor to the professions. The present study included both boys and girls, but does not propose to differentiate the sexes since Holland did not view sex differences as critical. As a group the subjects were average to above average in scholastic aptitude and in

school achievement. More detailed descriptive data can be found in Table 2 and in Appendix I.

All 54 experimental subjects were used in testing both major hypotheses. Using the ACL, each subject was asked to: (1) describe himself; (2) describe his one most preferred occupation; (3) describe his one least preferred occupation; and (4) describe the occupation selected by this investigator as representative of each of Holland's six separate categories.

Test Instruments

Adjective Check List

The ACL (Gough & Heilbrun, 1965) was the instrument used to test the hypotheses of the present study. Included in the ACL are 300 behavioral adjectives from which a person is requested to choose those which are most self-descriptive. Although the printed instructions call for self-reports, many studies using this instrument have varied the instructions widely. In fact, the manual claims that the ACL can be administered to persons to elicit characterizations of anyone with whom they are familiar, or by raters and judges to record the personality attributes of subjects being evaluated.

The present edition (1965) has undergone many revisions since its development in 1952 by Gough while working at

TABLE 2

CHARACTERISTICS OF STUDENT POPULATION

Characteristic	Mean	Standard Deviation
Age	190 months	5.5 mo.
Grade Point Average[a]	2.45	.76
Differential Aptitude Test[b]		
Verbal Reasoning	64.83	20.71
Numerical Ability	57.28	24.30
Total	62.73	22.46

[a]Grades computed on the following basis: A = 4; B = 3; C = 2; D = 1; F = 0.

[b]Percentile scores based on national 9th grade norms.

the University of California Institute of Personality Assessment and Research. Of primary significance is Heilbrun's (1959) contribution. He constructed 15 scales for the ACL, each representing one of Murray's need-traits (see Appendix II). Together, Heilbrun and Gough have developed 10 additional experimental scales and a system of standard score conversions for each in the 1965 edition.

Scoring for each scale consists of obtaining the algebraic sum of indicative adjectives minus contra-indicative adjectives. The procedure yields a total raw score which can be converted into a standard score using normative groups based on sex and total number of adjectives checked across all scales. In addition to providing tables from which these scores can be derived, the manual offers

sketches that are intuitive and inductive descriptions of each scale.

Three types of reliability studies have been reported in the manual: reliability of the scales; test-retest reliability concerning the list of words; and agreement among judges. Regarding reliability of scales, experimental samples of undergraduate college students, high school students, adult males, and medical school students have been used for subjects. Test-retest intervals have varied from ten weeks to five and one-half years. Most of the scales were found to possess moderate reliability over the ten-week interval. A few scales, such as Dominance, Self-Confidence, and Exhibition showed high reliability over the five and one-half year interval.

Two studies were reported whose purpose was to establish test-retest reliability of the list of words. It was found that the reliability coefficients varied from +.01 to +.86 with a mean of +.54. Although the mean reliability is not high, further researches indicated that high stability coefficients were correlated with the personality of the test taker. Thus reliability on the ACL may be a psychological variable, not just statistical error.

With respect to agreement between judges, the practice of Gough was to have ten observers describe each assessee on the ACL. The inter-group reliability coefficients ranged

from +.61 to +.75. The manual states that these values are high enough to suggest that the ACL can be used by trained observers.

The ACL Manual (1965) cites a large number of investigations on the validity of the ACL. In one of them (Heilbrun, 1958) the need scales of the ACL were compared to their counterparts on the Edwards Personal Preference Schedule. Analysis of the data yielded significance beyond the .01 level of confidence in ten of the fifteen coefficients.

In another validation study, Heilbrun (1960) discovered that adjusted college students could be differentiated from maladjusted ones using the need scales. Experienced psychologists stipulated which needs would be correlated with degree of adjustment. The results were in the predicted directions.

The ACL has been found to be valid in discerning the personality factors of adolescents with different child rearing histories (Heilbrun & McKinley, 1962) and in identifying creativity among architects (MacKinnon, 1963). Furthermore, some studies have computed the correlations of the ACL with well-established, existing measures. Examples of such measures are the Terman Concept Mastery Test, the California Psychological Inventory, the Minnesota Multiphasic Personality Inventory, and the California F Scale.

Other Instruments and Materials

The OPL was constructed specifically for this study. It consists of 36 job titles arranged in alphabetical order from which each subject was instructed to place a "+" mark next to the one he most preferred to enter, and a "-" mark next to the one he least preferred to enter (see Appendices III & IV).

Each of Holland's categories was represented by six of these job titles. In selecting these titles, an attempt was made to provide a balance of traditional male and female occupations, as well as high and low status ones. The exact job titles were primarily derived from Holland's Vocational Preference Inventory (1965) and his earliest theoretical paper (1959).

To test the first major hypothesis, a selection of six occupational titles was made by this investigator and described by the subjects in terms of stereotypes on the ACL. They were: auto mechanic, scientist, teacher, bank teller, business executive, and artist.

Each occupational title represented one of Holland's categories. Three of them were the same occupations used by Holland (1963a) to test vocational images. Holland used the physicist to represent his intellectual category. However, it was felt that adolescents would not have direct exposure to this occupation. Consequently, it was decided to substitute the generic title scientist.

Inasmuch as the aforementioned four occupations have been found to be characterized by moderate to high social status, a balance with respect to occupations of low status was thought to be desirable. This rationale led to the selection of auto mechanic and bank teller as occupational titles representing the realistic and conventional categories respectively. Support for their low social status was cited in the studies of Hodge, Siegel, and Rossi (1964); Ulrich, Hechlik, and Roeber (1966); and Gonyea (1961).

Additionally each subject was provided with an eight-page list of definitions of the 300 ACL adjectives. These definitions were derived from the Thorndike-Barnhart Junior Dictionary (1965) because its vocabulary is geared to the age group represented by the experimental population. It was thought that some standardization procedure was necessary to account for the possibility that some subjects were not aware of the meaning of specific adjectives on the list.

Procedure

The entire experimental group of 54 tenth-graders was administered both the ACL which yielded self-descriptions or occupational stereotypes, and the OPL which determined vocational preferences. In addition each subject was given a list of definitions regarding the 300 adjectives used in the ACL. One group was used to test both major hypotheses. All testing took place at the Putnam City High School, under

standard classroom conditions, and was completed in three sessions on three different days.

The first major hypothesis was to determine the degree of consistency in the descriptions of six occupational stereotypes with the theoretical formulations of the model type they represented according to Holland's classification system. The directions called for all subjects to describe their stereotypic conceptions of an auto mechanic, a scientist, a teacher, a bank teller, a business executive, and an artist separately on the ACL. Specifically, the subjects responded to auto mechanic and scientist during the first session, and teacher during the second session. At the third session each subject was instructed to describe a bank teller, business executive, and artist.

The second major hypothesis asked the extent to which self-descriptions were related to the stereotypic descriptions of one's most preferred occupation and one's least preferred occupation. The following procedure was used to collect these data. During the first of two sessions, each subject was asked to describe himself on the ACL. Also, each subject was given the OPL to choose the one most preferred occupation and the one least preferred occupation from among 36 job titles.

The remaining data were collected during the second session. Using the ACL, each subject was asked to describe

his conceptions of two occupations: the most preferred occupation and the least preferred occupation selected from the OPL.

The procedure for the two major hypotheses overlapped during the sessions. For example, on Experimental Day One while each subject was describing two of the six standard occupations in order to test the first major hypothesis, he was also describing himself and choosing occupations from the OPL. On Experimental Day Two the third of six occupations was described on the ACL, as well as the most and the least preferred occupational choice. All data for the second hypothesis were collected during these two sessions. Experimental Day Three was set aside for stereotypic descriptions of the remaining three standard occupations.

Statistical Treatment of the Data

The scores for every subject on each of the ACL need scales were statistically analyzed. To determine the degree of consistency in the stereotypic descriptions of the six occupations with the theoretical formulations of the model category they represented, a single-factor analysis of variance with repeated measures was selected (Winer, 1962). The null hypothesis stated that the means for each occupation (called treatments in this discussion) on a specific ACL were equal.

Each scale was analyzed separately to determine if the over-all differences between the six treatment means were significant. The analysis of variance was computed as follows:

1. The sum of squares was partitioned into treatment and error term components and computed by:

$$SS_{treatments} = \frac{\Sigma T_j^2}{n} - \frac{G^2}{kn}$$

$$SS_{error} = \Sigma\Sigma X^2 - \frac{\Sigma T_j^2}{n} - \frac{\Sigma P_i^2}{k} + \frac{\Sigma G^2}{kn}$$

X^2 = sum of the squares of each individual score.

T_j^2 = sum of the squares of each treatment mean.

G^2 = sum of the treatment means squared.

P_i^2 = sum of the squares of each subject mean.

n = number of subjects.

k = number of treatments.

2. The mean square (MS) for each SS component was computed by:

$$MS = \frac{SS}{df} \quad \text{where } df_{treatments} = k - 1.$$
$$\text{where } df_{error} = (n - 1)(k - 1)$$

3. To test the null hypothesis of no significant differences between treatment means an F test was computed by:

$$F = \frac{MS_{treatments}}{MS_{error}}$$

4. The critical region for the two-tailed test of significance was defined by:

$F_{.95}\ (5,318) = 2.21$

$F_{.99}\ (5,318) = 3.02$

If the F test proved to be significant, the next step was to determine which of the six treatment means in a specific scale contributed to the results. The Duncan's new multiple-range test (Steel & Torrie, 1960) was selected to compare each treatment mean with every other treatment mean in that scale. The procedure was as follows:

1. The standard error of the treatment means was determined by:

$$S_{\bar{x}} = \sqrt{\frac{MS_{error}}{MS_{treatments}}}$$

2. Significant ranges for the .05 level of confidence were extracted from a table wherein values for df_{error} and the number of means for the range being tested were entered (Steel & Torrie, 1960, p. 443). These significant ranges were then each multiplied by $S_{\bar{x}}$ to give the least significant ranges.

3. The treatment means in any ACL scale were ranked and a test of differences was made in the following order: largest minus smallest; largest minus second smallest; . . .; largest minus second largest;

then second largest minus smallest; second largest minus second smallest; and so on to second smallest minus smallest.

4. To test for significant differences between any two means, it was necessary to determine the range of means between the two ranked means. The appropriate least significant range value corresponding to the range of means between the two means was identified. Significant differences between any two means was defined as the mean difference value that exceeded its corresponding least significant range value.
5. A treatment mean was defined as "high" within an ACL scale if it was significantly different from and larger than four of the other five treatment means. Conversely, a treatment mean was defined as "low" if it was significantly different from and smaller than four of the other five treatment means.

A correlational analysis was used to study the degree of significance in the relationships between self-descriptions and stereotypic descriptions of both the most and the least preferred occupations. The procedure was as follows:

1. Pearson product moment correlation coefficients between self and most preferred occupation and between self and least preferred occupation

descriptions were computed separately for each ACL scale. The coefficient was defined by:

$$r = \frac{N\Sigma XY - \Sigma X \Sigma Y}{\sqrt{N\ X^2 - (\ X)^2 \quad N\ Y^2 - (\ Y)^2}}$$

X = raw score self description.

Y = raw score occupational stereotype.

2. A test of significance was used on each Pearsonian r that was computed. According to McNemar (1962) if the number of subjects is greater than 50 and one is interested in determining if an r is significantly different from zero, the following formula can be used:

$$Z = \frac{r_{xy}}{s_i} \text{ where } s = \frac{1}{\sqrt{N}} \text{ and } N = \text{number of subjects.}$$

3. The critical region for the two-tailed test of significance was defined by:

$Z_{.05} = \pm 1.96$

$Z_{.01} = \pm 2.54$

4. Since it was thought desirable to determine the over-all relationship, the r's had to be averaged over the 15 scales. McNemar (1962, p. 140) states that "when we have two or more sample values for the correlation between two variables we can average the r's." This was accomplished by converting

each r to a Fisher's z. The following transformation was used:

$z = 1.1513 \log_{10} \frac{1 + r}{1 - r}$ where the standard error $= \frac{1}{\sqrt{N - 3}}$.

5. The 15 scale values for the correlations between each of the two values (self-most and self-least) were averaged separately by taking the weighted average of the corresponding z's as follows:

$$z_{av} = \frac{(N_1 - 3)z_1 + (N_2 - 3)z_2 + \ldots (N_{15} - 3)z_{15}}{(N_1 - 3) + (N_2 - 3) + \ldots (N_{15} - 3)}$$

6. A significant obtained r was defined as one that did not represent a chance relationship, assuming the population correlation to be zero. The significance of r was determined by substituting its z_{av} equivalent and computing as follows:

$$Z = \frac{z_{av}}{\text{Standard Deviation}} = \frac{z_{av}}{\sqrt{(N_1-3)+(N_2-3)..(N_{15}-3)}}$$

7. Hypothesis seven (self-most) predicted directionality. Consequently the critical region was a one-tailed test and was defined as:

$Z_{.05} \geqq 1.64$

$Z_{.01} \geqq 2.34$

8. Hypothesis eight (self-least) did not predict directionality. Consequently the critical region was a two-tailed test and was defined as:

$Z_{.05} = \pm 1.96$

$Z_{.01} = \pm 2.54$

Hypothesis nine stated that adolescents selected the one most preferred occupation and the one least preferred occupation from different environmental categories. A large sample test concerning proportions (Walker & Lev, 1953) was selected to test the above hypothesis. The only assumption that must be met to use the test is the presence of a binomial population. Accordingly, the preferential choices of the subjects were classified into two groups: most and least preferred occupational choices selected from the same environmental category; and most and least preferred occupational choices selected from different environmental categories. Since Holland's six categories were presented in the OPL, it was expected that by chance alone the probability of making both choices from the same category would be one-sixth. However, this investigator predicted that the probability of occurrence would be less than one-sixth.

The large sample test for proportions was calculated by:

$$Z = \frac{p - P}{\frac{PQ}{N}}$$

p = observed proportion.

P = theoretical proportion.

Q = 1 - P

The critical region of the one-tailed test was defined as:

$Z_{.05} \leq -1.64$

$Z_{.01} \leq -2.34$

The data derived from the methods described, and relating to the stated hypotheses, will be presented and discussed in the succeeding chapters.

CHAPTER III

RESULTS

Appropriateness of the ACL for Discriminating Stereotypes

A single-factor analysis of variance (see page 33 and page 34) was conducted separately for each of the 15 ACL need scales. In this way the mean scores for auto mechanic, scientist, teacher, bank teller, business executive, and artist were analyzed to determine if they represented random samplings for a common normal population. Inspection of the F tests in Table 3 revealed that each scale produced significant differences in the means of the six occupational stereotypes at the .005 level of confidence. Hence, the null hypothesis of no difference between means was rejected. The computational data used to determine the over-all significance level of a particular scale are contained in Appendix V.

TABLE 3

SUMMARY OF ANALYSIS OF VARIANCE FOR EACH OF 15 ACL NEED SCALES ON SIX OCCUPATIONAL STEREOTYPES

Need Scale	Source	DF	SS	MS	F (5,318)
Achievement	Total	323	10412.1		
	Treatment	5	2553.2	510.6	20.6*
	Error	318	7858.9	24.7	
Dominance	Total	323	14439.4		
	Treatment	5	4136.9	827.3	25.5*
	Error	318	10302.4	32.3	
Endurance	Total	323	11446.0		
	Treatment	5	2564.8	512.9	18.3*
	Error	318	8881.1	27.9	
Order	Total	323	9161.7		
	Treatment	5	1989.6	397.9	17.6*
	Error	318	7172.0	33.5	
Intraception	Total	323	7620.0		
	Treatment	5	975.5	195.1	9.3*
	Error	318	6644.4	20.8	
Nurturance	Total	323	20641.6		
	Treatment	5	1145.2	229.0	3.7*
	Error	318	19496.3	61.3	
Affiliation	Total	323	13123.2		
	Treatment	5	1187.9	237.5	6.3*
	Error	318	11935.2	37.5	
Heterosexuality	Total	323	3462.3		
	Treatment	5	315.9	63.1	6.3*
	Error	318	3146.3	9.8	
Exhibition	Total	323	4945.0		
	Treatment	5	1018.6	203.7	16.5*
	Error	318	3926.3	12.3	
Autonomy	Total	323	6047.4		
	Treatment	5	1359.7	271.9	18.4*
	Error	318	4687.7	14.7	

TABLE 3 (Continued)

Need Scale	Source	DF	SS	MS	F (5,318)
Aggression	Total	323	14396.7		
	Treatment	5	1481.5	296.3	7.2*
	Error	318	12915.2	40.6	
Change	Total	323	3515.5		
	Treatment	5	856.7	171.3	20.4*
	Error	318	2658.7	8.3	
Succorance	Total	323	2365.1		
	Treatment	5	332.5	66.5	10.4*
	Error	318	2032.5	6.3	
Abasement	Total	323	4373.6		
	Treatment	5	973.9	194.7	18.2*
	Error	318	3399.7	10.6	
Deference	Total	323	6125.2		
	Treatment	5	1663.0	332.6	23.7*
	Error	318	4462.1	14.0	

*Significant at the .005 level of confidence.

Hypotheses One through Six

Since the F test for each ACL scale proved to be significant at the .005 level of confidence, the Duncan's new multiple range test (Steel & Torrie, 1960) was used to compare each occupational stereotype mean with every other one on that scale. However, the means of the six occupational stereotypes were not compared across ACL scales because specific clusters of the ACL's 300 adjectives were applicable only to certain scales. Consequently each scale varied in the kinds and number of adjectives used to derive raw scores.

TABLE 4

MEAN SCORES FOR OCCUPATIONS REPRESENTING HOLLAND'S CATEGORIES ON 15 ACL NEED SCALES[a]

Need Scale	Auto Mechanic	Scientist	Teacher	Bank Teller	Business Executive	Artist
Ach	6.35	11.09*	8.87	5.77	12.75*	5.27
Dom	7.90	9.96	10.51	4.40**	14.50*	4.33**
End	5.98	9.66*	7.38	7.27	10.11*	1.57**
Ord	5.53	8.94	6.88	7.96	9.37	2.03**
Int	5.38	9.09*	8.53	7.11	8.16	4.27**
Nur	5.33	4.85	6.75	8.46	6.57	2.40
Aff	7.94	8.70	12.12*	9.59	12.48*	7.62
Het	2.53	1.96	3.05	2.05	4.90*	3.20
Exh	2.11	0.77**	2.90	-1.00**	4.57*	2.96
Aut	1.38	2.35	1.85	-1.77**	2.09	5.24*
Agg	-4.11	-3.96	-2.81	-8.16**	-2.83	-1.27
Cha	1.12	3.70	1.98	-0.37**	3.51	4.25
Suc	-1.46**	-0.46	0.62	0.38	-1.48**	1.14
Aba	-2.66	-1.35	-2.29	1.05*	-4.66**	-1.11
Def	-0.05	-0.24	-0.18	4.16*	-2.29**	-2.90**

[a]The following abbreviations have been employed for the need scales: Ach = Achievement; Dom = Dominance; End = Endurance; Ord = Order; Int = Intraception; Nur = Nurturance; Aff = Affiliation; Het = Heterosexuality; Exh = Exhibition; Aut = Autonomy; Agg = Aggression; Cha = Change; Suc = Succorance; Aba = Abasement; Def = Deference.

*Mean is significantly different from, and larger than four of the remaining five means in a specific ACL scale at the .05 level of confidence.

**Mean is significantly different from, and smaller than four of the remaining five means in a specific ACL scale at the .05 level of confidence.

The mean values for each occupational stereotype on the 15 ACL need scales are contained in Table 4. These values were used to accept or reject the hypothesis that the six occupational stereotypes could be described in terms of high or low needs extracted from the conceptual definition of the model type they represented according to Holland's classification system. On any scale, a mean was defined on an a priori basis as high, if it were significantly different from and larger than four of the remaining five means at the .05 level of confidence. Conversely, a mean was defined as low on an a priori basis, if it were significantly different from and smaller than four of the remaining five means at the .05 level of confidence.

It should be noted that Table 3 and Table 4 suggest that some need scales are better able to discriminate among the six occupations than are others. For example, the three scales with the highest F ratios (achievement, deference, and dominance) were found to yield a total of eight significant mean scores. In contrast, the three scales with the lowest F ratios (affiliation, nurturance, and heterosexuality) were found to yield only a total of three significant mean scores. It was expected, therefore, that confirmation of an hypothesis would be influenced by the discrimination power of each scale.

Hypothesis One

The first hypothesis stated that the auto mechanic was characterized as having the configuration of: high need -- aggression; high need -- heterosexuality; low need -- affiliation; and low need -- intraception. The Duncan's new multiple range test was used to test for the presence of these hypothesized needs.

Not one of the four predicted mean scale scores were obtained. Analysis of these data yielded only statistically significant low need -- succorance, as descriptive of the auto mechanic. Therefore, the first hypothesis was not confirmed.

The finding that only the succorance scale discriminated the auto mechanic was unexpected. Notwithstanding, adolescents tended to perceive the auto mechanic as being distinguished by the characteristics of independence, resourcefulness, and self-sufficiency. These terms were representative of a sketch based on the definition of low need -- succorance (ACL Manual, 1965, p. 9).

A possible explanation of the failure to support hypothesis one might be that adolescents did not have either strong or polarized perceptions of the auto mechanic. Appendix V provided support for this contention. Ten of the 15 variance values for auto mechanic were smaller than the corresponding average variance values. Further support came

from the stereotype research of Ulrich, Hechlik, and Roeber (1966). Using a series of rating scales the investigators found that auto mechanic was the only one among six selected occupations that did not receive extreme ratings.

It was also possible that the scales predicted as descriptive of the auto mechanic in hypothesis one had low discrimination power. In Table 3 these scales (affiliation, heterosexuality, aggression, and intraception) ranked 11 through 14 with respect to the size of the F ratio and the number of high and low mean scores identified.

Hypothesis Two

The second hypothesis stated that the scientist was characterized as having the configuration of: high need -- achievement; high need -- endurance; high need -- intraception; and high need -- change. The Duncan's new multiple range test was used to test for the presence of these hypothesized needs.

Three of the four predicted mean scale scores (75%) were obtained. Only high need -- change failed to be significant. Therefore, the second hypothesis was substantially confirmed. Analysis of these data further yielded statistically significant low need -- exhibition, as descriptive of the scientist.

A composite of the scientist based on the definitions of the need scales found in the ACL Manual (1965, pp. 7-9)

presented him as hard working and very involved in intellectual tasks from which recognition and success were sought. The scientist was also seen as emotionally constricted and lacking in confidence, especially when appearing in public.

Failure of high need -- change to support the hypothesis may have indicated that the adolescents used in this study had a unique perception in this respect. A review of the stereotype literature led to the conclusion that interest in new and changing things was a primary characteristic of the scientist. Adolescents, at this point in their development, may not have perceived the role of change in the performance of the scientist.

The emergence of low need -- exhibition as additional evidence of the scientist stereotype appeared to be a function of faulty hypothesis making by this investigator. For example, Holland (1963a) observed that "introverted" was a frequent adjective applied to the occupations representing the intellectual category. Evidence also came from the impressions of Beardslee and O'Dowd (1962) that a dominant feature of the scientist stereotype was a lack of interest in socializing and appearing in public, which was consistent with the definition of low need -- exhibition.

Hypothesis Three

The third hypothesis stated that the teacher was characterized as having the configuration of: high need --

affiliation; high need -- exhibition; and high need -- nurturance. The Duncan's new multiple range test was used to test for the presence of these hypothesized needs.

One of the three predicted mean scale scores (33%) was obtained. Only high need -- affiliation proved to be significant. Therefore, the third hypothesis was only nominally confirmed.

A composite of the teacher based on the definitions of the need scales found in the ACL Manual (1965, pp. 7-9) presented him as adaptable and anxious to please other people. He was concerned about his position and would not be above exploiting his relationships with others to gain his ends.

Although the teacher was found to have a flat, restricted stereotype, it was believed that this adolescent population had strong polarized impressions of the occupation. However, since their perceptions were highly varied, it appeared that the statistical phenomenon of regression to the mean may have occurred.

Appendix V supported this explanation. Inspection of these data revealed that the variances for teacher exceeded the mean variance on 13 of the 15 scales. High need -- nurturance was thought to be the best scale to differentiate the teacher from the other five occupations. From Appendix V it was noted that its variance (high need -- nurturance)

was twice that of the average variance for all occupations. Thus, the mean nurturance score for teacher may have represented a statistical artifact.

Hypothesis Four

The fourth hypothesis stated that the bank teller was characterized as having the configuration of: high need -- deference; high need -- order; low need -- aggression; low need -- autonomy; and low need -- change. The Duncan's new multiple range test was used to test for the presence of these hypothesized needs.

Four of the five predicted mean scale scores (80%) were obtained. Only high need -- order failed to be significant. Therefore, the fourth hypothesis was substantially confirmed. Analysis of these data further yielded statistically significant high need -- abasement, low need -- dominance, and low need -- exhibition as descriptive of the bank teller.

A composite of the bank teller based on the definitions of the need scales found in the ACL Manual (1965, pp. 7-9) presented him as having a rather unfavorable image. He was seen as passive, submissive, and unsure of himself in meeting life's problems. He sought stability and avoided risks. His positive characteristics were dependability and conscientiousness.

The findings of the fourth hypothesis tended to be perplexing. The failure of high need -- order to materialize was unexpected inasmuch as this attribute was thought to be a prerequisite for successful experiences in the conventional category occupations. It was noted that bank teller had the largest mean score for the need order, being significantly greater than three of the remaining five means. Consequently, the failure to obtain statistical significance may have been a function of stringent cut-off points used to define a need as either high or low.

The additional findings of statistically significant high need -- abasement, low need -- dominance, and low need -- exhibition may have to be incorporated into the conceptual definition of occupations representing Holland's conventional category. These needs reflected attributes of emotional insecurity, which Holland did not cover in his studies.

It will be recalled that Holland (1963a) used the accountant to represent the conventional category. Consequently, it was conceivable that the bank teller, although from the same category, would be reacted to as a less desirable low status occupation which does not require as high a degree of training and skill as does the accountant.

Hypothesis Five

The fifth hypothesis stated that the business executive was characterized as having the configuration of: high need -- achievement; high need -- dominance; high need -- endurance; high need -- autonomy; high need -- exhibition; low need -- abasement; and low need -- deference. The Duncan's new multiple range test was used to test for the presence of these hypothesized needs.

Six of the seven predicted mean scale scores (86%) were obtained. Only high need -- autonomy failed to be significant. Therefore, the fifth hypothesis was substantially confirmed. Additional statistically significant data descriptive of the business executive were: high need -- affiliation; high need -- heterosexuality; and low need -- succorance.

A composite of the business executive based on the definitions of the need scales found in the ACL Manual (1965, pp. 7-9) demonstrated that he had the most favorable and elaborate image of the six occupations. He was seen as a masculine figure whose characteristics of independence, persistence, confidence, and desire to succeed were suited to supervisory and decision-making tasks.

The failure of the business executive profile to show high need -- autonomy may be explained by suggesting that he was perceived as adhering to social expectations but not

rigidly conforming to them. Actually Holland's definition of the enterprising category stated that people in these occupations conformed to society, but not to the degree that they could be differentiated from people in other categories of occupations. Hence, the fact that high need -- autonomy was not confirmed may have been attributed to a faulty translation of the conceptual definition into the hypothesis by this investigator.

The emergence of additional scales (high need -- affiliation, high need -- heterosexuality, and low need -- succorance) as descriptive of the business executive was not supported in the literature. Consequently, Holland's conceptual definition for the enterprising category may have to be augumented. It was also possible that the significant findings on these scales were a unique manifestation of the business executive stereotype, at least to adolescents.

For example, the occurence of high need -- heterosexuality may have been associated with the manipulative, assertative qualities of the business executive which could have also implied masculinity. Additionally, the business executive was distinguished from many of his enterprising counterparts by his ability to relate well with others and supervise workers. These qualities could have been interpreted as expressions of a high need for affiliation.

Hypothesis Six

The sixth hypothesis stated that the artist was characterized as having the configuration of: high need -- autonomy; high need -- abasement; high need -- intraception; low need -- affiliation; low need -- endurance; and low need -- order. The Duncan's new multiple range test was used to test for the presence of these hypothesized needs.

Three of the six predicted mean scale scores (50%) were obtained. They were as follows: high need -- autonomy; low need -- order; and low need -- endurance. Therefore, the sixth hypothesis was only partially confirmed. Further statistically significant data descriptive of the artist included: low need -- dominance; low need -- deference; and low need -- intraception.

A composite of the artist based on the descriptions of the need scales found in the ACL Manual (1965, pp. 7-9) revealed that adolescents saw him as being an impulsive, erratic, and impatient person who harbored much self-doubt. He was aggressive in manner and avoided situations where direct action was not possible.

According to Holland's theory it was expected that the artist would be characterized as having high need -- intraception. However, if one evaluated the stereotype literature, it was not surprising that low need -- intraception proved to be significant. In most studies the

artist was described as more impulsive than reflective. The various stereotypes also conceived of the artist as a doer who demonstrated little interest in teasing out the motives of others. Consequently this finding, in conjunction with the evidence from other studies, indicated that a revision of Holland's formulation may be necessary.

In the same fashion, the failure of high need -- abasement and low need -- affiliation to be statistically significant was consistent with the findings of other investigators. Typically, the artist was described as confident of his abilities and desirous of exhibiting or performing in public respectively. These findings in other studies would seem to contradict Holland's formulation for this model type. The lack of statistically significant findings in this present study suggested that other theories of vocational choice may offer more valid descriptions of the artist stereotype.

Relationship of Self-Description to Occupational Preferences

The purpose of hypotheses seven, eight, and nine was to study the process of vocational choice in terms of Holland's theory. To do this, data were obtained on descriptions of self, one's most preferred occupation, and one's least preferred occupation.

A correlational analysis using Pearson product moment coefficients was performed to determine if significant relationships existed between self and the most preferred occupation (hypothesis seven) and between self and the least preferred occupation (hypothesis eight). Each ACL scale was analyzed separately for significance. The correlation coefficients were averaged over the 15 scales in order to ascertain if the over-all relationships between self and the most preferred occupation, or between self and the least preferred occupation were significant. The values of the correlation coefficients for each scale are contained in Table 5.

A large sample test concerning proportions was used to investigate the proposition that adolescents selected the one most preferred occupation and the one least preferred occupation from different environmental categories (hypothesis nine). Accordingly the subjects' choices which were derived from the OPL were classified into two groups: most and least preferred occupational choices selected from the same environmental category; and most and least preferred occupational choices selected from different environmental categories. Table 6 presents the two occupational choices for each subject by category.

TABLE 5

CORRELATION COEFFICIENTS BETWEEN SELF, MOST PREFERRED, AND LEAST PREFERRED OCCUPATIONS

Need Scale	[a]Self v.s. Most Preferred Occupation	[b]Self v.s. Least Preferred Occupation
Achievement	.255*	.075
Dominance	.271*	-.131
Endurance	.332*	.057
Order	.259*	.114
Intraception	.367**	.428**
Nurturance	.525**	.220
Affiliation	.663**	.211
Heterosexuality	.637**	-.005
Exhibition	.427**	-.014
Autonomy	.378**	.050
Aggression	.419**	.118
Change	.364**	.214
Succorance	.120	-.143
Abasement	.167	-.275*
Deference	.491**	-.027

[a] r_{av} = .389; Z = 11.368.

[b] r_{av} = .018; Z = 1.709.

*Significant at the .05 level of confidence.

**Significant at the .01 level of confidence.

Hypothesis Seven

The seventh hypothesis stated that an adolescent most preferred an occupation for which he held a stereotype positively related to his self-description. Pearson product

TABLE 6

CHOICE OF OCCUPATIONAL PREFERENCES BY CATEGORY*

Subjects	Category of Most Preferred Occupation	Category of Least Preferred Occupation
1	Social	Intellectual
2	Realistic	Social
3	Enterprising	Artistic
4	Social	Intellectual
5	Social	Intellectual
6	Conventional	Artistic
7	Social	Intellectual
8	Social	Intellectual
9	Social	Intellectual
10	Conventional	Social
11	Intellectual	Artistic
12	Social	Realistic
13	Social	Conventional
14	Realistic	Social
15	Conventional	Artistic
16	Intellectual	Artistic
17	Social	Intellectual
18**	Conventional	Conventional
19	Artistic	Social
20	Realistic	Social
21	Conventional	Artistic
22	Intellectual	Social
23	Social	Conventional
24	Intellectual	Conventional
25	Intellectual	Realistic
26	Social	Realistic
27	Social	Intellectual
28	Conventional	Intellectual

TABLE 6 (Continued)

Subjects	Category of Most Preferred Occupation	Category of Least Preferred Occupation
29	Enterprising	Social
30	Enterprising	Social
31	Enterprising	Artistic
32	Enterprising	Realistic
33	Conventional	Intellectual
34	Social	Intellectual
35	Artistic	Social
36	Intellectual	Realistic
37	Social	Intellectual
38	Artistic	Social
39	Realistic	Artistic
40	Realistic	Artistic
41	Realistic	Social
42	Social	Intellectual
43	Intellectual	Enterprising
44	Conventional	Intellectual
45	Realistic	Social
46	Enterprising	Social
47	Conventional	Social
48	Enterprising	Social
49	Social	Artistic
50	Realistic	Conventional
51	Social	Intellectual
52	Intellectual	Artistic
53	Intellectual	Artistic
54	Realistic	Social

*Categories: I=Realistic; II=Intellectual; III=Social; IV=Conventional; V=Enterprising; VI=Artistic.

**Both occupations selected from same category.

moment correlation coefficients between descriptions of oneself and one's most preferred occupation were computed separately for each ACL scale. Another analysis of these data included averaging the 15 r's in order to obtain a value describing the over-all degree of relationship.

Statistically significant results were obtained for 13 of the 15 correlation coefficients (87%). Specifically, nine coefficients were significant at the .01 level of confidence, while four coefficients attained the .05 level of confidence (see Table 5). Only the scales for succorance and abasement failed to show significant values.

Other findings demonstrated that the over-all relationship was significant ($r = .389$) at the .01 level of confidence. Both the separate analysis of each scale and the analysis of the combined scales yielded significant positive correlations. Therefore, the seventh hypothesis was confirmed.

The fact that two of the scales did not reach significance levels does not appear damaging to this hypothesis. Both values were positive relationships and just slightly smaller than the value necessary for significance. Furthermore, it was not expected that every scale would be equally sensitive to the nuances of perceived similarity.

It may be concluded, from these research findings, that adolescents "searched" for that occupational environ-

ment which most satisfied their orientations and needs. This present study showed that occupational choices for adolescents were based, in part, on the degree of positive relationship between their self-description and various occupational stereotypes that they held. Specifically, the hypothesis was confirmed that adolescents most preferred an occupation for which they held a stereotype positively related to their self-description.

Hypothesis Eight

The eighth hypothesis stated that adolescents least preferred an occupation for which they held a stereotype bearing no relationship to their self-descriptions. Pearson product moment correlation coefficients between descriptions of oneself and one's least preferred occupation were computed separately for each ACL scale. Another analysis of the data included averaging the 15 r's in order to obtain a value describing the over-all degree of relationship.

Only two of the 15 correlation coefficients obtained were significant (14%). Specifically, the abasement scale yielded a significant negative correlation at the .05 level of confidence. In contrast, the intraception scale showed a significant positive correlation at the .01 level of confidence (see Table 5).

Other findings demonstrated that the over-all relationship was not significant ($r = .018$). Both the separate

analysis of each scale and the analysis of the combined scales failed to yield significant results. Therefore, the eighth hypothesis was confirmed.

The significant negative correlation on the abasement scale might possibly be explained as a defensive process on the part of the subjects. The indicative adjectives in this scale had a highly negative emotional loading. Consequently, it would be unlikely that either self or the most preferred occupation would be described in these terms. However, it might have been easier to attribute such characteristics to an occupation with which one did not identify.

The finding of a high positive correlation on the intraception scale was puzzling. In fact, this correlation coefficient was larger than the one between self and the most preferred occupation on this same scale. Since this phenomenon occurred only with the intraception scale, it may be viewed as a chance factor or a unique property of the scale insofar as discriminating perceived similarity.

Hypothesis Nine

The ninth hypothesis stated that an adolescent selected the one most preferred occupation and the one least preferred occupation from different environmental categories. A large sample test concerning proportions was used to test the above hypothesis.

Since Holland proposed six categories, it was expected that by chance alone the probability of choosing the most preferred occupation and the least preferred occupation from the same category would be one-sixth. Therefore, one-sixth of the 54 experimental subjects would distribute their choices into the same category. The remaining 45 subjects would make the two occupational selections from different categories. Table 6 presents the occupational choices of the 54 subjects by category.

One of the 54 subjects selected the most preferred occupation and the least preferred occupation from the same category. The large sample test for proportions yielded a Z score of -2.96 which was significant at the .01 level of confidence. This meant that the probability of these results occurring, if the actual proportion of agreement as to category $\geq \frac{1}{6}$, was less than one per cent. Therefore, hypothesis nine was confirmed.

These research findings suggested that adolescents tended to choose their most preferred occupation and their least preferred occupation from different categories. This present study supported Holland's paper (1959) in which he stated that persons develop a hierarchy of adjustive orientations to life, each of which corresponds to a specific occupational environment. It was concluded that the two occupational selections were from different categories be-

cause the selections corresponded to the orientations at different levels in an individual's hierarchy. That is, the most preferred occupation corresponded to the orientation highest in the individual's hierarchy; while the least preferred occupation corresponded to the orientation lowest in the hierarchy.

Summary of Research Findings

As a result of the research with the six occupational stereotypes, the following conclusions were drawn:

1. The auto mechanic was described as having the configuration of low need -- succorance.
2. The scientist was described as having the configuration of: high need -- achievement; high need -- endurance; high need -- intraception; and low need -- exhibition.
3. The teacher was described as having the configuration of high need -- affiliation.
4. The bank teller was described as having the configuration of: high need -- deference; high need -- abasement; low need -- aggression; low need -- autonomy; low need -- change; low need -- dominance; and low need -- exhibition.
5. The business executive was described as having the configuration of: high need -- achievement; high need -- endurance; high need -- dominance; high

need -- exhibition; high need -- affiliation; high need -- heterosexuality; low need -- abasement; low need -- deference; and low need -- succorance.

6. The artist was described as having the configuration of: high need -- autonomy; low need -- order; low need -- endurance; low need -- dominance; low need -- deference; and low need -- intraception.

As a result of the research with descriptions of oneself, one's most preferred occupation, and one's least preferred occupation, the following conclusions were drawn:

1. An adolescent most preferred an occupation for which he held a stereotype positively related to his self-description.
2. An adolescent least preferred an occupation for which he held a stereotype bearing no relationship to his self-description.
3. Adolescents selected the one most preferred occupation and the one least preferred occupation from different environmental categories.

CHAPTER IV

DISCUSSION

The results of this study suggested that adolescent stereotype descriptions of the six occupations were generally consistent with the theoretical formulations of the model category they represented. Inspection of the data indicated that each occupation had a different composite profile. Comparison of the significant need scales found for an occupation with their hypothesized significant need configuration led to the conclusion that three occupational stereotypes were substantially confirmed (scientist, bank teller, and business executive), one was partially confirmed (artist), one was nominally confirmed (teacher), and one was not confirmed (auto mechanic).

The fact that two of the six hypothesized stereotype configurations were not adequately supported does not appear damaging to Holland's theory. The negative finding for teacher was partially explained as being the statistical phenomenon of regression to the mean, due to the widely polarized impressions expressed by the adolescents in this

study. The negative finding for auto mechanic took the form of a flat profile without extreme scores. This could have meant that adolescents in this study did not have a differentiated stereotype of auto mechanic. Consequently, the selection of another occupation within the realistic category, for which adolescents have distinct stereotypes, might have proved more fruitful.

The research results also suggested that stereotypes played an important role in occupational exploration and choice. Pearson product moment correlation coefficients for each ACL scale were generally significant for the relationship between self-description and description of one's most preferred occupation. Additionally, a significant over-all relationship was found when the coefficients of the 15 scales were averaged. Neither the separate analysis for each scale nor the analysis of averaging the scales yielded a significant relationship between self-description and description of one's least preferred occupation.

Efficacy of Holland's Theory of Vocational Choice

The present study supported certain aspects of Holland's theory of vocational choice. Stereotypes of occupations representing each of the categories were found to be consistent with the theoretical formulations for each type. This finding was very important to understanding the

theoretical statement that a person making a vocational choice "searches" for environments which satisfy his orientations and needs. Such a search for an appropriate environment implies that a person has a library of occupational stereotypes. This present investigation showed that choices were accomplished with substantially valid stereotypes and were based on the degree of positive relationship between one's orientations and these stereotypes.

The question of the applicability of the theory to a sample of a population other than National Merit Scholars has been partially answered. It would appear that predictions derived from Holland's theory might be generalized to a younger population representing more heterogeneous levels of academic ability. Applicability of the theory has also been confirmed with respect to measuring the stereotypes on need scales. It should be remembered that Holland's conceptual definitions of each category were derived from open-ended sentence stems, where frequency tallies of adjectives were made.

Holland (1963a) noted that "the brevity and ambiguity, however, of the statements for each model type means that some findings would not be anticipated or interpretable within the theory [p. 234]." Such was the case for some of the results of the present study. For example, the artist was seen as avoiding attempts to understand his behav-

ior or the behavior of others (low need -- intraception). This finding was in direct contradiction to the prediction derived from the model type. Another unexpected finding was the occurrence of high need -- heterosexuality as descriptive of the business executive. It was expected that he would be described as more aloof and cold (low heterosexuality), than affectionate and warm (high heterosexuality). It was thought that this finding might suggest a need for revision in Holland's theoretical definition.

Additionally, the theory might be criticized for its reliance on the stereotype of one occupation as a representative description of all occupations classified within that category. Consideration of factors such as social status, salary, working conditions, and job preparation for different occupations within a given category might result in varying stereotypes. Support for this supposition was found in the selection of bank teller to represent the conventional category. Although the configuration for bank teller was basically consistent with that of accountant (Holland, 1963a), additional findings in this study suggested that the bank teller was seen as significantly more conforming and withdrawn than the accountant.

Implications for Further Study

An analysis was not made of the sex differences for the six occupations to which both adolescent boys and girls

responded. Primarily this decision was based on the fact that Holland's theory of vocational choice had not generated any theoretical propositions regarding sex differences. A review of the literature revealed that one study (Dipboye & Anderson, 1961) conducted such an analysis. They concluded that the differences between the responses of boys and girls were small and not significant. However, further research may be warranted because of the limited representation of such investigations.

No attempt was made in the present study to discriminate between "on-the-job" behavior and behavior in general, with respect to stereotypes. Social factors, economic factors, working conditions, and job preparation were areas not included. Future investigations which would incorporate these descriptive areas might help provide additional evidence relative to the six categories in Holland's theory.

Some other interesting lines of research were suggested by the results of this study. The process by which stereotypes emerge and vocational choices develop seemed to be a critical research problem. Longitudinal studies covering the period from early childhood through late adolescence, with measurements at regular intervals, might shed light on this process. Studies of the effects of role playing, counseling, and vocational courses on the occupational stereotypes might provide worthwhile information

for counselors interested in helping people obtain more adequate and realistic information relative to the world of work.

Implications for Counseling

It is apparent that counselors must know their clients and the world of work. Both are imposing tasks, requiring a theoretical framework within which the client's attributes and occupational opportunities are assessed and categorized. Holland's theory seems most promising in this regard.

Holland assumed that there were six different orientations necessary for environmental and/or occupational adjustment. Most people possess aspects of all six, but behave in a manner which reflects one or two of them more strongly. The theory permits predictions about the kinds of occupations that people in each of the categories should select. For example, individuals with a social orientation would include teachers, counselors, social workers, etc. According to Holland's theory, the work of the counselor is to evaluate which of the six categories most characterizes a client and then explore with him those occupations which satisfy this orientation.

Clearly, Holland's theory would stress the importance of the client's self-concept in the vocational choice pro-

cess. Accordingly, counselors should give clients the opportunity to explore how they think and feel about themselves in relation to certain occupations. Attention in counseling sessions should be given to self-appraisal and the six theoretical orientations necessary for environmental and/or occupational adjustments. Thus a client may begin to realize his personal orientation and "search" for those occupations which satisfy this particular orientation.

Unfortunately the counselor's work does not end here. He must be aware that many clients have limited knowledge of occupations and often hold erroneous stereotypes of them. In counseling it would prove worthwhile to give clients accurate, first-hand knowledge of workers and their duties in various occupations. For adolescents, this could mean acquainting them with successful individuals in different occupations in order to test their stereotypes.

The stereotype held by the adolescent in the present study indicates the need for counselors to help students develop more differentiated stereotypes. For example, although people with research skills are needed for most occupations, these attributes are largely perceived in the intellectual category as represented by the scientist. The development of more differentiated stereotypes will allow adolescents to see themselves in more occupations. Conse-

quently, talented adolescents may become attracted to worthwhile occupations which formerly had little appeal to them.

The focus of this study has been on the world of work. Accordingly, counselors have been urged to help clients consider their needs and the potential of an occupation to satisfy them. However, one should not lose sight of the fact that an occupation is but one facet of the individual's total environment. This condition is becoming more apparent with the shift to a shorter work week, with more time for leisure activities. The counselor will play an important role here, for he will be able to point out to the client the potential of his environment to meet those needs which can no longer find expression primarily through occupations.

CHAPTER V

SUMMARY

This study had two primary purposes: (1) the identification of adolescent stereotypes for a number of occupations as related to specified personality dimensions; and (2) to determine if adolescents make vocational choices based on the similarity of the occupational stereotype to their self-description. It was thought that adolescent stereotypes of occupations might have construct validity and counselor utility, if they were described in accordance with some of the evidence from theories of vocational choice and classification. Additionally, the hypothesis was advanced that vocational choices for adolescents would be based in part on the similarity of occupational stereotypes to self-description.

Holland's theory of vocational choice was selected as the theoretical framework within which the problems of this study were tested. The rationale for this selection was that Holland has been the only major theorist to incorporate the concept of occupational stereotypes in his for-

mulations and then demonstrated its validity by controlled investigations.

The subjects for this study were 54 high school sophomores attending Putnam City High School in Oklahoma City, Oklahoma. The entire experimental group was administered both the Adjective Check List, which yielded self-descriptions and occupational stereotypes; and the Occupational Preference List (constructed for this study), which determined vocational preferences. Using the Adjective Check List, all subjects described themselves, their one most preferred occupation, their one least preferred occupation, and the six occupations representing Holland's categories (auto mechanic, scientist, teacher, bank teller, business executive, and artist). The Occupational Preference List was administered to the subjects to determine their vocational preferences from among 36 selected job titles.

A one-way analysis of variance to determine over-all significance, and the Duncan's new multiple range test to compare differences between means for the six occupations on each scale were used to test the first major hypothesis. The second major hypothesis was tested by using Pearson product moment correlation coefficients to ascertain the degree of relationship between self and most preferred occupa-

tion, as well as between self and least preferred occupation descriptions.

The results of this study suggested that adolescent stereotypes of the six occupations were generally consistent with Holland's theoretical formulations of the model category they represented. Specifically, the hypothesized need scales statistically significant for an occupation were substantially confirmed for Scientist, Bank Teller, and Business Executive. Artist was partially confirmed, Teacher was nominally confirmed, and Auto Mechanic was not confirmed.

It was concluded from the research findings that adolescents "searched" for that occupational environment which most satisfied their orientations and needs. This present study showed that occupational choices for adolescents were based, in part, on the degree of positive relationship between their self-description and various stereotypes that they held. Specifically, the hypothesis was confirmed that adolescents most preferred an occupation for which they held a stereotype positively related to their self-description.

This present study supported certain aspects of Holland's theory of vocational choice. It was demonstrated that the theory could be generalized to a younger population representing more heterogeneous levels of academic ability. Further applicability of the theory was also con-

firmed with respect to measuring the stereotypes on need scales.

Some lines of research for further study were advanced by this investigator. It was suggested that an analysis could be made of the sex differences in the descriptions of occupational stereotypes. Additionally, descriptive areas such as social factors, economic factors, working conditions, and job preparation should be investigated.

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APPENDIX I

CHARACTERISTICS OF THE STUDENT POPULATION

Student Number	Grade Point Average	Age	Differential Aptitude Test Data: Verbal Reasoning	Numerical Ability	Total
1	3.30	15-11	55	60	55
2	1.30	15-5	65	45	55
3	2.37	15-9	20	20	15
4	2.20	16-2	80	60	75
5	2.87	15-9	45	75	60
6	2.70	15-6	80	80	85
7	2.60	15-8	55	70	60
8	2.50	15-9	35	40	35
9	2.40	17-0	40	75	55
10	2.62	17-1	50	05	25
11	2.00	15-5	75	45	65
12	3.10	15-6	80	65	75
13	3.00	15-8	70	55	65
14	2.90	15-10	90	80	90
15	3.00	16-3	90	80	90
16	3.30	15-4	70	50	65
17	2.90	15-10	60	70	60
18	3.87	16-3	--	--	--*
19	3.12	15-5	65	70	70
20	2.10	15-5	--	--	--*
21	2.70	15-6	85	90	90
22	2.00	16-5	--	--	--*
23	1.25	16-3	35	30	30
24	2.25	16-0	--	--	--*
25	3.25	15-4	80	85	85
26	2.22	15-10	80	50	60
27	2.70	15-5	90	65	85
28	3.77	16-3	90	65	85
29	2.70	15-9	75	70	75
30	1.80	16-3	50	35	45
31	1.25	16-3	30	50	40
32	2.25	15-5	75	60	75
33	2.90	15-7	60	40	50
34	2.12	15-10	95	90	95
35	1.90	15-10	45	05	25
36	3.66	15-8	80	85	85
37	3.00	15-9	80	90	85
38	1.88	17-2	40	50	40
39	3.08	15-6	90	75	85
40	2.87	15-11	85	80	90

APPENDIX I (Continued)

Student Number	Grade Point Average	Age	Differential Aptitude Test Data		
			Verbal Reasoning	Numerical Ability	Total
41	1.25	16-2	60	70	65
42	1.87	15-7	45	10	30
43	2.62	15-9	60	75	65
44	1.40	15-9	25	30	25
45	2.00	15-7	95	30	75
46	1.25	14-4	45	50	50
47	3.63	15-8	97	97	99
48	0.88	15-10	50	30	40
49	1.12	15-7	--	--	--*
50	2.75	15-9	30	30	30
51	0.75	15-9	50	05	30
52	3.77	16-3	75	60	70
53	2.70	16-2	75	75	80
54	3.00	15-11	80	85	90

*Differential Aptitude Test information was not available.

APPENDIX II

DESCRIPTIONS OF THE ACL NEED SCALES *

Achievement: Ach

Definition: to strive to be outstanding in pursuits of socially recognized significance.

Dominance: Dom

Definition: to seek and sustain leadership roles in groups or to be influential and controlling in individual relationships.

Endurance: End

Definition: to persist in any task undertaken.

Order: Ord

Definition: to place special emphasis on neatness, organization, and planning in one's activities.

Intraception: Int

Definition: to engage in attempts to understand one's own behavior or the behavior of others.

Nurturance: Nur

Definition: to engage in behaviors which extend material or emotional benefits to others.

Affiliation: Aff

Definition: to seek and sustain numerous personal friendships.

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*Definitions for ACL need scales are taken from Gough and Heilbrun (1965).

APPENDIX II (Continued)

Heterosexuality: Het

Definition: to seek the company of and derive emotional satisfactions from interactions with opposite-sexed peers.

Exhibition: Exh

Definition: to behave in such a way as to elicit the immediate attention of others.

Autonomy: Aut

Definition: to act independently of others or of social values and expectations.

Aggression: Agg

Definition: to engage in behaviors which attack or hurt others.

Change: Cha

Definition: to seek novelty of experience and avoid routine.

Succorance: Suc

Definition: to solicit sympathy, affection, or emotional support of others.

Abasement: Aba

Definition: to express feelings of inferiority through self-criticism, guilt, or social impotence.

Deference: Def

Definition: to seek and sustain subordinate roles in relationships with others.

APPENDIX III

JOB TITLES ON THE OPL BY CATEGORY

Category I -- Realistic

Airplane Mechanic
Carpenter
Engineer
Farmer
Machine Operator
Truck Driver

Category II -- Intellectual

Anthropologist
Biologist
Chemist
Doctor
Mathematician
Physicist

Category III -- Social

Foreign Missionary
Nurse
School Counselor
School Teacher
Social Worker
Speech Therapist

Category IV -- Conventional

Accountant
Bookkeeper
Court Stenographer
IBM Equipment Operator
Payroll Clerk
Secretary

Category V -- Enterprising

Buyer
Hotel-Motel Manager
Lawyer
Politician
Salesman
TV Producer

Category VI -- Artistic

Author
Composer
Musician
Poet
Singer
Stage Director

APPENDIX IV

SAMPLE FORM OF THE OPL

Name _____
Last First Middle

Below is a list of 36 occupations.
Place a + on the line in front of the one occupation you would most prefer to enter.
Place a - on the line in front of the one occupation you would least prefer to enter.

_____	Accountant	_____	Machine Operator
_____	Airplane Mechanic	_____	Mathematician
_____	Anthropologist	_____	Musician
_____	Author	_____	Nurse
_____	Biologist	_____	Payroll Clerk
_____	Bookkeeper	_____	Physicist
_____	Buyer	_____	Poet
_____	Carpenter	_____	Politician
_____	Chemist	_____	Salesman
_____	Composer	_____	Secretary
_____	Court Stenographer	_____	School Counselor
_____	Doctor	_____	School Teacher
_____	Engineer	_____	Singer
_____	Farmer	_____	Social Worker
_____	Foreign Missionary	_____	Speech Therapist
_____	Hotel-Motel Manager	_____	Stage Director
_____	IBM Equipment Operator	_____	Truck Driver
_____	Lawyer	_____	TV Producer

APPENDIX V

MEANS, VARIANCES, AND THE DUNCAN'S NEW MULTIPLE RANGE FOR THE SIX OCCUPATIONAL STEREOTYPES

Need Scale	Group	Mean	Variance		Multiple Range
Ach.	(1)Artist	5.27	23.78		4 5 6 2 3 1
	(2)Auto Mec.	6.35	25.36	4	- - * * * *
	(3)Bank Tel.	5.77	14.17	5	- * * * *
	(4)Bus. Ex.	12.75	23.65	6	- * * *
	(5)Scientist	11.09	28.84	2	- - -
	(6)Teacher	8.87	32.45	3	- -
	Total	8.35	24.71	1	-
Dom.	(1)Artist	4.33	30.75		4 6 5 2 3 1
	(2)Auto Mec.	7.90	33.89	4	- * * * * *
	(3)Bank Tel.	4.40	27.56	6	- - * * *
	(4)Bus. Ex.	14.50	32.40	5	- - * *
	(5)Scientist	9.96	37.88	2	- * *
	(6)Teacher	10.51	31.87	3	- -
	Total	8.60	32.39	1	-
End.	(1)Artist	1.57	23.72		4 5 6 3 2 1
	(2)Auto Mec.	5.98	36.35	4	- - * * * *
	(3)Bank Tel.	7.27	20.39	5	- * * * *
	(4)Bus. Ex.	10.11	23.53	6	- - - *
	(5)Scientist	9.66	26.86	3	- - *
	(6)Teacher	7.38	36.39	2	- *
	Total	7.00	27.92	1	-
Ord.	(1)Artist	2.03	21.20		4 5 3 6 2 1
	(2)Auto Mec.	5.53	26.44	4	- - - * * *
	(3)Bank Tel.	7.96	16.03	5	- - * * *
	(4)Bus. Ex.	9.37	19.36	3	- - * *
	(5)Scientist	8.94	23.86	6	- - *
	(6)Teacher	6.88	28.40	2	- *
	Total	6.79	22.55	1	-
Int.	(1)Artist	4.27	14.12		5 6 4 3 2 1
	(2)Auto Mec.	5.38	19.90	5	- - * * * *
	(3)Bank Tel.	7.11	16.66	6	- - - * *
	(4)Bus. Ex.	8.16	18.74	4	- - * *
	(5)Scientist	9.09	23.36	3	- - *
	(6)Teacher	8.53	32.55	2	- -
	Total	7.09	20.89	1	-

APPENDIX V (Continued)

Need Scale	Group	Mean	Variance		Multiple Range
Nur.	(1)Artist	2.40	42.66		3 6 4 2 5 1
	(2)Auto Mec.	5.33	48.00	3	- - - - * *
	(3)Bank Tel.	8.46	50.66	6	- - - - *
	(4)Bus. Ex.	6.57	72.58	4	- - - *
	(5)Scientist	4.85	32.09	2	- - -
	(6)Teacher	6.75	121.84	5	- -
	Total	5.73	61.30	1	-
Aff.	(1)Artist	7.62	28.69		4 6 2 5 2 1
	(2)Auto Mec.	7.94	42.58	4	- - * * * *
	(3)Bank Tel.	9.59	28.62	6	- * * * *
	(4)Bus. Ex.	12.48	41.80	3	- - - -
	(5)Scientist	8.70	30.96	5	- - -
	(6)Teacher	12.12	52.53	2	- -
	Total	9.74	37.53	1	-
Het.	(1)Artist	3.20	13.90		4 1 6 2 3 5
	(2)Auto Mec.	2.53	7.42	4	- * * * * *
	(3)Bank Tel.	2.05	7.82	1	- - - - -
	(4)Bus. Ex.	4.90	13.10	6	- - - -
	(5)Scientist	1.96	7.16	2	- - -
	(6)Teacher	3.05	9.94	3	- -
	Total	2.95	9.89	5	-
Exh.	(1)Artist	2.96	17.54		4 1 6 2 5 3
	(2)Auto Mec.	2.11	11.11	4	- * * * * *
	(3)Bank Tel.	-1.00	14.90	1	- - - * *
	(4)Bus. Ex.	4.57	11.75	6	- - * *
	(5)Scientist	0.77	11.19	2	- * *
	(6)Teacher	2.90	7.55	5	- *
	Total	2.05	12.34	3	-
Aut.	(1)Artist	5.24	23.65		1 5 4 6 2 3
	(2)Auto Mec.	1.38	8.88	1	- * * * * *
	(3)Bank Tel.	-1.77	9.23	5	- - - - *
	(4)Bus. Ex.	2.09	14.12	4	- - - *
	(5)Scientist	2.35	12.68	6	- - *
	(6)Teacher	1.85	19.86	2	- *
	Total	1.85	14.74	3	-

APPENDIX V (Continued)

Need Scale	Group	Mean	Variance		Multiple Range
Agg.	(1)Artist	-1.27	37.94		1 6 4 5 2 3
	(2)Auto Mec.	-4.11	37.15	1	- - - * * *
	(3)Bank Tel.	-8.16	27.91	6	- - - - - *
	(4)Bus. Ex.	-2.83	47.68	4	- - - - *
	(5)Scientist	-3.96	26.82	5	- - - *
	(6)Teacher	-2.81	66.15	2	- - *
	Total	-3.86	40.61	3	-
Cha.	(1)Artist	4.25	9.66		1 5 4 6 2 3
	(2)Auto Mec.	1.12	6.64	1	- - - * * *
	(3)Bank Tel.	-0.37	3.78	5	- - * * *
	(4)Bus. Ex.	3.51	7.49	4	- * * *
	(5)Scientist	3.70	14.09	6	- - *
	(6)Teacher	1.98	8.47	2	- *
	Total	2.37	8.36	3	-
Suc.	(1)Artist	1.14	5.44		1 6 3 5 2 4
	(2)Auto Mec.	-1.46	4.06	1	- - - * * *
	(3)Bank Tel.	0.38	7.44	6	- - * * *
	(4)Bus. Ex.	-1.48	6.78	3	- - * *
	(5)Scientist	-0.46	7.27	5	- * *
	(6)Teacher	0.62	7.33	2	- -
	Total	-0.20	6.39	4	-
Aba.	(1)Artist	-1.11	10.77		3 1 5 6 2 4
	(2)Auto Mec.	-2.66	7.58	3	- * * * * *
	(3)Bank Tel.	1.05	12.80	1	- - - * *
	(4)Bus. Ex.	-4.66	12.15	5	- - * *
	(5)Scientist	-1.35	10.04	6	- - *
	(6)Teacher	-2.29	10.77	2	- *
	Total				-
Def.	(1)Artist	-2.90	18.68		3 2 6 5 4 1
	(2)Auto Mec.	-0.05	7.86	3	- * * * * *
	(3)Bank Tel.	4.16	10.97	2	- - - * *
	(4)Bus. Ex.	-2.29	19.08	6	- - * *
	(5)Scientist	-0.24	13.35	5	- * *
	(6)Teacher	-0.18	14.22	4	- -
	Total	-0.25	14.03	1	-

*Means significantly different from each other at the .05 level of confidence.

-Means not significantly different from each other.