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Personality Types and Their Hypothesized Attributes: An Application of Holland's Vocational Choice Theory

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PERSONALITY TYPES AND THEIR HYPOTHESIZED ATTRIBUTES:
AN APPLICATION OF HOLLAND'S VOCATIONAL CHOICE THEORY

by

Ronald W. Kristjanson

Bachelor of Arts, University of Manitoba 1962

A Thesis

Submitted to the Faculty

of the

Graduate School

of the

University of North Dakota

in partial fulfillment of the requirements

for the Degree of

Master of Arts

Grand Forks, North Dakota

January
1969

This thesis submitted by Ronald W. Kristjanson in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota is hereby approved by the Faculty Advisory Committee under whom the work has been done.

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PERSONALITY TYPES AND THEIR HYPOTHESIZED ATTRIBUTES:
Title AN APPLICATION OF HOLLAND'S VOCATIONAL CHOICE THEORY

Department Psychology

Degree Master of Arts

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ACKNOWLEDGMENTS

The writer wishes to express his appreciation to Dr. Beulah Hedahl for her most generous contribution of both time and effort in directing this study.

The assistance of Dr. Ralph Kolstoe and Dr. Leroy Stone has also been highly valued, particularly with respect to the statistical procedures.

Special thanks are due to Dr. Richard Grosz for his assistance in the collection and analysis of the data.

To my wife, Doris, and to Mark, Paula and Jon my deepest appreciation for the many sacrifices and continuing support and encouragement.

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ABSTRACT

The purpose of this study was to assess the usefulness of Holland's vocational choice theory for counseling with university students. More specifically, it attempted to determine whether or not Holland's theory provides a suitable framework for integrating the results of two commonly used counseling instruments: the SVIB and the EPPS.

A sample was drawn from those students tested by the University Counseling Center on both the SVIB and EPPS. This sample was, within reasonable limits, representative of the male student population dealt with by the Counseling Center. The sample contained 255 Ss.

For analysis of the data the student test profiles were grouped according to Holland's criteria - by SVIB profile. Hypotheses regarding the personality attributes (manifest needs) of Holland's six major personality types were then tested by means of EPPS profile scores.

Analysis of variance revealed differences between the H-SVIB groups on seven of the 15 EPPS needs ($p < .05$). Out of 105 t-tests of differences between means of the H-SVIB groups 42 were significant at the .05 level (or better). Out of 54 directional hypotheses made regarding specific

needs associated with each of Holland's six basic personality types 47 Chi-square results were in the direction predicted and 25 of the 47 were significant at the .05 level or better.

The results of this study clearly indicate that Holland's theory of vocational choice does provide a suitable system or theoretical framework within which to organize the SVIB and EPPS results.

CHAPTER I
INTRODUCTION

The present study was conducted to assess the usefulness of Holland's vocational choice theory for counseling with university students. More specifically, does this theory provide a suitable framework for integrating the results of two commonly used counseling instruments: the Strong Vocational Interest Blank (SVIB) and the Edwards Personal Preference Schedule (EPPS)?

Background of the Problem

The research literature pertaining to vocational choice is expanding at an enormous rate. More sophisticated testing and statistical techniques combined with the capacity of computers to process rapidly great volumes of information have made it possible to gather and analyze data almost faster than it can be digested. The result has been an increasingly urgent need to establish commonalities and a system or theoretical framework within which to organize this fund of knowledge.

Many investigators have attempted to isolate and describe interest and value factors which will account for the major part of the nonrandom variance in the data gathered. An early attempt by Thurstone yielded four

factors: science, people, language and business. The Allport-Vernon studies modified and expanded these into six: theoretical, social, economic, political, aesthetic, and religious. Strong isolated five factors (unrotated): science, people, language, things versus people, and business. Rotating these he found essentially the same except that business further divided into what he called "system" and "contact". Guilford's comprehensive analysis yielded the following eleven factors: scientific, social-welfare, mechanical, outdoor, clerical, business, aesthetic-expression, aesthetic appreciation, and personality factors (Super and Crites, 1962). That there have been differences in their findings is clear; more striking, however, are the number of common factors, more and less refined, running through all of those listed.

The common factors which emerged following an exhaustive survey of the research literature have been embodied in a theory of vocational choice by Holland, (1958, 1959a, b, 1962, 1963, 1964, 1966a, b; Holland and Nichols, 1964). Holland has briefly outlined this theory in the statement of four major assumptions: 1) "In our culture, most persons can be categorized as one of six types - Realistic, Intellectual, Social, Conventional, Enterprising, and Artistic" (Holland, 1966a, p. 9).

Holland goes on to describe a type as a complex cluster of personal attributes. The individual's biological and social heredity, coupled with his personal history, creates a characteristic set of abilities, perceptual skills and outlook, life goals, values, self-concepts (his image and evaluation of himself) and coping behavior (his typical methods of dealing with the problems of living). 2) Holland's second major assumption is that the environment can be classified in a manner corresponding to the personality types. "There are six kinds of environments: Realistic, Intellectual, Social, Conventional, Enterprising and Artistic" (Holland, 1966a, p. 11). He explains further that each environment is dominated by a given type of personality, and each environment is typified by physical settings posing special problems and stresses. Where people congregate they create an environment that reflects the types they are. 3) Holland's third assumption is that "People search for environments and vocations that will permit them to exercise their skills and abilities, to express their attitudes and values, to take on agreeable problems and roles, and to avoid disagreeable ones" (Holland, 1966a, p. 11). 4) Finally, Holland assumes that "A person's behavior can be explained by the interaction of his personality pattern and his environment" (Holland, 1966a, p. 12). In effect, a person functions

best in an environment which is congruent with his dominant personality type. Holland's theory is comprehensive enough to incorporate information about the individual from a wide variety of sources, and yet is specific enough to be applied in the counseling setting, and to permit empirical testing of hypotheses derived from it.

A brief elaboration of some aspects of Holland's theory provides a more explicit base for the hypothesis which this study has tested. The classification, using six basic personality types, has been extended by Holland to provide a system for describing an individual by means of a personality pattern or profile.

Different approaches may be used in this description. An individual's expressed educational and vocational preferences in conjunction with stated interests in various activities may be used to assess his similarity to each of the six major types (e.g. Realistic, Intellectual, Artistic). Alternatively, a more accurate and refined method may be to use a test such as the SVIB to determine a person's resemblance to each type. The profile description or personality pattern would be obtained by rank ordering the types according to the individual's degree of resemblance to each. The closest resemblance denotes his dominant personality type.

Holland has proposed that a convenient way of expressing the relative dominance of personality characteristics would be a numerical coding system; 1 - Realistic, 2 - Intellectual, 3 - Social, 4 - Conventional, 5 - Enterprising, 6 - Artistic.

Sub types could also be used to provide more accurate and efficient predictions of behavior and greater understanding for the individual being counselled. Depending on the degree of refinement required the individual may be classified according to: a) only his dominant personality type (e.g. Intellectual); b) his first and second most dominant types (e.g. 21 = Intellectual - Realistic); or c) the complete hierarchy of descending type dominance (e.g. 126534).

Some elaboration of this aspect of Holland's theory will be useful for interpreting the data presented in this study. Holland proposes that predictions can be made regarding a person's vocational choice, job satisfaction, stability and achievement. The primary direction of a person's educational and vocational choice is "a function of the dominant characteristic (that is the model type he most resembles) of his personality pattern" (Holland, 1966a, p. 43). The person's role within the major vocational class of his choice is a function of the secondary characteristic of his personality pattern; that is,

the model type that the person resembles secondarily.

Stability and fluctuations in vocational choice, and hence college major, are functions of both the dominant characteristics and the consistency of the personality pattern. Some personality types tend to be more stable in their vocational choice than others, i.e. Realistic and Intellectual types more so than Social, Conventional, Enterprising, and Artistic types. In addition to these differences some primary-secondary combinations are more conducive to stability than others because they are consistent patterns.

"The consistency of the personality code is a function of the similarity between the primary and secondary types. For example, a 21 code (Intellectual-Realistic) is a consistent code because the model formulations and the empirical evidence indicate that these two types have many traits in common - unsociability, an orientation towards things rather than people, self-depreciation, and masculinity - although they also have some contradictory attributes. Inconsistent codes are assumed to indicate that the person has psychological attributes that are somewhat contradictory. For example, a 13 (Realistic-Social) code is inconsistent because the models for the Realistic and Social types contain such oppositions as an orientation towards things versus an orientation towards people, masculinity versus femininity,

poor versus good interpersonal skills, and motoric versus verbal skills. The consistency is related in many ways to Festinger's concept of dissonance." (Holland, 1966a, p. 44). Holland lists as consistent codes the following combinations: 12, 14, 26, 34, 35, 36, 45, and 56.

Referring back to Holland's third major assumption stated earlier (p. 3) reveals a further factor which will affect the stability of a specific vocational choice (or choice of major in college). This is the degree to which that choice is congruent with the individual's dominant characteristics as measured by such instruments as the SVIB. If the college major is not in keeping with the individual's dominant personality pattern he may be expected to change from that major to one which is more congruent with his dominant characteristics. Consistency and congruency of choice may be found to correlate positively with achievement within a field as well as persistence with choice of major. If the individual's needs are not being met in the vocational "environment" in which he finds himself he will not function optimally and he will be attracted to one in which the tasks and situations are such as to gratify his personal needs and give him satisfaction. This assumption has been supported by the findings of Astin (1963, 1965).

Statement of the Problem

It can be readily seen from these brief extracts from Holland's statement of his theory of vocational choice that, if his thinking and his assumptions are correct, more coherent and useful information may be derived from test results by integrating them according to his classification.

In a description of the concepts of validity which are useful and important in evaluating a test Berdie (1960, p. 20) refers to construct validity. He considers it to be, perhaps, the most important of the various validities and illustrates the meaning of the term by the following, "...if one's theory of interests results in one's viewing interests as a reflection of basic personality variables, then one might hypothesize that an interest test such as the SVIB would be related to another test purporting to measure other personality variables". This hypothesis is basic to the present study, and is restated as follows: does Holland's theory provide a suitable framework for integrating the results of two of the most widely used instruments in counseling practice and research: the SVIB and the EPPS? Does Holland's classification group people according to other personality variables besides vocational interests?

For the purposes of this study the classification has been limited to Holland's six basic types. Further

refinements would be accompanied by greater complexities, and a considerably larger sample than was available would be required to analyze for differences between subtypes.

It was hypothesized that persons grouped according to Holland's classification by means of their SVIB scores would differ, one group from another, on personality variables as measured by the EPPS.

Holland describes his personality types as having particular characteristics. Of those characteristics purported to be measured by the EPPS do Holland's predictions hold true with our population as grouped using the SVIB? It was hypothesized that these predictions would hold true and therefore that within each group certain needs would be more predominant than others. Schaffer (1953) found that occupational satisfaction depends most directly upon those needs which are highest in the individual's need hierarchy. Therefore, the relative strength of needs within an individual's own profile appears to be more important in relating needs to occupational variables than does the absolute level of measured need or the level relative to other persons or groups. For this reason in the analysis of the data more importance was placed on comparisons within each personality type than on comparisons between the different types.

It was hypothesized that out of the 15 EPPS scales those individuals classified as Realistic would tend to score high in needs for Abasement (Aba), Endurance (End), and Deference (Def) and low in need for Dominance (Dom), Nurturance (Nur), Exhibition (Exh), and Affiliation (Aff).

It was also hypothesized that individuals classified as being most like the Intellectual personality type would tend to score high in need for Achievement (Ach), Autonomy (Aut), End, and Aba. These same persons would most often score low in need for Exh, Aff, Nur, Succorance (Suc), and Aggression (Agg).

It was further hypothesized that those students who, on the basis of their SVIB scales, were classified as most resembling each of the remaining basic types would score as follows on the EPPS: Social - high on Aff, Dom, Intrareception (Int), Ach, and Nur, but low on Aut, Def, Suc, Order (Ord), Aba; Conventional - high on Ord, End, Ach, Aba, Heterosexuality (Het), and Aff, but low on Aut, Agg, Nur, and Suc; Enterprising - high on Dom, Exh, Het, Ach, Aff, and Agg, but low on End, Aba, Nur, and Def; Artistic - high on Ach, Aut, Int, Exh, and Aba, but low on Ord, Aff, and Nur.

CHAPTER II

REVIEW OF RELATED LITERATURE

The literature reviewed is organized into sections relevant to various aspects of the problem dealt with in this study. The first section pertains to studies which established relationships between vocational interests (as measured by the SVIB) and other personality variables, measured by a variety of instruments. The next section is concerned with studies conducted relating EPPS results to occupational stereotypes. This is followed by investigations which have used both the SVIB and the EPPS. More extensive coverage has been given to those studies which have specifically tested aspects of Holland's theory of vocational choice.

SVIB Studies

Over the years attempts have been made to relate SVIB scores to various personality measures. Such attempts to relate vocational interests with other aspects of personality have met with varying success (Tussing, 1942, Tyler, 1945; Cottle, 1950, 1954; Kates, 1950; Brown, 1954; Segal, 1955; Harker, 1957; Korn, 1962; Hewer, 1965; and Siess and Jackson, 1967). Most of these studies were a qualified success in establishing the sought relationships.

The most striking negative example was the first attempt by Cottle (1950). He used Thurstone's complete centroid method in factoring a correlation matrix of responses of 400 adult male veterans on the Minnesota Multiphasic Personality Inventory (MMPI), SVIB, Kuder, and Bell Inventories. His analysis revealed seven common factors; five of which were common to the Strong and the Kuder and two of which were common to the personality inventories only. Cottle found no overlap between the vocational interest and the personality inventories. The five factors which were common to the interest inventories were similar to Holland's first five groupings and the items which were negatively loaded on one of the bi-polar factors closely resembled Holland's sixth group: the Artistic.

In further studies Cottle, working primarily with the SVIB and MMPI, found that two bi-polar factors emerged: a) things versus people, and b) business versus science. He qualified these findings by stating that the factors which emerge result from both the method of analysis and the particular combination of variables used in the study. Cottle further cautioned that using a highly heterogeneous sample of subjects may result in masking relationships that would otherwise emerge if the range of differences were restricted (Cottle, 1954).

Focusing on the cue left by Cottle, Siess and Jackson (1967) attempted to control for common method variance by using a multimethod factor analysis technique. In their study they used the SVIB and the Personality Research Form (PRF) - an instrument based on Murray's need system. They successfully isolated seven factors (some of them bi-polar) which combined SVIB and PRF loadings.

Brown (1954) used a wide ranging and assorted battery of tests including the Allport-Vernon, the MMPI, and the Miller Analogies test, only to find that the SVIB was the most successful in differentiating between three medical groups of male veteran patients: T.B. patients, psychiatric patients, and a general medical group. Brown concluded that "as we learn more about the personality aspects of the Strong scales, the [SVIB] becomes an increasingly useful instrument to the counseling psychologist. There is a semantic error in regarding an interest test as exclusively that, forgetting that interests and personality are inextricable" (p. 11).

Brandt and Hood (1967) also established a functional, if not a factorial relationship between SVIB responses and psychiatric classification. Classifying MMPI profiles as normal or deviant they found that for clients classified as normal the SVIB was markedly more successful in accurately predicting later occupational entry than it was

for clients having deviant profiles (the criterion used for deviance was the presence of at least three scales on the MMPI profile 70 or greater, including the Sc or Pt scale). Their follow up was on the average six years after testing. With normal profiles the prediction of occupation was judged a "good hit" with 56 per cent of the clients and a clean miss with 28 per cent. For deviant profiles the prediction ratio was 39 per cent to 37 per cent.

Thorndike, Weiss, and Dawis (1967) also have recently studied the relationships between measured vocational interests and measured vocational needs. They conclude, as did Cottle (1954), that the method of analysis used will greatly affect the relationships to be found. It is their contention that bivariate and multiple correlational techniques may not properly reveal these relationships, and that a more appropriate statistical method to use is the technique of canonical correlation. Using the SVIB for interests and the Minnesota Importance Questionnaire (MIQ) to measure vocational needs Thorndike, et. al. analyzed the test results from two groups. With both groups four of the resulting canonical correlation coefficients were significant beyond the .01 level, but the pattern of weights was quite dissimilar for the two groups. The first, a student group, was relatively homogeneous;

whereas the other, a group of clients from the Division of Vocational Rehabilitation, represented a variety of work experience, levels of abilities, and occupational aspirations. Thorndike, Weiss, and Dawis concluded that their findings strongly supported the hypothesis that interests and needs as measured by the SVIB and MIQ may relate to the same motivational system.

In 1963 Holland reported the results of a four year prediction study in which he used six scales of the SVIB to classify students: Aviator - (Realistic); Physicist - (Intellectual); Social Science Teacher - (Social); Accountant - (Conventional); Sales Manager - (Enterprising); and Musician - (Artistic). He stated that these particular Strong scales appeared to exemplify best the six orientations of his theory. The subjects for this study were 956 finalists in the 1956 National Merit Program. They were tested prior to college entrance and again just prior to graduation. For the retesting the numbers were reduced from 956 to 592. Generally the results of this study confirmed those of his earlier two year follow up (1962). The SVIB scores correlated with self ratings on 20 characteristics. Of 240 correlation coefficients computed, 209 were in keeping with the hypotheses, 25 were ambiguous and 6 were in the opposite direction to that predicted.

Bohn (1966) used a sample drawn from the University of Iowa counseling center files to study the relationship between psychological needs and personality types. He also used SVIB scores to group his subjects within Holland's classification. In three cases he used the same scale as did Holland (1963) to represent a vocational personality type: Social Science Teacher (Social); Accountant (Conventional); Sales Manager (Enterprising); but for the other types he selected a different representative: Printer (Realistic); Chemist (Intellectual); and Artist (Artistic). Bohn used the Adjective Check List (ACL) to measure Murray's 15 needs. By means of analysis of variance he determined that at least five needs were significantly related to each personality type, with the exception of Social. Some of the relationships were direct while others were inverse. Most of the relationships were in keeping with Holland's theoretical formulations. Other results were neither in keeping with nor directly contrary to Holland's formulations but in one instance there was a direct contradiction. Although Holland hypothesizes a high need for Ach for the Artistic type, Bohn found an inverse relationship between the two.

Wall, Osipow, and Jefferson (1967) using 186 male freshmen at Pennsylvania State University have provided further support for the contention that SVIB scores relate

to personality variables. In this study they tested Holland's theory by attempting to relate SVIB scores to Holland's six personality types. Each student ranked the descriptions of the six personality types according to the order in which they described themselves. The students also rated each description on a scale according to how well it described them: "The results of discriminant analysis between the SVIB group scores and first personality rank resulted in a Wilks Lambda of 0.68 ($P < .001$)".

Although not directly testing Holland's theory, a study by Hood (1965) does lend support to another formulation of Holland's regarding the increased accuracy obtained in understanding and predicting behavior by considering the relative dominance of subtypes rather than using basic personality types only. Hood's results demonstrated that the accuracy of prediction of medical school attendance from college freshmen SVIBs could be greatly enhanced by considering secondary dominant interests. Three hundred and sixty-six of a group of freshmen tested obtained an "A" on the physician scale of the SVIB. Only 54 of these students subsequently applied for admission to medical school. These 54 freshmen differed from the remaining 312 students in that they scored considerably lower on the artist and architect

scales and they also had significantly fewer A ratings on scales other than the physician scale (an average of 4.7 compared with 6.1).

In general terms the above mentioned studies have provided evidence to support the hypothesis that interests are a reflection of basic personality variables and that the SVIB relates to tests such as the Rorschach, MMPI, Activity Vector Analysis (AVA), California Personality Inventory (CPI), PRF, and MIQ, which purport to measure other personality variables.

EPPS Studies

The literature pertaining to the EPPS has been reviewed to determine what basis there might be for assuming that personality types, such as have been described and classified by Holland, would demonstrate consistent patterns of needs, as measured by the Edwards.

Izard (1960a) compared the average EPPS profile of 81 experienced engineers with that of 750 male liberal arts students in Edwards' norm group. Analysis of variance revealed substantial and apparently meaningful differences on 10 of the scales. The engineers, who presumably most closely resemble Holland's Realistic type, scored higher than the liberal arts students on Ach, Def, Ord, Dom, and End scales and lower on Aff, Int, Suc, Aba, and Nur. The t tests of differences between the means

would be significant at the .001 level for all of these scales except Int which was at the .02 level. However, since the EPPS scales are intercorrelated and the scores for an individual sum to a constant, these t's are not independent tests and, therefore, cannot be taken at face value.

In another study using the EPPS Izard (1960b) found support for the hypothesis that mutual friends have similar personality profiles. He used an analysis of variance for comparing profiles of paired friends versus random subjects. These findings in turn would appear to support Holland's hypothesis that a person seeks, and functions best in, an environment which is congruent with his dominant personality type.

A group of college educated male applicants for sales jobs were compared with Edwards' college male norm group by Kirchener, Dunnette, and Mousley. These sales applicants would be expected to most closely approximate Holland's Enterprising personality type. There were large differences between the group means on 14 scales. The sales applicants scored higher on Ach, Exh, Dom, and End. The authors consider these high scores to be descriptive of the stereotype of the sales personality, i.e. ambitious, outgoing, dominant.

Merrill (1960) compared group profiles of education students with successful science teachers and with educational administrators. The results were not clearly interpretable because the standard for comparison was not fixed - e.g., an average size fellow looks tall beside a midget. These results introduce a note of caution in interpreting other reported results. Compared with the college education students the successful, experienced science teachers would appear to resemble more closely Holland's Intellectual type than the Social personality type that teachers have resembled most closely in other studies. For example, these teachers scored significantly higher than did the college students on Def (.001), Ord (.001), End (.001) and Aba (.01) and lower on Het (.001) and Exh (.01).

Dipboye and Anderson (1961) took a different approach to the problem of establishing need patterns for occupations. Instead of measuring needs as perceived by persons in various occupations they attempted to establish occupational stereotypes as perceived by 448 high school seniors. From a list of 70 statements describing the behavior of people the students selected five statements they considered best described behavior of a typical person engaged in each of eight occupations. The statements used were taken from need descriptions in the EPPS. The engineer (or Realistic type) was described as high in need for Ach,

End, and Ord, but low in Suc, Int, Agg, Exh, Aff. The scientist (or Intellectual type) was described as high in need for End, Chg, Ach, and low in Aff, Suc, Nur, and Agg. The physician (or Social type) was pictured as high in Nur, Int, End, and Ach, but low in Agg, Suc, Dom. On the whole the stereotypes described would not differ greatly from Holland's description of each.

Gray (1963) used the more typical approach in his study of the manifest needs of secondary teachers, accountants and mechanical engineers. Teachers scored higher than CPA's in Def, Aff, Int, Aba, Nur, whereas the CPA's were higher in Ach, Exh, Dom, and End. Contrasted with the engineers, teachers were higher on Aff, Int, Suc, and Nur, whereas the engineers were higher on Ach, Ord, Dom, and End. CPA's and engineers when compared did not differ significantly from each other. Gray's findings would generally be in agreement with Holland's formulations with the exception of a higher need for Dom by both CPA's and engineers than for the teacher.

Asa (1967) compared a group of 15 graduate students in counselor education with Edwards' norms for college men. On five of the 15 EPPS scales there were significant differences between the means of the two groups. They scored significantly higher (at .05 level or better) on needs for Aff, Int, and Chg, but lower on Suc and Agg.

The differences are in the direction which would be expected if the counselor education students were classified according to Holland's classification as Social personality types. Within the group of counselor students Asa also found that certain needs related to various types of counseling lead behavior categorized as accepting, probing-projecting, interpreting, and diagnosing. Dom related negatively with "accepting" and positively with "probing-projecting". Agg related positively with "diagnosing" and negatively with "interpreting".

This brief review of EPPS studies has revealed strong evidence to suggest that people in various vocations do in fact demonstrate consistent need patterns. In general, the patterns found have also been in accord with Holland's findings. Pool indicated at least part of the reason why need patterns fit in with a vocational choice theory when he stated the "Personality needs have an important role in the making of vocational choices...Vocational choices are often based on emotional needs rather than on a realistic basis" (Pool, 1965, p. 26). Merwin and Di Vesta were even more emphatic on this point: "The degree of acceptance (or rejection) of a career is dependent upon the individual's perceptions that the career facilitates (or hinders) the satisfaction of his important needs" (Merwin and Di Vesta, 1959, p. 302).

Studies Combining SVIB and EPPS

A number of studies have been conducted which have made use of both the SVIB and EPPS. One of the earliest was a research report by Gee (1957), describing the characteristics of 1000 senior class students from 22 medical schools. Out of approximately 500 intercorrelations between SVIB and EPPS scales the highest was .299 (between Sales Manager and Dom scales) and there was only a total of 20 that had coefficients exceeding \pm .200. However, the very moderate correlations that were observed between SVIB and EPPS scales were in the direction which would have been hypothesized on the basis of Holland's theory. Large correlation coefficients were not to be expected considering the degree of homogeneity of the sample. A further inspection of Gee's SVIB data indicates that the sample resembled most closely the Social type. This would be in keeping with Holland's classification.

Garman and Urh (1958) also used a medical school population in their cross-validation study of the Garman Anxiety Scale. They found a positive correlation (significant at the .01 level) between this anxiety scale and Mathematician, Chemist, Artist, Musician and Author-Journalist; but a negative correlation was found with Accountant, Officeman, Banker, Production Manager,

Personnel Director, and Sales Manager. Three Edwards scales also correlated significantly with Garman's Anxiety Scale: Suc, positively, at the .01 level; Dom, negatively, at the .01 level; and End, negatively, at the .05 level.

Dunnett, Kirchner and De Gidio (1958) reported on the relations among scores on the EPPS, CPI, and SVIB for an industrial sample. They obtained product moment correlations between each of the EPPS scales and the mean scores of various groupings on the SVIB. When their data are viewed in terms of Holland's theory it is found that the skilled trades or Realistic type correlated positively with Aba and End, but negatively with Ach, Exh, Dom, and Chg. The Physicist and Mathematician scales or Intellectual type related positively with Def and Int, but negatively with Ord and Aut. The business detail scales or Conventional type correlated positively with Aff, but negatively with Ach, Exh, and Aut. Sales and Verbal scales or the Enterprising personality type related positively with Ach, Exh, Dom, Chg, and negatively with Aut, Ord, Aba, and Nur. They did not analyze any scales which were typical or representative of the Artistic type. These results would generally support Holland's findings for the Realistic, Conventional and Enterprising types with the exception of the negative correlations of Ach need with the

Conventional type interest scores. On the other hand, the correlations with the Intellectual types (Physicist and Mathematician) do not agree with Holland's formulations; especially the negative correlation with Aut.

Heist (1960) administered the EPPS, Allport-Vernon-Lindzey Study of Values and the SVIB to 613 dental students from nine colleges. His findings were somewhat at variance with Holland's classification of the dentists in the Intellectual group. Heist found them to be very similar to the engineers (Realistic) in terms of their socio-economic background and values. When contrasted with "average undergraduate college students" the dental students scored higher in Def, Ord, and End, but lower in Aut, Dom, and Chg. These scores would be more consistent with the Realistic than the Intellectual personality type.

Patterson (1962) conducted a correlational study of the test results from a variety of instruments including the EPPS and SVIB. His subjects were 550 graduate students in rehabilitation counseling programs in 20 different colleges and universities. Most of the EPPS scores for the group were close to the mean for college student norms. However, the group means were high on three scales: Def, Int, and Nur. Holland's formulations would agree with highs on the latter two.

In a study of 50 general hospital in-patients, Brown and Pool (1966) used as a measure of self-awareness the discrepancy between a self-predicted SVIB profile and the regularly scored SVIB profile for that individual. They found that the need for Ach was positively related to the degree of self-awareness, whereas with the needs for Aba, Suc, and Ord the correlation was negative.

Armatas (1962) employed the Edwards to determine personality correlates of SVIB patterns. In contrast to the previous studies reported which found some degree of consistency in personality patterns he concluded from his results that any given SVIB score could have different meanings since it might be a result of specific item content, a response set (e.g. a tendency to agree with any statement regardless of its content) or a combination of both of these factors. Armatas felt, therefore, that no consistent personality pattern could be expected to accompany a given SVIB profile. A group of subjects with similar SVIB scores might represent a heterogeneous sample regarding the combination of the above mentioned factors.

Suziedelis and Steimel (1963) conducted a study which is, in some respects, most directly comparable to the present study. Following the lead of Schaffer (1953) who concluded that the extent of overall job satisfaction enjoyed by an individual is determined by the satisfaction

of his two or three strongest needs, they attempted to establish empirically which specific needs are related to particular vocational choices. Their results were generally in keeping with those previously discussed in spite of the fact that their sample and design differed. Reviewing their data in light of Holland's classifications it is found that Group IV Technical (Realistic) persons ranked high in need for Def and End, but low in Aut, Int, and Dom. Group II Physical Science (Intellectual) persons ranked high in need for Ach and End, but low in need for Dom. Individuals with a primary in Group V Social Service (Social) ranked high in need for Aff, Int, Dom, and End, but low in Ord, Aba, and Het. In their sample of persons with Business Detail vocational interest (Conventional) the only significant finding was a low ranked need for Aut, whereas the Business Contact (IX) interest group (Enterprising) ranked high in Int and Dom, but low in Ach, Aff, and Fnd. With the exception of the Group IX, Business Contact or Enterprising group the results follow closely what would be anticipated from Holland's formulations. In that instance Ach and Aff would be ranked high but Int would not, according to Holland.

In the studies reviewed the SVIB and EPPS have been used singly and together on a variety of populations including hospital patients, DVA clients, high school

students, and most frequently college students. In a number of studies the students included in the samples were clients from university counseling centers. A wide variety of designs and statistical techniques have been used. In some cases the authors have analyzed their data using certain techniques which they felt were particularly appropriate or absolutely necessary to properly reveal the relationships sought.

In almost all instances the findings would support the general hypotheses that vocational interests are a reflection of basic personality variables and personal needs are integrally involved in vocational choice. Likewise the findings have, for the most part, been consistent with Holland's theoretical formulations.

CHAPTER III

METHOD

Description of Subjects

A sample of 255 students was drawn from those tested by the counseling Center on both the SVIB and EPPS during the period November 1963 to December 1966. Only Strong Blanks based on the 1938 revision were included. The sample was, within reasonable limits, representative of the male student population dealt with by the University of North Dakota Counseling Center.

The single largest category of students having contact with Counseling Center services are entering freshmen facing choices of college major in preparation, ultimately, for vocations. Vocational testing is also provided for other groups of students considering special programs of study such as elementary education and the honors program. Sophomores, juniors and seniors in lesser numbers also come to the center for vocational testing and counseling. Some of these are just curious about themselves but many are individuals who are dissatisfied, lack interest, or are just not performing satisfactorily academically in their present major field. The reasons for this, of course, are many: perhaps a

poor matching of course demands with individual strengths or aptitudes, or with patterns of interests and personal needs. In terms of Holland's theory their current major and hence academic environment may be incongruent with their personality type.

The initial contact with the counseling center for the majority of students is through the group testing programs. Out of the total of 255 students included in this study the records of 71 showed individual counseling contact while the remaining 184 had group testing contact only. The total sample included 124 students from the fall of 1965 and a further 61 from the spring of 1966 who responded to an invitation to test extended to all registering freshmen. Some of these students followed up the testing with requests for counseling while others had no further contact with the counseling center. The remaining students were required to test to fulfill course requirements or were assigned testing as part of counseling. Thirty three of these students were elementary education majors and 18 were applicants for the honors program.

To confirm that it would be appropriate to combine the test results secured from both counseling and non-counseling sources for analysis, t tests were run of the differences between the mean scores of the "individual

counseling" versus the "group contact only" students. Differences were tested for each EPPS scale and for each of the six personality type scores derived from the means of SVIB interest scales grouped according to Holland's classifications.

The means and standard deviations of these six composite Holland personality type scores and of the 15 EPPS need scores are presented in Appendix A for those students who came to the Center for individual counseling and for those who had group testing contact only. Just one of the 21 t tests was significant at the .05 level. The means differed on the need for achievement. At the .05 level one such difference out of 21 could be a chance result. The null hypothesis of no differences could not be rejected, and therefore the assumption was supported that it was appropriate to combine the data for analysis.

Description of Measures Used

To test Holland's theory of vocational choice required the use of two instruments which are widely used in counseling practice and research. The SVIB and EPPS fit this description well.

SVIB. By 1955 the SVIB was considered to be without peer among vocational interest tests (Darley and Hagenah, 1955, p. viii), and 10 years later Astin stated "... the

SVIB remains as the best constructed and most thoroughly validated instrument of its kind", (Astin, 1965, p. 1304). Only the Rorschach is more extensively reported in the test literature than the SVIB.

The original SVIB was published by Strong in 1927 and the same basic form and construction have been retained in the 1938 and 1966 revisions. The rationale for the test is that men in a given occupation have like interests and their interests differ from those of men in different jobs. The SVIB was devised to identify differences among those occupations that college students usually enter. It provides an index of the similarity between a person's interests and those of successful men in a wide range of occupations.

The blank contains approximately 400 items to which (for the most part) the individual responds with "like", "dislike", or "indifferent". It can be completed in 35 to 40 minutes and is generally scored by machine rather than by hand since scoring procedures are complex and laborious. Standardized scores for approximately 50 different occupational scales are reported on a profile form.

Test-retest reliabilities for the 1938 and 1966 revisions are essentially the same on the scales common to both forms. These correlations range from .79 to .95 over thirty days and from .43 to .74 over an 8 year

interval (Campbell, 1966a; Campbell and Johansson, 1966).

Follow-up studies over periods ranging from 4 to 30 years (Strong 1943, 1955; Kelly, 1955; McArthur, 1955; Berdie, 1955, 1960, 1965; Campbell, 1966b, c; Feist, 1966; Strong and Campbell, 1966) of students tested in high school or college confirm the exceptional predictive validity with different student populations.

EPPS. Edwards published the first manual for the Personal Preference Schedule in 1954. The EPPS, which was developed primarily for use in counseling and research, was designed to measure normal personality attributes possessing broad personal and social relevance. It is a forced choice instrument which measures along 15 dimensions drawn from Murray's (1938) system of manifest needs.

A major feature of the test, and the focus of a great deal of research, is the forced choice format which is designed to control the social desirability factor. The general consensus of the research findings is that Edwards has been successful in minimizing the influence of the social desirability response set at both the item and variable levels, but he has not fully controlled it. The number of studies conducted employing the EPPS attests to the fact that the instrument is considered useful. Bernardin and Jessor (1957) and Gebhart and Hoyt (1958) achieved positive results in limited attempts at construct validation, but the literature is meagre regarding

validity studies.

Test-retest reliability coefficients are reported in the manual over a one week interval using 1509 subjects. They range from .74 to .87 across the scales, and are for the most part in the 80's. Edwards (1959) also reports split half reliabilities for individual scales ranging from .60 to .87 but these would appear to be rather inflated correlations since the 28 items which contribute to each scale are not entirely independent.

In terms of validities and reliability the EPPS has clearly not yet earned the favored position held by the SVIB in the field of psychological measurements. Cronbach describes the Strong as "undoubtedly the most highly developed and best understood of the inventories; indeed, it ranks very near the top among psychological tests of all types" (Cronbach, 1960, p. 434). In contrast to this he refers to the Edwards as "a descriptive inventory useful in initiating counseling of college students (Cronbach, 1960, p. 487). However, the EPPS does purport to measure characteristics which are relevant to Holland's description of the six basic personality types and it is widely used in counseling and research. This study is specifically concerned with assessing the usefulness of Holland's theory in providing a suitable framework for integrating the results of commonly used counseling instruments.

Classification of Data

A number of different methods have been proposed for analyzing SVIB profiles to determine primary patterns or principal occupational interest groupings. Perhaps the most widely used method in counseling practice is the one developed by Darley in 1941 and subsequently modified by Darley and Hagenah (1955). Although this method appears to work well for experienced counselors, too much latitude is left for subjective judgement. The result has been that findings by different investigators have often not been comparable. Stephenson (1961) and Korn and Parker (1962) have devised considerably more objective methods but in neither case has 100 per cent inter-judge agreement been achieved.

It was decided that profile analysis and coding of personality types would be greatly facilitated by establishing a method which was entirely objective. Such a method should also facilitate replication studies.

The following method was used to code the SVIB vocational interest profiles of the 255 subjects. Forty-seven of the 51 SVIB occupational scales were classified according to Holland (1966a) as belonging to one of his six basic personality types. The groupings were as follows: (1) Realistic - Engineer, Farmer, Carpenter, Aviator, Army Officer, Vocational Agricultural Teacher,

Policeman, and Forest Service Man; (2) Intellectual - Architect, Dentist, Veterinarian, Mathematician, Physicist, Chemist, and Math-Science Teacher; (3) Social - Psychologist, Physician, Psychiatrist, Y.M.C.A. Physical Director, Vocational Counselor, Y.M.C.A. Secretary, Social Science Teacher, Social Worker, Physical Therapist, City School Superintendent, and Minister; (4) Conventional - C.P.A. Partner, Senior C.P.A., Junior Accountant, Office Worker, Banker, Credit Manager, Business Education Teacher; (5) Enterprising - Production Manager, Personnel Manager, Public Administrator, Purchasing Agent, Sales Manager, Real Estate Salesman, Life Insurance Salesman, Advertising Man, Lawyer, and President of Manufacturing Concern; and (6) Artistic - Artist, Music Performer, Music Teacher, Author-Journalist. The four remaining scales Osteopath, printer, Pharmacist and Mortician, were not included because they have not been classified by Holland and did not appear clearly to belong with any of the six basic personality types.

For every subject personality type scores were obtained by averaging the scores on all the SVIB scales within each group. (In order to distinguish these groups from traditional SVIB groups and from Holland's Vocational Preference Inventory (VPI) groups they will be referred to from here on as H-SVIB groups.) For example, John Smith obtained the following standard scores on the

occupational scales classified as Realistic: Engineer - 37, Farmer - 39, Carpenter - 39, Aviator - 35, Army Officer - 41, Voc. Agric. Teacher - 40, Policeman - 35, and Forest Service Man - 39. The average of all these scores is 38.13. Similarly, the average of the scores obtained by him on the occupational scales classified as Intellectual was 25.29. Using the same procedure with the remaining groups of occupational scales the following average scores were obtained: Social - 47.80, Conventional - 37.29, Enterprising - 30.90, and Artistic - 34.25. Smith's highest group average was 47.80 (Social). His second highest group score was 38.13 (Realistic), and the lowest group score was 25.29 (Intellectual). Finally, the primary, secondary, and reject pattern was coded numerically: 31-2 (Social: Realistic: Intellectual) according to Holland's system as was discussed earlier (p. 5). This code (31-2) indicates that Smith resembles most closely the Social personality type and would be expected to possess many of the characteristics associated with that type. Secondarily he resembles the Realistic type, but he is least like the Intellectual personality type. It should be noted that the use of the terms primary, secondary and reject patterns differs from that of Darley and Hagenah (1955).

Statistical Analysis

There has been considerable discussion in the literature concerning the limitations placed on the analysis of EPPS data due to the ipsative nature of its scores. Ipsative scores arise when traits for an individual are ranked for that individual. Placing the items in a forced choice format, such as is found in the EPPS, results in an indirect ranking of the individual traits. "Ipsative measurements for each individual are distributed about the mean of that individual, not about the population mean. Individual differences in ipsative measurements have little meaning because there is not a single scale for all individuals" (Guilford, 1954, p. 528). Therefore, while normative scores express inter-individual differences in a trait, ipsative scores give intra-individual differences in various traits.

Stoltz (1958) reported that the measures involved in the Edwards are more ipsative than normative in character. Heilizer (1963), Radcliffe (1965), Stricker (1965), and Mills and Menck (1967) support this finding and affirm that EPPS results therefore must not be analyzed as being normative. Conversely, others such as Heilbrun (1963) and Karr feel that "although the scores on the EPPS are undeniably ipsative as statistically defined, there is a reasonable possibility that they may be treated

as normative scores" (Karr, 1962, p. 55).

The weight of evidence suggests that extreme caution must be used when interpreting the results of analyses which assume normative properties for EPPS scores. Despite these cautions, Corah (1961) decided that violation of the rules might provide useful information so he proceeded with his factor analytic study of the EPPS.

Similarly, for this study it was decided to examine the data using techniques such as the analysis of variance even though this entailed violation of the assumptions of normative measures possessing at least interval scaling properties. However, in view of the conflicting evidence, less powerful nonparametric statistical techniques have been employed also to provide less vulnerable, though more conservative tests of the hypotheses made.

Kendall's Coefficient of Concordance (W) was used to test the general hypothesis that persons grouped according to Holland's classification by means of their SVIB scores would form coherent groups with respect to other personality variables. The EPPS scales were rank ordered from highest to lowest for each of the 255 subjects (S_s). The S_s were then separated into six groups: Realistic, Intellectual, Social, Conventional, Enterprising, and Artistic, according to their H-SVIB primary. For each group of S_s W was computed to obtain

an average Spearman rank co-efficient for the 15 EPPS needs. It would be expected that the individuals within each of these groups would tend to have the same order of ranked needs. It was hypothesized, therefore, that there would be a significant average correlation between the rankings of the EPPS scales by individuals within each group.

The general hypothesis was formulated that persons grouped according to their H-SVIB primary would differ, one group from another, on personality variables as measured by the EPPS. This hypothesis was then tested in three ways: (1) A one-way analysis of variance was completed for each EPPS scale in turn. EPPS raw scores were used to yield results which could be compared most readily with those of other studies which had used the EPPS with the SVIB. For those needs where the overall differences were found to be statistically significant t tests were made of differences between means of the six H-SVIB Groups. (2) The assumption has been made that the factor which determines the importance of the strength of a given need in determining or influencing the behavior of an individual is, not the absolute level of the need but rather, the relative predominance of that need within the hierarchy of needs of the individual. It was decided, therefore, that it would be useful

to determine what difference, if any, intra-individual ranked scores would make to intergroup comparisons. While clearly a gross violation of the assumption that the data should be reasonably close to interval or ratio level, a second analysis of variance was completed, parallel to the one mentioned above, but using rankings instead of EPPS raw scores. (3) The Kruskal-Wallis one-way analysis of variance by ranks was used as a test whose results would be less open to question. These results, although not directly comparable to the analyses above, should provide evidence at least partially to confirm or refute their findings.

On the basis of Holland's formulations it was possible to make more specific hypotheses regarding the association of specific predominant needs with each of the six basic personality types. It was hypothesized for each of the six H-SVIB groups that certain EPPS needs would tend to rank high and others low (see p.10).

As with the hypotheses regarding inter-group differences, these hypotheses were tested in three ways: 1) The EPPS raw scores of those individuals possessing a given primary were contrasted with those of other persons showing a reject pattern in that same H-SVIB group. The same comparison was made for each group on each of the 15 EPPS needs. 2) The same approach was then used to make these comparisons using EPPS rankings in place of the raw scores.

For both 1 and 2 above t tests were made to determine the level of significance of the differences between the mean scores. 3) The null hypothesis was also tested that the proportion of times a need would be ranked high (1 to 5), in the middle (6 to 10), or low (11 to 15), would not differ. The Chi-square test was used in this analysis.

CHAPTER IV

RESULTS

Similarity Within H-SVIB Groups

It was hypothesized that there would be a significant average correlation between the rankings of the EPPS scales by individuals within each group. The Ss were separated into six groups according to their H-SVIB primary. W, Kendall's coefficient of concordance, was computed for each group. Chi-square tests of the significance of the coefficients indicate that all are significant at the .001 level or better. Table 1 shows the number of persons of each type and W for each of these groups. Ss classified by means of their H-SVIB scores as being most like a given personality type tended, in an overall way, to score alike on the EPPS.

Differences Between H-SVIB Groups

The general hypothesis was formulated that persons grouped according to their H-SVIB primary would differ, one group from another, on personality variables as measured by the EPPS. The null hypothesis of no differences between the groups was tested by three methods:

- (a) one-way analysis of variance using EPPS raw scores;
- (b) one-way analysis of variance using intra S ranked EPPS

scores; and (c) a Kruskal-Wallis one-way analysis of variance by ranks.

TABLE 1

CHI-SQUARE TESTS OF KENDALL COEFFICIENTS OF CONCORDANCE
WITHIN GROUP AGREEMENT ON EPPS SCALES

Personality Type	k ^a	W	χ^2 (df=14)
Realistic	63	.092	81.04***
Intellectual	24	.110	36.96***
Social	29	.203	82.42***
Conventional	73	.077	78.69***
Enterprising	41	.129	73.95***
Artistic	25	.150	52.50***

k^a = No. of observations or No. of Ss per group.

*** P < .001

Analysis using EPPS raw scores. The Ss were grouped by H-SVIB primary according to Holland's six personality types. A separate one-way analysis of variance was completed for each of the 15 EPPS need scales. Table 2 summarizes the results of the 15 raw score analyses which indicate that there are differences between the H-SVIB groups in terms of need preferences. The F-tests were significant on seven needs: Ord, Aut, Int, Dom, Aba, End, and Agg. For these seven needs t-tests were run of the differences between the means of the H-SVIB groups. Out of

TABLE 2

ONE-WAY ANALYSIS OF VARIANCE USING EPPS RAW SCORES
FOR Ss GROUPED BY H-SVIB PRIMARY

Need	Source of Variance	SS	df	MS	F	P
Ach	Between Groups	175.01	5	35.00	2.20	ns
	Within Groups	3956.39	249	15.89		
Def	Between Groups	153.65	5	30.73	1.91	ns
	Within Groups	4011.67	249	16.11		
Ord	Between Groups	333.38	5	66.68	3.36	<.01
	Within Groups	4942.20	249	19.85		
Exh	Between Groups	77.64	5	15.53	1.28	ns
	Within Groups	3019.40	249	12.13		
Aut	Between Groups	363.44	5	72.69	4.13	<.01
	Within Groups	4381.56	249	17.60		
Aff	Between Groups	159.37	5	31.87	1.82	ns
	Within Groups	4362.03	249	17.52		
Int	Between Groups	306.94	5	61.39	2.26	<.05
	Within Groups	6776.02	249	27.21		
Suc	Between Groups	162.90	5	32.58	1.51	ns
	Within Groups	5383.51	249	21.63		
Dom	Between Groups	522.35	5	104.47	4.83	<.01
	Within Groups	5386.38	249	21.63		
Ada	Between Groups	306.53	5	61.31	2.89	<.05
	Within Groups	5285.22	249	21.23		
Nur	Between Groups	211.88	5	42.38	1.96	ns
	Within Groups	5387.47	249	21.64		
Chg	Between Groups	43.36	5	8.67	0.48	ns
	Within Groups	4508.31	249	18.11		
End	Between Groups	719.23	5	143.85	4.99	<.01
	Within Groups	7176.63	249	28.82		
Het	Between Groups	172.93	5	34.59	0.93	ns
	Within Groups	9267.88	249	37.22		
Agg	Between Groups	272.16	5	54.43	2.57	<.05
	Within Groups	5264.57	249	21.14		

the 105 t-tests made 20 were significant at the .01 level and a further 22 at the .05 level for a total of 42 (see Appendix B, Table 28). The level of significance of the differences was determined using two-tailed tests. Table 3 summarizes these results, which were as follows:

TABLE 3
SUMMARY OF t-TESTS OF DIFFERENCE BETWEEN MEANS
OF H-SVIB GROUPS AFTER THE ANALYSIS
OF VARIANCE USING EPPS RAW SCORES

Lower H-SVIB Group	Higher H-SVIB Group					
	Real- istic	Intel- lectual	Social	Conven- tional	Enter- prising	Art- istic
Realistic			Dom**		Dom** Agg*	Aut** Agg*
Intellectual			Int** Dom**		Dom**	Agg*
Social	Aut*	Ord** Aut* End**		Ord*		Aut** Agg*
Conventional	Aut*	Aut* End*	Int* Dom*		Dom** Agg*	Aut** Agg*
Enterprising	Aba** End**	Ord** Aba** End**	Int**	Ord** Aba** End*		Aut*
Artistic	Aba* End**	Ord* Aba* End**		Aba* End*		

Note: Each group designated at top of table scored higher than intersecting group to left of table on the needs as indicated.

*p < .05

**p < .01

The Realistic group scored higher than the Enterprising and the Artistic types on both Aba and End. They also scored higher than the Social and Conventional types on Aut but lower than the Artistics on this same need. In addition, the Realistic types scored lower than the Artistic and the Enterprising persons on Agg and lower than the Enterprising and Social types on Dom.

The Intellectual group scored higher than the Social group on Ord, Aut, and End; the Conventional group on Aut, and End; and the Enterprising and the Artistic groups on Ord, Aba, and End. They also scored lower than the Social group on Int and Dom; the Enterprising group on Dom; and the Artistic group on Agg.

The Social group scored higher than the Realistic, Intellectual and Conventional on Dom; and the Intellectual, Conventional, and Enterprising types on Int. This group also scored lower than the Realistic on Aut; the Intellectual on Ord, Aut, and End; the Conventional on Ord; and the Artistic on Aut and Agg.

The Conventional group was higher than the Social types on Ord; the Enterprising types on Ord, Aba, and End; and the Artistics as well on Aba and End.

The Conventional types scored lower than the Realistics on Aut; the Intellectuals on Aut and End; the Social types on Int and Dom; the Enterprising types on Dom and Agg; and the Artisticals on Aut and Agg.

The Enterprising group was higher than both the Realistic and Conventional types on Dom and Agg, and was also higher than the Intellectuals on Dom. This group was lower than the Realistics on Aba and End; both Intellectual and Conventional types on Ord, Aba, and End; the Social types on Int; and the Artisticals on Aut.

The Artistic group scored higher than the Realistic, Social and Conventional types on both Aut and Agg; the Intellectuals on Agg; and the Enterprising types on Aut. This group scored lower than the Realistic, Intellectual and Conventional types on both Aba and End; and lower than the Intellectuals on Ord as well.

Analysis using EPPS ranked scores. This analysis was completed in the same manner as the first, with the exception that EPPS ranked data were used in place of the raw scores. Table 4 summarizes the results of the one-way analyses of variance. There were significant F-tests on five of the seven needs found to differ among the groups on the raw score data. These were Aut, Dom, Aba,

End, and Agg. The Ord and Int analyses which had yielded significant F-tests on the raw score data resulted in F scores of 1.74 and 2.16 respectively. An F-score of 2.25 would be required for significance at the .05 level.

Differences between the means of the H-SVIB groups were tested on the five needs. Twenty five of the 75 t-tests made were significant at the .05 level or better (see Appendix B, Table 29). The level of significance of the differences was determined using two-tailed tests.

Table 5 summarizes these results which were as follows:

The Realistic group was higher than both the Enterprising and the Artistic types on Aba and End.

They were lower than the Social types on Dom; and the Enterprising types on Dom and Agg.

The Intellectual group was higher than the Social, Enterprising and Artistic type on End and in addition was higher than the Enterprising types on Aba. They were lower than the Social types on Dom and the Enterprising types on Dom and Agg.

The Social group was higher than the Realistic, Intellectual and Conventional types on Dom. They were lower than the Intellectual types on End, the Enterprising types on Agg, and the Artistic types on Aut.

The Conventional group was higher than both the Enterprising and Artistic types on Aba and End. They

TABLE 4

ONE-WAY ANALYSIS OF VARIANCE USING EPPS
RANKED SCORES FOR Ss GROUPED
BY H-SVIB PRIMARY

Need	Source of Variance	SS	df	MS	F	P
ACH	Between Groups	158.57	5	31.71	1.04	ns
	Within Groups	7605.99	249	30.55		
DEF	Between Groups	131.35	5	26.27	1.74	ns
	Within Groups	3751.18	249	15.06		
ORD	Between Groups	129.68	5	25.94	1.74	ns
	Within Groups	3717.67	249	14.93		
EXH	Between Groups	101.41	5	20.28	1.54	ns
	Within Groups	3275.50	249	13.15		
AUT	Between Groups	216.95	5	43.39	2.55	<.05
	Within Groups	4240.72	249	17.03		
AFF	Between Groups	105.06	5	21.01	1.30	ns
	Within Groups	4020.88	249	16.15		
INT	Between Groups	207.63	5	41.53	2.16	ns
	Within Groups	4778.63	249	19.19		
SUC	Between Groups	170.72	5	34.14	1.95	ns
	Within Groups	4370.24	249	17.55		
DOM	Between Groups	370.93	5	74.19	4.45	<.01
	Within Groups	4151.01	249	16.67		
ABA	Between Groups	310.37	5	62.07	3.78	<.01
	Within Groups	4084.63	249	16.40		
NuR	Between Groups	164.32	5	32.86	1.92	ns
	Within Groups	4267.04	249	17.14		
CHG	Between Groups	360.59	5	7.21	0.48	ns
	Within Groups	3726.74	249	14.97		
END	Between Groups	396.09	5	79.22	3.52	<.01
	Within Groups	5599.49	249	22.49		
HET	Between Groups	86.02	5	17.20	0.78	ns
	Within Groups	5487.38	249	22.04		
AGG	Between Groups	205.33	5	41.07	2.35	<.05
	Within Groups	4353.90	249	17.49		

were lower than the Social group on Dom, the Enterprising types on Dom and Agg, and the Artistic on Aut.

TABLE 5

SUMMARY OF t-TESTS OF DIFFERENCES BETWEEN MEANS OF H-SVIB GROUPS AFTER THE ANALYSIS OF VARIANCE USING RANKED EPPS SCORES

Lower H-SVIB Group	Higher H-SVIB Group					
	Realistic	Intellectual	Social	Conventional	Enterprising	Artistic
Realistic			Dom**		Dom** Agg**	
Intellectual			Dom*		Dom** Agg*	
Social		End*			Agg*	Aut**
Conventional			Dom*		Dom** Agg**	Aut**
Enterprising	Aba** End**	Aba** End**		Aba** End*		
Artistic	Aba* End**	End**		Aba* End*	Dom*	

Note: Each group designated at top of table scored higher than intersecting group to left of table on the needs as indicated.

* p < .05
** p < .01

The Enterprising group was higher than the Realistic, Intellectual, and Conventional types on both Dom and Agg. They were also higher than the Social types on Agg, and the Artistics on Dom. Conversely, the Enterprising types were lower than the Realistic, Intellectual and Conventional types on both Aba and End.

The Artistic group was higher than both the Social and Conventional types on Aut. They were lower than the Realistic and the Conventional types on Aba and End, the Intellectuals on End, and the Enterprising types on Dom.

The net result of this second analysis was to indicate that using intra-individual ranked scores rather than the original raw scores did not appreciably alter the outcome. The relative predominance of a need within the hierarchy of needs of the individual may be more important than its absolute level in influencing the behavior of that individual but differences between raw scores and rankings were not great when considering group averages. Comparing directly the ranked with the raw score data for the results of the t-tests on the five EPPS need scales for which significant F-tests were found on the ranked data analysis, 12 differences were significant for the raw score data which were not for the ranked data. These were:

The Realistic group higher than the Social and Conventional types on Aut.

The Intellectual group higher than the Social types on Aut, the Conventional types on Aut and End, and the Artistics on Aba.

The Artistic group higher than the Realistic, Intellectual, Social, and Conventional types on Agg, and the Realistic and Enterprising types on Aut.

On the other hand three differences were favored by the ranked data:

The Enterprising group higher than the Intellectual and the Social types on Agg, and the Artistic on Dom.

In many of the 15 instances listed the differences are more apparent than real. The t values in a number of cases have been just short of the arbitrary .05 level which was set as the minimum acceptable for consideration as being a significant finding.

Kruskal-Wallis one-way analysis of variance by ranks. As with the first two sets of analyses, the Ss were grouped by H-SVIB primary. A Kruskal-Wallis analysis was completed for each EPPS scale (see Table 6). The results of the 15 analyses support the major finding of the earlier two sets of analyses that there are differences between the H-SVIB groups in terms of need

TABLE 6

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE
BY RANKS ACROSS THE SIX H-SVIB GROUPS

EPPS NEED	H (df=5)	P
Achievement	9.17	ns
Deference	8.35	ns
Order	8.49	ns
Exhibition	7.51	ns
Autonomy	12.73*	<.05
Affiliation	6.09	ns
Intracception	10.83	ns
Succorance	9.68	ns
Dominance	20.80***	<.001
Abasement	21.99***	<.001
Nurturance	9.66	ns
Change	2.51	ns
Endurance	16.35**	<.01
Heterosexuality	3.91	ns
Aggression	11.01	ns

preference. A more conservative and hence less sensitive test than the regular analysis of variance, the Kruskal-Wallis yielded significant differences on only four of the seven EPPS needs on which differences were found between the H-SVIB group on the raw score analysis. These four were Aut, Dom, Aba, and End.

Specific Needs Associated with Personality types

Perhaps of greater value than inter-group differences for the counseling situation are the results of tests made of hypotheses regarding the association of specific predominant needs with each of Holland's six basic personality types. It was hypothesized for each of the six groups,

selected on the basis of H-SVIB primary, that certain EPPS needs would tend to rank high and others low. Specifically, it was hypothesized that the students most resembling each of the types would score as follows on the EPPS:

Realistic - high on Aba, End, and Def, but

- low on Dom, Nur, Exh, and Aff.

Intellectual - high on Ach, Aut, End, and Aba, but

- low on Exh, Aff, Nur, Suc, and Agg.

Social - high on Aff, Dom, Int, Ach, and Nur, but

- low on Aut, Def, Suc, Ord, and Aba.

Conventional - high on Ord, End, Ach, Aba, Het,

and Aff, but

- low on Aut, Aff, Nur, and Suc.

Enterprising - high on Dom, Exh, Het, Ach, Aff,

and Agg, but

- low on End, Aba, Nur, and Def.

Artistic - high on Ach, Aut, Exh, and Aba, but

- low on Ord, Aff, and Nur.

As with the hypotheses regarding intergroup differences, these hypotheses were tested in three ways:

- (a) using t-tests of differences between mean EPPS raw scores for students grouped according to H-SVIB primary compared with students group by H-SVIB reject pattern,
- (b) using t-tests of differences between mean EPPS ranked scores with the same groupings and,
- (c) using Chi-square

tests of differences in frequency with which EPPS needs were ranked high, midway or low by students classified according to H-SVIB primary.

Analyses using EPPS raw scores. To test the hypothesis that students possessing a given H-SVIB primary (their highest score) would differ, on EPPS needs, from students with a reject (their lowest score) on the same H-SVIB group, t-tests were used. When no direction was predicted a two-tailed t-test was used. Whenever direction was predicted the t-test used was one-tailed. The results were as follows:

Realistic. When Ss possessing an H-SVIB Realistic primary were compared with Ss having a Realistic reject pattern all seven of the predicted differences were in the appropriate direction (see Table 7). Of the seven predictions three of the differences were significant at the .05 level or better. These were a higher need for Aba and End and a lower need for Dom. There was also a significant difference recorded on an Edwards scale for which no prediction was made. This was a lower need for Ach. Although support for predicting this latter difference can be found in Holland's writings, it was not made for this study because his statements concerning this need are not unequivocal.

TABLE 7

t-TESTS OF DIFFERENCES BETWEEN MEANS OF EPPS RAW SCORES
FOR Ss GROUPED BY H-SVIB REALISTIC PRIMARY COMPARED
WITH Ss GROUPED BY REALISTIC REJECT PATTERN

EPPS Needs	Primary (N=63)		Reject (N=23)		Predicted Direction	t
	M	SD	M	SD		
Ach	14.92	3.34	18.70	3.55	...	-4.56**
Def	12.03	4.06	10.44	4.34	YES	1.59
Ord	10.75	4.64	8.70	3.52	...	1.92
Exh	14.08	3.46	15.22	3.03	YES	-1.39
Aut	13.81	4.34	13.74	4.84	...	0.07
Aff	15.06	3.83	15.17	4.70	YES	-0.11
Int	14.79	5.65	15.52	4.74	...	-0.55
Suc	10.98	4.16	12.57	4.93	...	-1.48
Dom	13.76	4.77	17.44	3.86	YES	-3.31**
Aba	15.65	4.13	13.65	4.99	YES	1.88*
Nur	13.68	4.85	13.70	3.78	YES	-0.01
Chg	15.95	3.88	14.48	3.60	...	1.59
End	15.51	5.41	11.65	5.85	YES	2.86**
Het	14.22	6.19	15.13	5.23	...	-0.63
Agg	12.35	4.31	13.26	4.70	...	-0.85

* p < .05

** p < .01

Intellectual. Nine differences were predicted for the Intellectual group and on eight of these the differences found were in the direction predicted (see Table 8). Four of these were significant at the .05 level or better. These were a higher need for Ach, Aut, and End, and a lower need for Aff. An expected lower score on Suc was reversed, although the difference between the mean scores for the primary and reject groups was very small (11.33 to 11.08). The Intellectual primary group also scored significantly lower than did the reject group on the Dom scale - in keeping with most of what Holland has had to say regarding this aspect of the personality makeup of the Intellectual type. No prediction was made regarding this need, however, as he does make one reference to an indirectly expressed need for dominance by this personality type.

For the Social type ten predictions were made. Nine of these differences were in the predicted direction (see Table 9). Out of the nine, seven differences were significant at the .05 level or better. These were higher needs for Aff, Int, Dom, and Nur, but lower on Ord, Aut, and Suc. The exception to the positive results was an anticipated higher need for Ach. In fact, the mean Ach score for the primary

TABLE 8

t-TESTS OF DIFFERENCES BETWEEN MEANS OF EPPS RAW SCORES
FOR Ss GROUPED BY H-SVIB INTELLECTUAL PRIMARY COMPARED
WITH Ss GROUPED BY INTELLECTUAL REJECT PATTERN

EPPS Need	Primary (N=24)		Reject (N=96)		Predicted Direction	t
	M	SD	M	SD		
Ach	16.63	4.26	14.80	3.81	YES	2.05*
Def	12.63	3.92	11.35	3.96	...	1.41
Ord	12.25	4.23	10.25	4.79	...	1.87
Exh	12.96	3.74	14.02	3.79	YES	-1.23
Aut	14.25	4.06	12.62	4.32	YES	1.68*
Aff	12.79	4.29	15.09	4.35	YES	-2.32*
Int	13.45	4.94	15.19	5.26	...	-1.46
Suc	11.33	4.50	11.08	4.90	NO	0.23
Dom	13.54	4.24	16.24	4.72	...	-2.55*
Aba	16.33	4.99	14.73	4.70	YES	1.48
Nur	12.71	4.02	13.94	5.25	YES	-1.07
Chg	15.83	4.66	15.85	4.35	...	-0.02
End	17.46	5.70	13.34	5.36	YES	3.32**
Het	13.33	7.58	15.57	5.92	...	-1.56
Agg	12.08	4.33	13.43	5.06	YES	-1.20

* p < .05

** p < .01

TABLE 9

t-TESTS OF DIFFERENCES BETWEEN MEANS OF EPPS RAW SCORES
FOR Ss GROUPED BY H-SVIB SOCIAL PRIMARY COMPARED
WITH Ss GROUPED BY SOCIAL REJECT PATTERN

EPPS Need	Primary (N=29)		Reject (N=51)		Predicted Direction	t
	M	SD	M	SD		
Ach	15.86	4.89	16.43	4.03	NO	-0.56
Def	11.17	3.47	12.02	3.90	YES	-0.97
Ord	8.86	4.06	11.67	4.24	YES	-2.89**
Exh	14.41	2.71	13.77	3.64	...	0.84
Aut	11.86	4.01	13.90	3.54	YES	-2.36*
Aff	15.66	4.82	13.82	4.29	YES	1.76*
Int	17.17	4.74	13.86	5.33	YES	2.78**
Suc	9.76	4.87	12.16	4.49	YES	-2.23*
Dom	17.21	4.62	13.65	4.74	YES	3.26**
Aba	14.83	5.09	14.94	4.72	YES	-0.10
Nur	15.76	5.13	12.63	4.56	YES	2.82**
Chg	15.93	4.42	14.33	4.44	...	1.55
End	13.21	5.10	15.51	5.95	...	-1.75
Het	14.69	4.85	14.39	6.39	...	0.22
Agg	11.93	5.36	13.59	4.19	...	-1.54

* p < .05
** p < .01

group was 15.86 as compared with the reject group mean score on this scale of 16.43. The difference, however, does not approach significance in size. Nor were there any significant findings on scales for which no prediction was made. The significant results for the Social type, more so than any other, were very closely in keeping with the predictions made.

Conventional. Ten predictions were also made regarding the direction of differences between the Conventional primary and reject groups. Out of these, seven mean differences were in the predicted direction (see Table 10) but, only one, a higher need for Ord, was statistically significant. For this group three of the differences were not in the direction anticipated. These three were a lower score on Aba and Het, but a higher score on Agg for the primary group. None of the negative findings were significant differences however.

Enterprising. As with the Conventional group, there were ten mean differences predicted for the Enterprising types. Eight of these were found to be in the appropriate direction (see Table 11). These were higher scores on Exh, Dom, Het, and Agg, and lower scores on Def, Aba, Nur, and End. Differences

TABLE 10

t-TESTS OF DIFFERENCES BETWEEN MEANS OF EPPS RAW SCORES
FOR Ss GROUPED BY H-SVIB CONVENTIONAL PRIMARY COMPARED
WITH Ss GROUPED BY CONVENTIONAL REJECT PATTERN

EPPS Need	Primary (N=73)		Reject (N=13)		Predicted Direction	t
	M	SD	M	SD		
Ach	15.52	3.69	13.92	4.13	YES	1.41
Def	11.95	3.68	12.08	4.77	...	-0.11
Ord	11.32	4.56	7.69	1.93	YES	2.81**
Exh	13.92	3.33	14.46	3.64	...	-0.54
Aut	12.16	4.22	13.46	4.31	YES	-1.02
Aff	15.04	4.04	14.23	3.98	YES	0.67
Int	14.66	4.93	13.77	6.71	...	0.57
Suc	11.59	5.04	13.54	4.14	YES	-1.32
Dom	14.56	4.77	16.15	4.76	...	-1.11
Aba	15.89	4.98	16.39	3.75	NO	-0.34
Nur	13.86	4.24	15.00	5.51	YES	-0.85
Chg	15.04	4.46	17.31	4.40	...	-1.69
End	14.59	5.54	12.54	5.58	YES	1.23
Het	15.52	6.51	16.77	6.85	NO	-0.63
Agg	12.41	3.99	11.39	4.65	NO	0.83

* p < .05

** p < .01

TABLE 11

t-TESTS OF DIFFERENCES BETWEEN MEANS OF EPPS RAW SCORES
FOR Ss GROUPED BY H-SVIB ENTERPRISING PRIMARY COMPARED
WITH Ss GROUPED BY ENTERPRISING REJECT PATTERN

EPPS Need	Primary (N=41)		Reject (N=28)		Predicted Direction	t
	M	SD	M	SD		
Ach	15.85	4.03	16.50	4.56	NO	-0.62
Def	10.66	4.77	11.46	3.69	YES	-0.75
Ord	9.00	4.39	9.89	4.27	...	-0.84
Exh	14.51	3.84	13.82	3.15	YES	0.79
Aut	13.66	4.04	14.32	4.34	...	-0.65
Aff	14.85	4.08	15.14	3.72	NO	-0.30
Int	13.54	4.87	16.64	4.80	...	-2.62
Suc	12.46	4.75	10.11	4.50	...	2.07*
Dom	17.32	4.57	12.54	5.22	YES	4.03***
Aba	13.27	3.91	16.04	4.38	YES	-2.75**
Nur	12.59	4.56	13.89	4.39	YES	-1.19
Chg	15.10	4.16	16.39	3.72	...	-1.33
End	12.29	5.14	15.36	5.39	YES	-2.38*
Het	15.98	5.40	14.25	6.44	YES	1.20
Agg	14.32	5.06	11.32	4.53	YES	2.52**

* p < .05
 ** p < .01
 *** p < .001

on Dom, Aba, End, and Agg were statistically significant at the .05 level or better. Two of the predictions were not borne out. These were higher needs on Ach and Aff, but neither was a large difference. The only significant difference found for which there was no prediction made was a higher primary group score on Suc.

Artistic. For the Artistic group seven out of eight differences were in the predicted direction (see Table 12). These were higher scores on Ach, Exh, Aut, and Int, and lower scores on Ord, Aff, and Nur. Out of these Ach, Ord, and Aut were statistically significant. The one difference not in the predicted direction was a lower score on Aba. Two significant differences found, for which no prediction was made were a higher score on Agg and a lower one on End.

Out of the 54 predictions made, 46 differences were in the predicted direction. Of the 46 positive findings 22 were significant at the .05 level or better. Four further differences, not predicted, were also statistically significant.

Analysis using EPPS ranked scores. This analysis was also to test the hypotheses that students scoring high on an H-SVIB group would differ from students scoring low on the same group in EPPS needs. Once again t-tests were used to determine the level of significance

TABLE 12

t-TESTS OF DIFFERENCE BETWEEN MEANS OF EPPS RAW SCORES
FOR Ss GROUPED BY H-SVIB ARTISTIC PRIMARY COMPARED
WITH Ss GROUPED BY ARTISTIC REJECT PATTERN

EPPS Need	Primary (N= 25)		Reject (N=44)		PREDICTED Direction	t
	M	SD	M	SD		
Ach	17.84	4.78	15.82	3.50	YES	2.01*
Def	9.96	4.16	11.86	4.35	...	-1.78
Ord	9.24	4.40	11.32	5.04	YES	-1.72*
Exh	15.28	3.90	14.46	3.05	YES	0.98
Aut	15.88	4.33	13.39	4.83	YES	2.14*
Aff	13.64	4.69	14.68	3.99	YES	-0.98
Int	15.96	6.14	13.86	5.19	YES	1.51
Suc	12.40	4.34	10.96	4.27	...	1.34
Dom	15.16	4.51	14.23	4.17	...	0.87
Aba	13.48	4.71	15.84	4.85	NO	-1.97
Nur	12.96	5.38	13.52	3.92	YES	-0.50
Chg	15.36	4.09	15.41	4.04	...	-0.05
End	11.60	5.08	16.02	4.72	...	-3.64**
Het	15.52	5.40	14.18	6.20	...	0.90
Agg	15.00	5.42	12.05	4.17	...	2.53*

* p < .05

** p < .01

of the differences between mean scores and when no direction was predicted the test was two-tailed. Whenever direction was predicted a one-tailed test was employed. This analysis was set up parallel to the raw score analysis to determine what difference, if any, intraindividual ranked scores would make to intergroup comparisons. For this reason the results are reported in terms of how they differ from the raw score results.

Realistic. These results are shown in Table 13.

A comparison of this table with Table 7, which shows the raw score Realistic results, reveals essentially the same picture. Scales for which there were significant differences were the same for both analyses. The only apparent reversal of direction, which could not be considered a real reversal, is on the Nur scale. The primary-reject difference shows in the predicted direction on the raw score analysis, but the difference ($13.70 - 13.68$, $t = .01$) is not really a difference at all. The ranked score comparison was $8.52 - 8.21$, $t = - .31$, with the primary group ranking higher than the reject group, or in the direction contrary to that predicted.

Intellectual. These results are summarized on Table 14. A comparison of this table with Table 8 shows no discrepancies in the direction of differences shown on scales for which hypotheses were made. However,

TABLE 13

t-TESTS OF DIFFERENCES BETWEEN MEANS OF EPPS RANKED SCORES
FOR Ss GROUPED BY H-SVIB REALISTIC PRIMARY COMPARED
WITH Ss GROUPED BY REALISTIC REJECT PATTERN

EPPS Need	Primary (N=63)		Reject (N=23)		Direction	t
	M	SD	M	SD		
Ach	7.33	3.33	4.13	3.05	...	4.21**
Def	9.19	4.08	10.74	3.58	YES	-1.61
Ord	10.38	4.08	12.00	2.52	...	-1.78
Exh	7.65	3.70	6.61	3.71	YES	1.16
Aut	8.14	4.11	8.00	4.74	...	0.14
Aff	7.08	3.74	6.48	4.06	YES	0.65
Int	7.60	4.68	6.61	3.99	...	0.91
Suc	10.51	3.93	8.87	4.32	...	1.67
Dom	8.51	4.45	5.91	3.42	YES	2.53**
Aba	5.97	3.92	8.22	4.70	YES	-2.23*
Nur	8.21	4.29	8.52	3.74	NO	-0.31
Chg	6.41	3.91	8.09	3.42	...	-1.82
End	6.43	4.73	9.48	5.04	YES	-2.60**
Het	7.60	4.96	7.35	4.06	...	0.22
Agg	9.14	4.11	9.39	4.77	...	-0.24

* p < .05

** p < .01

TABLE 14

t-TESTS OF DIFFERENCES BETWEEN MEANS OF EPPS RANKED SCORES
FOR Ss GROUPED BY H-SVIB INTELLECTUAL PRIMARY COMPARED
WITH Ss GROUPED BY INTELLECTUAL REJECT PATTERN

EPPS Need	Primary (N=24)		Reject (N=96)		Predicted Direction	t
	M	SD	M	SD		
Ach	5.58	3.93	7.55	3.79	YES	-2.26*
Def	8.46	4.24	9.92	3.66	...	-1.69
Ord	9.38	3.90	10.62	3.83	...	-1.41
Exh	9.08	3.86	7.94	3.62	YES	1.37
Aut	8.00	3.90	9.22	4.18	YES	-1.29
Aff	9.00	4.27	6.96	4.06	YES	2.18*
Int	8.58	4.53	7.18	4.28	...	1.42
Suc	9.79	3.88	10.08	4.37	NO	-0.30
Dom	8.00	3.68	6.24	4.06	...	1.94
Aba	5.96	4.29	6.91	3.96	YES	-1.03
Nur	8.79	3.78	8.02	4.50	YES	0.77
Chg	6.29	3.78	6.39	3.80	...	-0.11
End	5.33	4.81	8.05	4.79	YES	-2.48**
Het	8.29	5.21	6.84	4.55	...	1.35
Agg	9.46	4.10	8.09	4.31	YES	1.40

*p < .05
**p < .01

on the Aut scale the primary-reject difference was a statistically significant one for the raw score analyses ($t = 1.68$, $p < .05$), but was not so on the ranked score data ($t = -1.29$). Similarly, on the Dom scale, for which no prediction was made the raw score difference ($t = -2.55$) reached significance at the .05 level, whereas the ranked score difference ($t = 1.94$) was not quite of sufficient magnitude.

Social. (See Table 15 for ranked score results).

On the raw score analysis (Table 9) seven differences reached the .05 level (or better) of significance. Only six of these are significant differences on the ranked data. On the Aff scale the t-score was only -1.51 . On these tables, as with the Realistic group comparisons, an apparent direction reversal occurs. The difference is not a real one, however. On the Aba scale Table 9 shows a t-score of -0.10 while Table 15 has a t-score of -0.01 on the same.

Conventional. (See ranked data in Table 16).

There were no direction reversals between these two tables. However, there was an additional significant difference on the ranked score data, on the Ach scale, which did not reach that level with the

TABLE 15

t-TESTS OF DIFFERENCES BETWEEN MEANS OF EPPS RANKED SCORES
FOR Ss GROUPED BY H-SVIB SOCIAL PRIMARY COMPARED
WITH Ss GROUPED BY SOCIAL REJECT PATTERN

EPPS Need	Primary (N=29)		Reject (N=51)		Predicted Direction	t
	M	SD	M	SD		
Ach	6.55	4.31	5.59	3.78	NO	1.04
Def	10.21	3.26	9.10	4.02	YES	1.27
Ord	11.66	3.23	9.77	3.81	YES	2.25*
Exh	7.38	3.08	8.02	4.07	...	-0.74
Aut	9.86	3.98	7.96	3.53	YES	2.21*
Aff	6.52	4.36	8.00	4.17	YES	-1.51
Int	5.59	3.33	8.31	4.79	YES	-2.71**
Suc	11.28	4.01	9.26	4.48	YES	2.01*
Dom	5.79	3.95	8.61	4.35	YES	-2.87**
Aba	6.90	4.48	6.90	4.10	NO	-0.01
Nur	6.35	4.19	8.88	4.09	YES	-2.64**
Chg	6.45	3.73	7.75	4.06	...	-1.41
End	8.00	4.25	6.71	4.97	...	1.18
Het	7.86	3.80	7.47	4.93	...	0.37
Agg	9.59	4.52	7.88	4.22	...	1.69

* p < .05

** p < .01

TABLE 16

t-TESTS OF DIFFERENCES BETWEEN MEANS OF EPPS RANKED SCORES
FOR Ss GROUPED BY H-SVIB CONVENTIONAL PRIMARY COMPARED
WITH Ss GROUPED BY CONVENTIONAL REJECT PATTERN

EPPS Need	Primary (N=73)		Reject (N=13)		Predicted Direction	t
	M	SD	M	SD		
Ach	6.64	3.80	8.62	3.43	YES	-1.98*
Def	9.55	3.75	8.92	4.48	...	0.54
Ord	10.15	4.22	13.31	1.60	YES	-2.65**
Exh	8.16	3.42	8.08	3.35	...	0.09
Aut	9.32	4.30	8.69	4.15	YES	0.48
Aff	7.14	4.01	7.54	3.91	YES	-0.33
Int	7.47	4.42	7.85	5.11	...	-0.28
Suc	9.59	4.34	8.08	3.66	YES	1.18
Dom	7.84	4.27	6.15	3.85	...	1.33
Aba	5.80	4.11	5.69	3.71	NO	0.08
Nur	8.03	4.11	7.15	4.58	YES	0.70
Chg	7.08	3.96	5.39	3.02	...	1.47
End	7.08	5.00	8.62	5.11	YES	-1.02
Het	6.93	4.93	5.85	4.90	NO	0.73
Agg	9.11	3.66	10.08	4.07	NO	-0.86

* p \leq .05
** p \leq .01

raw score data.

Enterprising. The ranked score data are summarized in Table 17. On the raw score data (shown in Table 11) eight of the ten predicted differences were in the appropriate direction. In Table 17 nine of the ten differences were as predicted. The apparent discrepancy was on the need for Aff with a raw data t of $-.30$ (lower for the primary group) and a ranked data t -score of $-.28$ (ranked higher for the primary group as predicted). On both of the analyses four of the predicted findings were significant. These were higher scores on Dom ($p < .001$) and Agg ($p < .01$) but lower on Aba ($p < .01$) and End ($p < .05$). The raw score data yielded a significantly higher score for the primary group on only one additional scale Suc ($p < .05$), whereas the ranked data yielded two significant t -scores on scales for which no prediction was made: Suc and Int.

Artistic. (See Table 18). The raw score data had significant differences on three needs for which there were predictions: Ach, Aut (both higher) and Ord (lower), as well as two further needs for which no prediction was made: Agg (higher) and End (lower). The ranked data had a significant t -score on only one of the five above-mentioned scales -

TABLE 17

t-TESTS OF DIFFERENCES BETWEEN MEANS OF EPPS RANKED SCORES
FOR Ss GROUPED BY H-SVIB ENTERPRISING PRIMARY COMPARED
WITH Ss GROUPED BY ENTERPRISING REJECT PATTERN

EPPS Need	Primary (N=41)		Reject (N=28)		Predicted Direction	t
	M	SD	M	SD		
Ach	6.46	3.52	6.18	3.74	NO	0.32
Def	10.10	4.34	9.82	4.28	YES	0.26
Ord	11.49	3.57	11.00	3.73	...	0.55
Exh	7.29	4.05	8.04	3.50	YES	-0.79
Aut	8.24	4.11	7.43	3.94	...	0.82
Aff	6.88	3.89	7.14	3.69	YES	-0.28
Int	8.42	4.17	6.00	3.87	...	2.43*
Suc	8.66	4.60	11.00	4.06	...	-2.17*
Dom	5.22	3.60	9.00	4.24	YES	-3.98***
Aba	8.61	3.48	5.86	3.98	YES	3.05**
Nur	9.10	4.00	8.32	4.04	YES	0.79
Chg	7.12	3.98	6.00	3.48	...	1.21
End	9.02	4.83	6.36	4.63	YES	2.29*
Het	6.34	4.37	7.71	5.06	YES	-1.20
Agg	7.05	4.46	10.14	3.68	YES	-3.03**

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 18

t-TESTS OF DIFFERENCES BETWEEN MEANS OF EPPS RANKED SCORES
FOR Ss GROUPED BY H-SVIB ARTISTIC PRIMARY COMPARED
WITH Ss GROUPED BY ARTISTIC REJECT PATTERN

EPPS Need	Primary (N=25)		Reject (N=44)		Predicted Direction	t
	M	SD	M	SD		
Ach	5.24	4.26	6.30	3.36	YES	-1.14
Def	11.28	3.20	9.48	4.11	...	1.89
Ord	11.28	3.26	9.93	4.77	YES	1.25
Exh	6.60	3.69	7.30	3.36	YES	-0.80
Aut	6.52	4.05	8.55	4.71	YES	-1.80*
Aff	7.80	4.30	7.41	4.11	YES	0.37
Int	6.24	4.75	8.14	4.55	YES	-1.64
Suc	8.92	4.15	10.11	3.67	...	-1.24
Dom	7.68	3.78	8.36	4.05	...	-0.69
Aba	8.16	4.32	5.84	4.48	NO	2.10*
Nur	9.12	4.34	8.05	3.81	YES	1.07
Chg	7.32	3.56	6.86	4.11	...	0.47
End	9.48	4.29	6.05	4.41	...	3.14
Het	7.20	4.18	8.02	4.76	...	-0.72
Agg	7.56	4.94	9.41	3.90	...	-1.72

* $p < .05$

Aut. There was also a significant difference (lower) on Aba in the opposite direction to that predicted.

Out of the 54 directional hypotheses made 46 raw score results were in the appropriate direction, and of these 46, 22 differences were significant at the .05 level or better. On the overall, the ranked score analysis results were very comparable. Forty-five differences were in the hypothesized direction and 19 of these differences were significant at the .05 level or better. On the raw score data five additional results were significant on scales for which no predictions were made. On the ranked data four such additional significant findings occurred. Four of the 22 significant results on the raw score analysis were not large enough differences to be statistically significant on the ranked data. Conversely, one difference which was not significant on the raw score data was so on the ranked data. Superficially there were three reversals of direction between the two analyses on needs for which hypotheses were made. In each of these three cases there were almost no difference between the primary and reject group means involved and hence, the discrepancies were more apparent than real.

Chi-square analysis. The non-parametric statistical technique employed for this set of analyses was the

Chi-square test. The null hypothesis tested was that the proportion of times a need would be ranked high (1 to 5), midway (6 to 10), or low (11 to 15), would not differ.

Before computing Chi-square for the specific needs related to the personality types, an overall Chi-square was computed on the EPPS data for each H-SVIB group in turn. There is considerably less than one chance in a thousand that the observed overall differences could have occurred by chance alone (see Table 19).

TABLE 19

OVERALL CHI-SQUARE TEST OF THE PROPORTION OF TIMES
EACH EPPS NEED WAS RANKED HIGH, MIDWAY AND LOW
BY THE H-SVIB GROUPS

H-SVIB Group	χ^2	P
Realistic	123.80	.001
Intellectual	51.84	.01
Social	109.19	.001
Conventional	123.62	.001
Enterprising	84.87	.001
Artistic	66.20	.001

P < .001, χ^2 56.89, df = 28

Realistic. Out of the seven needs on which predictions were made for this group only four results were in the predicted direction (see Table 20). Aba and End were both significantly more often ranked high than low. Dom and Nur were more often ranked low than high but in neither case was the difference statistically significant. Contrary to expectations Aff was more often ranked high and Def low, although the differences were not significant. It was also predicted that Exh would be ranked low. In fact it was more often ranked high than low, but most often midway. This chi-square was significant. Significant differences were also found on four needs for which no predictions were made. Ord and Suc were both more often ranked low than high. Ach was most often ranked midway, and more often high than low. Chg was more often ranked high than midway or low.

Compared with the raw score analysis these results provide less support for the hypothesis. On the raw score data, where predictions were made, all seven differences were in the hypothesized direction. Three of these differences were significant. Only four of the seven were in the appropriate direction on the chi-square analysis,

TABLE 20

FREQUENCY WITH WHICH EACH OF THE 15 EPPS NEEDS WERE RANKED
HIGH, MIDWAY OR LOW BY STUDENTS CLASSIFIED
AS REALISTIC PERSONALITY TYPES

RANK	HIGH (1-5)	MIDWAY (6-10)	LOW (11-15)	PREDICTED DIRECTION	χ^2	P
<u>NEED</u>						
Ach	23	30	10	--	9.8	<.01
Def	13	23	27	NO	4.9	ns
Ord	11	12	40	--	25.8	<.001
Exh	20	30	13	NO	6.9	<.05
Aut	15	26	22	--	2.9	ns
Aff	26	24	13	NO	4.7	ns
Int	25	19	19	--	1.4	ns
Suc	9	15	39	--	24.0	<.001
Dom	16	22	25	YES	2.0	ns
Aba	34	18	11	YES	13.2	<.01
Nur	17	25	21	YES	1.5	ns
Chg	31	19	13	--	8.0	<.05
End	33	15	15	YES	10.3	<.01
Het	27	13	23	--	4.9	ns
Agg	14	24	25	--	3.5	ns

and only two of these four results were significant. Intellectual. Eight out of the nine needs for which directional hypotheses were made were most often ranked in the direction predicted (See Table 21). These eight needs were: more often high on Ach, Aba, and End; and low on Exh, Aff, Suc, Nur, and Agg. Ach, Aba, and End results were significant at the .05 level or better.

There were two apparent discrepancies between these results and the raw score data. In the latter analysis the primary group mean was significantly higher than the reject group mean on Aut. This difference was in the hypothesized direction. The chi-square analysis revealed that the same number of individuals in the Intellectual primary group had ranked Aut low as had ranked it high. The second apparent discrepancy pertained to the need for Suc which was expected to be low. On the chi-square analysis more individuals did rank Suc low than high whereas on the difference between mean scores for the primary and reject groups, the primary mean was slightly higher.

Social. Nine out of the ten EPPS scales for which directional hypotheses were made were most often ranked in the predicted manner (see Table 22).

TABLE 21

FREQUENCY WITH WHICH EACH OF THE 15 EPPS NEEDS WERE RANKED
HIGH, MIDWAY OR LOW BY STUDENTS CLASSIFIED
AS INTELLECTUAL PERSONALITY TYPES

RANK	HIGH (1-5)	MIDWAY (6-10)	LOW (11-15)	PREDICTED DIRECTION	χ^2	P
<u>NEED</u>						
Ach	15	5	4	YES	9.25	<.01
Def	8	6	10	--	1.00	ns
Ord	5	9	10	--	1.40	ns
Exh	4	11	9	YES	3.25	ns
Aut	7	10	7	NO	0.75	ns
Aff	3	10	11	YES	4.75	<.05
Int	9	5	10	--	1.40	ns
Suc	4	8	12	YES	4.00	ns
Dom	8	9	7	--	0.25	ns
Aba	13	8	3	YES	6.25	<.05
Nur	6	9	9	YES	0.75	ns
Chg	9	11	4	--	3.20	ns
End	16	3	5	YES	12.25	<.01
Het	8	7	9	--	0.25	ns
Agg	5	9	10	YES	1.40	ns

TABLE 22

FREQUENCY WITH WHICH EACH OF THE 15 EPPS NEEDS WERE RANKED
HIGH, MIDWAY OR LOW BY STUDENTS CLASSIFIED
AS SOCIAL PERSONALITY TYPES

RANK	HIGH (1-5)	MIDWAY (6-10)	LOW (11-15)	PREDICTED DIRECTION	χ^2	P
<u>NEED</u>						
Ach	13	10	6	YES	2.54	ns
Def	1	14	14	YES	11.65	< .01
Ord	2	7	20	YES	17.86	< .001
Exh	8	18	3	--	12.07	< .01
Aut	5	5	19	YES	13.51	< .01
Aff	13	10	6	YES	2.54	ns
Int	17	8	4	YES	9.17	< .01
Suc	3	6	20	YES	17.02	< .001
Dom	14	10	5	YES	4.21	ns
Aba	14	7	8	NO	2.96	ns
Nur	17	6	6	YES	8.34	< .01
Chg	14	10	5	--	4.21	ns
End	9	12	8	--	0.90	ns
Het	9	11	9	--	0.28	ns
Agg	6	11	12	--	2.14	ns

These nine were: high on Ach, Aff, Int, Dom and Nur; and low on Def, Ord, Aut, and Suc. Results on Def, Ord, Aut, Int, Suc, and Nur were significant at the .05 to .001 level. The need for Aba was more often ranked high rather than low as expected. No prediction was made regarding Exh which was significantly more often ranked midway.

The Social group also had two apparently discrepant results. Ach was more often ranked high as expected, but the primary group mean was lower than the mean for the reject group. Aba was also more often ranked high than low, but this time contrary to hypothesis.

Conventional. As with the Social group, nine out of ten predicted differences were in the appropriate direction (see Table 23). These nine results were: more often high on Ach, Aff, Aba, End, and Het; and more often low on Aut, Suc, Nur, and Agg. Significant differences were recorded on Ach, Aut, Suc, Aba, End, and Agg. Contrary to expectations Ord was ranked low significantly more often than high by the Conventional types. Def was ranked low more often than high and Exh was most often ranked midway. These last two results, which were significant findings, were on needs for which no predictions were made.

TABLE 23

FREQUENCY WITH WHICH EACH OF THE 15 EPPS NEEDS WERE RANKED
HIGH, MIDWAY OR LOW BY STUDENTS CLASSIFIED
AS CONVENTIONAL PERSONALITY TYPES

RANK	HIGH (1-5)	MIDWAY (6-10)	LOW (11-15)	PREDICTED DIRECTION	χ^2	P
<u>NEED</u>						
Ach	31	29	12	YES	9.08	<.01
Def	15	24	34	--	7.43	<.05
Ord	12	16	45	NO	26.66	<.001
Exh	17	37	19	--	9.97	<.01
Aut	17	22	34	YES	6.27	<.05
Aff	28	28	17	YES	3.32	ns
Int	27	27	19	--	1.75	ns
Suc	16	23	34	YES	6.77	<.05
Dom	26	24	23	--	0.19	ns
Aba	42	19	12	YES	20.25	<.001
Nur	21	25	27	YES	0.77	ns
Chg	34	21	18	--	5.94	ns
End	37	12	24	YES	12.85	<.01
Het	31	22	20	YES	2.82	ns
Agg	12	34	27	YES	10.38	<.01

A comparison of the raw score analysis with the chi-square analysis indicates that the latter more closely supports the hypotheses made. The raw score data show only one significant finding whereas six of the chi-square predicted results were significant and two others in addition, not predicted. Enterprising. Ten out of ten predicted differences were in the expected direction for this group (see Table 24). These ten were: Ach, Exh, Aff, Dom, Het, and Agg (more often ranked high), and Def, Aba, Nur and End (ranked low more often). Ach, Dom, Het and Def were significant at the .05 level or better. In addition Ord was significantly more often ranked low than high, although no prediction was made for this need.

The raw score data also yielded four predicted and one additional significant differences: Dom and Agg (both higher), Aba and End (both lower), and Suc (also higher). Contrary to predictions and also to the chi-square results were low raw mean scores on Ach and Aff.

Artistic. Seven out of eight predicted differences were in the direction hypothesized for the Artistic types (see Table 25). These seven were: Ach, Exh, Aut, Int (all more often ranked high); and Aff, Nur and Ord (more often ranked low). Significant

TABLE 24

FREQUENCY WITH WHICH EACH OF THE 15 EPPS NEEDS WERE RANKED
HIGH, MIDWAY OR LOW BY STUDENTS CLASSIFIED
AS ENTERPRISING PERSONALITY TYPES

RANK	HIGH (1-5)	MIDWAY (6-10)	LOW (11-15)	PREDICTED DIRECTION	χ^2	P
<u>NEED</u>						
Ach	18	18	5	YES	8.24	<.01
Def	7	13	21	YES	7.22	<.05
Ord	2	12	27	--	23.17	<.001
Exh	16	14	11	YES	0.93	ns
Aut	11	16	14	--	0.93	ns
Aff	16	17	8	YES	3.56	ns
Int	13	13	15	--	0.20	ns
Suc	13	11	17	--	1.37	ns
Dom	24	12	5	YES	13.51	<.01
Aba	8	16	17	YES	3.56	ns
Nur	9	14	18	YES	2.98	ns
Chg	17	15	9	--	2.54	ns
End	10	12	19	YES	3.27	ns
Het	23	10	8	YES	9.71	<.01
Agg	18	12	11	YES	2.10	ns

TABLE 25

FREQUENCY WITH WHICH EACH OF THE 15 EPPS NEEDS WERE RANKED
HIGH, MIDWAY OR LOW BY STUDENTS CLASSIFIED
AS ARTISTIC PERSONALITY TYPES

RANK	HIGH (1-5)	MIDWAY (6-10)	LOW (11-15)	PREDICTED DIRECTION	χ^2	P
<u>NEED</u>						
Ach	17	4	4	YES	13.53	<.01
Def	2	6	17	--	14.49	<.001
Ord	1	9	15	YES	11.85	<.01
Exh	10	9	6	YES	1.04	ns
Aut	12	10	3	YES	5.36	<.05
Aff	8	7	10	YES	0.56	ns
Int	12	6	7	YES	2.33	ns
Suc	7	8	10	--	0.56	ns
Dom	7	14	4	--	6.32	<.05
Aba	8	9	8	NO	0.08	ns
Nur	6	6	13	YES	3.92	ns
Chg	10	9	6	--	1.04	ns
End	4	11	10	--	3.44	ns
Het	10	9	6	--	1.04	ns
Agg	11	7	6	--	1.72	ns

differences were recorded on Ach, Ord, and Dom, as well as on a low ranked need for Def for which no prediction was made. The one exception to the hypothesized direction of the rankings was on the need for Aba. This need was ranked high and low equally often.

Basically the two analyses were in agreement for this group. In each case seven out of the eight predicted differences were in the appropriate direction. The exception in both cases was the need for Aba. Both analyses also revealed significant differences in the direction predicted on Ach and Ord. The raw score data showed a predicted significant difference on Aut as well, and two significant differences, not hypothesized, on End and Agg. The only significant finding which occurred in the Chi-square analysis which was not predicted was a high on Dom.

Fifty-four predictions were made on the basis of Holland's formulations regarding the association of specific predominant needs with each of the six personality types. In the raw score data 46 differences were in the direction hypothesized. In 47 instances the Chi-square results were in the direction predicted and in seven cases they were not. Out of the latter seven, one finding

was significant at the .05 level and another at the .001 level. Exh was most often ranked in the middle by the Realistics rather than low, and the need for Ord, directly contrary to prediction, was most often ranked low by the Conventional group. Twenty-three of the 47 differences which were in the predicted direction were significant at the .05 level or better. The comparable figure from the raw score data was 22. There were, in addition, 10 significant differences on scales for which no predictions were made.

Despite this marked similarity in the total number of correctly predicted results, there were apparent discrepancies between the primary versus reject, raw score analysis and the Chi-square analyses. A total of seven trends and another six significant findings were seemingly reversed.

CHAPTER V
SUMMARY, DISCUSSION AND CONCLUSIONS

Summary

The purpose of this study was to assess the usefulness of Holland's vocational choice theory for counseling with university students. More specifically, it attempted to determine whether or not Holland's theory provides a suitable framework for integrating the results of two commonly used counseling instruments: the SVIB and the EPPS.

A sample was drawn from those students tested by the University Counseling Center on both the SVIB and EPPS. This sample was, within reasonable limits, representative of the student population dealt with by the Counseling Center.

For analysis of the data the student test profiles were grouped according to Holland's criteria - by SVIB profile. Hypotheses regarding the personality attributes (manifest needs) of Holland's six major personality types were then tested by means of EPPS profile scores. The data were examined from these different aspects: (a) for similarity within H₇-SVIB groups,

(b) for differences between H-SVIB groups, and (c) for specific needs associated with each of Holland's six basic personality types.

Similarity Within H-SVIB Groups

It was hypothesized that there would be a significant average correlation between the rankings of EPPS scales by individuals within each group. The Kendall Coefficients of Concordance computed for each H-SVIB primary group were all significant at the .001 level or better. There is a similarity among individuals classified as most resembling each of the six basic personality types.

Differences Between H-SVIB Groups

The general hypothesis was formulated that persons grouped according to their H-SVIB primary would differ, one group from another, on personality variables as measured by the EPPS. The null hypothesis of no differences between the groups was tested by three methods: (a) one-way analysis of variance using EPPS raw scores; (b) one-way analysis of variance using intra S ranked EPPS scores; and (c) a Kruskal-Wallis one-way analysis of variance by ranks.

The raw score analysis resulted in significant F-tests on seven needs: Ord, Aut, Int, Dom, Aba, End, and Agg. For these seven needs t-tests were run of the

differences between the means of the H-SV-IB groups. Out of the 105 t-tests made 42 were significant at the .05 level (or better). These were as follows:

The Realistic group scored higher than the Enterprising and Artistic types on both Aba and End and higher than the Social and Conventional types on Aut.

The Intellectual group scored higher than the Social group on Ord, Aut, and End; the Conventional group on Aut and End; and the Enterprising and Artistic groups on Ord, Aba, and End.

The Social group scored higher than the Realistics, Intellectuals and Conventionals on Dom; and the Intellectual, Conventional and Enterprising types on Int.

The Conventional group was higher than the Social types on Ord; the Enterprising types on Ord, Aba, and End; and the Artistic persons as well on Aba and End.

The Enterprising group was higher than both the Realistic and Conventional types on Dom and Agg, and was also higher than the Intellectuals on Dom.

The Artistic group scored higher than the Realistic, Social and Conventional types on both Aut and Agg; and the Intellectuals on Agg; and the Enterprising types on Aut.

The analysis using EPPS ranked scores, which parallels the raw score analysis, yielded significant F-scores on five of the seven needs found to differ among the groups on the raw score data. These were Aut, Dom, Aba, End, and Agg. Twenty-five of the 75 t-tests made of the differences between the mean EPPS scores of the H-SVIB groups, were significant at the .05 level or better. These results were as follows:

The Realistic group was higher than both the Enterprising and the Artistic types on Aba and End.

The Intellectual group was higher than the Social and Artistic types on End and the Enterprising types on both Aba and End.

The Social group was higher than the Realistic, Intellectual and Conventional types on Dom.

The Conventional group was higher than both the Enterprising and Artistic types on Aba and End.

The Enterprising group was higher than: the Realistic, Intellectual and Conventional groups on Dom and Agg; the Social types on Agg; and the Artistic types on Dom.

The Artistic group was higher than both the Social and Conventional types on Aut.

The raw score and ranked score analyses had 22 significant findings in common out of a possible 75. In addition the raw score data yielded 12 significant results not found with the ranked data and conversely three findings were significant in the ranked data which did not reach that level in the raw score analysis. Twelve of these differences pertained to either Aut or Agg and in many instances the differences in findings were more apparent than real. The t values in a number of cases were just short of the arbitrary .05 level decided upon as the level accepted as significant.

The Kruskal-Wallis one-way analysis of variance by ranks supported the major findings of the other analyses regarding the existence of intergroup differences on four of the EPPS scales: Aut, Dom, Aba, and End.

Specific Needs Associated With the Personality Types

The inter-group differences reported above facilitate the comparison of the characteristics of the population used in this study with the Ss described by other investigations of this nature. Perhaps more readily applied in the counseling situation is information regarding the specific needs associated with a given personality type. Three separate analyses were made of the data to test the hypotheses made regarding the specific predominant needs associated with each of

Holland's six basic personality types. Both raw score and ranked data were analyzed by contrasting the mean EPPS scores of persons grouped by H-SVIB primary with those of persons grouped by the same H-SVIB group reject scores. In other words, those people for whom the given H-SVIB group score is their highest were compared to those for whom the group score for the same personality type is their lowest H-SVIB score. The t-test was used to determine the level of significance of the observed differences. For the third analysis the students were grouped according to H-SVIB primary only and the difference in the proportion of times a need was ranked high (1 - 5), midway (6 - 10), or low (11 - 15), was tested for significance using the Chi-square test. The results of these three analyses, are summarized below in comparative form, one group at a time (see Table 26).

Out of the 54 directional hypotheses made 46 raw score results were in the appropriate direction; 22 of the 46 being significant at .05 level or better. On the ranked score analysis there were 19 significant differences out of the 45 which were in the direction hypothesized. One significant finding was in opposition to the prediction. In 47 cases the Chi-square results were in the direction predicted and 25 of the 47 were significant at the .05 level or better. Two significant findings were not in the direction predicted. In addition there were

TABLE 26

PREDOMINANT NEEDS ASSOCIATED WITH PERSONALITY TYPES
SUMMARY OF SIGNIFICANT RESULTS OF THREE
COMPARATIVE ANALYSES

H-SVIB Group	Direction	Results of Analyses		
		Raw Score	Ranked Score	Chi Square
Realistic	Higher	Aba End	Aba End	Aba End (Chg)
	Lower	Dom (Ach)	Dom (Ach)	(Suc) (Ord)
Intellectual	Higher	Ach End Aut	Ach End	Ach End Aba
	Lower	Aff (Dom)	Aff	Aff
Social	Higher	Int Nur Dom	Int Nur Dom	Int Nur (Exh)
	Lower	Aut Suc Ord	Aut Suc Ord	Aut Suc Ord Def
Conventional	Higher	Ord	Ord Ach	End Ach Aba
	Lower			Aut Suc Ord* (Def) Agg
Enterprising	Higher	Dom Agg (Suc)	Dom Agg (Suc)	Dom Het Ach
	Lower	End Aba (Int)	End Aba (Int)	Def (Ord)
Artistic	Higher	Ach Aut (Agg)	Aut	Ach Aut
	Lower	Ord (End)	Aba* (End)	Ord (Def)

Note: () no prediction made.

* opposite to prediction.

significant differences on scales for which no predictions were made. There were five such results in the raw score data, five in the ranked score data and ten from the Chi-square analysis. While the results of the ranked and raw score analyses run closely parallel there were a number of apparent discrepancies between these and the Chi-square results. A total of seven trends and another six significant findings were seemingly reversed. The direction of the findings (higher or lower) was the same for the three analyses in the majority of instances but in only 12 cases did the differences reach the level of significance jointly.

Discussion

Similarity Within H-SVIB Groups

A "family resemblance" or general similarity was found among individuals classified as most resembling each of the six basic personality types. Individuals within a group tended to ascribe the same relative importance to a given EPPS need. While the results were statistically significant ($P < .001$) the correlations (coefficients of concordance) were not particularly high. The relationship between personality type classification (as determined by SVIB scores) and specific needs (as measured by the EPPS scores) was not of sufficient magnitude to permit prediction of the latter

test scores from the former. A few factors which could be controlled in future studies appear to have some bearing on this. Two of these factors relate to population sampling limitations. No subjects were eliminated from the study for reasons other than incomplete data. As a result a number of persons were included who had rather flat SVIB profiles. No minimum cut off score was set with respect to H-SVIB primary. With a larger population to draw from it might have been advisable to set a minimum H-SVIB primary cut off score for inclusion in the study. A minimum average score of 40 would have been preferred. Such a cut off would presumably help to delineate more closely the characteristics of the various personality types. To have used such a cut off for this study would have reduced the total sample from 255 to 128 students and Intellectual, Enterprising and Artistic groups to N's of 11, 11, and 13 respectively.

The second procedure which would likely have contributed to more clear cut results would have been to include in the basic groups only those individuals whose secondary H-SVIB classification was consistent with their H-SVIB primary.

A third factor which appears relevant is the fact that the classification of occupations (and therefore SVIB scales) as belonging with a certain personality type

is on a theoretical basis rather than an empirical one. Further research may indicate that some of the scales do not belong in their present classification. Two such scales are Dentist and Veterinarian. The impression was gained during the process of coding and classifying Ss that perhaps these two scales are more closely related to the SVIB scales within the Realistic classification than to those in the Intellectual grouping. The inclusion of such questionably classified scales may also have contributed to less clear cut results. The closer a person's resemblance to a particular type the more likely he will exhibit the personal traits and behaviors associated with that type. If the misclassification of scales on which he scores high results in the individual being included in the wrong group then he will not likely exhibit the characteristics expected of him on the basis of his classification.

Differences Between H-SVIB Groups

Holland made some direct comparisons among the various types in his classification system of the relative strength of certain needs. However, since he did not make these comparisons across all the groups nor even for a majority of the 15 EPPS needs, specific directional hypotheses were not made in this study for intergroup comparisons. Nevertheless, those predictions which could

be made on the basis of his theory were generally supported by these results. Some comparisons specifically detailed by Holland which were supported by the analysis results summarized in Table 3, (p. 46), were as follows: Persons classified as Social personality types tended to be more introverted and insightful (Int $<.01$) than those classified as Enterprising types, and more dominant (Dom $<.05$) than the Conventional types; persons classified as Conventional indicated they possessed a stronger need for self-control (Ord $<.05$) than did those typed Social; Enterprising persons showed a greater need for Dom ($<.01$) and Agg ($<.05$) than did Conventional types; and finally, those persons identified as Artistic tended to be more independent, unsociable and unconventional (Aut $<.05$) than were the Enterprising persons.

The pattern of the raw score results is generally in keeping with Holland's classification of his groups into consistent and inconsistent pairs in terms of primary-secondary codes. There are similarities or overlappings in need preferences between Realistic and Intellectual types, Realistic and Conventional types, Social and Enterprising types, Enterprising and Artistic types and between Intellectual and Artistic types. These are all classified by Holland as consistent codes or

combinations. There is, perhaps, more overlapping between the Intellectual and Conventional groups than would be expected. These results are summarized in Table 3.

As far as it went the Kruskal-Wallis analysis supported the findings of the raw score one-way analysis of variance. However, it revealed significant differences on only four of the seven needs which showed significant F-scores on the raw score analysis. Using less of the information available in the data the Kruskal-Wallis proved a much less powerful test.

Nor were as many significant differences found between the personality types following the ranked score analysis than following the raw score analysis. This appears to be due in part because the range of possible ranked scores is cut almost to half (15) of the possible range of raw scores (28). The ratio of possible to actual significant differences was 40 per cent for the raw score analysis but only $33\frac{1}{3}$ per cent for the ranked scores. Of greater importance was the fact that the advantages of intra-individual ranking of EPPS scores were lost in the group averages. Since this approach yielded only three new results and lost so many more in the process its value for repeated use is questionable. It did lend support and confidence to the raw score results, however, and in that light served a useful purpose.

Specific Needs Associated With Each of Holland's Six Basic Personality Types

There was almost no difference between the raw and ranked score analyses where the responses of H-SVIB primary groups were contrasted with those of their corresponding H-SVIB reject group. The object of these analyses was to establish the needs which hold a linear relationship with the personality types (as identified by H-SVIB scores).

For the raw score analysis 22 out of the 54 predicted results were significant. Eighteen of those 22 findings were supported by the ranked score data. One additional predicted result was significant on the ranked score data as well as one finding contrary to hypothesis. The surprising aspect of these results is the much greater similarity between the results of these two analyses than was found with the raw and ranked score data on the inter group comparisons (i.e. testing for differences between the H-SVIB groups).

For the H-SVIB primary versus reject data, on the average, five of the fifteen needs were significantly related to each personality type. The range was from two for the Conventional group to seven for the Social group. For the Chi-square data the average was six significant EPPS results for each H-SVIB group. The range was from four with the Intellectual group to nine for the Conventional group.

The raw and ranked score data were very similar. They differed in a number of respects from the Chi-square data. It was apparent from the results of the Chi-square analysis that it did, in fact, make some difference in the information derived from the data to focus on the intra-individual rankings in such a way as to retain the individuality of the score and hence the importance of each need to the individuals within a group. Which of the findings is more important or likely to be most useful: the correlation of an individual's need strength with the degree of resemblance of that individual to a given personality type as shown by the raw score primary versus reject group analysis; or the proportion of times that need is rated highly or otherwise by individuals in a group? It is important for the counselor to be able to determine what motivates the individual - what are the predominant determiners of the client's behavior? Since the individual does not operate in a vacuum it is also necessary to consider the individual in relationship to those around him to be able to understand and predict what will likely be of greater significance to him in a given social situation. Consequently both considerations are of importance.

The following is an example of this type of difference in the results. The Enterprising group most often ranked Het high (i.e. significantly more often high than

midway or low) but there was no significant difference between the primary and reject groups because the reject group also ranked the need for Het high. Therefore, there does not appear to be a linear relationship between the H-SVIB Enterprising scores and Het scores. Will a person classified as Enterprising likely express a high need for that? The question must arise, of course, that if no linear or other relationship is evident for a specific need with a given personality type then that Chi-square result may be an artifact - e.g. a characteristic of the student population sampled as distinct from the general population.

Some of the results do suggest a social desirability factor operating - perhaps peculiar to a student population or to the age group characteristic of the university population. An example of this is the need for Ord. This need was ranked low significantly more often than high by all of the six groups with the exception of the Intellectual types. Even with this group there were only five out of 24 who ranked high on Ord. There was a similar, though not so pronounced, tendency within the total sample for the students to rank low on the need for Suc.

There was also a general tendency across the whole sample for the students to rank high on the needs for Ach, Chg, Int, and Aff, although there are some distinct

and predicted exceptions to these.

A further characteristic of the data collected was a much greater variability in the responses regarding the Het need than for any of the other 14 EPPS scales. In other studies involving comparisons of students with various occupational groups it has been noted that younger, single individuals tended more often to score high on the Het scale than did more mature and/or married persons.

Apart from the possible bias introduced by studying a student population, another explanation for some of the apparently discrepant results may be found in a factor referred to earlier in the discussion regarding similarities within the Holland groups. This factor is the inclusion of a number of individuals possessing low H-SVIB profiles in the samples studied. Their closest resemblance or identification is with the group to which they were assigned, yet that resemblance may not be a strong one.

Conclusions

The results of this study clearly indicate that Holland's theory of vocational choice does provide a suitable system or theoretical framework within which to organize the SVIB and EPPS results. Further research might be usefully directed to confirm the relationships

established between H-SVIB scores and inventoried needs. It is suggested for greater clarity of results that separate groups be established of individuals who possess only consistent primary-secondary personality type codes, and further that minimum H-SVIB cut-off scores be employed when selecting Ss for inclusion in the six H-SVIB groups.

APPENDICES

APPENDIX A

TABLE 27

t-TESTS OF DIFFERENCES BETWEEN MEAN H-SVIB SCORES
FOR INDIVIDUAL CONTACT AND GROUP CONTACT

Personality Type	Individual (N=71)		Group (N=184)		t
	M	SD	M	SD	
Realistic	30.00	10.04	31.19	9.11	-0.90
Intellectual	26.41	9.30	25.05	8.83	1.09
Social	29.09	8.37	28.21	9.26	0.69
Conventional	33.70	8.04	34.10	7.54	-0.37
Enterprising	30.93	5.37	31.72	4.86	-1.13
Artistic	29.25	8.51	27.75	7.66	1.36

TABLE 28

t-TESTS OF DIFFERENCE BETWEEN MEAN EPPS SCORES FOR
INDIVIDUAL CONTACT AND GROUP CONTACT

Need	Individual (N=71)		Group (N=184)		t
	M	SD	M	SD	
Achievement	16.62	4.93	15.48	3.40	2.04*
Deference	11.83	4.04	11.43	4.06	0.71
Order	10.62	4.44	10.33	4.61	0.46
Exhibition	14.38	3.03	14.07	3.66	0.65
Autonomy	13.48	4.21	13.28	4.37	0.32
Affiliation	14.20	3.52	14.95	4.45	-1.27
Intracception	14.79	5.42	14.82	5.24	-0.04
Succorance	10.90	4.18	11.63	4.85	-1.12
Dominance	15.25	5.13	15.00	4.71	0.38
Abasement	14.82	4.71	15.20	4.69	-0.59
Nurturance	13.00	4.05	13.88	4.91	-1.34
Change	16.00	4.26	15.28	4.22	1.21
Endurance	15.04	4.96	13.97	5.78	1.38
Heterosexuality	14.28	5.84	15.23	6.19	-1.13
Aggression	12.45	4.54	13.03	4.72	-0.69

* p < .05

APPENDIX B

TABLE 29

t-TESTS OF DIFFERENCE BETWEEN MEAN EPPS RAW SCORES FOR H-SVIB GROUPS ON NEEDS FOR WHICH ANALYSIS OF VARIANCE YIELDED SIGNIFICANT F-SCORES

Need	H-SVIB Groups				t
	M	SD	M	SD	
	Realistic (N=63)		Intellectual (N=24)		
Ord	10.75	4.64	12.25	4.23	-1.38
Aut	13.81	4.34	14.25	4.06	-0.43
Int	14.79	5.65	13.46	4.94	1.02
Dom	13.76	4.77	13.54	4.24	0.20
Aba	15.65	4.13	16.33	4.99	-0.65
End	15.51	5.41	17.46	5.70	-1.48
Agg	12.35	4.31	12.08	4.33	0.26
	Realistic (N=63)		Social (N=29)		
Ord	10.75	4.64	8.86	4.06	1.88
Aut	13.81	4.34	11.86	4.01	2.05*
Int	14.79	5.65	17.17	4.74	-1.97
Dom	13.76	4.77	17.21	4.62	-3.25**
Aba	15.65	4.13	14.83	5.09	0.82
End	15.51	5.41	13.21	5.10	1.93
Agg	12.35	4.31	11.93	5.36	0.40
	Realistic (N=63)		Conventional (N=73)		
Ord	10.75	4.64	11.32	4.56	-0.72
Aut	13.81	4.34	12.16	4.22	2.24**
Int	14.79	5.65	14.66	4.93	0.15
Dom	13.76	4.77	14.56	4.77	-0.98
Aba	15.65	4.13	15.89	4.98	-0.30
End	15.51	5.41	14.59	5.54	0.98
Agg	12.35	4.31	12.41	3.99	-0.09

* p < .05

** p < .01

Need	H-SVIB Groups				t
	M	SD	M	SD	
	Realistic (N=63)		Enterprising (N=41)		
Ord	10.75	4.64	9.00	4.39	1.91
Aut	13.81	4.34	13.66	4.04	0.18
Int	14.79	5.65	13.54	4.87	1.17
Dom	13.76	4.77	17.32	4.57	-3.77**
Aba	15.65	4.13	13.27	3.91	2.94**
End	15.51	5.41	12.29	5.14	3.02**
Agg	12.35	4.31	14.32	5.06	-2.12*
	Realistic (N=63)		Artistic (N=25)		
Ord	10.75	4.64	9.24	4.40	1.39
Aut	13.81	4.34	15.88	4.33	-2.02*
Int	14.79	5.65	15.96	6.14	-0.85
Dom	13.76	4.77	15.16	4.51	-1.26
Aba	15.65	4.13	13.48	4.71	2.14*
End	15.51	5.41	11.60	5.08	3.12**
Agg	12.35	4.31	15.00	5.42	-2.41*
	Intellectual (N=24)		Social (N=29)		
Ord	12.25	4.23	8.86	4.06	2.97**
Aut	14.25	4.06	11.86	4.01	2.15*
Int	13.46	4.94	17.17	4.74	-2.78**
Dom	13.54	4.24	17.21	4.62	-2.98**
Aba	16.33	4.99	14.83	5.09	1.08
End	17.46	5.70	13.21	5.10	2.87**
Agg	12.08	4.33	11.93	5.36	0.11
	Intellectual (N=24)		Conventional (N=73)		
Ord	12.25	4.23	11.32	4.56	0.89
Aut	14.25	4.06	12.16	4.22	2.12*
Int	13.46	4.94	14.66	4.93	-1.03
Dom	13.54	4.24	14.56	4.77	-0.93
Aba	16.33	4.99	15.89	4.98	0.38
End	17.46	5.70	14.59	5.54	2.19*
Agg	12.08	4.33	12.41	3.99	-0.34

* p < .05

** p < .01

H-SVIB Groups						
Need	M	SD	M	SD	t	
	Intellectual (N=24)		Enterprising (N=41)			
Ord	12.25	4.23	9.00	4.39	2.92**	
Aut	14.25	4.06	13.66	4.04	0.57	
Int	13.46	4.94	13.54	4.87	-0.06	
Dom	13.54	4.24	17.32	4.57	-3.30**	
Aba	16.33	4.99	13.27	3.91	2.75**	
End	17.46	5.70	12.29	5.14	3.75**	
Agg	12.08	4.33	14.32	5.06	-1.81	
	Intellectual (N=24)		Artistic (N=25)			
Ord	12.25	4.23	9.24	4.40	2.44*	
Aut	14.25	4.06	15.88	4.33	-1.36	
Int	13.46	4.94	15.96	6.14	-1.51	
Dom	13.54	4.24	15.16	4.51	-1.29	
Aba	16.33	4.99	13.48	4.71	2.06*	
End	17.46	5.70	11.60	5.08	3.80**	
Agg	12.08	4.33	15.00	5.42	-2.07*	
	Social (N=29)		Conventional (N=73)			
Ord	8.86	4.06	11.32	4.56	-2.53*	
Aut	11.86	4.01	12.16	4.22	-0.33	
Int	17.17	4.74	14.66	4.93	2.35*	
Dom	17.21	4.62	14.56	4.77	2.55*	
Aba	14.83	5.09	15.89	4.98	-0.97	
End	13.21	5.10	14.59	5.54	-1.16	
Agg	11.93	5.36	12.41	3.99	-0.50	
	Social (N=29)		Enterprising (N=41)			
Ord	8.86	4.06	9.00	4.39	-0.13	
Aut	11.86	4.01	13.66	4.04	-1.84	
Int	17.17	4.74	13.54	4.87	3.11**	
Dom	17.21	4.62	17.32	4.57	-0.10	
Aba	14.83	5.09	13.27	3.91	1.45	
End	13.21	5.10	12.29	5.14	0.74	
Agg	11.93	5.36	14.32	5.06	-1.90	

* p < .05

** p < .01

Need	H-SVIB Groups				t
	M	SD	M	SD	
	Social (N=29)		Artistic (N=25)		
Ord	8.86	4.06	9.24	4.40	-0.33
Aut	11.86	4.01	15.88	4.33	-3.54**
Int	17.17	4.74	15.96	6.14	0.82
Dom	17.21	4.62	15.16	4.51	1.64
Aba	14.83	5.09	13.48	4.71	1.00
End	13.21	5.10	11.60	5.08	1.16
Agg	11.93	5.36	15.00	5.42	-2.09*
	Conventional (N=73)		Enterprising (N=41)		
Ord	11.32	4.56	9.00	4.39	2.64**
Aut	12.16	4.22	13.66	4.04	-1.84
Int	14.66	4.93	13.54	4.87	1.17
Dom	14.56	4.77	17.32	4.57	-3.00**
Aba	15.89	4.98	13.27	3.91	2.91**
End	14.59	5.54	12.29	5.14	2.18*
Agg	12.41	3.99	14.32	5.06	-2.22*
	Conventional (N=73)		Artistic (N=25)		
Ord	11.32	4.56	9.24	4.40	1.98
Aut	12.16	4.22	15.88	4.33	-3.77**
Int	14.66	4.93	15.96	6.14	-1.07
Dom	14.56	4.77	15.16	4.51	-0.55
Aba	15.89	4.98	13.48	4.71	2.12*
End	14.59	5.54	11.60	5.08	2.38*
Agg	12.41	3.99	15.00	5.42	-2.54*
	Enterprising (N=41)		Artistic (N=25)		
Ord	9.00	4.39	9.24	4.40	-0.22
Aut	13.66	4.04	15.88	4.33	-2.11*
Int	13.54	4.87	15.96	6.14	-1.77
Dom	17.32	4.57	15.16	4.51	1.87
Aba	13.27	3.91	13.48	4.71	-0.20
End	12.29	5.14	11.60	5.08	0.53
Agg	14.32	5.06	15.00	5.42	-0.52

* p \leq .05
 ** p \leq .01

TABLE 30

t-TESTS OF DIFFERENCES BETWEEN EPPS RANKED SCORES FOR H-SVIB GROUPS ON NEEDS FOR WHICH ANALYSIS OF VARIANCE YIELDED SIGNIFICANT F-SCORES

Need	H-SVIB Groups				t
	M	SD	M	SD	
	Realistic (N=63)		Intellectual (N=24)		
Aut	8.14	4.11	8.00	3.90	0.15
Dom	8.51	4.45	8.00	3.68	0.50
Aba	5.97	3.92	5.96	4.29	0.01
End	6.43	4.73	5.33	4.81	0.96
Agg	9.14	4.11	9.46	4.10	-0.32
	Realistic (N=63)		Social (N=29)		
Aut	8.14	4.11	9.86	3.98	-1.88
Dom	8.51	4.45	5.79	3.95	2.81**
Aba	5.97	3.92	6.90	4.48	-1.01
End	6.43	4.73	8.00	4.25	-1.53
Agg	9.14	4.11	9.59	4.52	-0.47
	Realistic (N=63)		Conventional (N=73)		
Aut	8.14	4.11	9.32	4.30	-1.62
Dom	8.51	4.45	7.84	4.27	0.90
Aba	5.97	3.92	5.80	4.11	0.25
End	6.43	4.73	7.08	5.00	-0.78
Agg	9.14	4.11	9.11	3.66	0.05

** p < .01

H-SVIB Groups					
Need	M	SD	M	SD	t
	Realistic (N=63)		Enterprising (N=41)		
Aut	8.14	4.11	8.24	4.11	-0.12
Dom	8.51	4.45	5.22	3.60	3.96**
Aba	5.97	3.92	8.61	3.48	-3.51**
End	6.43	4.73	9.02	4.83	-2.71**
Agg	9.14	4.11	7.05	4.46	2.46*
	Realistic (N=63)		Artistic (N=25)		
Aut	8.14	4.11	6.52	4.05	1.68
Dom	8.51	4.45	7.68	3.77	0.82
Aba	5.97	3.92	8.16	4.32	-2.30*
End	6.43	4.73	9.48	4.29	-2.80**
Agg	9.14	4.11	7.56	4.94	1.54
	Intellectual (N=24)		Social (N=29)		
Aut	8.00	3.90	9.86	3.98	-1.71
Dom	8.00	3.68	5.79	3.95	2.09*
Aba	5.96	4.29	6.90	4.48	-0.77
End	5.33	4.81	8.00	4.25	-2.14
Agg	9.46	4.10	9.59	4.52	-0.11
	Intellectual (N=24)		Conventional (N=73)		
Aut	8.00	3.90	9.37	4.30	-1.33
Dom	8.00	3.68	7.84	4.27	0.17
Aba	5.96	4.29	5.80	4.11	0.17
End	5.33	4.81	7.08	5.00	-1.50
Agg	9.46	4.10	9.11	3.66	0.39

* p < .05

** p < .01

Need	H-SVIB Groups				t
	M	SD	M	SD	
	Intellectual (N=24)		Enterprising (N=41)		
Aut	8.00	3.90	8.24	4.11	-0.24
Dom	8.00	3.68	5.22	3.60	2.98
Aba	5.96	4.29	8.61	3.48	-2.72**
End	5.33	4.81	9.02	4.83	-2.98**
Agg	9.46	4.10	7.05	4.46	2.17*
	Intellectual (N=24)		Artistic (N=25)		
Aut	8.00	3.90	6.52	4.05	1.30
Dom	8.00	3.68	7.68	3.77	0.30
Aba	5.96	4.29	8.16	4.32	-1.79
End	5.33	4.81	9.48	4.29	-3.19
Agg	9.46	4.10	7.56	4.94	1.46
	Social (N=29)		Conventional (N=73)		
Aut	9.86	3.98	9.37	4.30	0.59
Dom	5.79	3.95	7.84	4.27	-2.24*
Aba	6.90	4.48	5.80	4.11	1.19
End	8.00	4.30	7.08	5.00	0.87
Agg	9.59	4.52	9.11	3.66	0.55
	Social (N=29)		Enterprising (N=41)		
Aut	9.86	3.98	8.24	4.11	1.64
Dom	5.79	3.95	5.22	3.60	0.63
Aba	6.90	4.48	8.61	3.48	-1.80
End	8.00	4.30	9.02	4.83	-0.92
Agg	9.59	4.52	7.05	4.46	2.33*

* p < .05

** p < .01

Need	H-SVIB Groups					
	M	SD	M	SD	t	
	Social (N=29)		Artistic (N=25)			
Aut	9.86	3.98	6.52	4.05	3.05**	
Dom	5.79	3.95	7.68	3.77	-1.79	
Aba	6.90	4.48	8.16	4.32	-1.05	
End	8.00	4.30	9.48	4.29	-1.27	
Agg	9.59	4.52	7.56	4.94	1.57	
	Conventional (N=73)		Enterprising (N=41)			
Aut	9.32	4.30	8.24	4.11	1.30	
Dom	7.84	4.27	5.22	3.60	3.31**	
Aba	5.80	4.11	8.61	3.48	-3.70**	
End	7.08	5.00	9.02	4.83	-2.02*	
Agg	9.11	3.66	7.05	4.46	2.66**	
	Conventional (N=73)		Artistic (N=25)			
Aut	9.32	4.30	6.52	4.05	2.85**	
Dom	7.84	4.27	7.68	3.77	0.16	
Aba	5.80	4.11	8.16	4.32	-2.45*	
End	7.08	5.00	9.48	4.29	-2.14*	
Agg	9.11	3.66	7.56	4.94	1.66	
	Enterprising (N=41)		Artistic (N=25)			
Aut	8.24	4.11	6.52	4.05	1.66	
Dom	5.22	3.60	7.68	3.77	-2.64*	
Aba	8.61	3.48	8.16	4.32	0.47	
End	9.02	4.83	9.48	4.29	-0.39	
Agg	7.05	4.46	7.56	4.94	-0.43	

* p < .05

** p < .01

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