A STUDY OF CRITICAL ABILITY IN ART AT THE COLLEGE LEVEL, AS RELATED TO INTERESTS AND PERSONALITY PATTERNS

By

BEATRICE JOHNSON CAMPBELL

Bachelor of Arts

Oklahoma Agricultural and Mechanical College

Stillwater, Oklahoma

1943

Master of Arts

Oklahoma Agricultural and Mechanical College

Stillwater, Oklahoma

1945

Submitted to the Faculty of the Graduate School of the Oklahoma Agricultural and Mechanical College in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF EDUCATION

1951

A STUDY OF CRITICAL ABILITY IN ART AT THE COLLEGE LEVEL,
AS RELATED TO INTERESTS AND PERSONALITY PATTERNS

BEATRICE JOHNSON CAMPBELL

DOCTOR OF EDUCATION

1951

REPORT AND ABSTRACT APPROVED:

J. L. Reed
Thesis Adviser

Guy A. Lackey
Faculty Representative

H. G. McCulloch
Dean of the Graduate School

PREFACE

A study of interest and personality patterns in relation to specific abilities is one approach to the basic understanding of individual differences. In every field of endeavor cognizance must be taken of these individual differences, if people are to attain satisfaction and success in their vocational and avocational activities. Not everything that makes for success in any given field can be measured by tests of aptitude and ability alone; interests and personality characteristics are also important factors, and when these are combined with aptitude and ability, a more comprehensive understanding of the individual and the factors that contribute to the development of his total potentialities will be gained. Interests and personality traits are very complex in their nature, and, when studied in their relation to specific abilities or vocations, they should aid in gaining insight into the intricate process of cause and effect.

Our knowledge concerning this aspect of human behavior is often shrouded in superstitions and beliefs that have evolved in man's endeavor not only to understand himself and others but also to assign reasons for the varying behavior of individuals within his group. Most of these concepts have been based on casual observation with no systematic attempt to secure an

analytic description of the interrelationship of traits existing as the basis of the various aspects of human activity.

This study is undertaken for the purpose of adding something to the understanding of this interrelationship and of verifying the findings in other investigations in this area.

I wish to express my sincere appreciation to the members of the advisory committee for the time and advice given during the preparation of this study, and especially, to Dr. S. L. Reed, chairman of the committee for his invaluable aid and encouragement. Prof. Carl Marshall also rendered valuable aid in computing the statistical data. A vote of thanks is due Miss Elizabeth J. Kerby for typing and assisting in the editing of the manuscript. And last, but not least, I wish to thank my husband and children for their consideration and understanding while this study was in process.

TABLE OF CONTENTS

List of Tables

List of Graphs

CHAPTER I

INTRODUCTION

Man has long been interested in the relationship between an individual's vocation and his abilities, interests, and personality traits. Even the philosophers of the ancient Greeks noted the existence of differences in ability and personality traits, and that these differences were factors in determining the particular vocational activity whereby a person could make his greatest contribution to society.[1] Many studies were undertaken, after the birth of experimental psychology, in the attempt to bring some scientific evidence to bear upon this problem. Each decade following the founding of Wundt's psychological laboratory, valuable techniques for the study of human traits have been developed, thus making possible further delving into the various aspects of individual differences and the relationships of individuals.

The depression during the 1930's gave an impetus to studies designed to determine if certain patterns of abilities characterized workers in different types of occupations. A study by Dvorak at that time produced evidence showing that distinctive

---

[1] Plato, "The Socratic Utopia," chap. II, The Republic, (New York: Random House, 1937).

patterns did exist.[2] However, counselors soon began to realize that not every thing that makes for success on the job is being measured satisfactorily. Tyler suggests that probably the reasons

> ...our predictions of educational and occupational success are no more accurate than they are is that we are basing them purely on measures of abilities and failing to take personality characteristics into account,[3]

and that interest and personality traits may be important aspects of an individual's success and efficiency in any field. This may be particularly so when coupled with abilities. Cattell believes that "Abilities...are the tools of dynamic traits and may be used interchangeably by the same or different drives."[4] This is evident in many clinical studies recording instances of special motor and perceptual skills,

> ...developing like symptoms, out of the unconscious drives, relentlessly seeking expression. ...Many of the specific abilities distinct from intelligence... may prove to be environmentally, dynamically shaped patterns, from general ability, being impressed by particular investment in time and energy in certain conventional patterns of skill.[5]

Purpose of the Study

This study has been undertaken to ascertain the interrelationships, if any, that may exist between aesthetic ability, as

---

[2] Beatrice Jeanne Dvorak, Differential Occupational Ability Patterns, (Minneapolis: University of Minnesota Press), 1935.

[3] Leona E. Tyler, The Psychology of Human Differences, (New York: D Appleton-Century Co., Inc., 1947), p. 379.

[4] Raymond B. Cattell, "Personality Traits Associated with Abilities. I. With Intelligence and Drawing Abilities," Educational and Psychological Measurements, Vol. V, (Summer, 1945), p. 131.

[5] Ibid., p. 132.

measured by the Meier Art Judgment Test, and interests and personality traits, as determined by the Kuder Preference Record and the Guilford-Zimmerman Temperament Survey, respectively. The primary objectives are:

1. To ascertain the existence, if any, of statistically significant sex differences in the interests and personality traits of both the high-ability (aesthetic) group and the low-ability (aesthetic) group.
2. To find if statistically reliable differences exist between the interests and personality traits of college men having no specific training in art, but possessing high aesthetic ability and a similar group apparently having little or no such ability.
3. To determine if significant differences in interests and personality traits are evident between high-ability women and low-ability women.
4. To make analyses of group profiles, constructed from the mean T-scores for each group on the various tests and scales, in order to discover if the differences will be significant in the formation of interest and personality patterns or syndromes characteristic of these groups.

The primary objectives are:

1. To ascertain if there are significant differences in aesthetic judgment between the high-ability group and a group of college art students.

2. To find statistically reliable differences in intelligence as measured by the Henmon-Nelson Tests of Mental Ability, that may exist between the ability groups and the college art students.
3. To determine if significant sex differences are evident in aesthetic judgment or mental ability.
4. To ascertain if personality differences exist between people having low aesthetic ability and high artistic interest, and those having both low ability and low artistic interest; also to ascertain if differences exist between groups having high aesthetic ability and high interest, and those having high ability but low artistic interest.
5. To analyze such differences as appear by means of profiles constructed from the mean T-scores.

Scope and design of the Study

The study might be characterized as an investigation dealing with the factors of intelligence, sex, interests, and personality traits, and their relationship to aesthetic judgment as it exists at the college level. The subjects were drawn from Introductory Psychology classes at the Oklahoma Agricultural and Mechanical College which are predominantly freshman. The data for this study were secured by administering the following tests: Meier Art Judgment Test, Kuder Preference Record, Guilford-Zimmerman Survey, and Henmon-Nelson Tests of Mental Maturity. The raw data have been statistically treated to obtain the mean, the standard deviation, the standard error of the mean. For

each of the groups being compared, the difference between means, the standard error of the difference, and t-values were computed. From these statistics the comparisons of the various groups were made and profiles constructed.

Organization of the Study

In this chapter the purpose and design of the study has been briefly presented. Chapter II gives the historical background of the problem and a review of the literature that is pertinent to the study. Chapter III presents the experimental design which encompasses the purpose, a detailed description of the materials used, the procedure, and the statistical treatment of the data. Chapter IV includes the findings and the interpretation accompanied by the tables and graphs developed from the compiled data. Chapter V is devoted to a summary of the study.

CHAPTER II

HISTORICAL BACKGROUND OF THE PROBLEM

Today, as never before in history, due to the complexity of modern civilization and the division of labor within our culture, it is important that a better understanding of the interrelationships underlying the interests, abilities, and personality traits of each individual be gained in order that each individual may obtain the greatest satisfaction from life and make his greatest contribution to society. Do dynamically shaped patterns of interests and personality traits accompany specific abilities, thus making an individual better adapted to some occupations or areas of activity than to others? Abilities are often thought of as being independent of personality traits but related to interests. But are ability traits unitary or are there certain traits of personality which are characteristic of people who possess certain specific abilities? How and to what extent is interest related to ability? Do people who possess a high degree of a specific ability have interest and personality patterns that are significantly different from interest and personality patterns of people who do not possess such abilities to any great extent? Are sex differences important in studying aesthetic ability and the interest and personality traits of people with high and low ability? Is there a difference in

such patterns for people who have high ability and little interest in a particular field, and those who possess little ability but appear to have a good deal of interest?

Since Dvorak's study[1] questions of this nature have stimulated research in the area of interest and personality patterns for various occupational groups and students in certain curricular fields in college. Most of the studies have dealt with either the interest patterns or the personality patterns; a few, however, have attempted to determine the relationships of both the interest and personality patterns to vocations or abilities. The research reviewed herein gives the background of the pattern approach to the study of aptitudes in relation to interests and personality traits.

In 1935 Dodge,[2] working with unemployed men and women who came for guidance to the Adjustment Service in New York, made a similar study to Dvorak's. There was, however, one outstanding difference. Dodge included the Bernreuter Personality Inventory in the battery of tests used. He chose thirteen occupational groups, composed of people who were unemployed but had had at least two years of successful employment in their special field. The occupational groups included were: engineers, draftsmen, high school teachers, elementary school teachers, secretaries, stenographers (women), accountants, traveling salesmen, retail

---

[1] Dvorak, op. cit.

[2] Arthur Farwell Dodge, Occupational Ability Patterns. (New York Teachers College, Columbia University Contribution to Education, No. 658, 1935). pp. 1-97.

saleswomen, retail salesmen, bookkeepers (men), bookkeepers (women), and office workers. Differences were found that were in the same direction as those in the Dvorak study. Although very reliable differences were found to exist between the average abilities of the individuals in different occupational groups, the variation of individuals within the group makes the profiles of little use for individual vocational-counseling. Nevertheless, some significant and distinctive personality differences were apparent from the data. The highest indication of Nervous Stability was for the engineers, with the traveling salesmen second.[3] Bookkeepers, both men and women, tended to rank lowest in Nervous Stability and Social Dominance as measured by the Bernreuter Inventory. The median of the sales group was above the median of the combined groups in Social Dominance; while the clerical group ranked below the combined group median in this personality trait. Self-Sufficiency showed less differentiation between the occupational groups; only the engineers stood out as significantly different from the combined group median.[4] Patterns on both the ability and personality tests for accountants and bookkeepers showed striking resemblances in general outline. Patterns for engineers and draftsmen were somewhat similar; patterns for the traveling salesmen and retail salesmen were also similar in shape. High school and elementary teachers' profiles differed only on the vocabulary

---

[3] Dodge, op. cit., p. 74.

[4] Ibid., p. 37.

test and, with the exceptions of the engineers, surpass all other groups in Nervous Stability.[5] There tended to be similar ability and personality patterns for workers in a given occupation regardless of sex.[6] Dodge concludes that certain patterns, derived from groups in similar occupations, tended to be similar; while certain patterns, derived from groups of individuals from unlike occupations, tended to be dissimilar. Patterns of individuals within groups showed very little resemblance; therefore Dodge suggests that "patterns should be based on minimum scores found to accompany certain degrees of success rather than median and average scores."[7]

Elwood[8] investigated the role of personality traits of a group of nurses and a group of college girls by using Laird's Introvert-Extrovert Scale and the Woodworth Neurotic Inventory. He concluded that both tests indicated far fewer unhealthy emotional reactions, as well as more outstanding extroversion for the nurses than for the college girls.

The Minnesota Multiphasic Personality Inventory[9] has been used extensively during the past few years. A number of the studies tend to shed some light on the relationship of interests

---

5 Ibid., p. 45.

6 Ibid., p. 57.

7 Dodge, op. cit., p. 74.

8 R. H. Elwood, "The Role of Personality Traits in Selecthing a Career, the Nurse and College Girl," Journal of Applied Psychology, (April, 1927), XI, pp. 199-201.

9 The Minnesota Multiphasic Personality Inventory will be referred to hereafter in this study as MMPI.

and personality traits to various occupational and college groups.

In an investigation to determine whether or not there were occupational differences in personality patterns as measured by the MMPI, Verniaud[10] gave the inventory to 97 women in three contrasting occupations. The subjects were 40 clerks, 27 department store workers, and 30 optical workers, all from an industrial plant. The occupational profiles were markedly similar on the Psychoneurotic Triad[11] of the MMPI, all groups being below the norm mean line. The profile of the clerical workers closely approximated the norm line and was reasonably flat throughout. All three groups were above the mean T-score norm on the Masculinity and Hypomania scales. The saleswomen showed the greatest elevation on the Masculinity scale, and the optical workers showed definite differentiation on the Hypomania and Psychasthenia (phobias and compulsive behavior) scales, with statistically significant mean scores on the Paranoic and Psychopathic Deviate Scales. These occupational differences in personality, although slight, are significant and measurable. Verniaud concludes that "there are group differences in the personality of successful workers corresponding to gross differences in job requirements and some may be identified by the MMPI."[12]

---

[10] Willie Maude Verniaud, "Occupational Differences in the MMPI," Journal of Applied Psychology, XXX (December, 1946), pp. 604-613.

[11] The Psychoneurotic Triad on the MMPI includes the Hypochondria, Depression, and Hysteria scales.

[12] Verniaud, op. cit., p. 612.

Lough[13] used the Minnesota Multiphasic Personality Inventory to study the personality difference of 185 women enrolled in a teachers' college; 94 were taking the general curriculum for elementary school teachers, and 91 were taking the music curriculum. She found that the profiles of both groups approached a fairly straight line at the T-score level of 50, average for the general population. The profiles for the two groups tended to be similar; there were, however, some differences, but none were statistically significant. The following year Lough used the MMPI to obtain the personality patterns for 54 students taking a Liberal Arts course and 61 students taking Cadet Nursing.[14] She then studied the profiles of these two groups and the two teacher groups of the previous study. Again she found differences, but they were not statistically significant; nevertheless, they did indicate that the nursing group was psychologically more mature, worried less, was more optimistic, and more masculine in their interest than any of the other groups. Moreover, they showed less concern over their own health.[15] Recently she re-examined her data and found a reliable difference on the Masculinity scale between the cadet nurses and the students in General Curriculum, with the nurses having

---

[13] Orpha Maude Lough, "Teachers' College Students and the MMPI", Journal of Applied Psychology, XXX (June, 1946), pp. 241-247.

[14] Orpha Maude Lough, "Women Students in Liberal Arts, Nursing, and Teacher Training Curricula, and the MMPI," Journal of Applied Psychology, XXXI (August, 1947), pp. 437-445.

[15] Ibid., p. 441.

the higher rating.[16] The Liberal Arts students showed more self-confidence and less inclination to worry, than did the two teacher training groups. The low scores of the elementary teachers on the Hypochondriasis and Depression scales indicated good morale and optimism with little tendency to worry about their own health. The music group seemed to show "greater psychological immaturity than the other group, with a tendency toward ideas of persecution, oversensitivity, suspiciousness, and of meeting emergencies by developing physical symptoms.[17] In the recent re-examination of her work Lough found statistically significant differences between the cadet nurses and the music students on the Hypochondrasis, Depression, Masculinity, and Schizophrenia scales. All of these differences showed a critical ratio of 2.6 or more.[18] The groups showed some slight disposition toward Hypomania which Lough states, "is characteristic of overproductivity in thought and action, ambition, vigor, and activity enthusiasm."[19]

Michaelis and Tyler studied 56 women enrolled in Teacher Training, by giving them the MMPI just prior to their entrance

---

16 Orpha Maude Lough, "Correction for Women Students in Liberal Arts, Nursing, and Teacher Training Curricula, and the MMPI," Journal of Applied Psychology, XXXV (June, 1951), p. 125.

17 Lough, "Women Students in Liberal Arts, Nursing, and Teacher Training Curricula, and the MMPI," op. cit., p. 441.

18 Lough, "Correction for Women Students in Liberal Arts, Nursing, and Teacher Training Curricula, and the MMPI," op. cit. p. 125.

19 Lough, "Women Students in Liberal Arts, Nursing, and Teacher Training Curricula, and the MMPI," op. cit., p. 441.

into student teaching.[20] Success in student teaching was determined by rating the students on a form which the university supervisors had used for several years. Each of the nine scales of the MMPI was correlated with these ratings. None of the scales correlated high enough with student teaching for predictive purposes,[21] so the group was divided then into three sub-groups, high (17), average (24), and low (14). When the ratios between the mean scores of the various scales for the high and low group were obtained, it was found that only one scale, Hysteria, differentiated sharply between the most and least successful student teachers. This scale was significant at the two per cent level of confidence. Michaelis and Tyler stated that Psychopathic Deviate and Paranoia scales were significant at the one per cent level.[22]

The data, according to the authors, seemed to indicate that certain scales on the MMPI might be useful as one of the instruments in the selection of students for certain curricula in college.

Blum[23] made a study of 125 male students, drawn equally from the five following fields of training: the Schools of

---

[20] J. U. Michaelis and F. J. Tyler, "MMPI and Student Teaching," Journal of Applied Psychology, XXXV (April, 1951), pp. 122-124.

[21] Ibid., p. 123.

[22] Ibid., p. 124.

[23] Lawrence Philip Blum, "A Comparative Study of Students Preparing for Five Selected Professions Including Teaching," Journal of Experimental Education, XVI (September, 1947), pp. 31-65.

Education, Law, Journalism, Medicine, and Engineering. Personal data were gathered by means of a questionnaire, the Minnesota Multiphasic Personality Inventory, and the Strong Vocational Interest Blank. The greatest differences between the five groups of professional students was in vocational and non-vocational interest tendencies, rather than in personality traits. All the personality profiles were fairly level, and any differences were not statistically significant. The slight correlation found between the personality traits and interest supported previous findings, "that in general there is little in common between scores on interest inventories and those of personality."[24]

In the early use of interest inventories, there was a tendency for counselors to use only single high scores in a specific field and to neglect the lesser scores or syndrome of scores. Such patterns or constellations may have some functional, underlying psychological elements in common.[25] More recently research studies are investigating interest patterns as well as personality patterns.

Lewis[26] undertook an investigation for the purpose of looking for a relationship between measured occupational interests

---

[24] Ibid., p. 65.

[25] John G. Darley, Clinical Aspects and Interpretations of the Strong Vocational Interest Blank. New York: New York Psychological Corporation, 1941, p. 11.

[26] John A. Lewis, "Kuder Preference Record and MMPI Scores for Two Occupational Groups," Journal of Consulting Psychology, XI (July-August, 1947), pp. 194-201.

and personality tendencies; and, if he found any, to try to ascertain the relationship. He administered the Kuder Preference Record and the MMPI to 50 life insurance salesmen and to 50 social workers. He found that the mean scores on the MMPI scales of the life insurance salesmen differed from those of the "norm group" at the two per cent level of confidence on the Depression, Hysteria, Psychopathic Deviate, Masculinity, Paranoia, and Hypomanic scales. Their mean scores were above the norm scores showing tendencies toward these traits. The mean scores of the social workers on the MMPI differed from the norm group at the two per cent level of significance on the Hypochondriasis, Depression, Hysteria, Masculinity, Psychasthenia, and Schizophrenia scales. The mean scores on the Depression and Hysteria scales were elevated; while the mean scores on the other four scales were below the norm averages.[27]

The main interests of the two groups were definitely different as measured by the Kuder Preference Record. The mean score of the life insurance group was at the 90th percentile on the Persuasive Scale, and the mean score of the social workers was at the 91st percentile on the Social Service Scale. Some other studies also have indicated that syndromes of interests for two groups are of some value in noting occupational differences.

The mean differences on the MMPI scales for the 11 life insurance salesmen who scored highest, and the 11 who scored

---

[27] Ibid., p. 200.

lowest on the Kuder Persuasive Scale were small and not statistically conclusive, except on the Depression and Hypochondriasis scales of the personality inventory. The scores of those with the least persuasive interest tended more in the abnormal direction on the MMPI, for all of the scales. This tendency was found consistent for the 12 lowest ranking social workers on the Kuder Social Service scale. Except on the Masculinity scale, the social workers with lowest interest had higher mean scores on all the personality scales, than the higher interest group. However the mean difference on the Schizophrenia scale was the only one that was statistically significant.[28]

Lewis concludes that:

> ...there is a relationship between occupational interests and personality tendencies as these are measured on the Kuder Preference Record and the MMPI. ...The relationship appears to be inversely proportional when the occupation the person is engaged in is considered; i.e., persons in an occupation who are relatively uninterested in the type of work represented tend to make more 'abnormal' scores on the MMPI than those relatively interested.[29]

The Kuder Preference Record was administered to 1000 freshmen at the Illinois Institute of Technology.[30] The studies indicated characteristic and significant profiles for the various departments--Fire-Protection Engineers, Engineers, and non-engineers--as represented by the freshmen students.

---

[28] Ibid.

[29] Ibid., p. 200-201.

[30] George S. Speer, "The Kuder Interest Test Patterns of Fire Protection Engineers," Journal of Applied Psychology, XXXII (October, 1948), pp. 521-526.

The Fire-Protection freshmen had an interest profile which differed from that of the other groups in that there were no areas in which a marked interest was exhibited, thus making a rather flat interest profile; whereas, the other groups showed strong characteristic interests as indicated by profiles showing definite peaks and valleys. The interest inventory was also given to the graduate students and 177 alumni of the Fire-Protection Department. Characteristic profiles were obtained for those doing advanced study or employed in the two major types of activities involved in fire protection. It appears that the freshman student in Fire Protection Engineering probably represents a more heterogeneous group than students in the other departments of the school. Those who continue in that field enter one of two types of activities, sales or engineering. Those entering sales activities tend to have high persuasive but low scientific and social service scores; while those taking up the engineering activities tend to show high mechanical, scientific, and social service scores but low persuasive scores.

Speer concludes that the Kuder Preference Record

> ...appears to be sensitive to life experiences of the individual, so that the interpretation of scores must consider both his present stage of development, and a static job profile, in relation to possible changes in interest patterns.[31]

---

[31] Ibid., p. 526.

Shaffer[32] studied the interest patterns of 975 men and 205 women, who were graduating seniors in the Indiana University School of Business. Significant differences characterized the interest patterns of students majoring in the various curricula. The interest patterns for the different groups, in almost every case, followed those set up by the author of the interest inventory for related occupations. The findings indicated that interest patterns obtained with the Kuder inventory might be a helpful tool for counselors in guiding students in the choice of a business major.

Baas[33] made a study of the interest patterns of psychologists. Sixty fellows were randomly selected from each of the following four divisions of the American Psychological Association: Clinical, Industrial, Counseling and Guidance, and Experimental and Theoretical. Twenty-six to 29 in each group returned the interest inventory. Twenty-one Clinical and 25 Industrial Psychology graduate students at Purdue University also participated in the study.

On the Scientific and Literary scales all scores were above the 75th percentile on the Kuder adult norms, indicating strength of interest for the entire professional sample in these fields. The Mechanical, Persuasive, and Clerical Scales indicated weak

---

[32] Robert H. Shaffer, "Kuder Interest Patterns of University Business School Seniors," Journal of Applied Psychology, XXXIII (October, 1949), pp. 489-493.

[33] Malcolm L. Baas, "Kuder Interest Patterns of Psychologists," Journal of Applied Psychology, XXXIV (April, 1950), pp. 115-117.

interest. The Industrial and Counseling group had significantly higher scores on the Persuasive scale than did the others, and the Industrial group was significantly higher on the Clerical scale. While the differences between groups were significant, the scores were all below the 50th percentile on the norms. The artistic scale differentiated between the Counseling and Industrial Divisions and between the Counseling and Theoretical Divisions; the Industrial Division group was significantly higher at the five per cent level of confidence, and the Theoretical group was significantly higher at the two per cent level. The mean-difference on the Social Service scale favored both the Clinical and Counseling Divisions over the Industrial and Theoretical Divisions at the one per cent level of confidence. This scale favored the Industrial group over the Theoretical group at the two per cent level.[34]

Significant differences prevailed between the mean scores of the professional psychologists and their student counterparts. There was no differentiation between the clinical professional and student groups on the Literary and Clerical scales, nor between the Industrial professional and student groups on the Mechanical, Computational, Musical, and Clerical scales. On all the other scales there were significant differences. Baas concludes that "interest patterns will become more stable and that strong interest areas will become better established as experience contributes to an individual's preference."[35]

---

[34] Ibid., p. 117.

[35] Ibid.

The studies reviewed indicate that there are significant personality and interest differences between people in various occupations or divisions of a given field; also between those studying to enter different vocations. Moreover, these studies seem to indicate that these differences become more meaningful when the syndrome of either interests or personality traits are considered. Furthermore, there is some evidence of a relationship existing between interest and personality; however, there have been fewer studies showing the nature of the interrelationship existing between ability, interests, and personality patterns.

Cattell[36] studied personality factors related to the drawing ability of 128 subjects. He found that drawing ability was correlated significantly with several of the 35 surface traits he used to represent the total personality sphere. There were low positive correlations with Surgency and Rhathymic Cyclothymia and slighter correlations with Dominance and Vigorous Character. He concludes,

> This personality pattern very distinctly resembles that observed in well-known artists, but it is suggested that total artistic ability, as distinct from artistic drawing ability alone, is also likely to involve General Emotionality.[37]

Meier, in his survey of the problem, stresses the fact that emotionality and artistic temperament are as important as the qualifications connected with mere skill.[38]

---

[36] Cattell, op. cit., p. 131-145.

[37] Ibid., p. 145.

[38] Norman C. Meier, Art in Human Affairs. New York: McGraw-Hill Book Co., Inc., 1942, pp. 127-161.

On the other hand, Meier reports that the results from a study by the Psychological Corporation using the Bernreuter scale on 21 successful artists and a large number of unselected adults did not disclose any definite differences, "suggesting that among successful artists there is little traditional 'temperament'."[39]

A study was made at Hunter College in which 40 junior and senior art students and 40 upperclassmen in other fields were given the Strong Interest Inventory Blank for Women, the Meier Art Judgment Test, the Allport and Vernon Study of Values, the Revised Minnesota Paper Form Board, and the Guilfords' Prognostic Test for Students in Design.[40] Scores on the Psychological Examination of the American Council on Education were available for all subjects. The difference in the means of the two groups was significant at the one per cent level for the Meier Art Judgment Test. Two critical scores were established. A score of 99 eliminated a fair number of control subjects, at the same time discriminating against only two art majors. A score of 107 and over singled out a considerable proportion of the art majors, while including only a small number of the control group.[41]

---

[39] Norman C. Meier, "Diagnosis in Art," National Society for the Study of Education Yearbook, XXXIV, Educational Diagnosis (Bloomington, Ill.: Public School Publishing Co., 1935), p. 472.

[40] D. M. Barrett, "Aptitude and Interest Patterns of Art Majors in a Liberal Arts College," Journal of Applied Psychology, XXIX (December, 1945), pp. 483-492.

[41] Ibid., pp. 484-485.

All areas of the Strong Vocational Interest Blank were scored, and the ratings for several of the occupations were found to differentiate between the two groups. The differentiation, however, on the basis of all but the Artist scale was not sufficient to warrant the extra time and work involved; and so the author limited his observations to the scores for the Artist scale. Since 34 of the art majors scored B or better, while only 18 of the control group rated that high, Barrett concluded that "high scores for the Artist scale on the Strong test are, more often than not, associated with successful specialization."[42] Furthermore, a study of the data on the Allport and Vernon test revealed that a larger number of art students scored at the extreme end on the Aesthetic Value scale; while more of the control subjects had extremely low scores. The difference was statistically significant at the one per cent level. On the Minnesota Paper Form Board the difference was small but significant at the five per cent level. The Guilford Line Drawing Test seemed to indicate a kind of creative ability, but was not considered practical for guidance purposes at that time. There were no significant differences in intellectual ability as indicated by any of the scores on the Psychological Examination. Barrett's study indicated that aptitude patterns do differentiate "clearly between art majors and the control group."[43]

---

[42] Ibid., p. 487.

[43] Ibid., p. 491.

A recent investigation[44] was made to ascertain the relationship between ability, interest, and personality. The Kuder Preference Record was administered to 156 students enrolled in college Introductory Psychology. Seven of the scales--Mechanical, Computational, Scientific, Artistic, Literary, Musical, and Clerical--were scored for a measure of interest in corresponding fields of activity. Measures of ability were secured to match these interests. The tests used for this purpose were: Survey of Mechanical Insight; Stanford Arithmetic Test; Iowa High School Content Examination, Section 3, Science; Meier Art Judgment Test; Iowa High School Content Examination, Section 1, English and Literature; Seashore Measures of Musical Talent, Series A; and the Minnesota Vocational Test for Clerical Workers. Interest-ability correlations were obtained. It was found that tests in which experience played a large part had higher correlations than those measuring mainly aptitude. The Interest-ability correlation for the literary and mechanical tests were .47 and .44 respectively, while the correlation for the art test was .29. The authors believe that "there is a genuine variation in the degree of relationship between interest and abilities for different activities or vocational areas."[45]

In studying the individuals some were found to have a high positive correlation between interest and ability; while others

---

[44] S. M. Wesley, Douglas Z. Corey, and Barbara M. Stewart, "The Intra-Individual Relationship between Interest and Personality," Journal of Applied Psychology, XXXIV (June, 1950), pp. 194-196.

[45] Ibid., p. 195.

had a low or even negative relationship. In order to explore this phenomenon, age, intelligence, and personality factors were studied in order to discover how they were related to the individual differences. The Army Alpha Examination and the MMPI were administered to the group. An upper and lower 25 per cent of the group were selected on the bases of those having the highest and those having the lowest interest-ability rank order correlations. A comparison was made of the mean age and mean intelligence scores, but the differences were statistically insignificant. Similar comparisons were made between the mean scores obtained by the upper and lower groups on each of the nine categories of the MMPI.

> ...the group having the highest agreement did show a tendency to less adequate personal adjustment in that the mean scores on eight of the nine scales of the Minnesota Multiphasic Personality Inventory were higher than mean scores for the group having lowest interest-ability agreement. Only one of these differences, that for Schizophrenia, was significant.[46]

The authors believe that a personality test "concerned with basic character structure rather than with nosological[47] groups, might reveal important differences"[48] between the two extreme interest-ability groups.

In the study of psychophysical capacities and abilities, Dreps found that the superior art group showed greater emotional sensitivity and more neurotic tendencies than those of lesser

---

[46] Ibid., p. 196.

[47] Nosological--pertaining to the classification of diseases.

[48] Ibid., p. 195.

ability.[49] She concluded that success in art, at least graphic art, must be based upon

> ...other factors than skills and certain capacities, possibly upon temperamental and attitudinal factors or probably upon the interaction of a high degree of aesthetic judgment with certain combinations of capacities and abilities.[50]

Although the number of subjects in most of the studies was small, the data to date seem to indicate some relationship between abilities, interests, and personality. Cattell believes,

> Interests produce discriminatory and motor abilities...the individual who finds himself endowed with certain good natural abilities is likely to enjoy exercising them, and, in a competitive world to find the dynamic pattern of his self-regard increasingly shaped by these abilities.[51]

> ...the interrelation of ability and personality traits proceeds causally in both directions, and with direct and indirect connections. Tempermental interests and aversions develop abilities in their service. Abilities favor certain kinds of dynamic adjustment,...[52]

Much research has been done in respect to factors related to art ability. Dreps, in her study, points out that future investigations will turn more from an analysis and evaluation of skills and capacities, and explore other areas, such as the

---

[49] Hildegarde Fried Dreps, "The Psychophysical Capacities and Abilities of College Art Students of High and Low Standing," Studies in the Psychology of Art, I University of Iowa Studies in Psychology, No. XVIII, Psychological Monographs, Vol. XLV, No 1, 1933, p. 144.

[50] Ibid., p. 145.

[51] Cattell, op. cit., p. 132.

[52] Raymond B. Cattell, "Personality Traits Associated with Abilities II. With Verbal and Mathematical Abilities," Journal of Educational Psychology, XXXVI (November, 1945), p. 486.

relation of "temperamental and attitudinal factors" to performance.[53]

The present study seeks to determine the interrelationship of interests, personality traits, and critical ability as related to art. Most of the investigations cited have confined their subjects to those who have had specific training in the vocational or ability field under study either in college or on the job. If the interlinkage of abilities, interests, and personality traits does "proceed causally in both directions and with direct and indirect connections,[54] there may be significant differences in the interests and temperament traits of people who have had no specific training in art but possess high aesthetic ability, and those apparently having low aesthetic ability. Moreover, a comparison for sex differences may show greater significance on some of the interest and personality scales, than the differences between the men and women in the low and high-ability groups.

To obtain data on the personality factors to be studied in this investigation, a test, designed to measure traits of basic personality structure, has been selected. Most of the studies reviewed, in contrast to this, have employed a test measuring nosological personality characteristics. Furthermore, the personality test chosen for this study was validated on normal population groups, rather than on mentally and emotionally maladjusted individuals. These are both important factors to be

---

53 Dreps, op. cit., p. 145.

54 Cattell, loc. cit.

considered, if significant differences are found, and such findings are to be employed as tools in educational and vocational guidance.

CHAPTER III

THE EXPERIMENTAL DESIGN

A survey of the literature indicates that definite interest and personality patterns tend to characterize people not only in certain industries and vocations, but also in particular curricular fields in higher education. There is, moreover, some indication that such patterns are evident when studied in relation to specific aptitudes which are influenced less directly by experience or learning.

There are many preconceived concepts regarding the temperament of individuals with aesthetic ability. Are there significant personality differences for these people and those who possess little or no aesthetic ability? If there are differences, do they coincide with those popularly believed to exist?

This investigation attempts to study these aspects of the problem as related to critical ability in art or aesthetic judgment, as measured by the Meier Art Judgment Test. In what areas, if any, are there significant differences in the interest and personality patterns, as measured by the Kuder Preference Record and the Guilford-Zimmerman Temperament Survey respectively, of people without special art training but having high aesthetic ability, and a similar group having low aesthetic ability? Do any significant sex differences exist on the various

categories of the interest and personality inventories for the ability groups.

Furthermore, this study seeks to determine the interrelationship of aesthetic ability and interest in art, as revealed by personality traits. Are there significant personality differences, as measured, when high-ability is coupled with high-interest and when it is coupled with low-interest; also, are significant differences evident when low-ability accompanies high-interest and when it accompanies low-interest?

If differences in the interest and personality patterns or syndromes, of either the major or sub-groups, are found to be significant, such differences might prove of value when used in conjunction with other techniques as an aid in educational and vocational guidance.

The Meier Art Judgment Test was used for the measurement of critical ability in art. This test, a revision of the Meier-Seashore Art Judgment Test, has been reconstructed from the latter by concentrating upon one hundred best items as determined by a bi-serial r analysis, the experience gained from use in a ten-year period of investigation[1] directed by Meier, and a weighted scoring procedure involving the twenty-five items of greatest diagnostic validity. As a result of the weighting, the total score remains the same as for the earlier form, which contained 125 plates; while the revised test has

---

[1] The ten-year program directed by Meier is known as the Genetic Studies of Artistic Capacity, and was sponsored by the Spelman Foundation Fund, and the Carnegie Foundation for the Advancement of Teaching.

only 100 plates. This change, according to Meier, has resulted in a significant improvement of the instrument by enhancing high scores, lowering poor scores, and shortening the time of administration by the inclusion of fewer items. The present test is the first in a projected battery of three designed to discover and measure art ability. The other two tests in the battery are Test II, Creative Imagination and Test III, Aesthetic Perception, both of which are in preparation at the present time.

Artistic aptitude, according to Meier, rests upon six general factors: manual skill or craftsman ability, energy output and volitional perseveration, aesthetic intelligence, perceptual facility, creative imagination, and aesthetic judgment.[2] The first three traits refer primarily to heredity involving constitutional stock inheritance, not direct inheritance from one's parents.[3] The latter three traits refer primarily to acquired nature, but are conditioned in their specific development by factors having a definite reference to heredity.[4]

Meier is confident that aesthetic judgment or critical art ability is probably the most important "single factor in artistic competence. Without a fairly high degree of it, no artist

---

[2] Norman C. Meier, "Factors in Artistic Aptitude: Final Summary of a Ten-Year Study of a Special Ability," Studies in the Psychology of Art, Vol. III, University of Iowa Studies in Psychology, No. 23, Psychological Monographs, Vol. LI No. 5, (Columbus, Ohio, The American Psychological Association, Inc. (1939), pp. 141-156.

[3] Ibid., p. 140.

[4] Ibid., p. 141.

produces meritorious work."[5] Aesthetic judgment refers to the critical appraisal of a work of art and the recognition of aesthetic quality in any relationship of elements within an organization; that is, it is "the ability to recognize good placements, good arrangements of objects, lines, and colors, in composition so that when qualities like balance, rhythm, and unity are attained"[6] one is cognizant of the effect. A number of studies[7] show that this ability is present in children to some degree but is subject to considerable development through learning and experience; in fact, there is, perhaps, no limit to the improvement that may result from experience. Nevertheless, aesthetic judgment is not the mere "application of a series of rules but is something which the individual acquires on the basis possibly of some innate neuro-physical constitution."[8]

Each of the 100 plates in the Meier Art Judgment Test, consists of two pictures, one of which is a work of established merit, containing some principle of aesthetic quality. These principles have been singled out for manipulation, so that there are two almost identical versions, in one of which the balance

---

[5] Norman C. Meier, Examiner's Manual, I. Art Judgment, (Iowa City: State University of Iowa, Bureau of Educational Research and Service, 1942), p. 4.

[6] Meier, Art in Human Affairs, op. cit., p. 130.

[7] Norman C. Meier (ed.), Studies in the Psychology of Art, Vol. I, University of Iowa Studies in Psychology, No. 18, Psychological Monographs, Vol. XLV (Princeton, New Jersey: The Psychological Review Company, 1933-1934), pp. 1-184 (Daniels, Jasker, Whorley, and Walton).

[8] Meier, "Factors in Artistic Aptitude: Final Summary of a Ten-Year Study of a Special Ability," op. cit., p. 155.

has been destroyed, the emphasis altered, the proportions changed, or the rhythm of continuity broken.

In the original Meier-Seashore Art Test the 125 test items were derived by a selective process which involved approximately 300 pairs of reconstructed drawings. The material used was adapted from the

> ...works of old masters, contemporary artists, oriental block prints, and similar types of material. Three requirements were laid down: (a) reputability of the work; (b) exemplification of some aesthetic principle or quality; and (c) suitability for manipulation for testing purposes. All of them provided some problem analagous to situations coming up regularly in the studio.[9]

The suitability of each item was derived by being submitted to 25 experts, mainly artists, art teachers, and art supervisors and directors. The experimental form was administered to 1,081 subjects, who had an age range from 11 years to past middle age and various degrees of scholastic attainment. The final selection for the test was determined by the agreement of the 25 experts and a 60 to 90 per cent preference for the item by the 1,081 subjects. According to Meier the present instrument, reconstructed from the original test, has benefited from the experience gained by ten years of use, a statistical analysis of the relative consistency of each item in use, and the prognostic capacity of each item as determined through bi-serial r analysis. The 25 items ranked as of least value were eliminated and the 25 ranked in order of most value were assigned an additional point.[10]

---

9 Meier, Examiner's Manual, op. cit., p. 13.

10 Ibid., p. 14.

A test in art judgment might be reflecting merely intellectual or maturational levels, however "a true capacity test would measure a response which is primarily not one dependent upon general intelligence, information about art, general maturity, or classroom training."[11] Studies indicate that there is, however, a slight positive correlation between artistic ability, as measured by tests of art judgment, and intelligence. These coefficients of correlations "vary somewhat but seldom have exceeded .40, the majority being much lower."[12] Meier states that samplings made on six groups in high schools and college, show correlations between critical ability in art and intelligence of from -.14 to ⁄ .28, which he concludes is too low to be of any significance.[13] On the other hand, one study on the ten-year investigation, disclosed that the mental ability of very successful artists showed an average I. Q. score of 118.43.[14] Undoubtedly superior intelligence is an adjunct, although not an absolute requirement, for success in any artistic field.

Aesthetic judgment has been found, not only in mature adults, but also in children as young as five or six years of

---

[11] Ibid., p. 14-15.

[12] Walter S. Monroe (ed.), "Art Education," Encyclopedia of Educational Research (rev. New York: The MacMillan Co., 1949), p. 65.

[13] Meier, Examiner's Manual, op. cit., p. 17.

[14] Carolyn Tiebout and Norman C. Meier, "Artistic Ability and General Intelligence," Studies in the Psychology of Art, Vol. II, University of Iowa Studies in Psychology, No. 19, Psychological Monographs, Vol. XLVIII (Princeton, New Jersey: Psychological Review Co., 1936-1937), p. 114.

age, so could not be positively correlated with information about art.[15] Furthermore, a greater indication of validity for the Meier Art Judgment Test as a measuring instrument is that

> ...some children in junior high school range make scores as high as any made by adults, college art students, and mature students in two of the foremost professional art schools in the country, ...a twelve year-old child without training may make as high a score as an adult with the benefit of the best training.[16]

According to Meier, this strongly indicates that the test is measuring capacity rather than learning or general knowledge picked up incidentally.

Coefficients of reliability for tests of capacity are not expected to be as high as for tests of achievement, because of the uncertainty of knowing exactly what factors operate in the person's total reactions. The opportunity for chance factors to control the final results are increased in an aptitude test. In the original Meier-Seashore Test the reliability coefficients ranged from .71 to .85, with the revised Meier Test, on five samplings of from 70 to 150 subjects, reliability coefficients of from .70 to .84 were obtained.[17] Edwin Ziegfeld, Head of the Department of Fine and Industrial Arts at Columbia University, says, "What the test measures,...it measures well; it is the most satisfactory of all the art tests that have been constructed".[18]

---

[15] Meier, Psychological Monographs, Vol. XLV, op. cit., (sections by Griffen and Tiebout).

[16] Meier, Examiner's Manual, op. cit., p. 15.

[17] Ibid., p. 19.

[18] Edwin Ziegfeld, "Fine Arts" The Third Mental Measurements Yearbook, ed. Oscar K. Buros (New Brunswick, New Jersey: Rutgers University Press, 1949), p. 172.

The Henmon-Nelson Tests of Mental Ability, Forms A and B for College Students, were used for securing a measurement of intelligence or mental ability of the students participating in this study. The Henmon-Nelson Tests have been constructed with considerable skill and expertness. They include a range of items which demand a variety of mental operations; thus touching many areas of mental ability. Each form of the test contains ninety items including information, disarranged sentences, classifications, logical selections, verbal analogies, geometrical analogies, proverbs, word meanings, number relations, and arithmetical problems.

In preparation 224 carefully selected items were administered to 500 students and an item analysis was run. Only such items as discriminated between superior and inferior students were retained; from these the two forms of ninety items each were prepared and equated. Validity coefficients were obtained by comparing these tests with other instruments designed to measure mental ability, one of which was the Otis Self-Administering Tests of Mental Ability. Four studies were made in various colleges and correlation coefficients were derived ranging from .68 to .79.[19] The reliability of the college examination, which was determined by correlating the For A scores with Form B scores of 171 college freshmen yielded a coefficient of .89.[20] The norms were obtained on the basis of scores of

---

[19] V.A.G. Henmon and M. J. Nelson, Teacher's Manual For Henmon-Nelson Tests of Mental Ability (Chicago: Houghton Mifflin Co.), 1932, p. 1.

[20] Ibid.

approximately 5500 college and university students in schools of various sizes and in several different parts of the United States.[21]

The Kuder Preference Record, Form C, was selected for measuring the interests of the experimental groups in this study. This instrument attempts to identify certain general activity patterns which are psychologically meaningful. Such an approach is consistent with the "pattern analysis" interpretation of interest inventories as suggested by Darley in his study.[22] The A Form of the Kuder Preference Record was developed on student groups, and the items were constructed on the basis of internal consistency and independence. Since then the tests have been administered to adults who were judged successful in their various occupations. Moreover, students who took the tests have been followed up in order to determine the relationship between their interest scores and their success in various fields.[23] More than twenty-five studies, using the Kuder Preference Record have been published and the author of the instrument has accumulated the interest scores of people engaged in a large number of occupations. To date profiles have been developed for 112 occupational groups and many of these groups have been subdivided into specific areas within the occupation, with profiles

---

[21] Ibid., p. 2.

[22] Darley, loc. cit.

[23] Donald E. Super. "Interest," The Third Mental Measurements Yearbook, op. cit., p. 640.

available for each.[24] In some cases, however, the data are based on small samples.

On Form C of the Kuder Record two new scales were added. The Outdoor scale was developed because of an expressed need for a measure related to outdoor activities, and a validation scale was devised in order to make it easy to identify those individuals who answer carelessly or without understanding. The other nine scales were developed by further item analysis of the items in Form B and other items which have been included. The item analyses were based on a series of groups which included 381 high school students and 650 adults. Coefficients of reliability on the various scales for four groups of 100 each--men, women, boys, and girls--range from .84 to .93.

> Experience seems to indicate that significant scores on the Kuder artistic key are 'easier to get' than significant ratings on the Strong artistic key. The Kuder artistic scale may make it rather easy for people with avocational interests in this area to score high.[25]

In a study of the artistic interest of 1000 men, who had come to a university testing bureau, the Kuder and Strong inventories were compared; 24 per cent of the group obtained significantly high scores on the Artistic scale of the Kuder, while on the Artist scale of the Strong only three per cent had

---

[24] G. Fredric Kuder, Examiner's Manual (Chicago: Science Research Associates, 1949), pp. 13-15.

[25] Arthur H. Brayfield, "Interest," The Third Mental Measurements Yearbook, op. cit., p. 663.

significantly high scores.[26] Such findings were factors in choosing this inventory for measuring interest in the present study.

The Guilford-Zimmerman Temperament Survey was constructed with the purpose of incorporating into one instrument personality traits formerly measured by a combination of tests. Guilford and Martin developed a series of three personality inventories, designed to measure thirteen personality factors. The O-Ag-C was to obtain a measure of Objectivity, Agreeableness, and Cooperation; the GAMIN, General Activity, Ascendance-Submission, Masculinity-Femininity, Inferiority Feelings, and Nervousness; the STDCR, Social Introversion, Thinking Introversion, Depression, Cyclothymia, and Rathymia. The time involved in administering and scoring three separate inventories indicated a need for a more comprehensive coverage of personality traits than was measured by the original series.

Guilford and Zimmerman decided to condense and omit trait scores where intercorrelations between the various factors of the series were sufficiently high. Thirty items were used for each of the ten traits included in the new instrument. The use of the personal pronoun has been avoided to a great extent by the use of affirmative statements instead of questions. The choice of items to be used for each trait was determined by

---

[26] Ralph F. Berdie, "Scores on the Strong Vocational Interest Blank and the Kuder Preference Record in Relation to Self-Rating," Journal of Applied Psychology, Vol. XXXIV (February, 1950), p. 46.

factor analysis and upon item analyses of old and new items.[27] Each category was designed so that a high score indicated the "positive" qualities of a trait and low scores indicated the "negative" qualities.[28]

Estimates of the total score reliabilities were made, based upon samples of 389 female and 523 male college students. Except for the Masculinity scale, the estimates are very similar for samples of either sex. The reliability coefficients for the various scales ranged from .79 to .87.[29]

The intercorrelations of the ten personality traits are, in general, fairly low, indicating the uniqueness of the scores. Only two correlations were relatively high. Sociability and Ascendance, traits pertaining to social behavior, and Emotional Stability and Objectivity, both related to emotional behavior, yielded correlation coefficients of .61 and .69 respectively.[30]

The norms for the Guilford-Zimmerman Temperament Survey are based, in part, on the same group of college men and women used to obtain the reliability of the items. In addition to these, the scores of the students in two Junior Colleges were also included. Then the final form of the Survey was administered to a group of high school students and their parents. Since no

---

[27] J. P. Guilford and Wayne S. Zimmerman, The Guilford-Zimmerman Temperament Survey: Manual of Instruction and Interpretation, Beverly Hills, California: Sheridan Supply Co., 1949, p. 5.

[28] Ibid., p. 3.

[29] Ibid., p. 5.

[30] Ibid., p. 6.

significant differences were found between the two age groups, they were combined for norm purposes. There were no marked sex differences except on the Masculinity scale, which, of course, was to have been expected. Men tended to be more ascendant than women, but less sociable and friendly.[31] The authors have published studies which give an indication of the validity of the instrument, particularly in regard to the selection of supervisors, in addition to the factor-analysis and successive item-analyses directed toward internal consistency and purity of trait.[32]

Gilbert made a study for the Personnel Service Division of the Pennsylvania State College for the purpose of comparing the Guilford-Zimmerman Temperament Survey with the Guilford-Martin O-Ag C (objectivity, aggression, cooperation) and three scales of the Bernreuter Personality Inventory, B_1-N (neurotic tendency, reversed and oriented as stability), B2-S (self-sufficiency), and B4-D (dominance).[33] An analysis of traits measured by these two personality inventories, was made by an intercorrelation with the traits of Objectivity, Friendliness, Personal Relations, Emotional Stability and Ascendancy on the Guilford-Zimmerman instrument. There was no indication of a relationship between B2-S and any of the factors on the Guilford-Zimmerman

---

31 Ibid.

32 Ibid., p. 8.

33 Claudia Gilbert, "The Guilford-Zimmerman Temperament Survey and Certain Related Personality Tests," Journal of Applied Psychology, XXXIV (December, 1950), pp. 394-396.

Survey.[34] However, a trait of "self-sufficiency" apparently has not been isolated by factor analysis by either Cattell or Guilford. The high positive correlation between the Guilford-Zimmerman Objectivity and Emotional Stability of .84 suggests, according to Gilbert, that the two are not separate traits.[35] The authors recognized the "uncomfortably high"[36] relationship between these two traits, but felt justified in retaining the traits as separate scales since "each score accounted for less than half the variance of the other, so that there is considerable unique contribution made by each."[37]

Since the Guilford-Zimmerman Temperament Survey is a recently developed instrument, the only published study, so far as this writer was able to ascertain, is the one cited above. Furthermore, Gilbert recorded and studied data on only half of the personality trait scales. Consequently, it seems advisable to explain in some detail, the meaning and quality of traits implied by the various personality scales used in the survey.

The ten personality traits measured by this instrument are General Activity, Restraint, Ascendance, Sociability, Emotional Stability, Objectivity, Friendliness, Thoughtfulness, Personal Relations, and Masculinity. These traits are designated by the letters G,R,A,S,E,O,F,T,P, and M, respectively and the scales referred to by these letters. The titles of these categories

---

34 Ibid., p. 395.

35 Ibid., p. 396.

36 Guilford and Zimmerman, op. cit., p. 6.

37 Ibid.

are suggestive of the kind of adjustment or behavior to be expected in individuals with high or low scores. High scores indicate "positive" qualities and low scores, "negative" qualities. "Extreme positive qualities do not always indicate the best adjustment, but extreme negative ones are likely to indicate trouble."[38]

Positive qualities characteristic of General Activity are drive, energy, and quickness of action. These positive qualities embrace rapid pace of activities, energy, vitality, continuous activity, productivity, efficiency, a liking for speed, enthusiasm, and liveliness; as contrasted with negative qualities embracing slow and deliberate pace, fatigability, pausing for rest, low productivity, inefficiency, taking one's time, slowness of action, impassivity, and sluggishness. If a high score on the G (General Activity) scale is coupled with the right kind of qualities, it is a good indication; if, however, it is coupled with the wrong traits, it may be bad. They This quality tends to exaggerate the appearance of other traits. If, for example, the T (Thoughtfulness) scale, indicative of reflective thinking, is high, a high G score would indicate that the individual's thoughtfulness and planning would be effective in action; rather than becoming useless and futile philosophizing. If one were inclined to be domineering, however, a high G status would indicate that his tyrannical manner would be more obvious and overt. A low G score may intensify a low S

---

[38] Ibid., p. 3.

(Sociability), low A (Ascendance), or high F (Friendliness) status. Moreover, clinically, a low G score may indicate a hypothyroid condition, anemia, or other physical conditions; this is an especially important consideration to be noted in the case of young people. On the other hand, a high G score may indicate manic behavior, in which random action and wasted effort is evident.

On the R (Restraint) scale positive qualities are characteristic of a serious-minded, deliberate, persistent, self-controlled individual; while the negative qualities characterize a happy-go-lucky, carefree, impulsive, excitement-loving person. Such an individual is not suited to hold positions of responsibility. At the other extreme, the over-serious, over-restrained person might also be ill suited for a position of great responsibility. A high R status accompanied by a high G scores would indicate internal conflict and danger of poor mental health; if accompanied by a low G status it would mean very low output. Restraint on this survey is opposite the former Guilford trait of rhathymia.

A high A (Ascendance) rating denotes the qualities of self-assertion, leadership, loquacity, persuasion, conspicuousness, and bluffing; a low score, on the other hand, denotes habits of submissiveness, following, reticience and avoidance of conspicuousness. It is important that a very high A score be balanced by favorable T, R, M, and F scores; if not, such an individual may tend "to ride rough-shod over others."[39]

---

[39] Ibid., p. 8.

The high and low S (Sociability) scores indicate the contrast between people, who have many friends, readily establish rapport, and are at ease in social groups; and those who are shy, reserved individuals, having few friends, and avoiding social contacts. People with high S scores tend to seek the limelight; those with low S scores tend to avoid the limelight. This trait of Sociability was called "social extraversion" on the Guilford-Martin series.

E (Emotional Stability) is the opposite of a combination of cycloid disposition and depressive tendencies as classified on the earlier Guilford tests. A high E score indicates optimism, cheerfulness, composure, and evenness of moods. An extremely high E score, coupled with a low G status, may be indicative of a phlegmatic, or lazy person. A very low E score denotes neurotic tendencies or poor mental health. An individual with such tendencies would be moody, gloomy, pessimistic, and excitable. He might harbor feelings of guilt, loneliness, and worry; and would, perhaps, daydream excessively.

Objectivity (O), as noted above, correlates fairly high with Emotional Stability. A high O score means that the individual is "thickskinned," less egocentric, and more impersonal in his attitude toward his own capabilities and liabilities than a person standing at the opposite end of the scale. A low O score means hypersensitiveness, suspiciousness, and egoism, with a tendency for the individual to have ideas of reference and to get into trouble. One could, however, be too objective for the most effective adjustment as well as too subjective.

An extremely high score might indicate a person so insensitive to himself, that he could not sympathize with others or appreciate their sensitiveness. A high T score would help to balance a high Objectivity rating. An individual with a low O score might either suffer in silence or find himself frequently in trouble, depending on his status on A, G, and F traits.

A high F score means a healthy realistic approach to the frustrations involved in living with others; it might mean pacifism, or it might indicate a very normal desire to please others and to be liked. A low score means some form of hostility. It might be indicative of a fighting attitude, and, if kept under control, it could be a favorable quality. Many people, scoring low on the F scale, like to dominate for the satisfaction or compensatory value derived therefrom. Such persons, in positions of authority, would probably stimulate friction and low morale among those under their supervision.

Thoughtfulness (T), formerly called thinking introversion, indicates an individual with the positive qualities of reflectiveness, meditativeness, self observance, philosophical inclination, mental poise, observance of the behavior of others, and interestin thinking. On the other hand, a person scoring on the negative side of the scale exhibits mental disconcertedness and interest in overt activity. Such an extraverted individual usually is so busy interacting with his social environment that he has little time for learning to observe himself or others; as a result, he will probably be lacking in tact and subtlety.

Personal Relations (P) was designated as cooperativeness on the Guilford-Martin series. This trait seems to be the core

of "getting along with people". A high score denotes not only tolerance and understanding of other people, but also confidence and faith in the existing social institutions. Some characteristics of persons making a low P score are self-pity, suspiciousness, faultfinding, hypercriticalness of other people, and criticalness of social institutions. Consequently, such an individual is unlikely to "get along with others".

On the positive side of the Masculinity scale, a high score exhibits both interests and behavior that are characteristic of men. If the score is extremely high, it may indicate an unsympathetic and callous individual; or it may, on the other hand, designate a person who, consciously or unconsciously, is seeking to compensate for feminine tendency or feeling of weakness or inferiority. A low M score indicates femininity of interests and behavior and would include emotional expressiveness, romantic interests, fearfulness, disgust, and an interest in feminine activities and vocations. Women scoring high on M "may have had masculinizing experiences through long association with the opposite sex or they may be rebelling against the female role".[40]

Procedure Used in Study

The data for this study were secured by administering the tests described above to 770 students--the students were enrolled in 15 sections of Introductory Psychology during the school term

---

[40] Ibid., p. 10.

of 1949-1950. Of this group 533 were men and 237 were women. The tests of 131 students, who had had instruction in art on the college level, were separated from those of students who had not had any art training. The art group included 61 men and 70 women. Of the total number 60 students were eliminated because one or more tests was incomplete, or an invalid score was obtained on the Kuder Preference Record. In the former category there were 44 men and 18 women; in the latter, 5 men and 3 women had invalid scores. After these eliminations, a group of 579 students remained in the non-art sample, 423 men and 156 women.

Either form A or B of the Henmon-Nelson Tests of Mental Maturity was administered to all students as the first test in the series. The Meier Art Judgment Test, the Kuder Preference Record, and the Guilford-Zimmerman Temperament Survey were given in rotation, one-third of the students taking each test at each of the other three testing periods. All tests were scored by the author and carefully rechecked for errors in both scoring and recording. The results of the tests were made available to all students who participated in the study, and counseling was given whenever students desired it. Professor Evert Little assisted with part of the first recording of scores, and assumed the responsibility of counseling four sections of the students; James Hafner, a teaching fellow, did the counseling for two sections of the students.

After all data were carefully checked and recorded, two groups were formed from the non-art students--a high aesthetic ability group and a low aesthetic-ability group--as determined

by their standing on the Meier Art Judgment Test. For the high-ability group only those students were chosen who ranked at the 50th percentile or above on the Meier norms for college students and adults. This cutting point was chosen since Meier believes that one can expect only average achievement or less in fields requiring a high degree of aesthetic ability if a person ranks below the 50th percentile.[41] On the basis of this assumption, 100 students were placed in the high-ability group--60 men and 40 women. Then the 100 students making the lowest scores on the art judgment test were chosen for the low-ability group. This group included 80 men and 20 women who ranked at the fourth percentile or below on the Meier test.

From the 131 students with credit in college art, the 35 were selected who had ten or more hours of art instruction at the college level. Ten hours' credit indicated interest in art beyond the art requirement of most schools. This group consisted of 26 men and nine women, all of whom were majoring in art or architecture.

After computing the raw data and selecting the groups, the statistics for showing significant differences were computed. The mean, standard deviation, and standard error of the mean were computed for the Meier Art Judgment Test, the Henmon-Nelson Tests of Mental Ability, and ten scales of both Kuder Preference Record and the Guilford-Zimmerman Temperament Survey. The differences of the means, the standard error of the difference,

---

[41] Meier, op. cit., Examiner's Manual, pp. 9-12.

and the critical ratios or t-values were obtained and recorded for the comparison of the major and sub-groups on each of the tests and scales. All the statistically obtained data were recorded in tables which are included in the following chapter of this study. Furthermore, profile analyses of the interests and personality traits for each of the various groups were constructed on graphs and also included in Chapter IV.

Comparisons were made to determine sex differences for the high and low-ability groups, and also to determine differences between like sex members of these two major groups. In order to study the relationship between aesthetic judgment and interest in art, the mean raw scores on the ten scales of the personality inventory were converted to mean T-scores and plotted on a graph each sex of the high-ability group with high-artistic interest and those with low-artistic interest as measured by the Kuder Artistic scale. The same procedure is used in studying the ability-interest relationship of the low-ability group.

CHAPTER IV

THE FINDINGS AND INTERPRETATION

Statistics based on a sample, are always estimates of their population counterparts; consequently the statistical data presented in this chapter is an estimate of what one would expect to find in other college populations, drawn from Agricultural and Mechanical Colleges of the Southwest, and composed of Introductory Psychology students that are predominantly underclassmen. Although we can not determine the true values for a whole population, we can compute, with a certain degree of confidence, the limits within which the true statistic may be expected to be. This chapter contains a summary of the statistically significant differences that have been found by comparing the sample groups on the several tests and scales. Accompanying this survey, are the tables containing the statistical data and also the graphs showing the profile patterns.

The Comparison of Groups on Aesthetic Ability

The data for high and low aesthetic ability were secured by the common practice of making two groups from the extremes of the frequency distribution of 579 students who took the Meier Art Judgment Test. Since these two groups consisted of only 100 non-art students each, the gap between the groups was naturally very great. Table 1 presents these data. The mean difference on art

TABLE 1

THE COMPARISON OF AESTHETIC ABILITY FOR EXTREME GROUP ON THE MEIER ART JUDGMENT TEST

	Aesthetic Ability				Significance of Differences		
	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
Low-Ability Group (Male and Female)	100	78.51	5.82	0.582	28.71	0.641	44.79
High-Ability Group (Male and Female)	100	107.22	2.70	.270			
College Art Group (Male and Female)	35	105.57	6.95	1.175	27.06	1.311	20.64
Low-Ability Group (Male and Female)	100	78.51	5.82	.582			
Low-Ability Group (Male)	80	78.05	6.02	.673	28.93	.745	38.83
High-Ability Group (Male)	60	106.98	2.47	.319			
Low-Ability Group (Female)	20	80.35	4.61	1.029	27.22	1.134	24.00
High-Ability Group (Female)	40	107.57	3.00	.475			

judgment between the high-ability and low-ability students is 28.71 which expresses a highly significant difference statistically (critical ratio: 44.78), sufficiently high to speak of these groups as high and low-ability groups. It is interesting to note that the mean difference between a group of art students and the low-ability group is 27.06 which is approximately the same as that between the high-ability group and the low-ability group. The difference of 1.65 between the high-ability and the

art group favors the high-ability group but is not statistically significant. There is, however, a much greater variability in the art group, which is what one might expect since this group represents variability, not only in ability, but also in training. The factor of training is largely responsible for bringing the average of the art students up to the high-ability group, although the selective factor, namely, students with more than average ability on the whole selected art, also operated. The sex factor is also fairly well equated between the high and low-ability groups. While the proportion of men and women in the high-ability group is about the same as that of the total distribution of the 579 students, the ratio in the low-ability group shows a greater proportion of men. However, the difference of the mean between the high and low-ability women is about the same as that of the high and low-ability men. For women this difference is 27.22 and for men it is 28.93. This difference is, of course, not statistically significant. Again, according to Table 2, the difference between the low-ability women and the low ability men is 2.30 with a t-value of 1.87 in favor of the women, but the mean difference between high-ability men and high-ability women is only .59. Neither of these differences are statistically significant. It does however seem to show a slighter higher variability for the men, a finding sometimes asserted for all abilities.[1] The data in this study are not clear cut on this point, however, since there is a smaller proportion

---

[1] Anastasia, Anne, Differential Psychology (New York: The MacMillan Co., 1937), pp. 390-394.

TABLE 2

THE COMPARISON OF AESTHETIC ABILITY FOR SIMILAR ABILITY GROUPS ON THE MEIER ART JUDGMENT TEST

	Aesthetic Ability				Significance of Differences		
	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
College Art Group (Male and Female)	35	105.57	6.95	1.175	1.65	1.205	1.37
High-Ability Group (Male and Female)	100	107.22	2.70	.270			
Low-Ability Group (Male)	80	78.05	6.02	.673	2.30	1.230	1.87
Low-Ability Group (Female)	20	80.35	4.61	1.029			
High-Ability Group (Male)	60	106.98	2.47	.319	.59	.572	1.03
High-Ability Group (Female)	40	107.57	3.00	.475			

of women in the low-ability group than in the high ability group. If the sex ratios of the two groups were equated by adding to the low-ability a sufficient number of women just above the cutting score, the variability would be slightly greater, but still not great enough to be statistically significant. Other studies report no statistically reliable sex differences.[2,3]

---

[2] Katherine Snow Whorley, "An Experimental Investigation of the Sensitivity of Children to Compositional Unity," Studies in the Psychology of Art, Vol. XVIII, op. cit., pp. 43, 44.

[3] E. Terry Prothra and Harold T. Perry, "Group Differences in Performance on the Meier Art Test," Journal of Applied Psychology, Vol. XXXIV (April, 1950) p. 96.

The Comparison of Aesthetic Judgment and Mental Ability

When aesthetic ability is compared with mental ability, it is found that the differences are large, favoring those with high aesthetic ability, and that these differences are highly significant. A verification of this statement can be secured by consulting the data in Table 3. There are no significant sex differences indicated as to intelligence; nor are there any significant differences in this respect, between the high-ability group who have had no specific art training and the college art students. These two groups both rank at approximately the 70th percentile on the Henmon-Nelson norms for college freshmen; while the low-ability group ranks at the 35th percentile. These findings are in the same direction as those of other studies[4] which usually indicate a positive relationship between aesthetic judgment and intelligence. Tiebout and Meier also found "a tendency for a higher than average degree of intelligence to be present with artistic superiority.[5] Monroe states that there is a slight positive correlation between artistic ability and intelligence, the coefficients of correlation varying somewhat but seldom exceeding .40 and the majority being much lower.[6] Meier, on the other hand, when validating the art test, found that correlations between aesthetic ability and

---

[4] Monroe, op. cit., p. 65.

[5] Tiebout and Meier, "Artistic Ability and General Intelligence," op. cit., p. 123.

[6] Monroe, loc. cit.

TABLE 3

THE COMPARISON OF ABILITY GROUPS ON THE HENMON-NELSON TESTS OF MENTAL ABILITY

	Mental Ability				Significance of Differences		
	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
Low-Ability Group (Male and Female)	100	40.23	9.03	0.903	7.85	1.431	5.485
High-Ability Group (Male and Female)	100	48.08	11.11	1.111			
College Art Group (Male and Female)	35	48.71	11.20	1.894	.63	2.196	.286
High-Ability Group (Male and Female)	100	48.08	11.11	1.111			
College Art Group (Male and Female)	35	48.71	11.20	1.894	8.48	2.098	4.041
Low-Ability Group (Male and Female)	100	40.23	9.03	0.903			
Low-Ability Group (Male)	80	40.26	8.98	1.004	.16	2.341	.068
Low-Ability Group (Female)	20	40.10	9.46	2.115			
High-Ability Group (Male)	60	47.44	2.47	.319	1.58	1.666	.948
High-Ability Group (Female)	40	49.02	10.34	1.636			
Low-Ability Group (Male)	80	40.26	8.98	1.004	7.18	1.053	6.820
High-Ability Group (Male)	60	47.44	2.47	.319			
Low-Ability Group (Female)	20	40.10	9.46	2.115	8.92	2.674	3.335
High-Ability Group (Female)	40	49.02	10.34	1.636			

intelligence varied from -.14 to + .28;[7] however, on one of the "ten-year" studies, he found that a group of very successful artists showed an average I.Q. score of 118.43. He, therefore, concluded that intelligence was not an absolute requirement for success in artistic field but that it was a valuable asset.[8]

Sex Differences in Interests and Personality Traits for Ability Groups

Low-ability group.--Sex differences are studied by comparing the men and women in both the low and high-ability groups. Table 4 contains the data for the comparison in the low group, and Table 5 contains the data for the comparison in the high group. Interest patterns are shown by profiles on Graphs 1 and 2 for the low and high-ability groups, respectively.

A comparison of the data on the interest inventory shows that the low-ability men are significantly higher than the low-ability women on the Outdoor, Mechanical, Scientific and Persuasive scales, with mean difference of 14.88, 18.94, 13.62, and 5.68 respectively. The first three scales are significant at the one per cent level; the Persuasive scale is significant at the five per cent level. Women, on the other hand, have significantly higher interest on the following scales: Artistic, with a mean difference of 4.12 at the five per cent level of confidence, Social Service with a difference of 10.94 at the

---

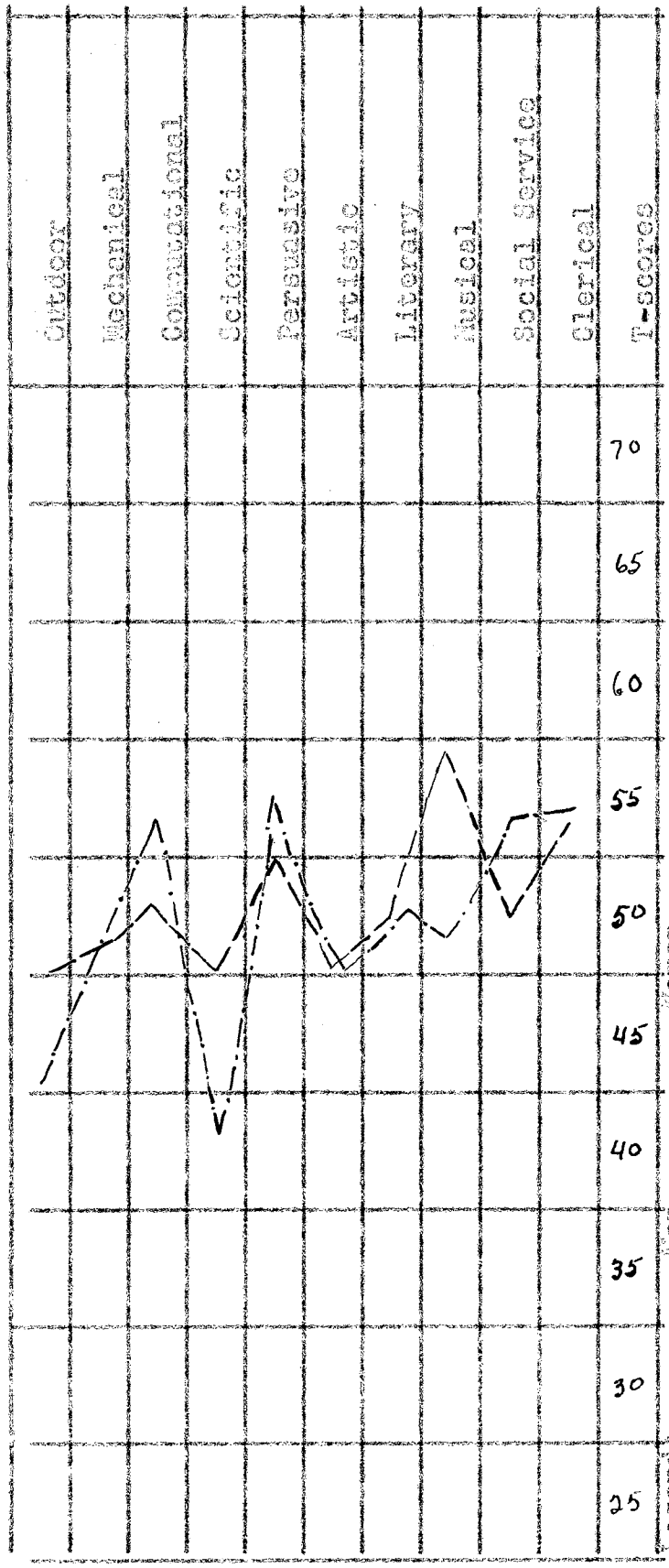
[7] Meier, Examiner's Manual, op. cit., p. 17.

[8] Tiebout and Meier, "Artistic Ability and General Intelligence," op. cit., p. 114.

TABLE 4

THE COMPARISON OF SEX DIFFERENCES FOR LOW-ABILITY GROUP ON THE KUDER PREFERENCE RECORD

Scales	Men				Women				Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
Outdoor	80	38.93	13.66	1.528	20	24.05	11.95	2.673	14.88	3.079	4.83
Mechanical	80	42.04	12.39	1.386	20	23.10	11.52	2.575	18.94	2.924	6.48
Computational	80	29.40	8.96	1.002	20	27.35	8.91	1.993	2.05	2.231	.99
Scientific	80	37.97	10.78	1.205	20	24.35	9.78	2.188	13.62	2.498	5.45
Persuasive	80	47.08	14.43	1.614	20	41.40	9.72	2.175	5.68	2.708	2.10
Artistic	80	19.28	8.02	.896	20	23.40	7.69	1.719	4.12	1.939	2.12
Literary	80	17.71	8.39	.938	20	20.65	10.06	2.250	2.94	2.437	1.21
Musical	80	14.37	7.55	.844	20	14.00	6.49	1.451	.37	1.678	.22
Social Service	80	43.91	10.90	1.177	20	54.85	14.73	3.299	10.94	3.502	3.12
Clerical	80	49.76	14.75	1.486	20	64.30	14.44	3.229	14.54	3.555	4.09

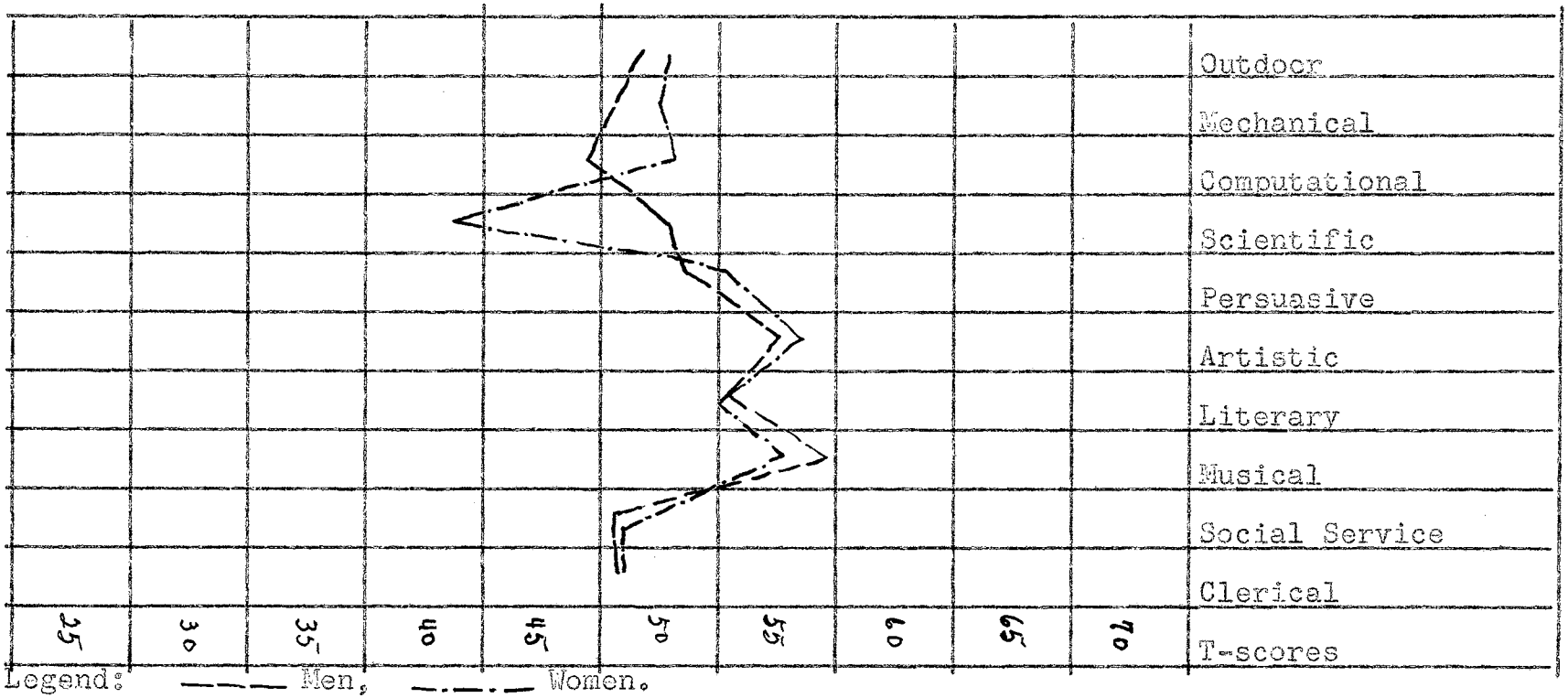


Graph 1.--Profiles of the mean T-scores on the scales of the Kuder Preference Record for the comparison of sex differences for the low-ability group.

TABLE 5

THE COMPARISON OF SEX DIFFERENCES FOR HIGH-ABILITY GROUP ON THE KUDER PREFERENCE RECORD

Scales	Men				Women				Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
Outdoor	60	41.01	15.51	2.002	40	33.27	10.19	1.611	7.74	2.570	3.01
Mechanical	60	40.36	13.58	1.753	40	24.50	11.46	1.812	15.86	2.521	6.29
Computational	60	25.78	10.28	1.327	40	22.15	10.96	1.733	3.63	2.183	1.66
Scientific	60	40.76	13.62	1.749	40	24.30	10.91	1.724	16.46	2.450	6.72
Persuasive	60	44.58	17.03	2.199	40	39.45	14.43	2.282	5.13	3.169	1.62
Artistic	60	25.61	9.77	1.261	40	34.40	9.36	1.483	8.79	1.944	4.52
Literary	60	20.63	8.99	1.161	40	22.10	9.10	1.439	1.47	1.828	.80
Musical	60	14.66	7.79	1.005	40	18.62	6.67	1.054	3.96	1.457	2.72
Social Service	60	39.46	13.60	1.756	40	46.10	12.96	2.050	6.64	2.699	2.46
Clerical	60	42.73	13.23	1.708	40	53.65	18.09	2.861	10.92	3.332	3.28



Graph 2.--Profiles of the mean T-scores on the scales of the Kuder Preference Record for the comparison of sex differences for the high-ability group.

one per cent level, and Clerical with a difference of 14.54, also at the one per cent level.

Not only are there highly significant sex differences for the low-ability group, found on the statistical data based on the raw scores of the interest scales; but there are also striking profile variations when based on the Kuder percentile norms, converted to T-scores. The transforming of the original or raw scores into T-scores, indicated the same level of ability in a normal distribution, is a technique used for normalizing the distribution of raw scores. T-scores are expressed in terms of the same unit and with respect to the same reference point; and unlike percentiles are equal throughout the scale. Many of the differences found on the raw score data are due to cultural sex differences which were recognized in developing the interest inventory and determining the norms. The profile of mean T-scores represents the sex differences in relation to aesthetic ability.

On the profile analysis the Artistic, Literary, and Clerical interests are practically identical for both sexes in the low-ability group. Artistic and Clerical scales show significant differences on the raw mean scores. The computational scale, on the other hand, indicates no significant differences with raw scores, but on the profiles the mean T-scores place the low-ability women at the 70th percentile, and the men at the 55th percentile. On the Musical scale the men stand at the 74th percentile, and women at the 48th percentile. The interest syndrome on the Computational, Persuasive, and Social Service scales characterize the low-ability women, while the syndrome of

Outdoor, Scientific and Musical interests characterizes the low-ability men. The variation of the interests of this group may be due not only to sex differences, but also to the heterogeneous character of the predominate interests of the low-ability groups. The unequal representation of the sexes may also effect the reliability of differences, since there were 80 men and only 20 women representative of the low-aesthetic ability group.

High-ability group.--In comparing men and women of the high-ability group for sex differences on the interest inventory, the data show that the men are significantly higher on the Outdoor, Mechanical, and Scientific scales; the mean differences are: 7.74 on the Outdoor scale, 15.86 on the Mechanical scale, and 16.46 on the Scientific scale, all reliable at the one per cent level. Except for the Persuasive scale, the differences are in the same direction as the low-ability men. The women are statistically more significant on the following scales: Musical, with a difference of 3.96; Social Service, with a difference of 6.64; Artistic with a difference of 8.97; and Clerical, with a difference of 10.92; each reliable at the one per cent level of confidence.

The profile patterns for the high-ability sex groups are very similar, both in shape and position, with the exception of the Scientific scale. On this scale the men rank at the 47th percentile, while the women rank at the 29th percentile. The number of women in this group are in better proportion to the number of men than the low-ability group were. In the high-ability group there are 60 men and 40 women.

Comparisons on the Personality Scales

Low-ability group.--The data for the comparison of men and women in the low-ability group on the scales of the personality test are recorded in Table 6, and the profiles of the personality patterns, based on mean T-scores, are presented on Graph 3.

In the low-ability group the three statistically reliable differences between the sexes on the personality scales are all in favor of the men. Ascendance shows a difference of 4.50, with a t-value of 2.62, almost reliable at the one per cent level; Emotional Stability shows a difference of 3.91, significant at the two per cent level; and Masculinity is highly significant with a mean difference of 12.17. As in interests the raw score data reflects cultural difference, although this influence is not as great a factor as in the case of interests except on Masculinity. On this scale men rank at the 50th percentile and women at the first percentile. The profile indicates, in addition to Masculinity, a pattern of traits, including Ascendance, Emotional Stability, Objectivity, Sociability, and Personal Relations, on which men are superior to women.

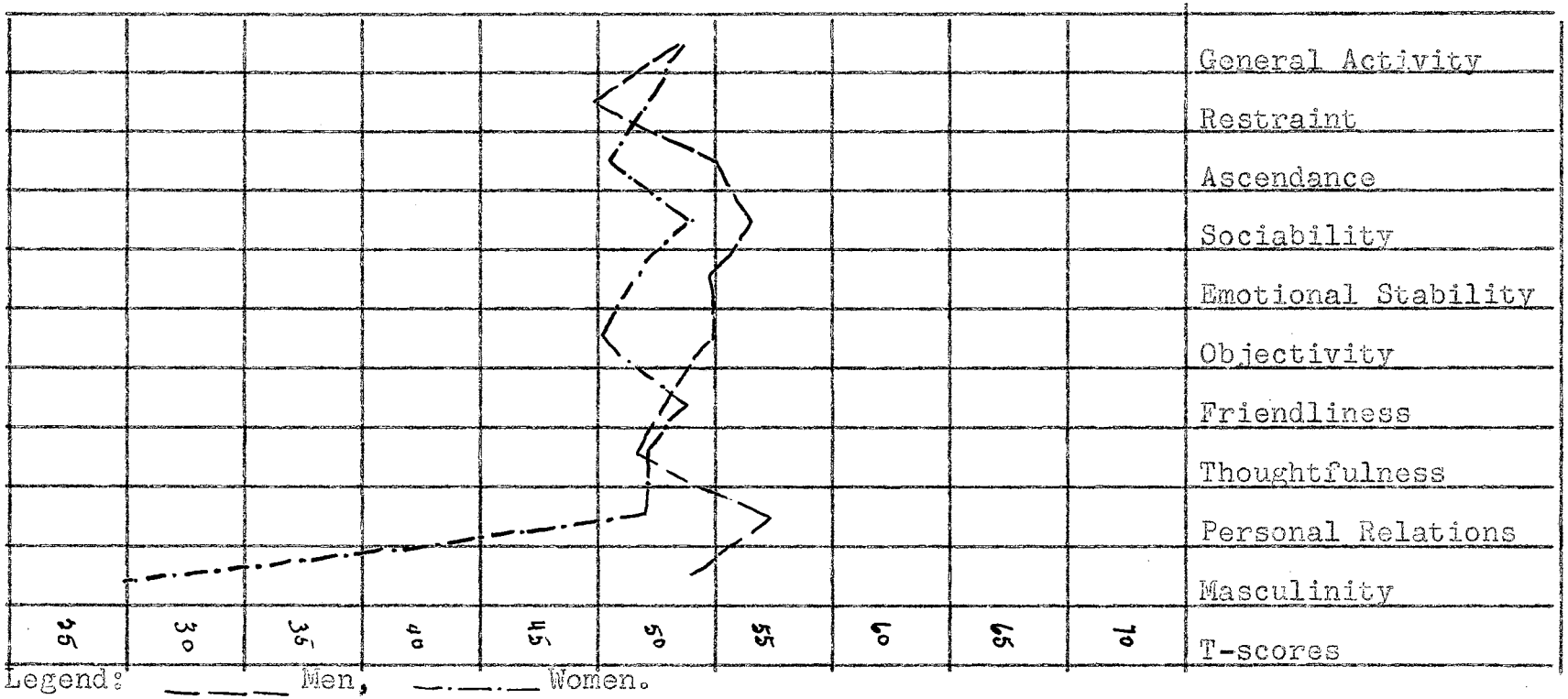
High-ability group.--Table 7 contains the data for a comparison of sex differences on the high-ability level, and Graph 4 shows the personality profiles for this group.

Men in the high-ability group have a mean difference of 3.76, reliable at the one per cent level, for Ascendance, and a significant difference of 7.57 for Masculinity. The difference on the Masculinity scale, while highly reliable, is not as

TABLE 6

THE COMPARISON OF SEX DIFFERENCES FOR LOW-ABILITY GROUP ON THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

Scales	Men				Women				Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
General Activity	80	17.47	8.90	.995	20	17.35	5.87	1.313	0.12	1.647	0.07
Restraint	80	51.02	4.42	.494	20	15.80	4.13	.923	.78	1.053	.74
Ascendance	80	17.20	9.10	1.002	20	12.70	6.19	1.385	4.50	1.719	2.62
Sociability	80	21.76	10.44	1.167	20	21.35	3.61	.776	.41	1.402	.29
Emotional Stability	80	18.26	7.62	.852	20	14.35	6.16	1.377	3.91	1.620	2.41
Objectivity	80	19.11	9.99	1.117	20	15.70	6.11	1.366	3.41	1.764	1.93
Friendliness	80	14.96	9.70	1.083	20	16.25	6.02	1.346	1.29	1.728	.75
Thoughtfulness	80	18.43	4.39	.492	20	18.10	4.52	1.010	.33	1.124	.29
Personal Relations	80	18.86	15.55	1.291	20	17.80	4.29	.960	1.06	1.609	.66
Masculinity	80	20.67	4.45	.498	20	8.50	4.11	.919	12.17	1.045	11.64

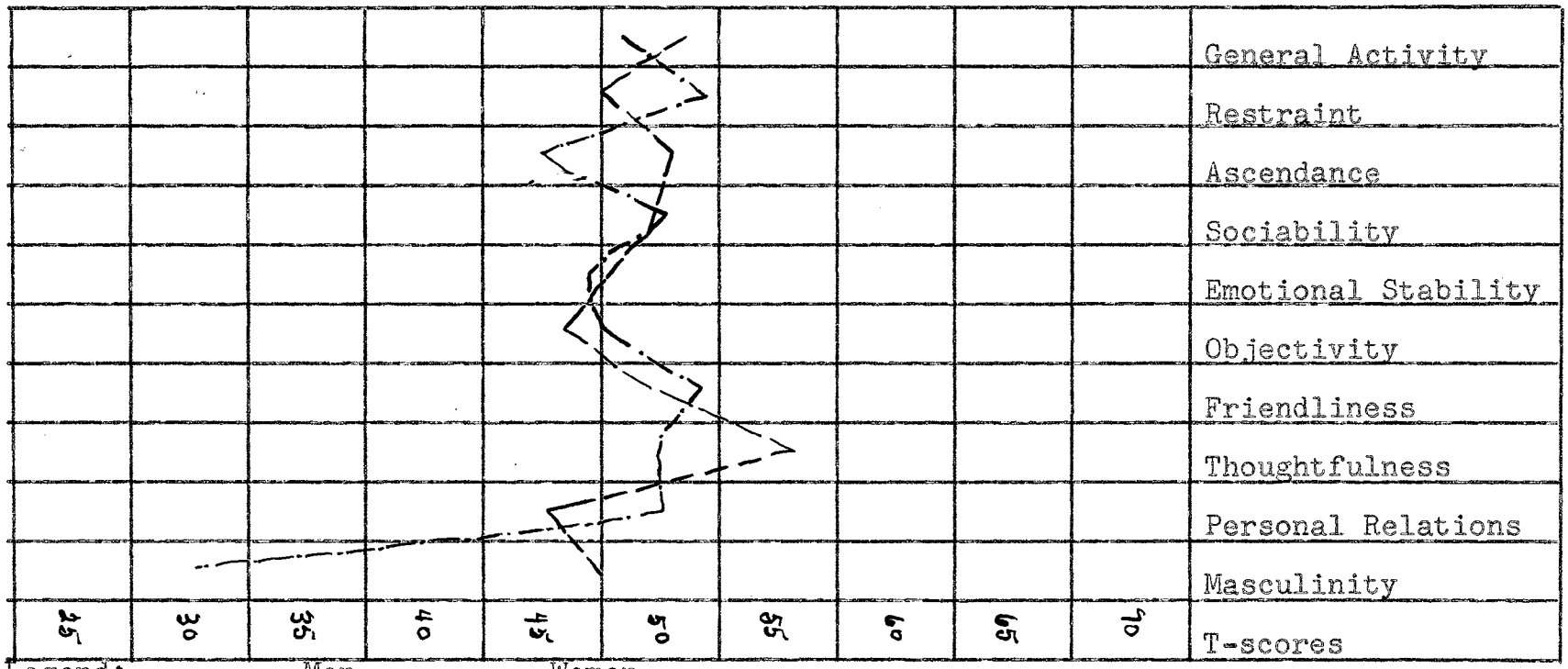


Graph 3.--Profiles of the mean T-scores on the scales of the Guilford-Zimmerman Temperament Survey for the comparison of sex differences for the low-ability group.

TABLE 7

THE COMPARISON OF SEX DIFFERENCES FOR HIGH-ABILITY GROUP ON THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

Scales	Men				Women				Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
General Activity	60	16.21	5.78	0.746	40	16.05	4.98	0.787	0.16	1.084	0.15
Restraint	60	16.53	5.47	.706	40	17.05	4.07	.633	.52	.943	.55
Ascendance	60	16.78	5.59	.722	40	13.02	4.68	.739	3.76	1.033	3.64
Sociability	60	18.59	6.42	.829	40	19.97	5.68	.898	1.38	1.222	1.13
Emotional Stability	60	15.54	5.89	.761	40	15.05	5.73	.907	.49	1.183	.41
Objectivity	60	15.93	5.45	.703	40	19.45	5.21	.824	.52	1.082	.48
Friendliness	60	13.48	5.45	.704	40	16.65	4.88	.772	3.17	1.045	3.03
Thoughtfulness	60	20.41	4.09	.529	40	19.35	4.15	.656	1.06	.843	1.26
Personal Relations	60	14.54	5.04	.651	40	19.00	4.53	.717	4.46	.968	4.61
Masculinity	60	19.39	4.10	.532	40	11.82	3.67	.581	7.57	.786	9.63



Legend: ——— Men, —·—·— Women.

Graph 4.--Profiles of the mean T-scores on the scales of the Guilford-Zimmerman Temperament Survey for the comparison of sex differences for the high-ability group.

great a sex difference for the high-ability as for the low-ability group.

Women rate higher on Friendliness and Personal Relations, having a difference of 3.17 for the Friendliness scale and 4.46 for the Personal Relations scale, both reliable at the one per cent level. Ascendance as well as Masculinity appear to be sex differences for both ability groups as indicated by not only the data but also by the personality profiles. For Ascendance the difference on the profile is not too great for either group, but for Masculinity the men rank at the 40th percentile and the women at the fourth percentile. This difference is probably influenced more by cultural factors than by aesthetic ability.

The data show a tendency for women to be more sociable, and men to be more thoughtful. A profile analysis of personality syndromes characterizing each group, show that men are superior on General Activity, Ascendance, and Thoughtfulness, next to Masculinity the most differentiating trait, and that women excel in Restraint, Sociability, Friendliness and Personal Relations. These syndromes indicate that the men possess a little more energy, vitality, and enthusiasm; greater habits of self defense and leadership; and somewhat more mental poise, reflectiveness, and philosophical attitude than the high-ability women. The women, on the other hand, have a personality pattern indicating a better social and personal adjustment, and a tendency to be more serious-minded and persistent in their efforts.

Differences in Interest and Personality Traits of the High and Low-Ability Groups

Comparisons on the Interest Scales

Men with high and low aesthetic ability.--The data, for comparing men of low and high aesthetic ability, are recorded in Table 8, and the profiles are on Graph 5. These data are used to designate interests that differentiate between men possessing high aesthetic ability and those having low ability.

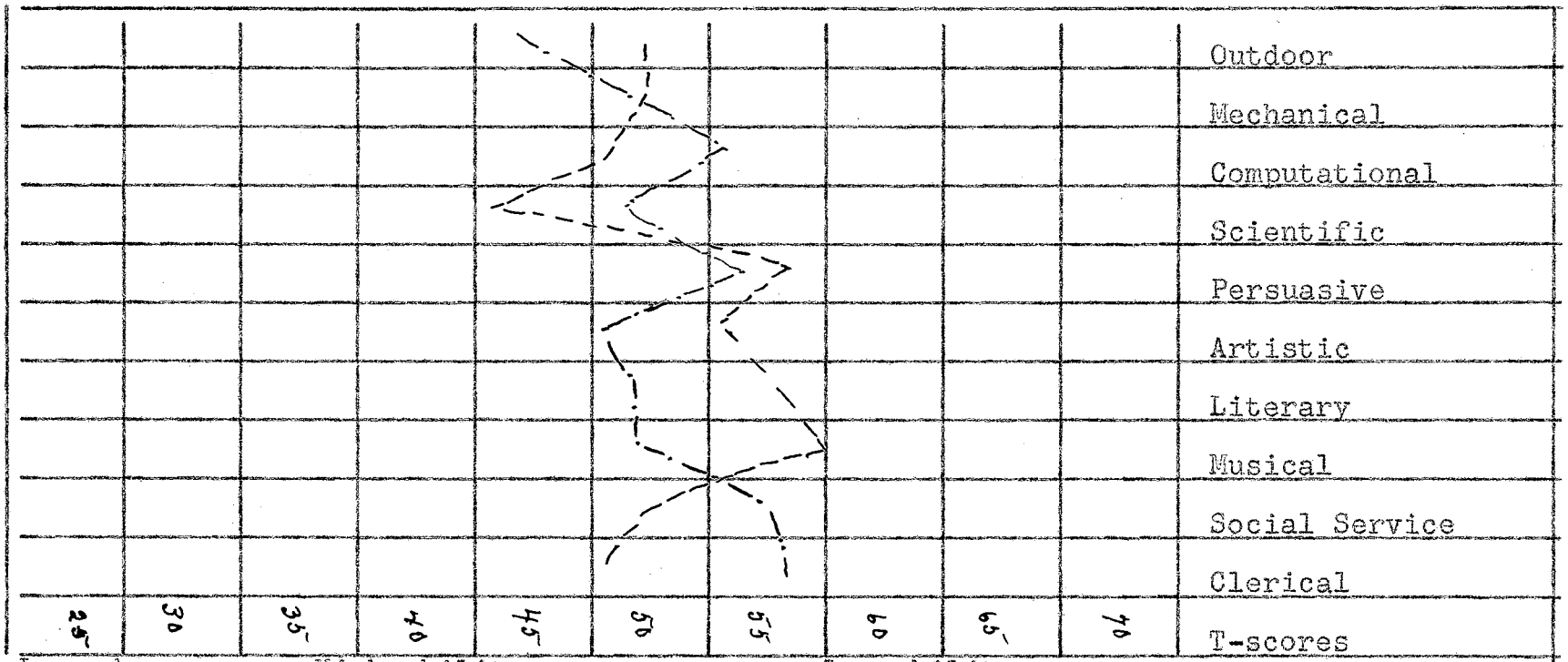
The low-ability men have a significantly larger mean difference than the high-ability men on the Computational and Social Service scales, with differences of 3.62 and 4.45, respectively, both at the five per cent level of reliability; and on the Clerical scale with a difference of 7.03 at the one per cent level. The high-ability men have a statistically higher mean difference on the Artistic scale with 6.33 at the one per cent level; the difference on the Literary scale is 2.92 with a t-value of 1.95, which is almost at the five per cent level of reliability.

The interest patterns, as represented on the profiles of the two male ability groups show definite, clear-cut dissimilarity. The Computational, Social Service and Clerical scales forming the cluster of interests for the low-ability men. The Artistic, and Literary interest characterize the high-ability men, with a tendency toward greater interest on the Outdoor scale. Both groups of men tend to rank below the 50th percentile on the Scientific scale, at approximately the 50th percentile on Music, and above average on the Persuasive scale.

TABLE 8

THE COMPARISON OF MEN IN LOW-ABILITY AND HIGH-ABILITY GROUPS ON THE KUDER PREFERENCE RECORD

Scales	Low-Ability Group				High-Ability Group				Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
Outdoor	80	38.93	13.66	1.528	60	41.01	15.51	2.002	2.08	2.518	0.83
Mechanical	80	42.04	12.39	1.386	60	40.36	13.58	1.753	1.68	2.235	.75
Computational	80	29.40	8.96	1.002	60	25.78	10.28	1.327	3.62	1.663	2.18
Scientific	80	37.97	10.78	1.205	60	40.76	13.62	1.749	2.79	2.124	1.31
Persuasive	80	47.08	14.43	1.614	60	44.58	17.03	2.199	2.50	2.727	.92
Artistic	80	19.28	8.02	.897	60	25.61	9.77	1.261	6.33	1.548	4.09
Literary	80	17.71	8.39	.938	60	20.63	8.99	1.161	2.92	1.492	1.96
Musical	80	14.37	7.55	.844	60	14.66	7.79	1.005	.29	1.313	.22
Social Service	80	43.91	10.90	1.177	60	39.46	13.60	1.756	4.45	2.114	2.10
Clerical	80	49.76	14.45	1.486	60	42.73	13.23	1.708	7.03	2.264	3.10



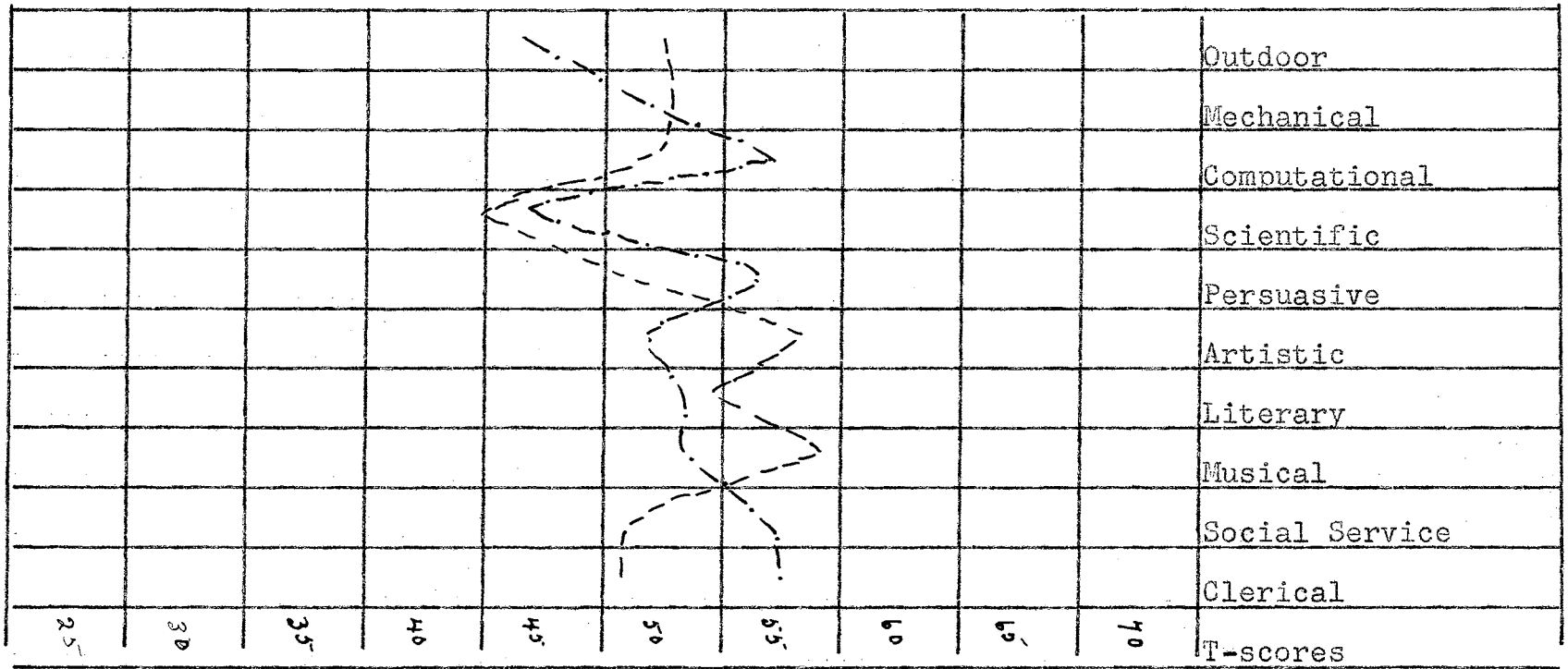
Legend; — — — — High-ability group. — . — . — . Low-ability group.

Graph 5.--Profiles of the mean T-scores on the scales of the Kuder Preference Record for the comparison of men in the low-ability and high-ability groups.

TABLE 9

THE COMPARISON OF WOMEN IN LOW-ABILITY AND HIGH-ABILITY GROUPS ON THE KUDER PREFERENCE RECORD

Scales	Low-Ability Group				High-Ability Group				Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
Outdoor	20	24.05	11.95	2.673	40	33.27	10.19	1.611	9.22	3.115	2.96
Mechanical	20	23.10	11.52	2.575	40	24.50	11.46	1.812	1.40	3.149	.44
Computational	20	27.35	8.91	1.993	40	22.15	10.96	1.733	5.20	2.641	1.96
Scientific	20	24.35	9.78	2.188	40	24.30	10.91	1.724	.05	2.786	.02
Persuasive	20	41.40	9.72	2.175	40	39.45	14.43	2.282	1.95	3.152	.62
Artistic	20	23.40	7.69	1.719	40	34.40	9.36	1.483	11.00	2.268	4.85
Literary	20	20.65	10.06	2.250	40	22.10	9.10	1.439	1.45	2.671	.54
Musical	20	14.00	6.49	1.451	40	18.62	6.67	1.054	4.62	1.794	2.57
Social Service	20	54.85	14.73	3.299	40	46.10	12.96	2.050	8.75	3.884	2.25
Clerical	20	64.30	14.44	3.229	40	53.65	18.09	2.861	10.65	4.315	2.47



Legend: — — — — High-ability group. —·—·—·— Low-ability group.

Graph 6.--Profiles of the mean T-scores on the scales of the Kuder Preference Record for the comparison of women in the low-ability and high-ability groups.

Women with high and low aesthetic ability.--In Table 9 are recorded the data for comparing women with high-ability with those of low-ability. Graph 6 shows the profiles for the female ability groups.

Significant differences in interests for the women indicate that the low-ability group are higher than the high-ability group on the Social Service scale, with a mean difference of 8.75, and on the Clerical scale, with a mean difference of 10.65, both highly reliable at the one per cent level; while for the high-ability women, a difference of 11.00 is evident on the Artistic, and 9.22, on the Outdoor scale, both reliable at the one per cent level.

A comparison of the mean T-score of the interest of the low and high-ability women show definite characteristic patterns for the two groups, although there are some similarities of interest. The personality syndromes for the high-ability women, that differentiates them from the low-ability women, are shown by high peaks on the pattern for the Outdoor, Artistic, and Musical scales with weak interests indicated on the Social Service and Clerical scales. The low-ability groups are characterized by high differentiating interests indicated on the Computational, Persuasive, Social Service, and Clerical scales, with weak interest on the Artistic and Musical ratings.

Computational, Social Service and Clerical interest differentiate men and women of the low-ability group as contrasted with Outdoor and Artistic interest for the high-ability men and women. The data seem to indicate a relationship between

high aesthetic ability and interest on the Outdoor and Artistic scale, and a lack of interest on the Computational, Social Service, and Clerical scales. This is in line with what one would expect.

Comparisons on the Personality Scales

Men with high and low-aesthetic ability.--The data used in making the comparison on the personality scales are recorded in Table 10, and the profiles are on Graph 7.

There are five reliable differences on the personality scales. Thoughtfulness and Personal Relations are both significant at the one per cent level. Thoughtfulness, with a mean difference of 1.98, favors the high-ability men; while Personal Relations, with a mean difference of 4.32, favors the low-ability men. Also favoring the low-ability men are Sociability, with a difference of 1.42, reliable at the five per cent level; Emotional Stability, with a difference of 2.72, and Objectivity, with a difference of 3.18, both reliable at the two per cent level. This indicates a less adequate social, emotional and personal adjustment for the high-ability men. This finding is in keeping with Drep's finding that people with high aesthetic ability have more neurotic tendencies.[9] There is a tendency, although not significant, for the high-ability men to show less General Activity and greater Restraint than the low-ability men. The low-ability men tend to show greater Sociability and Masculinity of interest than do the high-ability men. These

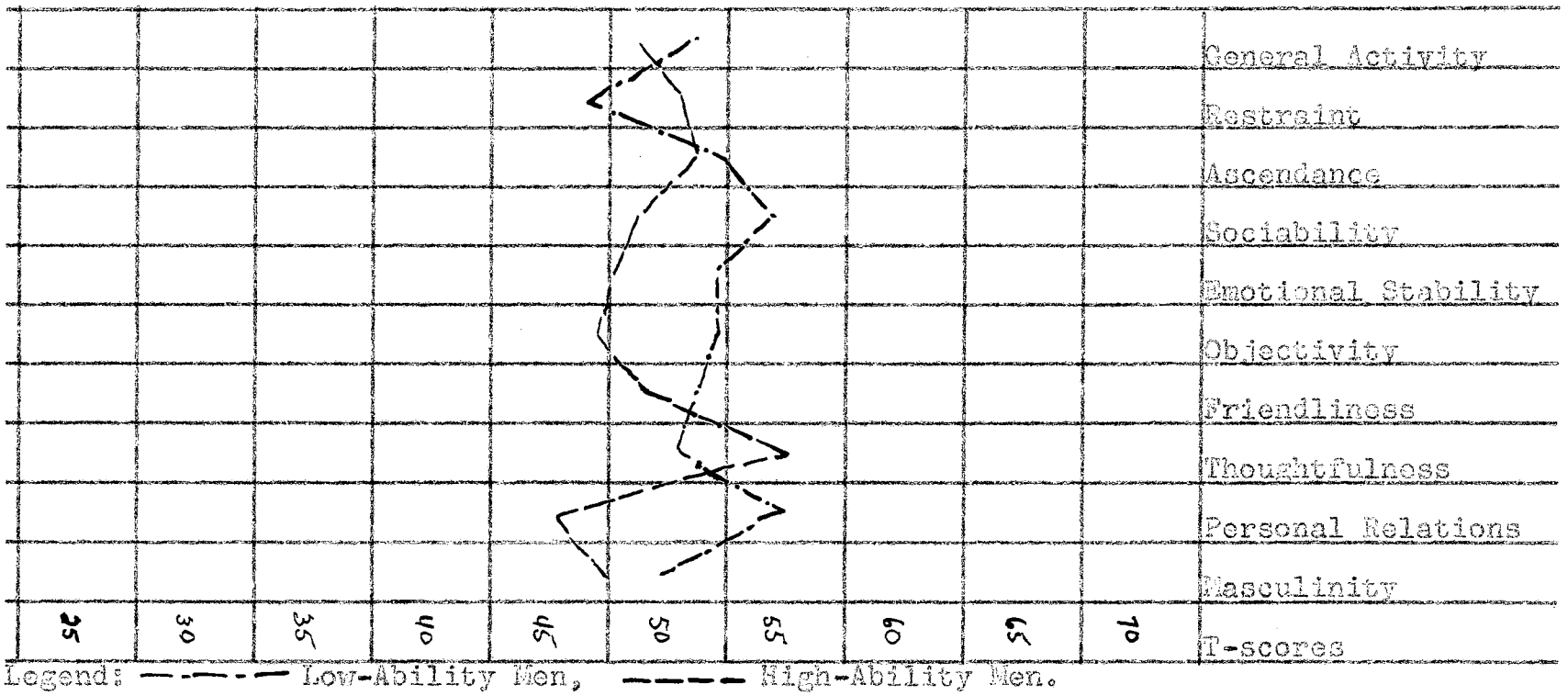
---

[9] Dreps, op. cit., p. 144.

TABLE 10

THE COMPARISON OF MEN IN LOW-ABILITY AND HIGH-ABILITY GROUPS ON THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

Scales	Low-Ability Group				High-Ability Group				Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
General Activity	80	17.47	8.90	0.995	60	16.21	5.78	0.746	1.26	1.243	1.01
Restraint	80	15.02	4.42	.494	60	16.53	5.47	.706	1.51	.861	1.75
Ascendance	80	17.20	9.10	1.002	60	16.78	5.59	.722	.42	1.284	.34
Sociability	80	21.76	10.44	1.167	60	18.59	6.42	.829	3.17	1.416	2.24
Emotional Stability	80	18.26	7.62	.852	60	15.54	5.89	.161	2.72	1.143	2.38
Objectivity	80	19.11	9.99	1.117	60	15.93	5.45	.703	3.18	1.320	2.41
Friendliness	80	14.96	9.70	1.083	60	13.48	5.45	.704	1.48	1.293	1.14
Thoughtfulness	80	18.43	4.39	.492	60	20.41	4.09	.529	1.98	.722	2.74
Personal Relations	80	18.86	15.48	1.291	60	14.54	5.04	.651	4.32	1.446	2.99
Masculinity	80	20.67	4.45	.498	60	19.39	4.10	.530	1.28	.727	1.76

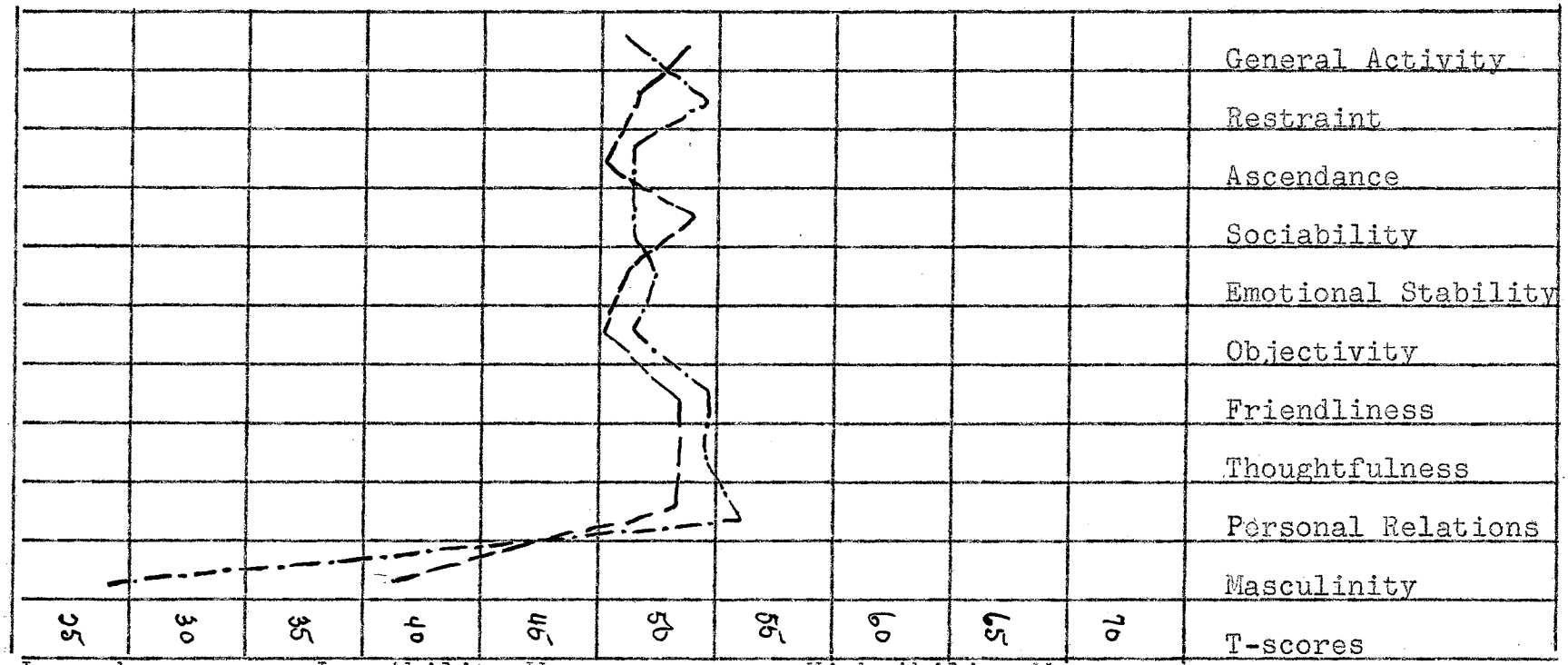


Graph 7.--Profiles of the mean T--scores on the scales of the Guilford-Zimmerman Temperament Survey for the comparison of men in the low-ability and high-ability groups.

TABLE 11

THE COMPARISON OF WOMEN IN LOW-ABILITY AND HIGH-ABILITY GROUPS ON THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

Scales	Low-Ability Group				High-Ability Group				Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
General Activity	20	17.35	5.87	1.313	40	16.05	4.98	0.787	1.30	1.531	0.85
Restraint	20	15.80	4.13	.923	40	17.05	4.07	.633	1.25	1.120	1.12
Ascendance	20	12.70	6.19	1.385	40	13.02	4.68	.739	.32	1.570	.20
Sociability	20	21.35	3.61	.776	40	19.97	5.68	.898	1.38	1.187	1.16
Emotional Stability	20	14.35	6.16	1.377	40	15.05	5.73	.907	.70	1.649	.42
Objectivity	20	15.70	6.11	1.366	40	16.45	5.21	.824	.75	1.595	.47
Friendliness	20	16.25	6.02	1.346	40	16.65	4.88	.772	.40	1.551	.26
Thoughtfulness	20	18.10	4.52	1.010	40	19.35	4.15	.656	1.25	1.205	1.04
Personal Relations	20	17.80	4.29	.960	40	19.00	4.53	.717	1.20	1.198	1.00
Masculinity	20	8.50	4.11	.919	40	11.82	3.67	.581	3.32	1.087	3.05



Legend: —·—·— Low-Ability Women, ———— High-Ability Women.

Graph:8.--Profiles of the mean T-scores on the scales of the Guilford-Zimmerman Temperament Survey for the comparison of women in the low-ability and high-ability groups.

findings would indicate that the low-ability make a better social and emotional adjustment, with greater objectivity and tolerance in association with other people, and a more happy-go-lucky, carefree attitude toward life. While the high-ability men tend to show some inadequacy in social and emotional adjustment, they have more mental poise, enjoy thinking, and are more philosophically inclined. They also show a tendency toward persistent effort and serious-mindedness.

Women with high and low aesthetic ability.--Table 11 contains the data for the comparison of the low and high-ability women on the personality scales; Graph 8 shows the profiles for this group.

A comparison of the low and high-ability women on the personality scales shows that the high-ability women rate significantly higher on the Masculinity scale with a mean difference of 3.32, reliable at the one per cent level. There are no other statistically significant differences between the high and low-ability women, but there are strong tendencies indicated for the high-ability group to show greater Restraint, more Thoughtfulness, and slightly better Personal Relations than the low-ability women, who, on the other hand, tend toward greater Sociability.

It would appear, that in our culture, at least, as represented on the college level, men with a high degree of aesthetic sensitivity are less well adjusted than those who possess little aesthetic ability, in contrast, women who have had little aesthetic sensitivity are less well adjusted. Is cultural expectancy an aspect of the interrelation between abilities and

interests and personality patterns? The significantly greater artistic interest of low-ability women over men may be of this origin.

Blum using the Strong Interest Blank and the MMPI found little in common between scores on interest inventories and those of personality.[10] The findings on this study indicate that there are trends indicative of some relationship. Larger and more equally proportioned sex groups should be used to study this interrelationship further.

Aesthetic Ability--Artistic Interest Agreement as Related to Personality Traits

Comparison of Aesthetic Ability--Artistic Interest Agreement for the Low-Ability Group

In order to compare personality traits for each sex on the bases of aesthetic ability--artistic interest agreement, each of the major ability groups are separated as to sex and then each sex group divided into two groups according to their standing on the Kuder Artistic scale; thus forming high and low-aesthetic ability, and high and low-artistic interest groups for each sex. Comparison of Low Aesthetic Ability Men.--In studying the data of the low-ability male group for traits that differentiate men who show low-Artistic interest from those who appear to possess high artistic interest, only one personality scale is significantly different. Men whose interest level in Artistic activities is high in relation to their aesthetic ability are

---

[10] Blum, op. cit., p. 65.

apparently more happy-go-lucky, carefree, impulsive individuals, than those people showing little interest and having low-ability. On this scale there is a difference of 3.99, reliable at the one per cent level. They tend also to have greater Sociability. So far as the author has been able to discover, no study on this phase of the interest-personality pattern approach is related to abilities or occupations has been made.

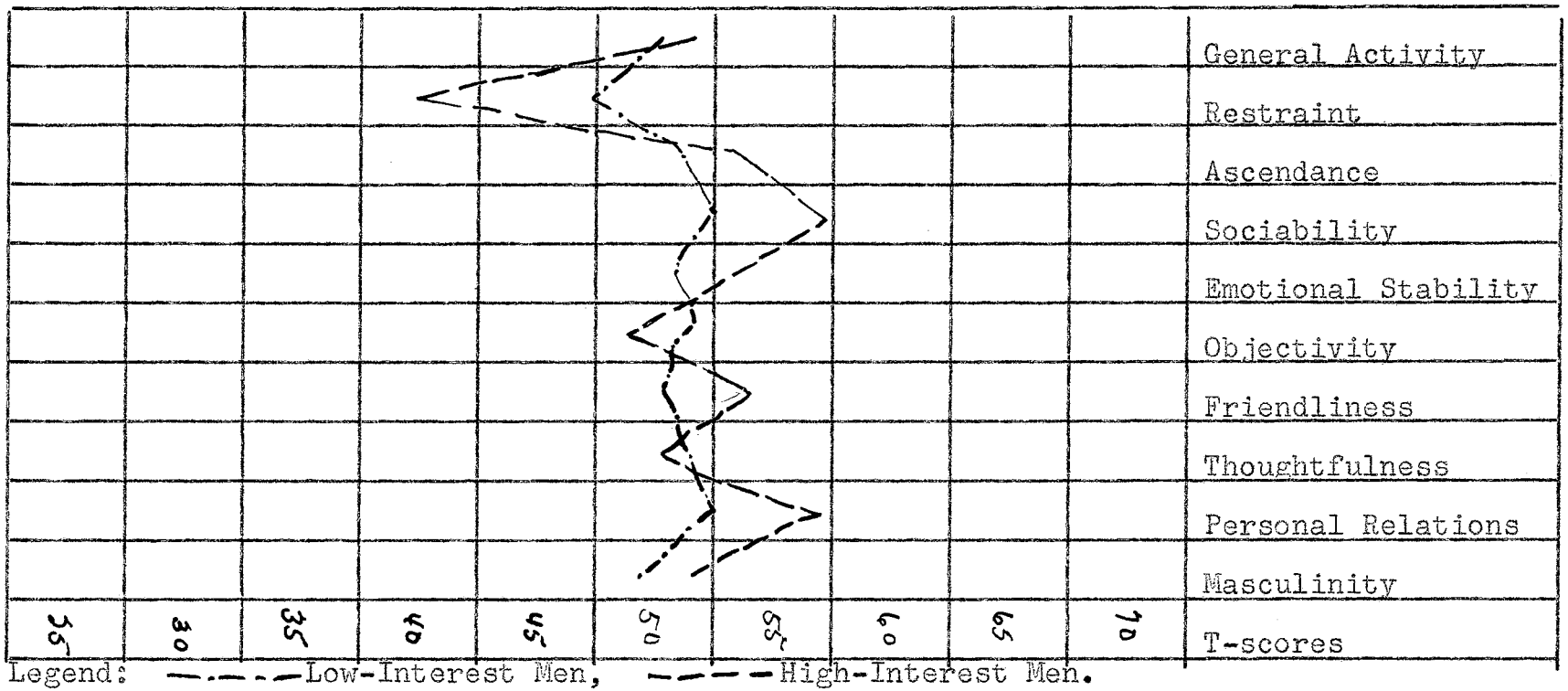
The personality pattern for the low-ability-high-interest men show they tend to have somewhat more social interest, toleration, and respect for others, and faith in existing institutions than the low-ability-low-artistic interest men. There is also a slight tendency, indicated by the personality profile, toward a better emotional adjustment than average. This finding may be indicative of the effect of cultural expectancy on the relationship between personality and interests when studied with respect to some special ability. The low-ability-low-interest male group have a rather flat profile, all scales tending to fall fairly close to the 50th percentile. This would seem to indicate that this group tends to be like the average individual in our society, while the low-ability-high-interest group is more optimistic, and shows less self-control, serious-mindedness, and reflective thinking. Such traits may be factors causing interest to be out of proportion to their ability. Table 12 contains the data for this group and Graph 9, the profiles.

Comparison of Low Aesthetic Ability Women.--A comparison of the female low-ability-low-interest and the low-ability-high-interest

TABLE 12

THE COMPARISON OF AESTHETIC ABILITY-ARTISTIC INTEREST AGREEMENT FOR THE LOW-ABILITY MALE GROUP ON THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

Scales	Low-Interest Group				High-Interest Group				Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
General Activity	40	16.80	5.78	0.913	40	18.15	11.23	1.776	1.35	1.990	0.68
Restraint	40	15.38	1.22	.193	40	12.17	4.93	.780	3.21	.804	3.99
Ascendance	40	16.55	5.38	.850	40	17.85	11.75	1.858	1.30	2.043	0.64
Sociability	40	20.43	5.58	.883	40	23.10	14.58	2.305	2.67	2.468	1.08
Emotional Stability	40	17.43	5.82	.841	40	19.10	9.38	1.483	1.67	1.703	.98
Objectivity	40	18.75	4.701	.742	40	19.47	13.40	2.120	.72	3.163	.23
Friendliness	40	13.90	4.70	.743	40	16.02	12.89	2.038	2.12	2.169	.98
Thoughtfulness	40	18.60	4.39	.693	40	18.27	4.46	.705	.33	.989	.33
Personal Relations	40	17.65	4.32	.682	40	20.07	15.76	2.492	2.42	2.623	.92
Masculinity	40	20.38	3.47	.549	40	20.97	5.29	.837	.59	1.000	.59

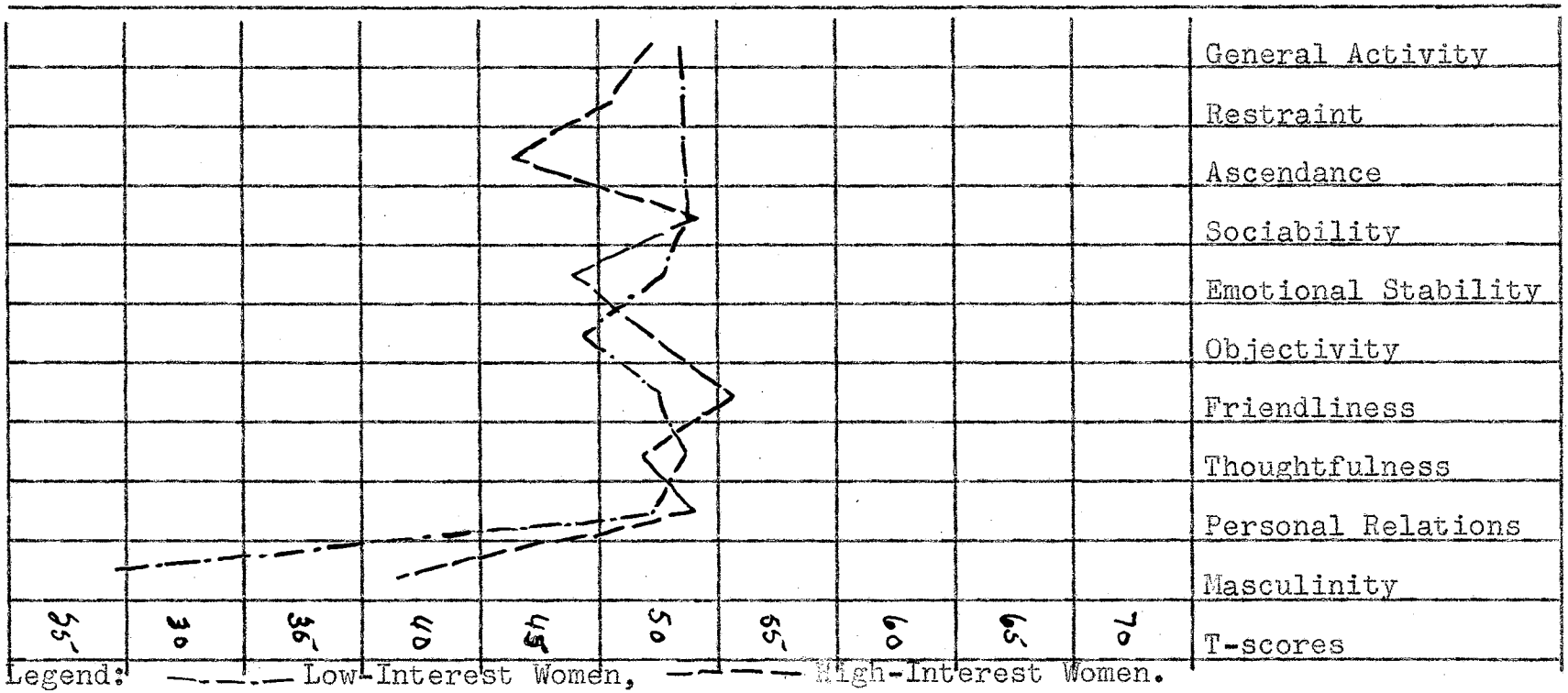


Graph 9.--Profiles of the mean T-scores on the scales of the Guilford-Zimmerman Temperament Survey for the comparison of artistic ability-artistic interest agreement for the low-ability men.

TABLE 13

THE COMPARISON OF AESTHETIC ABILITY-ARTISTIC INTEREST AGREEMENT FOR THE LOW-ABILITY FEMALE GROUP ON THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

Scales									Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
General Activity	10	17.80	6.80	2.150	10	16.90	5.11	1.616	0.90	2.690	0.33
Restraint	10	16.90	3.54	1.121	10	14.70	4.55	1.438	2.20	1.823	1.21
Ascendance	10	14.90	7.89	2.496	10	10.50	2.81	.888	4.40	2.650	1.66
Sociability	10	21.30	4.37	1.382	10	21.40	2.49	.789	.10	1.592	.06
Emotional Stability	10	15.50	7.08	2.239	10	13.20	5.21	1.647	2.30	2.779	.83
Objectivity	10	15.30	5.96	1.886	10	16.10	6.54	2.068	.80	2.799	.28
Friendliness	10	15.60	7.21	2.280	10	16.90	4.84	1.531	1.30	2.747	.47
Thoughtfulness	10	18.00	5.11	1.616	10	17.60	4.05	1.282	1.00	2.063	.48
Personal Relations	10	17.50	5.00	1.586	10	18.10	3.70	1.169	.60	1.966	.30
Masculinity	10	8.40	3.48	1.101	10	8.60	4.86	1.538	.20	1.892	.10



Graph 10.--Profiles of the mean T-scores on the scales of the Guilford-Zimmerman Temperament Survey for the comparison of aesthetic ability-artistic interest agreement for the low-ability women.

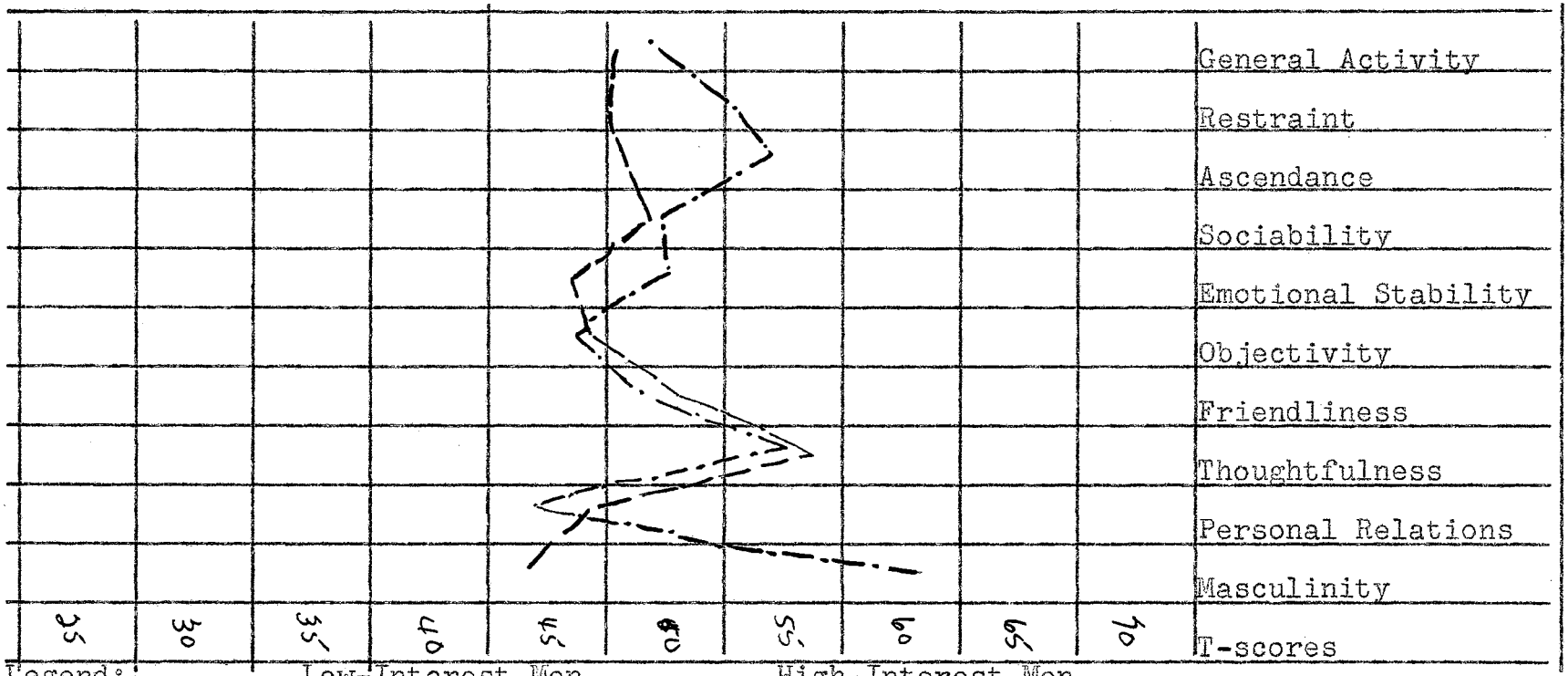
groups show no statistically significant differences. But there is a trend for the low-ability-low-interest group to rate slightly higher on Restraint, Ascendance, and on the profile, to show a lightly better emotional adjustment. Here we find a reverse tendency in regard to men and women in a particular sub-division. Cultural expectancy may be causing interest to develop out of proportion to ability, and thereby causing emotional conflict since our society seems to expect women to be more artistic. The data for this sub-group is given in Table 13 and Graph 10.

Comparison of High Aesthetic Ability Men.--On the upper ability level statistically significant differences for the men are evident on two personality scales--Ascendance and Masculinity. On Ascendance there is a difference of 3.56, reliable at the five per cent level; on Masculinity the difference is 5.43, reliable at the one per cent level. The high-ability-low-interest male group rates higher than the high-ability-high-interest group on these two scales, indicating a greater tendency toward habits of leadership, self-defense, and conspicuousness as well as greater Masculinity of interests and emotions. Moreover, on the personality patterns there is indicated a tendency toward greater Emotional Stability for the low interest group, although this is not statistically reliable. The high-ability-high-interest men tend more toward submissiveness and withdrawal and to have less than average Emotional Stability. The high-ability-high-interest group are less masculine in their interests than those who have high-ability-low-interest. This again, is probably

TABLE 14

THE COMPARISON OF AESTHETIC ABILITY-ARTISTIC INTEREST AGREEMENT FOR THE HIGH-ABILITY MALE GROUP ON THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

Scales	Low-Interest Group				High-Interest Group				Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
General Activity	30	16.80	6.38	1.164	30	15.63	5.15	0.940	1.17	1.490	0.78
Restraint	30	17.53	5.67	1.035	30	15.53	5.16	.942	2.00	1.400	1.43
Ascendance	30	18.56	4.65	.850	30	15.00	5.94	1.085	3.56	1.380	2.85
Sociability	30	18.73	5.86	1.070	30	18.46	7.03	1.284	.27	1.350	.20
Emotional Stability	30	16.73	6.56	1.198	30	14.36	4.97	.908	2.37	1.500	1.58
Objectivity	30	15.86	5.99	1.094	30	16.00	4.94	.902	.14	1.418	.10
Friendliness	30	13.13	5.45	.995	30	13.83	5.52	1.009	.70	1.414	.49
Thoughtfulness	30	20.43	4.19	.766	30	20.40	3.99	.729	.03	1.059	.03
Personal Relations	30	14.03	5.47	.998	30	15.06	4.61	.841	1.03	1.306	.79
Masculinity	30	24.06	3.50	.640	30	18.33	4.43	.809	5.73	1.031	5.56



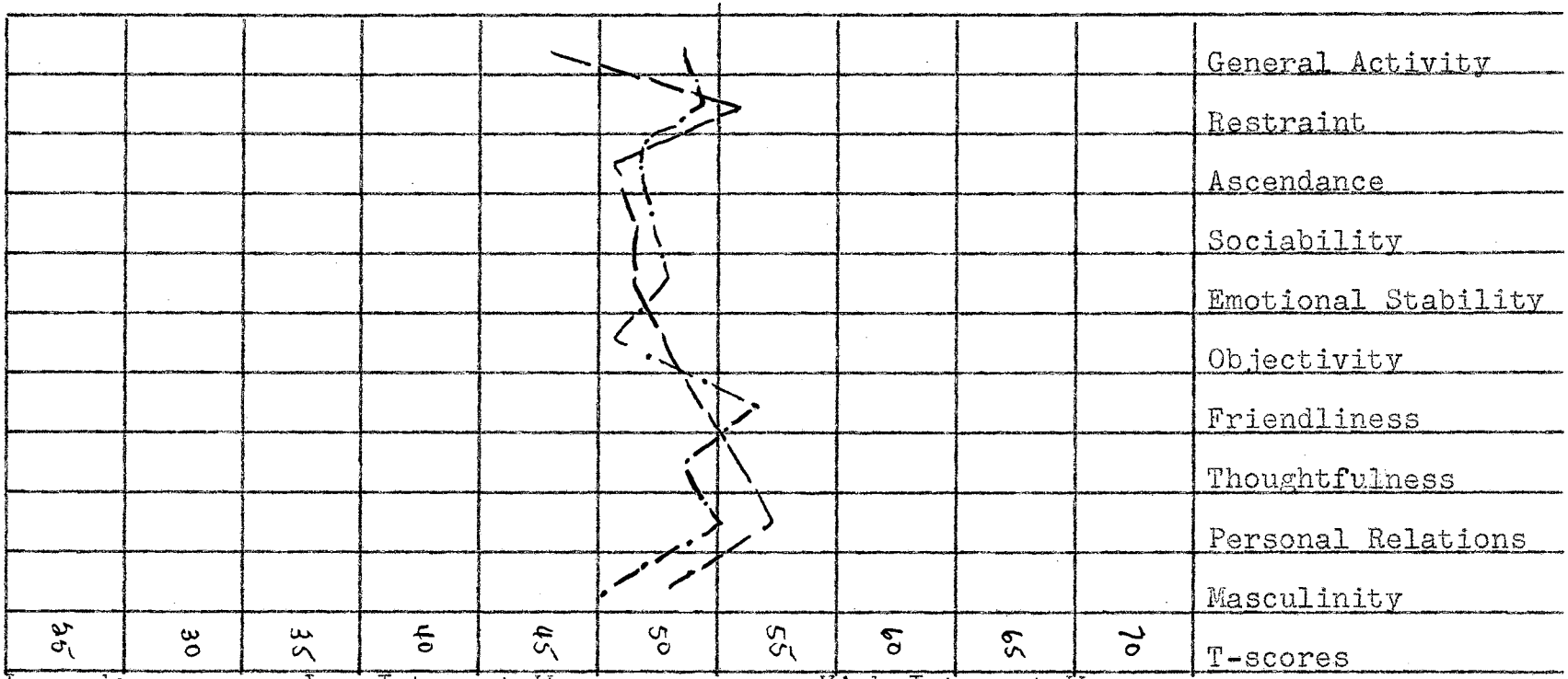
Legend: —·—·— Low-Interest Men, ———— High-Interest Men.

Graph 11.--Profiles of the mean T-scores on the scales of the Guilford-Zimmerman Temperament Survey for the comparison of aesthetic ability-artistic interest agreement for the high-ability men.

TABLE 15

THE COMPARISON OF AESTHETIC ABILITY-ARTISTIC INTEREST AGREEMENT FOR THE HIGH-ABILITY FEMALE GROUP ON THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

Scales	Low-Interest Group				High-Interest Group				Significance of Differences		
	No.	Mean	S.D.	S.E.	No.	Mean	S.D.	S.E.	Diff. of Means	S.E. of Diff.	t-Value
General Activity	20	17.30	5.77	1.291	20	14.80	3.78	0.846	2.50	1.540	1.62
Restraint	20	17.15	4.15	.928	20	17.95	3.97	.887	.20	1.283	.16
Ascendance	20	13.10	4.80	1.074	20	12.95	4.67	1.045	.15	1.499	.10
Sociability	20	20.20	6.03	1.348	20	19.75	5.47	1.223	.45	1.817	.25
Emotional Stability	20	15.75	5.59	1.250	20	14.35	5.93	1.327	1.40	1.823	.77
Objectivity	20	15.90	5.35	1.198	20	17.00	5.15	1.152	1.10	1.661	.66
Friendliness	20	17.05	4.86	1.087	20	19.25	4.99	1.117	.80	1.558	.51
Thoughtfulness	20	18.90	3.87	.865	20	19.80	4.48	1.002	.90	1.324	.68
Personal Relations	20	18.55	4.06	.907	20	19.45	5.03	1.125	.90	1.445	.62
Masculinity	20	12.45	8.50	.928	20	11.20	3.11	.696	1.25	1.160	1.08



Graph 12.--Profiles of the mean T-scores on the scales of the Guilford-Zimmerman Temperament Survey for the comparison of aesthetic ability-artistic interest agreement for the high-ability women.

caused by a cultural factor. The data for this comparison is included in Table 14 and Graph 1.

High-Ability Women.--The comparison of the women in the high-ability group, as in the low-ability group, shows no statistically significant scores. There is a tendency for the high-ability-low-interest division to show more General Activity and greater Masculinity than the group with high-ability-interest agreement. The personality profiles show a slight tendency on the part of the high-ability-interest agreement women to show more Restraint and better Personal Relations and a slight tendency toward less adequate emotional and personal adjustment. Since the two groups rate so closely together, and are both in the normal range one could hardly call either maladjusted. Table 15 and Graph 12 record the data for the comparison of these women.

The findings on the ability-interest agreement in aesthetic ability in this study tend to confirm those of Wesley, Corey, and Stewart on the nosological scales of the MMPI.[11] They found "a tendency to less adequate personal adjustment" for men with high-ability-high-interest agreement. If this personal adjustment includes emotional adjustment, which the nature of the MMPI would seem to indicate, the high-ability-high-interest agreement for women in this study tends slightly in that direction. On the Guilford-Zimmerman survey high-ability-high-interest women show Personal Relations higher than for the average norms. This would indicate that while emotional and social adjustment is

---

[11] Wesley, Corey, and Stewart, op. cit., p. 196.

slightly less adequate, this group of women are more tolerant of others and less critical of the existing institutions in our society.

We may conclude that there are tendencies for patterns to characterize the men and women in each of the four ability-interest divisions. However, these groups are all small, especially those for women. More studies with larger groups need to be made before the meaning of these tendencies are clear or could be used as a counseling technique.

CHAPTER V

GENERAL SUMMARY

The interest-personality pattern approach has been employed in recent years as a technique in searching for a better understanding of individual differences as related to various vocations and abilities. There is a great need to have a better understanding of the interrelationships of interests, personality traits, and abilities, not only for the practical purposes of selection and guidance, but also for adding to our scientific understanding of human differences.

This study deals with the factors of intelligence, sex, interests, and personality traits as related to aesthetic ability of college students in beginning psychology courses. The data for this study were secured by the use of the following instruments: The Meier Art Judgment Test, the Henmon-Nelson Tests of Mental Ability, The Kuder Preference Record, and the Guilford-Zimmerman Temperament Survey.

Summary of Results

Group Differences in aesthetic ability and in intelligence.

1. The high-ability group tends to be slightly superior to the art students in aesthetic ability, however the difference is statistically inconclusive.

2. No significant differences are evident in the mental

ability of the high-ability group and the art students, both groups ranking at approximately the 70th percentile on college norms.

3. Differences in mental ability are large and very significant for the comparison of the low-ability group with either the high-ability group or the art students. The low-ability group ranks at the 35th percentile. The great difference may be due to the fact that we are contrasting the upper 50 per cent on the art judgment test with the lower four per cent.

4. There are no significant sex differences in mental ability indicated by the data.

Sex Differences in Interest and Personality Patterns as Related to Aesthetic Ability

Sex differences in interest patterns.--

1. A profile analysis of the interests scales differentiating the sexes in the low-ability group show varied interests, with women excelling men on the Computational, Persuasive, and Social Service scales, and men showing greater interest on the Outdoor, Scientific and Musical scales.

2. The patterns for the high-ability men and women are very similar, both in shape and position, except for Scientific interest, in which men are superior to women.

Sex differences in personality patterns.--

1. A personality pattern, including the traits of Masculinity, Ascendance, Emotional Stability, Objectivity, Sociability and Personal Relations, in favor of the men, differentiates between the sexes in the low-ability group.

2. In the high-ability group distinctive personality patterns are found for both men and women.

3. Men in the high-ability group tend to show more energy, vitality and enthusiasm; greater habits of self defense and leadership; and somewhat more mental poise, reflectiveness and philosophical attitude, than women do.

4. The personality pattern for high-ability women indicate a slightly better social and personal adjustment, and a tendency to be more conscientious and to show more persistent effort than men in the same group.

Differences in Interests and Personality Patterns for Low-Ability and High-Ability Groups

Interest Patterns for men.--

1. The interest pattern for low-ability men shows strong Computational, Social Service and Clerical interest.

2. The high aesthetic ability male group has a cluster of interests indicating stronger liking for activities on the Outdoor, Artistic, and Literary scales than the low-ability group.

Interest Patterns for women.--

1. The interest patterns for low and high-ability women are very distinctive. High-ability women have a pattern indicating a high interest on the Outdoor, Artistic, and Musical scales and a weak interest on the Computational, Persuasive, Social Service, and Clerical scales. The reverse pattern characterizes the low-ability women.

2. High-ability women show strong differentiating interests on the Outdoor and Artistic scales, with interest in either literature or music.

Personality Patterns for men.--

1. Men with high aesthetic ability appear to make a somewhat less adequate personal adjustment than men with low aesthetic ability. They also show a less tolerant and objective attitude in their association with others. On the other hand, high-ability men appear to have greater mental poise and to exhibit more persistent effort than the low-ability men.

2. The syndrome of traits characteristic of men with high aesthetic ability are greater Restraint and Thoughtfulness with weaker Sociability, Emotional Stability, and Personal Relations than the low-ability men.

Personality Patterns for women.--

1. Women with high aesthetic ability tend to show greater Restraint, more Thoughtfulness, and a little better Personal Relation than low-ability women.

2. Low-ability women tend to show greater Sociability.

3. The personality patterns, of the high and low-ability groups for women, are quite similar in shape as contrasted with the very differently shaped personality pattern for men. The patterns for both the women groups lie close to the 50th percentile.

Aesthetic Ability--Artistic Interest Agreement As Related to Personality Traits

1. There are patterns characterizing the men and women in each of the ability-interest-agreement divisions.

2. When low aesthetic ability is accompanied by high artistic interest men tend to be less restrained and more impulsive than men who have low artistic interest and low ability.

3. Low-ability-high-interest women tend to show slightly less adequate emotional adjustment than the low-ability-low-interest group. There have been no other studies made on this phase of the ability-interest relationship.

4. Men with high-ability accompanied by high-interest show less Ascendance, Masculinity, and slightly less Emotional Stability than the high-ability-low-interest men.

5. High-ability-high-interest women tend to have better Personal Relations and to show more Emotional Stability than high-ability-low-interest group.

These findings tend to confirm those found by Wesley Corey and Stewart on the nosological scales of the MMPI. When studying people in a particular field, Lewis found that those who had little interest in their work showed more abnormal tendencies.

GENERAL CONCLUSIONS

1. Some relationship appears to exist between aesthetic judgment and the personality traits of Thoughtfulness and Restraint since both men and women with high aesthetic ability tend to excel the low-ability group on these scales.

2. The data seem to indicate a relationship between high aesthetic ability and above average interest on the Outdoor and Artistic scale, also between high aesthetic ability and a lack of interest in the Computational, Scientific, Social Service, and Clerical interest scales.

3. There is a greater similarity of interests for the high-ability men and women than for the low-ability men and women.

4. The only outstanding sex difference in interests of the high-ability group, as revealed by the profile, is the superiority of the men on the Scientific scale.

5. Intelligence appears to be a factor in high aesthetic ability.

6. There are definite patterns of interests and personality traits that differentiate between men and women with high aesthetic ability and those with low aesthetic ability, thereby indicating some relationship between interests and personality traits when studied in connection with a specific ability. Blum found no such relationship in his study.

7. There are definite patterns of interest and personality traits that differentiate the members of either sex with high aesthetic ability from those with low aesthetic ability.

8. Temperament appears to be related to aesthetic ability. Both men and women of high aesthetic ability tend to show more submissiveness and less adequate emotional adjustment than the low-ability group.

9. In aesthetic-ability-artistic-interest agreement there appears to be a cultural expectancy factor present. Women with high-interest tend to show emotional instability when aesthetic ability is low. Men with high-ability show poor emotional and social adjustment when ability is accompanied by high-interest.

10. For guidance purposes, separate interest and personality profile patterns for men and women should be used. Such patterns might be of some value as one tool to be used in educational and vocational guidance.

SUGGESTIONS FOR FUTURE STUDY

Further research, using larger high and low aesthetic ability groups, should be made to verify the findings in this study before the personality and interest patterns found herein are used as a technique in educational and vocational guidance. A study should be made for each sex, comparing individual profiles of art students and students with high aesthetic ability with the mean T-score profiles of the men and women in these two groups.

A study on the art training level, comparing senior male art majors with senior students in architecture might be of value from the standpoint of guidance. A further comparison could then be made with the high-ability group.

The findings on the ability-interest agreement sub-group should be verified by using larger groups, especially the groups for the women. A study of ability-interest agreement in understanding some emotional problems of college students.

BIBLIOGRAPHY

1. Anastasi, Anne. Differential Psychology. New York: The Macmillan Co., 1937. Pp. 614.

2. Anastasi, Anne. "Intelligence," The Nineteen Forty Mental Measurements Yearbook. Highland Park, New York: The Macmillan Co., 1941. p. 674.

3. Baas, Malcolm L. "Kuder Interest Patterns of Psychologists," Journal of Applied Psychology, Vol. XXXIV (April, 1950), pp. 115-117.

4. Barrett, D. M. "Aptitude and Interest Patterns of Art Majors in a Liberal Arts College," Journal of Applied Psychology, Vol. XXIX (December, 1945), pp. 483-492.

5. Bartlett, E. M. Types of Aesthetic Judgment. London: George Allen and Unwin, Ltd., 1937. Pp. 241.

6. Berdie, Ralph F. "Scores on the Strong Vocational Interest Blank and the Kuder Preference Record in Relation to Self Rating," Journal of Applied Psychology, Vol. XXXIV (February, 1950), pp. 42-49.

7. Blum, Lawrence Philip. "A Comparative Study of Students Preparing for Five Selected Professions Including Teaching," Journal of Experimental Education, Vol. XVI (September, 1947), pp. 31-65.

8. Brayfield, Arthur H. "Interests," The Third Mental Measurements Yearbook. Edited by Oscar K. Buros. New Brunswick, New York: Rutgers University Press, 1949. pp. 662-663.

9. Brighthouse, Gilbert. "A Study of Aesthetic Appreciation," Studies in the Psychology of Art, Vol. III. Edited by Norman C. Meier. University of Iowa Studies, No. 23. Psychological Monographs, Vol. LI, Columbus, Ohio: The American Psychological Association. 1939. pp. 1-22.

10. Cahalan, Ellen Johnson. "The Consistency of Aesthetic Judgment," Studies in the Psychology of Art, Vol. III. University of Iowa Studies in Psychology, No. 23, Psychological Monographs, Vol. LI, Columbus, Ohio: The American Psychological Association, Inc., 1939, pp. 75-87.

11. Cattell, Raymond B. "Personality Traits Associated with Abilities, I. With Intelligence and Drawing Abilities," Educational and Psychological Measurements, Vol. V (Summer, 1945), pp. 131-145.

12. Cattell, Raymond B. "Personality Traits Associated with Abilities, II. With Verbal and Mathematical Abilities," Journal of Educational Psychology, Vol. XXXVI (November, 1945), pp. 475-486.

13. Daniels, Parmely Clark. "Discrimination of Compositional Balance at the Pre-School Level," Studies in the Psychology of Art, Vol. I. University of Iowa Studies in Psychology, No. 18., Psychological Monographs, Vol. LXV. Princeton, New Jersey: Psychological Review Co., 1933-1934. pp. 1-12.

14. Darley, John G. Clinical Aspects and Interpretations of the Strong Vocational Interest Blank. New York: New York Psychological Corporation, 1941. Pp. 35.

15. Dodge, Arthur Farwell. Occupational Ability Patterns. New York Teachers College, Columbia University Contribution to Education, No. 658, 1935. Pp. 97.

16. Dreps, Hildegarde Fried. "The Psych-physical Capacities and Abilities of College Art Students of High and Low Standing.", Studies in the Psychology of Art, Vol. I, University of Iowa Studies in Psychology, No. 18, Psychological Monographs, Vol. LXV. Princeton, New Jersey: Psychological Review Co., 1933-1934. pp. 134-145.

17. Dvoark, Beatrice Joanne. Differential Occupational Ability Patterns. Minneapolis: University of Minnesota Press, 1935. pp. 46.

18. Elwood, R. H. "The Role of Personality Traits in Selecting a Career, the Nurse and College Girl," Journal of Applied Psychology, Vol. XI (April, 1927), pp. 199-201.

19. Garrett, Henry E. Statistics in Psychology and Education. New York: Longmans, Green and Company, 1947. pp. 487.

20. Gilbert, Claudia. "The Guilford-Zimmerman Temperament Survey and Certain Related Personality Tests," Journal of Applied Psychology, XXXIV (December, 1950), pp. 394-396.

21. Guilford, J. P. and Zimmerman, Wayne S. The Guilford-Zimmerman Temperament Survey, Manual of Instructions and Interpretations. Beverly Hills, California: Sheridan Supply Co., 1949. Pp. 12.

22. Grippen, Velma Bookhart. "A Study of Creative Artistic Imagination in Children by the Constant Contact Procedure," Studies in the Psychology of Art, Vol. I. Edited by Norman C. Meier. University of Iowa Studies in Psychology. No. 18, Psychological Monographs, LXV. 1933-1934. Princeton, New Jersey: Psychological Review Co. pp. 63-81.

23. Hathaway, Starke Rand and McKenley, J. Charnley. Manual for the Minnesota Multiphasic Personality Inventory. New York: The Psychological Corporation, 1943. Pp. 16.

24. Henmon, V. A. G. and Nelson, M. J. Teacher's Manual for Henmon-Nelson Tests of Mental Ability. Chicago: Houghton Mifflin Co. 1932. p. 2.

25. Jasper, Constance C. "The Sensitivity of Children of Pre-School Age to Rhythm in Graphic Form," Studies in the Psychology of Art, Vol. I. Edited by Norman C. Meier, University of Iowa Studies in Psychology, No. 18, Psychological Monographs, Vol. LXV. Princeton, New Jersey: Psychological Review Co., 1933-1934. pp. 12-25.

26. Kuder, G. Frederic. Examiner Manual for the Kuder Preference Record, Form C. Chicago: Science Research Associates, 1949. Pp. 24.

27. Lewis, John A. "Kuder Preference Record and MMPI Scores for Two Occupational Groups," Journal of Consulting Psychology, Vol. XI (July-August, 1947), pp. 194-201.

28. Lough, Orpha Maude. "Correction for Women Students in Liberal Arts, Nursing, and Teacher Training Curricula, and the MMPI," Journal of Applied Psychology, Vol. XXXV (June, 1951), p. 125.

29. Lough, Orpha Maude. "Teachers College Students and the MMPI," Journal of Applied Psychology, Vol. XXX (June, 1946), pp. 241-247.

30. Lough, Orpha Maude. "Women Students in Liberal Arts, Nursing, and Teacher Training Curricula, and the MMPI," Journal of Applied Psychology, Vol. XXXI (August, 1947), pp. 437-445.

31. McCloy, William, "Creative Imagination in Children and Adults," Studies in the Psychology of Art, Vol. III. Edited by Norman C. Meier, University of Iowa Studies in Psychology, No. 23, Psychological Monographs, Vol. LI. Columbus, Ohio: The American Psychological Association, Inc., 1939. pp. 88-102.

32. McCloy, William, "Passive Creative Imagination," Studies in the Psychology of Art, Vol. III. Edited by Norman C. Meier, University of Iowa Studies in Psychology, No. 23, Psychological Monographs, Vol. LI. Columbus, Ohio: The American Psychological Association Inc., 1939. pp. 103-107.

33. Meier, Norman C. and McCloy, William. "An Instrument for the Study of Creative Artistic Intelligence," Studies in the Psychology of Art, Vol. II. University of Iowa Studies in Psychology, No. 19, Psychological Monographs, Vol. LXIVIII. Princeton, New Jersey: Psychological Review Co., 1936-1937. pp. 164-172.

34. Meier, Norman C. Art in Human Affairs. New York: McGraw-Hill Book Company, Inc., 1942. pp. 222.

35. Meier, Norman C. "Art Ability without Instructions or Environment Background: Case Study of Loran Lockhart." Studies in the Psychology of Art, Vol. II, University of Iowa Studies in Psychology, No. 19, Psychological Monographs, Vol. LXVIII. Princeton, New Jersey: Psychological Review Co., 1936-1937. pp. 155-163.

36. Meier. "Diagnosis in Art" National Society for the Study of Education Yearbook, XXXIV, Educational Diagnois. Bloomington, Illinois: Public School Publishing Company, 1935. pp. 463-476.

37. Meier, Norman C. Examiner's Manual, I. Art Judgment, Iowa City: State University of Iowa, 1942. pp. 24.

38. Meier, Norman C. "Factors in Artistic Aptitude: Final Summary of a Ten-Year Study of a Special Ability," Studies in the Psychology of Art, Vol. III, University of Iowa Studies in Psychology. No. 23, Psychological Monographs, Vol. LI, Columbus, Ohio. The American Psychological Association, Inc., 1933. pp. 141-156.

39. Meier, Norman C. "Reconstructive Imagination," Studies in the Psychology of Art, Vol. III, University of Iowa, Studies in Psychology, No. 23. Psychological Monographs, Vol. LI. Columbus, Ohio: The American Psychological Association, Inc., 1939. pp. 117-126.

40. Michaelis, J. U. and Tyler, F. J. "MMPI and Student Teaching," Journal of Applied Psychology, Vol. XXX (April, 1951), pp. 122-124.

41. Monroe, Walter S. (ed.). "Art Education," Encyclopedia of Educational Research. (revised). New York: The Macmillan Co., 1949. pp. 64-67.

42. Plato. "The Socratic Utopia," The Republic. The Dialogues of Plato Vol. I. trans. Benjamin Jowett. New York: Random House, 1937. Pp. 891.

43. Frothra, E. Terry and Perry, Harold T. "Group Differences in Performance on the Meier Art Test," Journal of Applied Psychology, XXXIV (April, 1950), pp. 96-97.

44. Saunders, Aulus W. "The Stability of Artistic Aptitude at the Child Level," Studies in the Psychology of Art, Vol. I, University of Iowa Studies in Psychology, No. 19, Psychological Monographs, Vol. XLVIII. Princeton, New Jersey: Psychological Review Co. 1936-1937. pp. 126-154.

45. Shaffer, Robert H. "Kuder Interest Patterns of University Business School Seniors," Journal of Applied Psychology. Vol. XXXIII (October, 1949), pp. 489-493.

46. Speer, George S. "The Kuder Interest Test Patterns of Fire Protection Engineers," Journal of Applied Psychology, Vol. XXXII (October,1948), pp. 521-526.

47. Super, Donald E. "Interests," The Third Mental Measurements Yearbook. Edited by Oscar K. Buros. New Brunswick, New Jersey: Rutgers University Press, 1949. pp. 661-663.

48. Trebout, Carolyn and Meier, Norman C. "Artistic Ability and General Intelligence," Studies in the Psychology of Art, Vol. II. Edited by Norman C. Meier, University of Iowa Studies in Psychology, No. 19, Psychological Monographs, LXVIII. Princeton, New Jersey: Psychological Review Co., 1936-1937. pp. 95-125.

49. Trebout, Carolyn, "The Psychophysical Functions Differentiating Artistically Superior From Artistically Inferior Children," Studies in the Psychology of Art, Vol. I. Edited by Norman C. Meier. University of Iowa Studies in Psychology, No. 18, Psychological Monographs, Vol. LXV. Princeton, New Jersey: Psychological Review Co., 1933-1934. pp. 51-62.

50. Tyler, Leona E. The Psychology Human Differences. New York: D. Appleton-Century Company, Inc., 1947. Pp. 420.

51. Verniaud, Willie Maude. "Occupational Differences in the MMPI," Journal of Applied Psychology, Vol. XXX (December, 1946), pp. 604-613.

52. Walton, William E. "The Sensitivity of Children and Adults in Color Harmony," Studies in the Psychology of Art, Vol. I. Edited by Norman C. Meier. University of Iowa Studies in Psychology, No. 18, Psychological Monographs, Vol. XLV. Princeton, New Jersey: Psychological Review Co., 1933-1934. pp. 51-62.

53. Wesley, S. M., Corey, Douglas Z., and Stewart, Barbara M. "The Intra-Individual Relationship between Interest and Personality," Journal of Applied Psychology, Vol. XXXIV (June, 1950), pp. 194-196.

54. Whorley, Katherine Snow. "An Experimental Investigation of the Sensitivity of Children to Compositional Unity," Studies in the Psychology of Art, Vol. I, University of Iowa Studies in Psychology, No. 18, Psychological Monographs, Vol. LXV, 1933-1934. pp. 26-45.

55. Ziegfeld, Edwin. "Fine Arts," The Third Mental Measurements Yearbook. Edited by Oscar K. Buros. New Brunswick, New Jersey: Rutgers University Press, 1949. p. 258.

THESIS TITLE: A STUDY OF CRITICAL ABILITY IN ART AT THE COLLEGE LEVEL, AS RELATED TO INTERESTS AND PERSONALITY PATTERNS

NAME OF AUTHOR: BEATRICE JOHNSON CAMPBELL

THESIS ADVISER: DR. S. L. REED

The content and form have been checked and approved by the author and thesis adviser. "Instructions for Typing and Arranging the Thesis" are available in the Graduate School office. Changes or corrections in the thesis are not made by the Graduate School office or by any committee. The copies are sent to the bindery just as they are approved by the author and faculty adviser.

NAME OF TYPIST: ELIZABETH J. KERBY

Margaret Martin (Bibliography)