TEMPERAMENT TRAIT DIFFERENCES OF ACADEMICALLY-ABLE COLLEGE AND NONCOLLEGE HIGH SCHOOL GRADUATES

Thesis for the Degree of Ed. D.

MICHIGAN STATE UNIVERSITY

Harry Sims Downs

1962

This is to certify that the

thesis entitled

Temperament Trait Differences Of
Academically-Able College and Noncollege
High School Graduates

presented by

Harry Sims Downs

has been accepted towards fulfillment
of the requirements for

Ed.D degree in Education

Walter F. Johnson
Major professor

Date May 18, 1962

O-169

TEMPERAMENT TRAIT DIFFERENCES OF ACADEMICALLY-ABLE COLLEGE AND NONCOLLEGE HIGH SCHOOL GRADUATES

By

Harry Sims Downs

AN ABSTRACT OF A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF EDUCATION

College of Education

1962

APPROVED Walter F. Johnson

ABSTRACT

TEMPERAMENT TRAIT DIFFERENCES OF ACADEMICALLY-ABLE COLLEGE AND NONCOLLEGE HIGH SCHOOL GRADUATES

by Harry Sims Downs

This investigation was concerned with an examination of temperament trait differences between academically-able high school graduates who entered college and their academically-able peers of the same sex who did not enter college. The primary objective of the study was to examine temperament trait differences between college and noncollege subjects when indices of academic ability, high school achievement, chronological age, desire and financial resources for college and parents' desire for college were controlled. In addition, differences between the college and noncollege groups on the six control variables were examined.

The subjects of the study consisted of 343 students, 160 boys and 183 girls, who scored at or above an I.Q. Standard Score of 58 (M = 50, σ = 10). These subjects graduated from six high schools in one school system in June 1961. Basic data were collected on the subjects during the spring and summer of 1961. The subjects were followed up to determine their status after high school

during the fall of 1961. This follow-up revealed that 63.4 per cent of the girls and 72.5 per cent of the boys entered college during the fall following graduation from high school.

Analysis of covariance was the principal statistical technique used to analyze these data. The subjects who entered college were found to be superior to their non-college peers of the same sex with respect to five of the six control variables: I.Q. Standard Score, High School Grade Point Average, Desire Score, Financial Resources Score and Parents' Desire Score. These differences were significant at the .01 level of confidence. The college boys and girls were slightly younger than their noncollege peers of the same sex, but these differences were not statistically significant.

With these six variables controlled, the college boys obtained significantly higher scores than did the noncollege boys on the O (Original) variable of the Structured-Objective Rorschach Test indicating greater freedom in thinking and a greater capacity for perceiving new relationships on the part of the college boys. The college girls obtained significantly higher scores than did the noncollege girls on the SORT FC variable indicating stronger tendencies of college girls toward social responsibility and cooperation. The noncollege girls obtained significantly higher scores than did the college girls on the SORT F-

variable suggesting stronger tendencies of noncollege girls toward poor intellectual control and impulsiveness.

The findings of this study must be verified before positive conclusions can be reached. However, it is tentatively concluded that academically-able college and noncollege boys do not differ and that academically-able college and noncollege girls do differ with respect to selected temperament and emotional traits as measured by the Structured-Objective Rorschach Test.

TEMPERAMENT TRAIT DIFFERENCES OF ACADEMICALLY-ABLE COLLEGE AND NONCOLLEGE HIGH SCHOOL GRADUATES

By

Harry Sims Downs

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF EDUCATION

College of Education

1962

G 23634
10/15/62

ACKNOWLEDGMENTS

The writer wishes to express his heartfelt appreciation to Dr. Walter F. Johnson, Chairman of his Guidance Committee, for his endless encouragement and help and to Dr. James W. Costar, Dr. William Roe and Dr. William Mann for their able assistance and encouragement. Without the understanding and help of this committee, this investigation could not have been completed.

Sincere appreciation is extended to Dr. Paul West, Superintendent, and Dr. Douglas MacRae, Assistant Superintendent of the Fulton County School System, and to the counselors and principals of the six high schools who cooperated and assisted with this study.

An expression of deep appreciation is made to Dr. Raymond N. Hatch whose assistance in planning and initiating this study was invaluable and to Dr. John R. Hills for his constant encouragement and help.

A research grant from the Willis and Ethel Clark Foundation is acknowledged with gratitude. Without this grant much of the data analysis of this study would not have been possible.

Sincere appreciation is also extended to Priscilla Canning, Margaret Erwin, Linda Emory and Lucille Sherman

for their able assistance in the preparation of data and of this manuscript.

To my wife, Melba, and my daughters, Nancy, Rebecca and Harriet, I wish to express my gratitude for their constant patience, understanding and encouragement.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

CHAPTER I

INTRODUCTION

The Problem

One essential of a free democratic society is an educated citizenry. This truth was recognized by the founding fathers of this country and is testified to today by the presence of the most complete and comprehensive educational system any society has ever known. The development of the American educational system has been based upon the premise that every individual should be developed to the fullest extent of his capacities. Maximum human development is necessary for the welfare of the individual and for the welfare of the society of which he is a member.

This ultimate goal, the development of every person to the fullest extent of his capacities, remains far beyond the reach of our society in spite of the relatively excellent educational facilities available to most of the youth and many of the adults of this nation. Many deterrents to the attainment of this basic goal are well known and often cited. Crowded classrooms, teacher shortages, inadequately trained teachers, limited instructional

materials, and inadequate curriculum content have characterized public education in America for many years. Yet the most consequential deterrent to the fullest development of every individual lies in the unwillingness or inability of individuals to pursue appropriate educational opportunities available to them. This is true to an appalling extent at the public school level and becomes acutely pronounced above the high school level. Wolfle in his report on the Commission on Human Resources and Advanced Training states that:

> The United States wastes much of its talent. College graduating classes could be twice as large as they currently are, and with no loss of quality. The potential supply gets drained off, in large or small amounts, all the way through the educational system. Practically all potentially good college students enter, and most of them finish high school, but after high school the loss is large. Fewer than half of the upper 25 per cent of all high school graduates ever earn college degrees; only 6 out of 10 of the top 5 per cent do. Society fails to secure the full benefit of many of its brightest youth because they do not secure the education that would enable them to work at the levels for which they are potentially qualified. (54, p. 269)

The Educational Policies Commission emphasizes the seriousness of this loss of talent in its report on Manpower and Education:

> Since 1950 the proportion of the very able who continue their education beyond high school has increased markedly but the wastage in this area is still distressing. A fuller cultivation of the talents of the able high school senior would add to the quality of their lives, and would provide additions of trained manpower for long periods of service in areas where training and experience are needed. . .the resources of

> talent represented by these able young men and women is one of the major challenges to contemporary education. (13, pp. 52-53)

Recognizing the seriousness of this great loss of talent, both to the lives of the individuals and to the nation, the Congress of the United States passed the National Defense Education Act in 1958. The primary purpose of this Act was to provide assistance to individuals and states in order to develop trained manpower of sufficient quality and quantity to meet the national defense needs of our country. One of the basic premises upon which this Act was written was that many of the human talents of the youth of this nation are never fully developed.

> Sec. 101. The Congress hereby finds and declares that the security of the nation requires the fullest development of the mental resources and technical skills of its young men and women. . . . We must increase our efforts to identify and educate more of the talent of our Nation. (8, p. 24)

One assumption of the National Defense Education Act of 1958 was that limited financial resources prevent or inhibit college attendance of able youth. Havighurst and Rodgers conclude from their intensive study of youth in one community that the offer of financial aid alone did not change the proportion of boys who entered college very much (19, p. 153). Havighurst and Rodgers (19), Hollinshead (24), Wolfle (54) and Berdie (4) conclude from their research and study of the research of others that several factors interacting are responsible for college attendance

or non-attendance. These authorities suggest that academic ability, previous achievement, financial resources, desire for college training, sex, geographic location, and cultural, ethnic and religious background are primary factors which are related and interrelated to attendance or non-attendance in college. Yet Hollinshead concludes that "what moves a young person to want or not want a higher education is our greatest imponderable" (24, p. 42).

Douvan and Kaye conclude that information about the decision to go to college is still very limited.

> We have little systematic information about the decision to go to college. The current renaissance of research on the college student has not concentrated on determinants of college-going, and the older studies either focused on objective determinants like family income and residence or stirred motivational variables into one pot with these so that it is impossible to say anything very clear about the independent operation of either type of factor. (11, p. 199)

Statement of the Problem

This study was designed to permit an examination of the relationship of selected temperament and emotional traits to college entry when other selected student traits are controlled.

The specific purposes of this study were to:

a. Determine the differences, if any, between academically able college and noncollege male high school graduates and between academically able college and noncollege female high school graduates with respect to academic ability,

high school achievement, chronological age, desire for college training, financial resources, and parents' desire for college training, and

b. Determine the differences, if any, between academically able college and noncollege male high school graduates and between academically able college and noncollege female high school graduates with respect to indices of selected temperament and emotional traits when academic ability, high school achievement, chronological age, desire for college training, financial resources, and parents' desire for college training are controlled.

Hypotheses stated in the form of the null hypothesis, four hypotheses were tested.

1. Academically able male high school graduates who enter college following graduation do not differ significantly from academically able male high school graduates who do not enter college following graduation with respect to indices of academic ability, high school achievement, chronological age, desire for college training, financial resources, and parents' desire for college training.

2. Academically able male high school graduates who enter college following graduation do not differ significantly from academically able male high school graduates who do not enter college following graduation with respect to selected indices of temperament and emotional traits when indices of academic ability, high school achievement,

chronological age, desire for college training, financial resources, and parents' desire for college training are controlled.

3. Academically able female high school graduates who enter college following graduation do not differ significantly from academically able female high school graduates who do not enter college following graduation with respect to indices of academic ability, high school achievement, chronological age, desire for college training, financial resources, and parents' desire for college training.

4. Academically able female high school graduates who enter college following graduation do not differ significantly from academically able female high school graduates who do not enter college following graduation with respect to selected indices of temperament and emotional traits when indices of academic ability, high school achievement, chronological age, desire for college training, financial resources, and parents' desire for college training are controlled.

Summary of Procedures

The subjects for this study were selected from the graduating classes of six white high schools in the Fulton County School System, Atlanta, Georgia. The Fulton County System serves an area around the city of Atlanta. This area includes areas classified as urban, suburban and rural. Four

of the schools included are located in suburban communities and serve urban and suburban pupils. Two of the schools are located in small communities or towns and serve rural and small town pupils. Graduating classes of the six schools ranged from 60 to 160 pupils in 1961.

Initial arrangements to conduct this study were made with the administration of the school system in the Spring of 1960. Basic data on the subjects of this study were collected in the Spring of 1961. The subjects were followed up in October, November, and December of 1961, and analyses of the data were made in January and February of 1962. Analysis of covariance, a modification of the procedure described by Gulliksen and Wilks (9) was the principle statistical procedure used.

Limitations and Scope

Interpretation of the findings of this study must be made in light of the scope and limitations of the study. The group studied is small in size and drawn from one geographic center. This fact will restrict the application of the findings of the study.

Twenty of the 363 students originally included in the study were later omitted because all of the needed data about these subjects were not available. (These 20 students represent 5.5 per cent of the subjects originally selected.) It was not possible to obtain indices of temperament and

emotional traits for 18 of these pupils. One girl transferred to another high school before graduation and one girl failed to graduate.

No attempt was made to equate students on the basis of the guidance they received during high school. Assuming that guidance received during high school influences decisions of pupils concerning plans after high school, then this factor remains uncontrolled in the study.

Classifying subjects as college or noncollege was achieved by determining which subjects were enrolled in degree granting institutions of higher education during the Fall quarter or semester following graduation from high school. It is most likely that some of the subjects who were not in college during this time will later enter college. Had the classification of subjects as college or noncollege been made one year after high school graduation or at some other time the classification of some subjects would be different.

The assessment of temperament or emotional traits was not accomplished with the reliability and validity desired. Five of the 15 scores obtained from the test used for this purpose have reported reliability coefficients on one set of scores on college students between .62 and .68 while .90 was the highest coefficient reported (46 p. 4). The validity of the results of tests of this nature is debatable and is discussed further in Chapter III of this report.

Indices of desire for college training, financial resources, and parents' attitudes about college are difficult to define, collect, and validate. For purposes of this study indices of desire for college training, financial resources, and parents' desire for college training were derived from the responses of the pupils to items on a questionnaire designed for use in this study (see Appendix F).

No comparisons were made between boys and girls. Ample evidence is available which demonstrates that boys and girls differ in college-going habits and in achievement in high school and college.

Definition of Terms

Several terms appearing throughout this report have special meaning. Some of these terms, particularly those describing pupil traits, are defined in Chapter III. Three of the most frequently used terms are defined for purposes of this study as follows:

Academically Able Pupils. Pupils whose I.Q. as measured by group tests of intelligence, when converted to a standard score with M=50 and σ=10, is equal to or greater than a standard score of 58.

College Student. A student enrolled in a degree-granting institution of higher education during the Fall of 1961.

Noncollege Student. A high school graduate who was not enrolled in a degree-granting institution of higher education during the Fall of 1961.

Organization of the Remainder of the Dissertation

A review of research and other professional literature related to the study is contained in Chapter II. Procedures followed in conducting the study are reported in Chapter III. Selection of the subjects studied, collection of the data, follow-up of the subjects, preparation of the data for analysis and methods used in analyzing these data are discussed in the chapter. The findings of the study are reported and discussed in Chapter IV. A summary of the study is presented in Chapter V along with a discussion of the conclusions reached. The appendices contain copies of the unpublished instruments and samples of letters and other materials used in the study, five tables and a list of definitions of temperament and emotional traits.

CHAPTER II

REVIEW OF RELATED LITERATURE

Literature on Factors Related to College Entry and Success

The decade of the 1950's witnessed a renaissance of interest in the college-bound youth and more particularly in the youngster of college potential who fails to find his way to the college campus. As a result of this renewed interest many studies were made in an attempt to determine the per cent of able high school graduates who do not enter college and the reasons for this failure to obtain further education. Concern about this problem is not new, but factors such as the shortage of highly educated people in many strategic areas of work and the high level of the American economy have tended to focus attention on the situation commonly acknowledged to be a costly waste of human resources. This waste existed in the mid and late 1930's but many educators conceded that few youngsters had the prerogative to choose or not to choose college due to the dictates of economic conditions.

Concern about the problem of wasted talent was evidenced, however, by Topps (52) who studied the seniors who were

enrolled in Ohio high schools in December of 1935, following them for two years. From this study he found that only one-half of the capable high school graduates continued on to college. Factors found to be associated with the failure of able students to enter college included geographic location within the state, the religion and educational level of parents, the occupation of the father and financial resources. Topps concluded, however, that continuation to college was controlled more by the attitudes of the child, the parents and the community than by the financial status of the family.

During the first half of the 1940's World War II occupied the time and energies of most youth of the country to the extent that wasted manpower was no problem. Following World War II attention was again directed to the failure to enter college of many able high school graduates. Phearman (43) studied a sample of 2,616 high school graduates of 94 Iowa high schools who graduated in 1947 to determine the extent to which scholastically talented graduates entered college and the reasons why some talented youngsters did not enter college. Results of the Iowa Test of Educational Development were available on each student. From an analysis of questionnaires returned by these youngsters, Phearman found that although the high school graduates who entered college were superior academically to those not entering, approximately one-third of the youngsters in the upper one-fourth of the group academically said they could

not afford college. He also found that college entry was related to the educational level of parents and the occupation of the father and inversely related to size of family. These findings agreed with the findings of Topps (52) some twelve years earlier in that youngsters were more prone to enroll in college when the educational level of the parents and the occupational level of the father were high.

Barber (2) conducted a rather intensive follow-up of the 1948 graduates of three public academic high schools of Erie, Pennsylvania, who had obtained I.Q.'s of 115 or more on the Kuhlmann-Anderson or the Henmon-Nelson intelligence tests. Of the 183 graduates with I.Q.'s of 115 or higher, 127 or 68 per cent failed to enter college following graduation. Barber was able to locate and interview during May through August of 1949 one hundred eleven of the 127 students who did not enter college. The purpose of these interviews was to probe more deeply into the reasons why these good college risks did not go to college.

When asked what caused them to reach the decision not to go to college, these 111 students made 195 responses, reporting 16 different factors or reasons. Sixty-six of the 111 reported their decision not to enter college was influenced by at least two factors, and 18 indicated their decision was influenced by at least three factors. Lack of finances was listed as the chief reason by 38 or 34 per

cent and was listed as a contributing factor by 18 additional students. Lack of academic interests was listed as the chief reason by 22 or 20 per cent of the students and as a contributing factor by 20 additional students. Preference for work experience was listed as the chief reason by 16 or 13 per cent of the students and as a contributing factor by 11 additional students. Lack of serious purpose was listed as the chief reason by 14 or 12 per cent of the students and as a contributing reason by six additional students (2, pp. 36-37).

Barber concluded that:

> . . .While the economic factor is important as indicated by its first position both as to chief reason and in total mentions, this study shows that other factors are also important in notable degree. These other factors account for 139 or 71 per cent of the entire 195 reasons offered. That we must look elsewhere than the economic factor is clearly evident in half of the total cases interviewed, since 50 per cent did not indicate the economic factor as having importance in their ultimate decision concerning non-college attendance. (2, p. 65)

A report of the Educational Policies Commission on Manpower and Education states that: "of the half of the top quarter who did not go beyond high school in 1950, roughly half were deterred by economic reasons, and the others were deterred by lack of motivation or interest or objective" (13, p. 53).

From a study of the 1950 high school graduating classes of the schools of Minnesota, Berdie (4) found that

only two out of three exceptionally well-qualified seniors, those with American Council on Education Test scores of 120 and above, planned to enter college. Twenty-five per cent of the high ability boys and 38 per cent of the high ability girls were not planning to enter college. Berdie also reported that students from homes of higher economic and cultural levels were more likely to enter college.

Hill reported from a four-year intensive study of 400 southern Ohio youth that college proneness is related to academic ability, achievement in elementary and high school, and economic ability but contended that the most potent determiners of college proneness were in the cultural and educational traditions, ambitions and hopes of the family. He concluded that proneness to attend college is a product of a complex of social, economic, psychological and educational forces (21, pp. 70-71).

Hollinshead has suggested that the top quarter in ability of American youth should have the opportunity to attend college but that about 40 per cent of the age group who possess top quarter ability finish high school but do not go to college (24, p. 68). In discussing the factors associated with college attendance, he states that attendance depends upon a number of intangible factors such as the motivation of the individual, the nature of the school a student attends, the influences of society and colleges and the competition of alternatives to a college

only two out of three exceptionally well-qualified seniors, those with American Council on Education Test scores of 120 and above, planned to enter college. Twenty-five per cent of the high ability boys and 38 per cent of the high ability girls were not planning to enter college. Berdie also reported that students from homes of higher economic and cultural levels were more likely to enter college.

Hill reported from a four-year intensive study of 400 southern Ohio youth that college proneness is related to academic ability, achievement in elementary and high school, and economic ability but contended that the most potent determiners of college proneness were in the cultural and educational traditions, ambitions and hopes of the family. He concluded that proneness to attend college is a product of a complex of social, economic, psychological and educational forces (21, pp. 70-71).

Hollinshead has suggested that the top quarter in ability of American youth should have the opportunity to attend college but that about 40 per cent of the age group who possess top quarter ability finish high school but do not go to college (24, p. 68). In discussing the factors associated with college attendance, he states that attendance depends upon a number of intangible factors such as the motivation of the individual, the nature of the school a student attends, the influences of society and colleges and the competition of alternatives to a college

education (24, p. 42). He further states that "Motivation, or lack of it, has more to do with college attendance or nonattendance than any other single factor. Yet motivation is bound up with many things. The expression of desire for education or for avoiding it probably more often than not covers some reason hidden far below the surface" (24, p. 42).

Havighurst and Rodgers have suggested the probability that a given boy or girl will go to college depends on five factors: mental ability, social expectations, individual motivation, financial ability, and propinquity to an educational institution (19, p. 137). Citing the relative importance of financial ability and motivation as factors in the decision to attend or not attend college, Havighurst and Rodgers stated that: "Financial barriers are the principle reason for not going on to college in the case of about a third of superior youth who do not go, while the other two-thirds lack sufficient motivation to go" (19, p. 162).

In an attempt to determine the influence of scholarship awards on college attendance, Parker and Wright (42) conducted a study of 628 students who applied for scholarships at Brigham Young University in the fall of 1954. The 247 scholarship recipients attending Brigham Young University were interviewed and questionnaires were sent to the 381 applicants who were not awarded scholarships. Of those interviewed 87.8 per cent said they would have attended college without a scholarship; 71 per cent said they would

have attended Brigham Young University without a scholarship. From the returned questionnaires 82 per cent were enrolled in college, 62 per cent at Brigham Young University. Of the 70 students who did not attend college, only 24 per cent gave as their reason for not attending the fact that they did not receive a scholarship. The investigators concluded that a large majority of students who apply for a scholarship will go to college whether they receive it or not but financial aid seemed to be the crucial factor with a small percentage of students.

Wolfle estimated that in the early 1950's approximately 53 per cent of students who finished high school in the top fifth of their classes enrolled in college (54, pp. 149-150). Of the 27 per cent of high school graduates who ranked in the top 40 per cent of their class, both in terms of grades and intelligence test scores, only 51 per cent entered college (54, p. 176). From his rather intensive study he concluded that: "The factors which determine who goes to college can be divided into two categories, those which are essentially related to school progress and those which are related but not in an essential way." The essentially related factors are academic ability, previous school achievement, financial resources and student desire. The factors which are related but in no essential way include sex, cultural background, geographic location, and ethnic and religious background (54, pp. 140-141).

The results of these studies are essentially in agreement about the factors probably related to college attendance and about the per cent of high school graduates who enter college, allowing for some regional differences. Additional studies in the mid and late 1950's tended to confirm the findings of these earlier studies and to reveal a trend of a greater per cent of able students entering college.

Daughtry (10) found from a study of the 1955 graduates of Kansas high schools that high school principals reported only 62 per cent of their valedictorians and salutatorians entered college. Approximately two-thirds of the graduates in the top fourth of their class on test scores entered college, three-fourths of the boys and slightly more than one-half of the girls. The primary reasons for not going to college were matrimony, lack of financial backing and lack of desire to continue (10, pp. 55-56).

Educational Testing Service (14) conducted a study of a sample of high school seniors in January and February of 1955 to look into the underlying factors related to the non-entry into college of able students. The schools included in the study were a representative sample of public high schools enrolling more than 35,000 twelfth-grade students. A follow-up of a sample of the original sample was made to determine the extent to which these students entered college by the fall following their senior year in high school.

A short scholastic aptitude test and a short questionnaire were administered to these students in January and February of 1955. An analysis of information obtained through the test, the questionnaire and the follow-up revealed that 36 per cent of the boys and 27 per cent of the girls had gone to college by the fall following their senior year at high school. Of the students who scored in the upper 30 per cent on the aptitude test, 60 per cent of the boys and 46 per cent of the girls entered college. Sixty-six per cent of the boys and 43 per cent of the girls ranking in the top 30 per cent of their graduating class entered college.

Factors found to be positively related to college attendance included academic aptitude as measured by tests, rank in graduating class, professional nature of the father's occupation, extent of the father's education, financial resources of family, professional aspirations, academic reasons for desiring college, number of friends going to college, amount of discussion about college with teachers or guidance people, and the academic nature of the student's high school program. The number of siblings was negatively related to college attendance. In the case of high scoring students not planning to go to college, over half of the boys and almost two-thirds of the girls indicated they would certainly or probably accept a scholarship to attend college.

Stroup and Andrew (48) conducted a two-year study of factors related to educational discontinuance of Arkansas high school seniors. Information from ACE test scores and questionnaires returned by 12,000 high school seniors was analyzed. Verification of college enrollment was made by college officials. These investigators found that 45 per cent of the seniors indicated plans to go to college, but only 26 per cent were enrolled in college the fall semester following their graduation from high school. Boys went to college in greater proportion than girls; younger seniors went in greater proportion than older seniors; students from families in the higher income brackets went in greater proportions than those from families in the lower income brackets. More than 46 per cent of the seniors who had scored above the median on the ACE test attended college while less than 21 per cent with scores below the median attended.

A rich home environment, a family tradition of college attendance, a decision by the senior to follow a profession and participation by the senior in school organizations and on athletic teams were all found to be positively related to college attendance (48, pp. 63-66). This multiple relationship seems of extreme importance in making predictions or in solving problems related to college attendance.

Wright and Jung (55) conducted a study of high school graduates who ranked in the upper 10 per cent of their graduating class in an effort to determine the reasons why certain of the students did not enter college following graduation in 1955. Preliminary investigation revealed that 29 per cent of these high-ranking students did not continue their education. Eighty-five per cent of the boys and 64 per cent of the girls did continue their education.

Of the total of 1,011 high-ranking youngsters who did not continue their schooling, 118 boys and 757 girls were included in the study. For each of these 875 cases, an interview was completed with school officials; for 731 cases a parental interview was completed; and for 570 cases an interview with the student was completed.

In response to specific questions only 38 per cent of these youngsters indicated that the cost of further education prevented them from continuing their education. Approximately 23 per cent of the students felt that the attitude of their parents was unfavorable toward their continuing their education. This was confirmed by parents as 26 per cent indicated that they did not want their children to continue in school. Approximately 55 per cent of the students reported that they did not really want to continue their education. Colleges or universities were within 20 miles of the school community of 63 per cent of the youngsters and within 40 miles of 92 per cent.

The investigators concluded that in many, if not most, cases the reason for an individual's failure to continue education beyond the high school is a fusion of several factors. However, four readers who reviewed each case carefully attempted to identify the most important factors in the failure of the youths to continue their education. The readers concluded that the most important primary reason for boys' failure to continue was that the boys thought of the high school as being the terminal point in their education or because they desired to earn money or had competing interest. The second most important primary cause was a financial one, and the third most important cause was judged to be "indifference." For girls, marriage was first with "indifference" closely following as second, and lack of finances the third most important factor.

Lichtenberger (27) surveyed the public schools in Nebraska to determine the per cent of the 1956-1957 high school graduates who enrolled in a recognized college or university in the school year immediately following their graduation. Responses from 366 of 450 high schools revealed that about 36 per cent of the 1956-1957 high school graduates enrolled in college or universities in the regular 1957-1958 school year.

Little (28) reported a two-year study of academically talented youth who graduated from Wisconsin high schools in the spring of 1957. He surveyed the students in the

spring of 1957 to determine their plans for education beyond high school, followed up with a survey of parents in the fall of 1957 to learn what the graduates were doing, followed up those not attending college in the winter of 1958 to determine their occupations and followed up the college group in spring 1959 to learn about their progress and persistence in college. He found that about 80 per cent of the boys and about 60 per cent of the girls who were in the top one-fourth of their class on both mental tests and rank in class were in college or planned to enroll. A tenth of the noncollege boys and three-tenths of the noncollege girls said they would not attend college even if they had the money. One-fifth of the noncollege boys and girls said they did not enter college because of money. Low levels of parental education, the influence of noncollege-going peers, and attitudes of indifference toward school and school work were negative influences which outweighed the influence of living in a college community and the opportunity to attend college while living at home.

In general, the cultural level and educational attainment of parents, the attitudes and values of close friends, and the psychosocial characteristics of the graduates themselves outweigh such factors as size or strength of a high school program, nearness to a college, or family income as influences upon decisions to attend college.

A follow-up of the 1958 graduating classes of Montana high schools revealed that 38.7 of these graduates entered college in the fall of 1958, 42.2 per cent of the boys and 35.3 per cent of the girls. Of the students in the top quarter of their class based on high school rank, 67 per cent enrolled in college the fall following graduation from high school. Of the top 10 per cent in high school rank, 79.4 per cent enrolled in college (34).

McDaniel and Forenback studied the top 15 per cent of Kentucky's 1959 high school seniors who participated in a state-wide testing program to determine how many went to college, where they went, sex differences and rural-urban differences. They found that 76 per cent of the top 15 per cent entered college, 81 per cent of the males and 71 per cent of the females, and that the higher the score of students, the larger the percentage entering college. About the same percentage of able rural, urban, mountain and metropolitan youth enter college (31).

From a review of several studies on factors related to college attendance, including the Arkansas, Indiana and Wisconsin studies, Beezer and Hjelm (3) concluded that (1) a large number of above-average and superior students are not continuing their formal education at the college level and a disproportionate number of these are girls, and (2) insufficient funds constitutes a serious barrier for some students, but it is difficult to differentiate

between the relative effect of this deterrent and a student's lack of motivation (3, p. 38).

Havighurst (20) reviewed several studies conducted in the 1950's on the college attendance of high school graduates and identified two major trends of this period.

> These recent studies add to certain others made earlier in the 1950's, and show that the trends which were evident earlier have continued until the present. There are two major trends. One is for a higher proportion of the youth in the upper quarter by intellectual ability to continue their education at college. Thus, at the beginning of the decade only about half of the ablest quarter were going to college, while at the end about two-thirds were going. The second major trend is for a higher proportion of working-class youth to go to college. (20, pp. 30-32)

Recently more attention has been directed to investigations of the possible relationship of personality and temperament traits to educational achievement and continuation of education. Bowman and Matthews, in a study of 487 children who were to be in the 1958 graduating class of the Quincy (Illinois) Public Schools, found school dropouts to be significantly inferior to a control group of their age peers matched on the basis of sex, intelligence, and social status, with regard to personal and social adjustment as measured by the California Personality Inventory, the California Test of Personality, a sociometric test and a behavior description chart (5, pp. 1-3).

Holland (22) reported a study of 743 Merit Scholars and 578 Certificate of Merit winners attending 291 colleges and universities. The study was designed to explore the use-

fulness of nonintellectual factors in predicting college grades. This sample was divided by sex and further into a standard sample and a cross validation sample. All students in the sample had taken the Scholastic Aptitude Test and the California Psychological Inventory before entering college. Zero-order correlations of freshmen grades and the California Psychological Inventory and Scholastic Aptitude Test variables were computed and multiple correlations and regression equations were obtained using selected CPI and SAT variables.

This study of exceptionally talented college freshmen found the SAT M factor to be significantly correlated with freshman grades for both male samples but for only one of the female samples. The SAT V factor was significant only for the male and female standard samples. For both samples of boys nine scales of the California Psychological Inventory (Capacity for Status, Sociability, Social Presence, Self-acceptance, Responsibility, Socialization, Self-control, Flexibility, and Femininity) were significantly correlated with freshman grades. Only the Social Presence and the Socialization scales of the CPI were found to have statistically significant correlations with freshman grades in both samples of girls.

Multiple correlations for the CPI and SAT in combination were found to be two to three times as great as the zero-order correlations obtained for the SAT alone.

Holland concluded that at a high level of scholastic aptitude personality variables may yield validity coefficients which are two to almost three times as great as those obtained using aptitude measures alone but that the individual scales of the CPI show wide variation in validity from college to college.

In another study Holland (23) explored the usefulness of nonintellectual factors in predicting college grades by studying the relationship of the results of the Sixteen Personality Factor Questionnaire, the National Merit Student Survey, and the Vocational Preference Inventory to freshman grades. The subjects for this study consisted of 952 Finalists who competed for National Merit Scholarship Corporation Scholarships and who were attending 277 institutions. Scholastic Aptitude Test scores and High School Rank were also available on these students. Freshman grades in college were correlated with the Sixteen Personality Factor Questionnaire, the National Merit Student Survey, the Vocational Preference Inventory, High School Rank and Scholastic Aptitude Test variables for the total sample of boys and of girls and also for samples of students attending institutions of "high" and "low" talent supply and Ph.D. productivity. Holland concluded that although different kinds of colleges reward different kinds of students, the results for the large sample of talented students suggests that nonintellectual variables such as Superego, Persistence,

and Deferred Gratification are significantly related to achievement in college.

In a study using California Psychological Inventory and American Council on Education test scores obtained at college entrance on 200 graduates and 200 dropouts, Maxwell found that seven California Psychological Inventory scales significantly differentiated graduates and dropouts. The seven scales on which graduates and dropouts differed were Achievement via Independence, Achievement via Conformance, Tolerance, Sociability, Responsibility, Psychological-mindedness, and Feminity (32).

Pierce and Bowman conducted a study of the top 30 per cent of the 10th- and 12th-grade students in the Quincy (Illinois) Public High School during the 1957-58 academic year. These students were selected on the basis of intelligence test scores. Several hypotheses were tested. One finding was that high achieving boys and girls score higher on adjustment as measured by the California Psychological Inventory than their low achieving peers (44, p. 46).

Witherspoon and Melberg studied the relationship between certain aspects of temperament as measured by the Guilford-Zimmerman Temperament survey and first semester grade point average of 229 first semester freshmen. They found a low but statistically significant relationship between first semester grade point average and the Purposive Scale score

and the Personal Relations score and for males only between first semester grade point average and the Masculinity-Feminity score (53).

From a testing survey involving 8,628 high school students, Gough selected two sub-samples of high ability males and females who did and did not go to college. The college and noncollege groups of each sex were matched for age, school, tested intelligence and grade point average. There were 26 males and 39 females in each sub-sample. The I.Q. means and standard deviations were 121.28 and 7.86 for the did not go group; 120.54 and 7.70 for the did go group.

Analysis revealed no significant differences between the male college and noncollege groups on the 18 California Psychological Inventory scales.

For the females, the college and noncollege groups differed on five of the 18 California Psychological Inventory scales at or beyond the .05 level; Capacity for Status, Sociability, Responsibility, Tolerance, and Achievement via Independence (17).

Literature on the Use of the Group Rorschach

Studies involving the use of the group Rorschach have to this point been inconclusive. Most of these studies have investigated the relationship of performance on a group Rorschach to academic success or achievement. The results

of some investigations have indicated that personality traits or variables measured by the Rorschach are related to academic success while other investigations have found no significant relationship between Rorschach variables and academic achievement.

Monroe (37) was one of the first investigators to examine the predictive efficiency of this technique. In 1940-42 she conducted a study of the use of the Rorschach for the prediction of academic achievement in college. From this study of 348 subjects Monroe concluded that the results of both the American Council on Education examination and the Rorschach were reliably associated with academic standing (37, p. 45).

In 1947 Thompson (51) administered a group Rorschach to 128 students in general psychology using Beck's classification system and including Klopfer's inanimate and animate movement scoring. Fifty-two types of data from each student's record were analyzed in terms of semester grades and verbal aptitude test scores. Of these 52 items, 34 were eventually combined into a quantitative score which yielded a Pearson product-moment coefficient of correlation of .52 with psychology grades. The best 36 items correlated .51 with verbal aptitude test scores. Twenty of the 52 items correlated .38 with grades and .04 with aptitude test scores. The aptitude test scores correlated .66 with semester grades; when combined with the 20 nonintellectual

items from the Rorschach a multiple coefficient of correlation of .74 was obtained.

McCandless (29, 30) used a Rorschach in 1947 with candidates in the U. S. Officers Maritime Service School to determine if he could discriminate between achievers and nonachievers. He used the conventional Rorschach categories, the Munroe Check List and Beck's Z scores. None of these approaches revealed any statistically significant differences between achievers and nonachievers.

Osborne and Sanders (38) administered the Harrower Multiple Choice Rorschach Test to 158 probation and 93 nonprobation students at the University of Georgia during the 1947-48 academic year. A comparison of the two groups showed statistically significant differences in 24 of the 30 response groups. In 29 of the 30 response groups the differences favored the nonprobation group. Differences in 22 response groups were significant at the .01 level. Two additional response groups were significant at the .05 level of confidence. These investigators concluded that Rorschach patterns or signs do significantly differentiate between achievers and nonachievers.

In another study at the University of Georgia, Osborne, Sanders and Greene (39) administered the Harrower Multiple Choice Rorschach to 504 freshmen in September of 1948. The Harrower-Erickson scoring system and four scoring systems devised by the investigators were used. Each of the four

systems of weighing responses devised by the investigators was found to be superior to the Harrower-Erickson method of weighting for predicting college grades. One of the locally devised scoring methods yielded a coefficient of correlation of .47 with first quarter grades and of .43 with second quarter grades. These investigators concluded that weighted Rorschach responses, when combined with scholastic aptitude test scores, yield appreciably better predictions of college grades than those based solely on scholastic aptitude tests.

Cronbach (9) reported a study by Bloom of the University of Chicago in which the group Rorschach with individual protocol scoring was tested as a predictor of academic success. Bloom found no significant relationship between the Monroe Check List and academic success nor between Rorschach results and underachievement.

Clark (6), in a series of studies during 1951-1955 at the State College of Washington and Brigham Young University, in which he devised and used a multiple choice Rorschach check list using the Harrower-Erickson Multiple Choice Rorschach Test as a guide, found no significant correlation between the scores on a multiple choice group Rorschach and grade-point average. He also found that prediction of grade-point average was not significantly improved by adding the use of a group Rorschach to the multiple correlation predicting grade-point average from

the American Council on Education Psychological Examination and the Purdue English test.

Segal (45) administered the Structured-Objective Rorschach Test to 455 high school students ranging in age from 12 to 19 years for the purpose of establishing limited norms on an adolescent population. From an analysis of the records of these students she concluded that adolescents and adults differ on all Structured-Objective Rorschach Test variables except F and FM and that adolescent boys and girls differ significantly on three variables: F-, FCh, and A (45, pp. 30-31).

In a study of science talented and language talented secondary school students, Hosford (25) found no significant differences between science talented and language talented boys on scores on the Structured-Objective Rorschach Test. However, science talented girls differed significantly from language talented girls in responses to D, P, and FCh factors on the SORT, indicating that the language talented girls were more adept in dealing with concrete detail, more likely to perceive elements usually noted and less anxious (25, p. 68).

Summary of the Literature

The academically able high school graduate who fails to enter college received increased attention during the 1950's as evidenced by the frequency with which studies appeared in professional publications. Most of these studies

concentrated on the relations of ability, achievement and background factors to college entry. The findings of most of these studies are in agreement on most points.

Without exception these studies revealed that a greater per cent of academically able boys enter college than was true of girls. For both sexes the likelihood of entering college increased with an increase in academic ability as measured by tests and in high school achievement. This is true throughout the range of ability and achievement.

Background factors commonly found to be related to college entry include the educational level of parents, the occupation of the father and the financial resources of the family. Also related to college proneness are the attitudes of students and their parents and the attitudes of the community in which a student lives. Several studies suggested that the peer associates of a student influence his decision about attending college.

Some attempts to determine the effects of specific factors on decisions about continuing education were made, particularly with respect to financial resources. In most cases it was concluded that from one-half to two-thirds of the academically able students who do not enter college fail to enter for reasons other than economic ones. In spite of these attempts most investigators agreed that decisions about college entry result from the interaction of all factors and cannot be attributed to single factors. This was true of the investigations conducted thus far for

no technique for parcelling out and measuring the effects of specific factors were reported.

There was a tendency for some investigators to group the interaction of certain factors under the heading of "motivation" or "desire." Acceptable definitions of these terms were not given. One specific trend seemed obvious. During the period of 1950 to 1960 the per cent of academically able high school graduates entering college gradually increased. The primary point on which investigators disagreed was the relationship of geographic location or geographic proximity to college entry. Conflicting findings are to be anticipated, however, in studies where other factors related to college entry are not controlled.

Studies of the relationship of personality or temperament traits as measured by standardized inventories to college entry and success reported findings which tended to be in agreement. Most investigators reported that some personality variables seemed to be significantly related to college entry or success. These relationships tended to become more prevalent when groups who were within a restricted range of ability were studied.

Studies on the use of a group Rorschach test were infrequently reported and revealed conflicting findings of the relationship of Rorschach variables and success in college. Some investigators found no significant correlations between Rorschach variables and academic grades or found

that achieving and nonachieving groups react to the Rorschach in the same manner. Other investigators reported significant correlations between Rorschach variables and college grades and significant increases in multiple correlation coefficients when Rorschach variables were combined with academic aptitude test scores and correlated with college grades.

CHAPTER III

Procedures

The subjects for this study were selected from the 1961 graduating classes of six high schools in the Fulton County School System, Atlanta, Georgia. Several factors were considered in selecting a population from which the subjects of this study were drawn.

It seemed desirable to select the subjects to be studied from one geographic center, preferably within commuting distance of institutions of higher education. In this way proximity to educational opportunity would be relatively controlled. The size of the pupil population needed to be large enough to produce groups of academically able college and noncollege subjects of adequate size to study statistically. It also seemed desirable to select students who compositely would represent a wide range of rural-urban and sociocultural characteristics. With these factors in mind, the Fulton County School System appeared to be an acceptable system in which to conduct a study of this nature.

The Fulton County School System serves a population in and around the metropolitan area of Atlanta, Georgia. The school system enrolls pupils who live in rural, urban and

suburban areas. Families represented in the schools of the system cover the range of sociocultural levels. Four institutions of higher education are located in the metropolitan area providing college opportunities within commuting distance of every high school graduate. The size of the graduating class of the school system was sufficiently large to assure sub-groups of adequate size to meet the criteria of the statistical procedures used in the study.

The study was proposed to the administrative officials of the school system in the Spring of 1960. These officials agreed to participate in the study and pledged their cooperation and help. Preliminary plans for conducting the study were made and presented to the principals of the nine white high schools in the school system on March 9, 1961. The newest high school in the system did not have a senior class in 1960-61 and therefore could not be included in the study. Two of the eight high schools with senior classes were not included in the study. One was engaged in another study at the time, and the other school was later eliminated because some of the basic data on students were not available.

A roster of the names of all seniors enrolled in the six remaining high schools was obtained in March of 1961. At the time the roster was obtained there were 343 boys and 426 girls enrolled, a total of 769 seniors. From this group of 769 high school seniors the subjects for the study were selected.

Selection of Academically-able Students

All of the state controlled colleges and most of the privately controlled colleges in Georgia require applicants for admission to submit academic aptitude test scores before consideration for admission is given to the applicant. The positive relationship between performance on tests of academic aptitude and success in college is well documented. Because of this relationship and because standardized tests provided a common means of appraising the academic aptitude of pupils enrolled in different high schools, standardized tests of academic aptitude were used to identify and select the subjects for this study. In order to increase the reliability of scores obtained from aptitude tests and to limit the chances of other errors of measurement, an effort was made to obtain two academic aptitude test scores on each of the 769 seniors enrolled in the six high schools.

One I.Q., obtained by administering the California Short-Form Test of Mental Maturity (49) or the Otis Quick-Scoring Mental Ability Tests: Gamma Test (41) was recorded on the permanent record of most seniors in four of the six high schools. These tests had been administered to the pupils when they were enrolled in grade eight or grade nine or when pupils above grade nine transferred into the school system. In two of the six schools aptitude tests results were not available on the seniors. The Otis Quick-Scoring Mental Ability Tests: Gamma Test was administered to the seniors in these two schools on March 29, 1961, and the

I.Q.'s obtained were recorded on the permanent records of the pupils.

A second aptitude test, the Otis Quick-Scoring Mental Ability Tests: Gamma Test (41) was administered to the seniors in the six high schools during the month of April of 1961. The pupils who took this test in March and again in April were given different forms of the tests on the two occasions. These tests were scored, and I.Q.'s for the pupils were computed and recorded. In computing the I.Q.'s of the pupils who took the Otis Gamma Test twice within the short period of time, three I.Q. points were subtracted from the score each pupil obtained on the second administration of the test. This was done to correct for practice effects in accordance with the recommendation of the author and the publishers of the test (40, p. 5).

From the school records and the administration of the Otis Gamma Test in March and in April of 1961, one I.Q. was obtained for every enrolled senior and two I.Q.'s were obtained on 685 or 89.1 per cent of the pupils. These I.Q.'s were converted to standard scores for the purpose of making statistical adjustments in I.Q.'s obtained from the different tests. The California Short-Form Test of Mental Maturity was normed in such a manner as to produce an I.Q. mean of 100 and an I.Q. standard deviation of 16 for unselected or normal populations (50, p. 27). The Otis Gamma Test was normed to produce an I.Q. mean of 100 and an

I.Q. standard deviation of 12 (33). Using these means and standard deviations, the I.Q. scores the subjects obtained on these two tests were converted to equivalent standard scores with a mean of 50 and a standard deviation of 10. Pupils with I.Q. scores of 100 on either test were assigned standard scores of 50. Pupils with I.Q.'s of 116 on the California Short-Form Test of Mental Maturity or with I.Q.'s of 112 on the Otis Gamma were assigned standard scores of 60, etc.

The two I.Q. standard scores available on 685 of the 769 pupils were averaged and combined with the single I.Q. standard scores of the remaining 94 pupils into one distribution of scores. From this distribution of scores the subjects for this study were selected.

The selection of the exact I.Q. standard score above which pupils would be included in the study was in a sense arbitrary. It was the intent of this project to study pupils who were believed to be able to succeed in and profit by college training. Although some authorities have suggested that the top 50 per cent of American youth might well profit from college training, most authorities agree that the top 25 per cent can succeed in college and can profit from the type of education offered at the college level. With this in mind, the decision was made to include in this study only those pupils whose I.Q. standard score or average I.Q. standard score would place them roughly in

the upper 25 per cent of American youth of similar age. Test results on entering students of one of the local state supported colleges were also available. These results revealed that the average raw score on the Otis Gamma test for the Fall 1959 entering freshman class was 49.9 which is equivalent to an I.Q. standard score of 56.67 (15, p. 3).

With these two reference points in mind, the decision was made to include in this study only those pupils with I.Q. standard scores of 58 or higher. This score was slightly higher than the average score of the Fall 1959 entering freshmen of the local senior college and was one which would select only those students who would rank in the upper 22.67 per cent of a normal unselected sample of American youth (16, p. 446).

Using an I.Q. standard score of 58 as the minimum score for qualifying a pupil for inclusion in the study, the subjects to be included in the study were identified. Of the 343 boys enrolled in the six senior classes, 173 or 50.44 per cent had obtained I.Q. standard scores of 58 or higher. There were 426 senior girls enrolled in the senior classes of the six schools of which 190 or 44.6 per cent had obtained I.Q. standard scores of 58 or higher. Of the total enrollment of 769 pupils, 363 or 47.2 per cent had obtained I.Q. standard scores of 58 or higher. These 363 pupils, 173 boys and 190 girls, were the subjects selected for this study.

Procedure for Obtaining Anonymous Responses

Rosters of these 363 pupils were made and given to the principals and counselors of the high school participating in the study. Plans for administering the Structured-Objective Rorschach Test (SORT) (47) and two questionnaires to these subjects were made with the school officials and a schedule was established for administering the test and the questionnaires. Make-up periods were scheduled in anticipation that some pupils would be absent on dates scheduled for the regular administration of these instruments.

Some questions on one of the questionnaires (Appendix F) used in the study asked for information about the financial resources of the parents of the pupils. Because of the nature of these questions the administrators of the school system felt that a procedure to insure anonymous responses to the SORT and to one of the questionnaires would enhance a cooperative spirit among the pupils and would limit the chances of undesirable reactions from parents and pupils.

Consecutive numbers were stamped on the top left corner of approximately 400 index cards. The names of the 363 pupils were written on the right margin of 363 of the consecutively numbered cards. Each student was given the index card which revealed his name and code number preceding the administration of the SORT and the questionnaire. Students were instructed to record their code numbers on

their SORT answer sheets and one of the questionnaires and were told that their names should not appear on either of the papers. At the conclusion of the testing sessions the index cards, answer sheets and questionnaires were collected. Each pupil's I.Q. standard score, high school grade point average, sex and birth date were later recorded on the index card bearing his name and code number. The names were then cut from the right margin of the cards and destroyed, leaving only the pupil code numbers and the four entries of information about the pupil. Having the pupil code numbers on the SORT answer sheet and on the questionnaire permitted combining all of the needed information about each pupil without knowing his identity.

One master list of pupil names and corresponding code numbers was filed in the central office of the school system. This list was later used to identify the code numbers of the subjects who entered college or failed to enter college in the Fall of 1961.

A second questionnaire was filled in by the pupils at the time the SORT was administered (Appendix G). This questionnaire requested the pupil's name, address, and telephone number, the name and address of his parents and the name and address of a close friend. It also requested the pupils who planned to enter college to record the name and address of the college they were most likely to attend. The information recorded on this questionnaire was later used in following up the pupils in the Fall of 1961.

Structured-Objective Rorschach Test (SORT)

The SORT was devised by Joics B. Stone and published by the California Test Bureau. It was designed to "provide psychologically meaningful data for the analysis of temperament and personality" (46, p. 3). Two main features of the traditional Rorschach are retained in the SORT: the ten original stimulus blots and the scoring system of Area, Determinants and Content (46, p. 3). It differs from the traditional Rorschach in that the stimulus-responses are provided to the examinee, the total number of responses is fixed by means of a forced-choice format and no inquiry of examinee responses is conducted. The element of suggestion of response is an integral part of the test (46, p. 3).

The fifteen scores obtained from this test, grouped according to standard Rorschach scoring techniques, are as follows:[1]

A. Responses to blot area
   1. Whole-blot (W)
   2. Major blot-details (D)
   3. Minor blot-details (Dd)
   4. White-space (S)

B. Determinant factors
   5. Responses closely resembling the form of the stimulus (F)
   6. Responses poorly resembling the form of the stimulus (F-)
   7. Responses involving human movement or posture-tension (M)

---

[1] See Appendix K for a more complete description of the fifteen SORT scores.

8. Responses involving animal movement or posture-tension (FM)
9. Responses involving color and closely resembling the form of the stimulus (FC)
10. Responses involving color and poorly resembling the form of the stimulus (CF)
11. Responses involving textural density of gray or shading (Fch)

C. Content factors
12. Responses involving whole animals or parts of animals (A)
13. Responses involving total human figure or parts of humans (H)

D. Statistically derived scores
14. Modal responses (P)
15. Rare responses (O)

These scores yield general measures of Intellectual functioning, Reductives, Interests, Responsiveness and Temperament (46, p. 8).

The examinee responds to items grouped together in triads, choosing the one item of the triad he perceives to be most representative of part or all of the blot. Each possible response, keyed for blot area and for a value in the determinant factor group, yields from two to four scores. The objective scoring conforms closely to the traditional Rorschach system, permitting the application of Rorschach rational in the interpretation of data (46, p. 3).

Two test-retest studies to determine the reliability of the test scores are reported by Stone. One involved 79 college students and the other 94 industrial supervisors with a one-week interval being maintained between testings in each case. Reliability coefficients were calculated using the Pearson product-moment formula. Coefficients for

the 15 scores on college students ranged from 162 to .90 with a median coefficient of .75. For the industrial supervisors, the reliability coefficients ranged from .68 to .84 with a median coefficient of .76 (46, p. 4).

Content validity of the SORT was established on the basis of four factors suggested by the American Psychological Association and Cronbach and Meehl. These factors are: item selection, item description, range and balance of items, and manner of item presentation. Concurrent validity of the SORT is supported by two studies, one with 2,600 freshmen at Brigham Young University and the other with 1,616 employees of General Telephone Company of California. Correlation coefficients of SORT scores with first-year college grade-point averages of 966 Brigham Young University freshmen ranged from about 9 to .42 and -.46 with one multiple correlation coefficient of four SORT scores with first-year college grade-point average of .64 reported (46, pp. 6-7). Over-all agreement of ratings derived from SORT scores with supervisors' ratings was 62.5 per cent for 412 telephone company employees (46, p. 10).

Three factors were of primary importance in selecting the SORT for use in this study. The projective nature of the test renders it less subject to soliciting answers or responses which may seem to be the correct or desired ones. It appeared to have some promise for measuring temperament traits which are related to performance in college. Another

important consideration was the ease with which the test can be administered and scored.

The form of the test used in this study was a revised SORT (Appendix J) provided for use with subjects of high school age. The revised form eliminated all words of sexual content which might be objectionable to parents, pupils and teachers. Words yielding the same basic interpretative potential were substituted for the sexual content words. The substituted words were checked against a vocabulary checklist to insure comprehension on the part of high school age pupils.

The SORT was administered to the subjects of this study between May 3 and May 16, which was from three to five weeks before the closing of school. The screen projection method of administration was used. The ink blots were projected on a screen, one at the time. Sizes of the groups tested varied from 16 to 30 depending upon the availability of space and pupils in the various schools. Each examinee was provided with an electrographic pencil, an IBM answer sheet, a non-illustrated test booklet and a card listing his name and code number. Lighting was controlled so that the examinees could see clearly the ink blot projections on the screen and read the items on the test booklet.

This investigator administered the SORT to all of the examinees with the counselor of the school serving as proctor. At the beginning of each testing session the

purposes of the study being conducted were briefly presented. It was explained to the pupils that they had been selected to participate in a study of high school students concerning their plans and activities for next year and that they had been selected because it was felt that they had the potential ability to succeed in college. A brief question period usually clarified all questions the subjects raised about the study and about the test they were to take. Particular attention was given to soliciting frank and honest responses and full cooperation of the pupils. It is the opinion of this investigator that not one pupil failed to cooperate to the fullest extent of his abilities. The tests were administered by following the directions provided in the SORT Manual (46, pp. 19-21).

The SORT answer sheets were scanned for completeness and scorability of responses and then scored on a standard IBM test scoring machine. The 15 raw scores of each student were recorded along the margin of the answer sheet. Every tenth answer sheet was scored a second time on a different IBM test scoring machine. A random 10 per cent sample of answer sheets was hand scored. This procedure revealed only four score changes indicating scoring errors, and in each instance the magnitude of the error was only one point. Consequently, the scoring of these answer sheets was believed to be accurate. It was most gratifying to find no answer sheets that were incomplete.

The Questionnaire

Immediately following the administration of the SORT, a questionnaire designed to gather information about the pupil's desire for college training, the parents' desire for college training for the pupil and the financial resources of the parents was administered to the pupils (Appendix F). The pupils were asked to record their code number on their copy of the questionnaire, to read each question carefully and to mark the one response to each question which best described their circumstances, feelings and desires.

The questionnaire contained seven questions with five answers listed for each. Two questions were designed to reveal information about the desire of the pupils for a college education, two questions were designed to reveal information about the desire of the parents for the pupils to obtain a college education, and three questions were designed to reveal information about the ability of the parents to finance a college education.

Consideration was given to alternative methods of gathering information about pupil and parents' desire for college training and about financial resources of parents. The techniques used by Berdie (4) in his study of high school graduates were seriously considered. Consideration was given to having parents provide information about their desire for a college education for their children and to having counselors and parents provide information about the

pupil's desire for college training. Procedures for estimating the financial ability of families suggested by the College Entrance Examination Board (7) and by the work of Mozier (35, 36) were explored. It was concluded that the procedures prescribed by the College Entrance Examination Board for estimating the financial resources of parents would probably produce the most valid information, but the cost and parent cooperation demanded by these procedures rendered this approach unusable for this study.

It was the decision of this investigator to use information provided by the pupils for estimating pupil and parent desire and financial resources. For purposes of this study, pupil desire for a college education is defined as the stated desire of the pupil. Parents' desire for a college education for their child is defined as the desire of the parent as stated by the pupil and financial resources for college is defined as stated financial resources. Hence the questionnaire in Appendix F was developed.

The five answers to each of the seven questions on the questionnaire were selected to represent a wide range of possible response from extremely positive to extremely negative responses or from extremely high to extremely low responses. The answers were listed in the order of the position they represented on a continuum of possible responses. For purposes of obtaining a numerical value or

score for each of the three areas covered by the questionnaire, a numerical value of 10, 20, 30, 40, or 50 was assigned to each possible response. Appendix A presents the questions contained in the questionnaire and the numerical values assigned to each possible response.

Three scores were computed for each pupil, one to represent pupil desire for a college education, one to represent parents' desire for a college education for the pupil and the third to represent financial resources or the ability of the parents to finance a college education for the pupil. The numerical values of the chosen responses to questions number 1 and number 3 were averaged to obtain a "pupil desire" score. The numerical values of the chosen responses to questions number 5 and number 7 were averaged to obtain a "parents' desire" score. The numerical values of the chosen responses to questions number 2, number 4, and number 6 were averaged to obtain a "financial ability" score for the family of each pupil. These three scores were recorded at the top of each questionnaire.

High School Grade-Point Average, Sex, and Chronological Age

In June and July of 1961, after the subjects of this study graduated from high school, the writer obtained each pupil's high school grades, sex and birth date from official high school records. The birth date, sex, and high school grade-point average of each pupil were recorded on an index

card bearing the name and code number of the pupil. Chronological age, to the nearest month as of September, 1961, was computed for each pupil and recorded on his index card. High school grades on official school records were recorded in terms of five letter grades: A, B, C, D, and F. For the purpose of computing high school grade-point averages, the letter grades were converted to a scale where A=60, B=40, C=20, D=0 and F=0. The numerical value for each grade was multiplied by the number of units of credit the grade represented and the sum of these products was divided by the total number of credits the pupil had earned in grades 9 through 12 to obtain the high school grade-point average. Each of the grades earned by pupils represented either one unit of credit or one-half unit of credit.

Follow-up

In November and December of 1961, the names of students believed to be enrolled in college were sent to the registrars of the appropriate colleges requesting that the enrollment of each student be verified or denied (Appendix H). Identification of students believed to be enrolled in college was made from the questionnaires the pupils had completed in April and from information provided by the former high school counselors of the pupils. This procedure was followed until the enrollment of every student who entered college in the fall of 1961 was verified by the registrar of his

college. The registrars of 76 colleges were written for information and responses were received from all 76 registrars.

Also in November and December of 1961 questionnaires were sent to the subjects believed to be engaged in activities other than college attendance (Appendix I). These questionnaires requested the subject to indicate whether he was working, attending school, in the Armed Services, etc. They were sent from the former high school counselor of each subject and the return envelopes enclosed were addressed to the appropriate high school counselor. Subjects who did not respond to the questionnaire within two weeks were sent a second questionnaire and non-respondents to the second questionnaire were sent a third questionnaire. Responses were received from 90 of the 111 subjects who were not in college. Twenty of the 21 remaining students were located by telephone or personal contact with the subject or with a member of his immediate family. The one remaining subject was not located although some of his former classmates reported that he was working. No transcript of his high school record was sent to the Armed Services or to any college; consequently, he was judged to be working and was not excluded from the study.

On the basis of the information obtained through the follow-up, each subject was classified according to the following key:

1 - Entered college
2 - Working
3 - Nursing school
4 - Armed Services
5 - Special school
6 - Working and special school
7 - Married, not working, not in school
8 - Unemployed or sick

This information was recorded on each pupil's index card along with his I.Q. standard score, high school grade-point average, sex, and chronological age.

Preparation of the Data

The data collected on each pupil, which included I.Q. standard score, high school grade-point average, sex, chronological age, desire score, parent desire score, financial resources score, and status after high school were recorded on the margin of the SORT answer sheet of the pupil. This procedure resulted in a record of all the data needed about each subject on the SORT answer sheet which served as a data transcription sheet. Complete data were available for 343 of the 363 pupils included in the study; 160 of the 173 boys and 183 of the 190 girls. Of the twenty subjects eliminated from the study, one girl transferred to a high school in another state before graduation. A second girl failed to graduate from high school and was thereby eliminated. The five remaining girls who were eliminated from the study were absent on the days the SORT was given in their respective schools. The thirteen boys who were eliminated from the study were also absent on the

days the SORT was given in their respective schools. This represented a loss of 7.5 per cent of the boys and 3.7 per cent of the girls. Of the group selected for the study, complete data were available on 94.5 per cent of the subjects; 92.5 per cent of the boys and 96.3 per cent of the girls.

The basic data on each subject was read from the SORT answer sheets, punched into cards using an IBM key punch and verified on an IBM verifier. One IBM card was punched for each subject in the study. The card columns used and the entries are presented in Appendix B.

From this basic deck, 30 decks of IBM cards, 15 for boys and 15 for girls, were produced for use in making the covariance analyses. In each of the 30 decks the dependent variable was the first entry in the cards, followed by the six independent variables on each subject. The format of these 30 decks of IBM cards is presented in Appendix C.

CHAPTER IV

ANALYSIS OF DATA AND FINDINGS

Status After High School

A follow-up of the 160 boys and 183 girls included in this study was made in November and December of 1961. The purpose of this follow-up was to determine the status of each boy and girl. Appendix D reveals what these boys and girls were doing during the fall following graduation from high school.

Almost three out of four boys (72.5 per cent) entered college following graduation, while slightly fewer than two out of three girls (63.4 per cent) entered college. Working was the next most popular activity of both boys and girls. One out of eight boys or 12.5 per cent were working while almost one out of four girls or 23.5 per cent were working. The next largest group of boys, 12 or 7.5 per cent, entered the Armed Services. Two boys were unemployed and one was recovering from an automobile accident and planned to enter college later. The remaining nine boys were attending special schools or working and attending special schools of a sub-college nature.

Eight girls, or 4.4 per cent, were enrolled in nursing schools, and nine girls, or 4.9 per cent, were working and

attending special schools other than schools of nursing. A total of 17, or 9.3 per cent, of the girls were attending special schools or working and attending special schools. Six of the girls, or 3.3 per cent, were housewives and were not working outside the home or attending college or special schools. Only one girl was unemployed, and she was seeking employment and planning to attend a local business school.

Colleges Attended

Two hundred thirty-two subjects, 116 boys and 116 girls, were attending college during the fall following graduation from high school. The colleges attended and the number of boys and girls attending each college are listed in Appendix E.

These 232 students entered 68 different colleges with 65 or 28 per cent of the students entering colleges outside the state of Georgia. The most popular college was the University of Georgia which enrolled 36 of the students. The Georgia Institute of Technology was second with thirty students followed by Georgia State College with 24 students, North Georgia College with 19 students and Emory University which enrolled 12 of the students. Each of the remaining colleges enrolled six or fewer of the students with 42 of the 68 colleges enrolling only one student each.

Differences Between College and Noncollege Boys

Comparisons were made between college and noncollege boys and between college and noncollege girls. No comparisons

were made between boys and girls. Of the 173 boys originally selected for inclusion in this study, complete data were available for only 160. A follow-up of these 160 boys in the fall of 1961 revealed that 116 boys had entered a degree granting college and 44 boys were not in college. Table I presents a summary of the mean performance and differences in mean performance of the college and noncollege boys on indices of the six independent variables used in the study. Critical ratios were computed to examine the significance of the differences between means. Differences at or beyond the .05 level of confidence were considered to be statistically significant.

The data presented in Table I reveal that the means for the college and noncollege boys are significantly different on each variable except chronological age. Except for the difference in chronological age, these differences are statistically significant at or beyond the .01 level of confidence. The mean I.Q. Standard Score for the college boys is significantly higher than the mean I.Q. Standard Score for the noncollege boys. The college boys also achieved significantly higher means on High School Grade Point Average, Desire Score, Financial Resources Score and Parents' Desire Score. The mean chronological age for the noncollege boys was higher than the mean Chronological Age for the college boys by about one and one-half months, but this difference was not statistically significant. These

TABLE I. Means, Standard Deviations and Differences in Means of College and Noncollege Boys on I.Q. Standard Score, High School Grade Point Average, Chronological Age, Desire Score, Financial Resources Score, and Parents' Desire Score

	College Boys N=116		Noncollege Boys N=44					
	M_1	σ_1	M_2	σ_2	$M_1 - M_2$	σ_D	CR	Level of Significance
I.Q. Standard Score	65.90	6.08	61.86	3.40	4.04	.76	5.29	.01
High School Grade Point Average	34.64	13.26	24.50	10.21	10.14	1.97	5.15	.01
Chronological Age	219.42	4.98	220.89	6.42	- 1.47	1.07	1.37	NS
Desire Score	48.02	3.60	39.55	9.45	8.47	1.46	5.80	.01
Financial Resources Score	37.78	8.12	32.02	11.68	5.76	1.92	3.00	.01
Parents' Desire Score	44.35	4.25	39.73	6.34	4.62	1.03	4.47	.01

data reject the null hypothesis that academically able college and noncollege boys do not differ significantly with respect to I.Q. Standard Score, High School Grade Point Average, Desire for College Training, Financial Resources and Parents' Desire for College Training but accept the hypothesis that academically able college and noncollege boys do not differ significantly with respect to chronological age. These differences between college and noncollege boys are in agreement with the findings of most other investigators.

Differences Between College and Noncollege Girls

Of the 190 girls originally included in this study complete data were available for only 183. A follow-up of these 183 girls in the fall of 1961 revealed that 116 girls had entered college and 67 had not entered college. Table II presents a summary of the mean performance and differences in mean performance of the college and noncollege girls on indices of I.Q Standard Score, High School Grade Point Average, Chronological Age, Desire for College, Financial Resources, and Parents' Desire for College for their children. Critical ratios were computed to examine the significance of the differences between means. Differences at or beyond the .05 level of confidence were considered to be statistically significant.

The data presented in Table II reveal that the means for the college girls and the noncollege girls are significantly

TABLE II. Means, Standard Deviations and Differences in Means of College and Noncollege Girls on I.Q. Standard Score, High School Grade Point Average, Chronological Age, Desire Score, Financial Resources Score and Parents' Desire Score

	College Girls N=116		Noncollege Girls N=67					
	M_1	$\sigma 1$	M_2	$\sigma 2$	$M_1 - M_2 = D$	σD	CR	Level of Significance
I.Q. Standard Score	65.97	4.93	62.42	4.64	3.55	.73	4.87	.01
High School Grade Point Average	43.08	11.33	34.79	11.37	8.29	1.74	4.76	.01
Chronological Age	217.91	4.58	218.18	3.62	- .27	.61	.44	NS
Desire Score	47.67	3.87	35.60	9.36	12.07	1.20	10.06	.01
Financial Resources Score	40.04	9.90	32.48	11.04	7.56	1.63	4.64	.01
Parents' Desire Score	42.33	5.00	34.40	7.20	7.93	.99	8.01	.01

different on each variable except chronological age. Except for the difference in chronological age, these differences are statistically significant at or beyond the .01 level of confidence. The mean I.Q. Standard Score for the college girls is significantly higher than the mean I.Q. Standard Score for the noncollege girls. The college girls also achieved significantly higher means on High School Grade Point Average, Desire Score, Financial Resources Score and Parents' Desire Score. The mean chronological age for the noncollege girls was higher than the mean chronological age for the college girls by approximately one-fourth of a month, but this difference was not statistically significant. These data reject the null hypothesis that academically able college and noncollege girls do not differ significantly with respect to I.Q. Standard Score, High School Grade Point Average, Desire for College Training, Financial Resources and Parents' Desire for College Training. The null hypothesis that college and noncollege girls do not differ with respect to chronological age is accepted.

Differences Between College and Noncollege Subjects on SORT Variables with Selected Factors Controlled

The college boys were found to score significantly higher than the noncollege boys on five of the six independent or control variables considered in this study. The college girls likewise scored significantly higher than the non-college girls on five of the six variables. Only on

chronological age were the college and noncollege boys and the college and noncollege girls approximately the same.

With these differences known, analysis of covariance, a modification of the procedure described by Gulliksen and Wilks (18) was used to control these six independent variables and examine differences between college and noncollege boys and girls with respect to 15 variables measured by the Structured-Objective Rorschach Test. This procedure was designed for use with two or more samples which may be from different sections of the same bivariate or multivariate population where the drawing of the samples has been controlled with respect to one or more of the independent variables. In this study a special adaptation of the Gulliksen and Wilks analysis of covariance procedure developed and programmed for the Burroughs 220 computer by Allen, Walker, and Hines (1) was used. A complete summary of this procedure is presented in Appendix L.

This procedure was used to answer the question: If allowances are made for the differences between college and noncollege subjects on I.Q. Standard Score, High School Grade Point Average, Chronological Age, Desire Score, Financial Resources Score and Parents' Desire Score, do college boys and girls differ significantly from noncollege boys and girls with respect to traits measured by the SORT? In other words, can the same regression plane of SORT scores (taken separately) on I.Q. Standard Score,

High School Grade Point Average, Chronological Age, Desire Score, Financial Resources Score and Parents' Desire Score be used for college and noncollege boys or for college and noncollege girls?

The first step in testing whether or not the same regression plane can apply to both groups is to determine if the standard error of estimating each SORT variable from the six independent (predictor) variables is essentially the same (Hypothesis A, Appendix L). If a common value for the standard error of estimate is found, the next step is to test a second hypothesis (Hypothesis B, Appendix L), namely, that the regression planes are parallel. If the regression planes are found to be parallel, it is then possible to test a third hypothesis (Hypothesis C, Appendix L).

The third test evaluates whether the regression intercepts are equal, i.e., whether the regression planes can be considered to be the same plane. If this third test reveals that college and noncollege groups differ significantly the interpretation is that with the six control variables equated, there is a difference between the two groups on the SORT variable. It is then possible to determine the amount of this difference between the two groups.

Following this procedure, thirty analyses were made on the Burroughs 220 computer. For the college and noncollege boys a separate analysis was made for each of the 15 SORT scores. This same procedure was followed for the

college and noncollege girls. Differences at or beyond the .05 level of confidence were considered to be statistically significant.

College Versus Noncollege Boys

Table III presents the results of the tests for significance of differences between college and noncollege boys on the 15 SORT variables with the six predictor variables controlled. Only on the SORT O score were the college and noncollege boys found to differ significantly and this difference was found to be significant at the .05 level of confidence. The SORT O score is a statistically derived score reflecting tendencies to perceive elements which are unique or uncommon.

The college boys obtained significantly higher scores than did the noncollege boys on the SORT O variable. Higher scores on this variable indicate that the college boys tend to think more freely and tend to possess more capacity for perceiving new relationships. These data also imply that noncollege boys tend to conform more to social pressures and tend to be less able to think freely and perceive new relationships.

On two other SORT variables, S and Fch, the standard errors of estimating the SORT variables from the six predictor variables were significantly different. On three additional variables, D, Dd, and F-, the regression planes were found to be significantly different from parallel and

TABLE III. Chi-Square Test Statistics, Degrees of Freedom and Level of Significance of Differences Between College and Noncollege Boys on 15 SORT Variables With Selected Factors Controlled by Analysis of Covariance

SORT Variable	Hypothesis Tested	Chi-Square Test Statistic	Degrees of Freedom	Level of Significance
W	A	.004	1	NS
W	A	5.739	6	NS
W	C	.129	1	NS
D	A	.923	1	NS
D	B	15.352	6	.02
D	C	1.748	1	NS
Dd	A	2.052	1	NS
Dd	B	13.291	6	.05
Dd	C	.308	1	NS
S	A	9.683	1	.01
S	B	7.087	6	NS
S	C	.144	1	NS
F	A	.002	1	NS
F	B	8.772	6	NS
F	C	.001	1	NS
F-	A	.559	1	NS
F-	B	16.234	6	.02
F-	C	.883	1	NS
M	A	1.025	1	NS
M	B	5.087	6	NS

Table III (continued)

SORT Variable	Hypothesis Tested	Chi-Square Test Statistic	Degrees of Freedom	Level of Significance
M	C	.012	1	NS
FM	A	.009	1	NS
FM	B	6.592	6	NS
FM	C	.234	1	NS
FC	A	.589	1	NS
FC	B	7.765	6	NS
FC	C	1.299	1	NS
CF	A	5.998	1	.02
CF	B	18.514	6	.01
CF	C	.061	1	NS
FCh	A	4.779	1	.05
Fch	B	5.406	6	NS
Fch	C	.118	1	NS
A	A	3.129	1	NS
A	B	11.723	6	NS
A	C	.105	1	NS
H	A	.004	1	NS
H	B	4.788	6	NS
H	C	2.404	1	NS
P	A	.076	1	NS
P	B	8.188	6	NS
P	C	.063	1	NS

Table III (continued)

SORT Variable	Hypothesis Tested	Chi-Square Test Statistic	Degrees of Freedom	Level of Significance
O	A	1.297	1	NS
O	B	2.714	6	NS
O	C	3.880	1	.05

NS = Not Significant. Differences were judged to be significant only when the .05 level of confidence was reached.
Hypothesis A: That the standard errors of estimate are equal.
Hypothesis B: That the regression planes are parallel.
Hypothesis C: That the regression planes are identical.
SORT variables are defined in Appendix K.

on one variable, CF, the standard errors of estimate were found to be significantly different and the regression planes were found to be significantly different from parallel.

Finding that the college and the noncollege boys differed at the .05 level of confidence on only one of the 15 SORT variables is only slightly better than a chance finding. Had 20 variables been studied, differences at the .05 level of confidence on one of the variables would be expected to occur by chance when no real differences exist. Consequently, it seems reasonable to conclude, pending further investigation, that academically able college and noncollege boys do not differ with respect to the variables measured by the Structured-Objective Rorschach Test when

I.Q. Standard Score, High School Grade Point Average, Chronological Age, Desire Scores, Financial Resources Scores and Parents' Desire Scores are controlled.

College Versus Noncollege Girls

Table IV presents the results of the tests for significance of differences between college and noncollege girls on the 15 SORT variables with the six predictor variables controlled. Differences between the two groups were found to be significant at the .05 level of confidence on two of the 15 SORT variables, F- and FC. The F- score reflects responses poorly resembling the form of the stimulus. The noncollege girls obtained significantly higher scores than did the college girls on the F- variable. High scores on this variable suggest tendencies toward vague thinking, poor intellectual and self control and impulsive thought and actions. Tendencies toward a lower level of intellectual efficiency are also implied. Conversely, these data suggest that college girls tend to think more clearly and exercise a higher degree of intellectual control.

The FC variable reflects responses involving color and closely resembling the form of the stimulus. The college girls obtained higher scores than did the noncollege girls on the FC variable indicating tendencies toward a higher level of social responsibility and cooperation. These scores also indicate that college girls tend to more readily

TABLE IV. Chi-Square Test Statistics, Degrees of Freedom and Level of Significance of Differences Between College and Noncollege Girls on 15 SORT Variables With Selected Factors Controlled by Analysis of Covariance

SORT Variable	Hypothesis Tested	Chi-Square Test Statistic	Degrees of Freedom	Level of Significance
W	A	.248	1	NS
W	B	3.386	6	NS
W	C	2.191	1	NS
D	A	1.086	1	NS
D	B	4.617	6	NS
D	C	.907	1	NS
Dd	A	1.196	1	NS
Dd	B	1.302	6	NS
Dd	C	1.118	1	NS
S	A	6.404	1	.02
S	B	4.651	6	NS
S	C	3.299	1	NS
F	A	.503	1	NS
F	B	2.443	6	NS
F	C	2.235	1	NS
F-	A	.541	1	NS
F-	B	4.694	6	NS
F-	C	4.473	1	.05
M	A	6.002	1	.02
M	B	1.668	6	NS

Table IV (continued)

SORT Variable	Hypothesis Tested	Chi-Square Test Statistic	Degrees of Freedom	Level of Significance
M	C	.029	1	NS
FM	A	1.438	1	NS
FM	B	4.313	6	NS
FM	C	.060	1	NS
FC	A	.253	1	NS
FC	B	3.256	6	NS
FC	C	5.333	1	.05
CF	A	.056	1	NS
CF	B	3.387	6	NS
CF	C	1.259	1	NS
Fch	A	.014	1	NS
Fch	B	3.307	6	NS
Fch	C	1.975	1	NS
A	A	.009	1	NS
A	B	3.595	6	NS
A	C	.083	1	NS
H	A	1.143	1	NS
H	B	1.165	6	NS
H	C	2.498	1	NS
P	A	1.944	1	NS
P	B	3.328	6	NS

Table IV (continued)

SORT Variable	Hypothesis Tested	Chi-Square Test Statistic	Degrees of Fredom	Level of Significance
P	C	.219	1	NS
O	A	.987	1	NS
O	B	8.335	6	NS
O	C	.109	1	NS

NS: Not Significant. Differences were judged to be significant only when the .05 level of confidence was reached.
Hypothesis A: That the standard errors of estimate are equal.
Hypothesis B: That the regression planes are parallel.
Hypothesis C: That the regression planes are identical.
SORT variables are defined in Appendix K.

accept obligations to self and others, to possess more sensitivity towards others and to exhibit a more mature, stable responsiveness in human relations.

On two other SORT variables, S and M, the standard errors of estimating these variables from the six predictor variables were found to be different at the .02 level of confidence.

These findings reveal that academically able college and noncollege girls differ significantly with respect to two of the 15 variables measured by the Structured-Objective Rorschach Test when I.Q. Standard Score, High School Grade Point Average, Chronological Age, Desire Score, Financial Score, and Parents' Desire Score are controlled. It is tentatively concluded, pending further investigation, that

academically able college and noncollege girls do differ with respect to two of the personality or temperament variables measured by the Structured-Objective Rorschach Test.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

This study was designed to examine certain differences between academically able high school graduates who enter college and those who do not enter college. The subjects studied were selected from the 1961 graduating classes of six high schools in the Fulton County school system, Atlanta, Georgia. Included in the study were the 363 pupils who achieved an I.Q. standard score of 58 or higher on one or two commonly used intelligence tests. Complete data were not available on 20 of the 363 pupils originally included in the study; consequently, the findings in this report are based on a study of 343 pupils. Comparisons of college and noncollege subjects were made within each sex group with no comparisons being made between sexes.

During the spring and summer of 1961 the following information was obtained on each subject included in the study: Intelligence Quotient, High School Grade Point Average, Chronological Age, Desire for College Training, Financial Resources for College, Parents' Desire for College Training, Sex, and Structured-Objective Rorschach Test results. Intelligence quotients were obtained from

school records and from administering the Otis Gamma test. High school grade point average, chronological age and sex were obtained from official school records. Indices of desire for college training, financial resources for college and parents' desire for college training for their children were obtained through the use of a questionnaire which was administered to each subject.

A follow-up of the subjects was conducted in the fall of 1961 to determine their status during the fall following graduation from high school. The status of students enrolled in college was verified by college registrars. The status of subjects not enrolled in college was verified by contacting the subjects or members of their immediate family.

Differences between boys enrolled in college and boys not enrolled in college with respect to I.Q. standard score, high school grade point average, chronological age, desire score, financial resources score, and parents' desire score were examined. Critical ratios were computed to examine the significance of differences between group means on each of the six variables. Differences at or beyond the .05 level of confidence were considered to be statistically significant. Differences between college and noncollege girls with respect to I.Q. standard score, high school grade point average, chronological age, desire score, financial resources score and parents' desire score were examined.

Analysis of covariance, a modification of the procedure described by Gulliksen and Wilks (18) were used to control

I.Q. standard score, high school grade point average, chronological age, desire score, financial resources score and parents' desire score and examine differences between college and noncollege boys and between college and noncollege girls with respect to 15 variables measured by the Structured-Objective Rorschach Test. Thirty analyses were made, one for each sex group on each of the 15 SORT variables.

Findings

1. Many academically able high school graduates failed to enter college during the fall following graduation from high school. Only 67.6 per cent of the subjects in this study were found to be enrolled in college.

2. A higher percentage of academically able boys entered college following graduation from high school than did academically able girls. Only 63.4 per cent or 116 of the 183 girls entered college whereas 72.5 per cent or 116 of the 160 boys entered college.

3. College boys and college girls achieved significantly higher scores on intelligence tests than did their noncollege peers of the same sex. These differences were found to be significant at the .01 level of confidence.

4. High school graduates who entered college achieved significantly higher high school grade point averages than did their noncollege peers of the same sex. These differences were found to be significant at the .01 level of confidence.

5. College boys and college girls expressed a stronger desire to enter college than did their noncollege peers of the same sex. The desire scores for the college groups were found to be significantly higher than for the noncollege groups at the .01 level of confidence.

6. College boys and college girls reported that their families were more able financially to send them to college than did their noncollege peers of the same sex. The financial resources scores of the college groups were found to be significantly higher than for the noncollege groups at the .01 level of confidence.

7. College boys and college girls reported that their parents more strongly desired them to enter college than did their noncollege peers of the same sex. The parents' desire scores for the college groups were found to be significantly higher than for the noncollege groups at the .01 level of confidence.

8. The mean chronological age of the noncollege boys was found to be about one and one-half months higher than for the college boys and the mean chronological age for noncollege girls was found to be about three-tenths of a month higher than for college girls. Although the college students were found to be slightly younger than their non-college peers of the same sex, these differences were not statistically significant.

9. When indices of I.Q., high school achievement, chronological age, desire for a college education, financial resources for attending college and parents' desire for college for their children were controlled by the statistical procedure of analysis of covariance:

a. college boys were found to differ significantly from their noncollege peers of the same sex with respect to only one of the 15 personality or temperament variables measured by the Structured-Objective Rorschach Test. The college boys obtained significantly higher scores on the SORT O (Original) variable indicating stronger tendencies to perceive unique, different or non-conforming elements suggesting a behavorial emphasis on individualism of actions and thoughts.

b. the noncollege girls obtained significantly higher scores on the SORT F- variable indicating they more frequently chose responses poorly resembling the form of the stimulus suggesting stronger tendencies toward poor intellectual control and impulsiveness. The college girls obtained significantly higher scores on the SORT FC variable indicating stronger tendencies toward social responsibility and cooperation.

Conclusions and Implications for Further Research

This investigation was designed to examine differences between college and noncollege academically able high school graduates with respect to selected personality and temperament traits when indices of ability, past achievement, chronological age, desire and financial resources for college and parents' desire for college were controlled. The results of this investigation must be verified or refuted by additional studies before valid conclusions can be drawn about the temperament trait differences between academically able college and noncollege high school graduates.

This investigation confirmed the findings of other investigations in finding that only two out of three of these academically able high school graduates entered college during the fall following graduation from high school. The graduates who entered college were slightly younger than those who failed to enter and the college groups were significantly superior with respect to ability, past achievement, desire and financial resources for college, and parents' desire for college. Further research is needed to determine the extent to which these six variables are interrelated and the accuracy with which they can be used to identify the academically able high school student who is likely not to enter college.

When these six variables were controlled, college and noncollege girls were found to differ significantly on two of the 15 variables measured by the Structured-Objective Rorschach Test, the F- variable and the FC variable. The noncollege girls obtained significantly higher scores on the F- variable suggesting stronger tendencies toward poor intellectual control and impulsiveness. The college girls obtained significantly higher scores on the FC variable indicating stronger tendencies toward social responsibility and cooperation. Although further research in this area is needed and recommended, it seems reasonable to tentatively conclude that college and noncollege girls do differ significantly with respect to temperament and emotional traits measured by the Structured-Objective Rorschach Test.

The college and noncollege boys were found to differ at the .05 level of confidence on only one of the 15 Structured-Objective Rorschach Test variables, the O variable. The college boys obtained significantly higher scores on the SORT O variable suggesting stronger tendencies toward independent actions and thoughts and freedom in thinking. Finding that college and noncollege boys differed significantly at the .05 level of confidence on only one of the 15 variables was only slightly better than a chance finding. Pending further study of these differences, this investigator tentatively concludes that college and non-

college boys do not differ significantly on personality and temperament traits measured by the Structured-Objective Rorschach Test.

Additional research is needed to provide conclusive information about the relationship of temperament and emotional traits to college entry. In the opinion of this investigator future studies should include samples of high school graduates at all ability levels and should examine the interrelationships among the variables included in this study.

BIBLIOGRAPHY

1. Allen, M. L., J. W. Walker, and W. W. Hines. Program for Correlations, Regression, and Gulliksen-Wilks Test. Atlanta: Georgia Institute of Technology, 1961. Unpublished Bulletin, ST 01, Burroughs 220 Computer, 220-RECC No. 1.

2. Barber, L. E. "Why Some Able High School Graduates Do Not Go to College." Unpublished Doctoral Dissertation, University of Pittsburgh, 1950.

3. Beezer, R. H. and H. F. Hjelm. "Factors Related to College Attendance." Washington: U. S. Department of Health, Education and Welfare, Cooperative Research Monograph No. 8, 1961.

4. Berdie, Ralph. After High School - What? Minneapolis: University of Minnesota Press, 1954.

5. Bowman, P. H. and C. V. Matthews. "Motivations of Youth for Leaving School." Washington: U. S. Department of Health, Education, and Welfare, OE-24004, Project No. 200, 1959.

6. Clark, S. G. "The Rorschach and Academic Achievement." Personnel and Guidance Journal, 1958, 36, 5, 339-341.

7. College Entrance Examination Board, "Financial Aid Manual." Princeton, N. J.: College Scholarship Service, 1961.

8. Committee on Education and Labor, House of Representatives. The National Defense Education Act of 1958. Washington: U. S. Government Printing Office, 1958.

9. Cronbach, L. J. "Studies of the Group Rorschach in Relation to Success in the College of the University of Chicago," Journal of Educational Psychology, 1950, 41, pp. 65-82.

10. Daughtry, A.A. "A Report on the Post Graduation Activities of the 1955 Kansas High School Graduates." Emporia, Kansas: The Emporia State Research Studies, Kansas State Teachers College, Vol. 5, No. 2, December, 1956.

11. Douvan, Elizabeth and Carol Kaye. "Motivational Factors in College Entrance." In N. Sanford (ed.), The American College. New York: John Wiley & Sons, 1962, 199-224.

12. Dyer, H. S. and W. B. Schrader. "Manual for Analyzing Results of an Educational Experiment (Analysis of Covariance)." Princeton, N. J.: Educational Testing Service, 1960.

13. Educational Policies Commission. "Manpower and Education." Washington, D. C.: National Education Association, 1956.

14. Educational Testing Service. "Background Factors Relating to College Plans and College Enrollment Among Public High School Students." Princeton, N.J.: Educational Testing Service, April, 1957.

15. Fincher, C. "A Preliminary Evaluation of the Admissions Testing Program at Georgia State College." Unpublished report, Georgia State College, 1961.

16. Garrett, H. E. Statistics in Psychology and Education, Fifth Edition. New York: Longmans, Green & Co., 1958.

17. Gough, H. G. "Some Personality Differences Between High Ability High School Students Who Do and Do Not Go to College." Unpublished Manuscript, Institute of Personality Assessment and Research, University of California, Berkeley, September, 1960.

18. Gulliksen, H. and S. S. Wilks. "Regression Tests for Several Examples." Psychometrika, 1950, 15, pp. 91-114.

19. Havighurst, R. J. and R. R. Rodgers. "The Role of Motivation in Attendance at Post-High School Educational Institutions." In Byron S. Hollinshead, Who Should Go To College. New York: Columbia University Press, 1952.

20. Havighurst, R. J. American Higher Education in the 1960's. Columbus, Ohio: Ohio State University Press, 1960.

21. Hill, G. E. "College Proneness--A Guidance Problem." Personnel and Guidance Journal, 1954, 33, pages 70-73.

22. Holland, J. L. "The Prediction of College Grades from the California Psychological Inventory and Scholastic Aptitude Test." Journal of Educational Psychology, 1959, 50, pp. 135-142.

23. Holland, J. L. "The Prediction of College Grades from Personality and Aptitude Variables." Journal of Educational Psychology, 1960, 51, pp. 245-254.

24. Hollinshead, B. S. Who Should Go to College. New York: Columbia University Press, 1952.

25. Hosford, Prentiss McIntyre. "Characteristics of Science Talented and Language Talented Secondary-School School Students." Unpublished Doctoral Dissertation, University of Georgia, 1961.

26. Iffert, R. E. "Retention and Withdrawal of College Students." Washington: U. S. Government Printing Office, 1957. OE Bulletin, 1958, No. 1.

27. Lichtenberger, A. R. "How Many Graduates of Nebraska High Schools Seek More Education?" Lincoln, Nebraska: Nebraska Research Brief, Nebraska Department of Education, Vol. 2, No. 4, May, 1958.

28. Little, J. K. "Wisconsin Study of Academically Talented High School Graduates: Their College Plans and Progress." In Brown, N. E. (ed.) Higher Education: Incentives and Obstacles. Washington: American Council on Education, 1960.

29. McCandless, B. R. "The Rorschach as a Differential Predictor of Academic Success for Matched Groups of High Superior Men." American Psychologist, 1947, 2, pp. 414-415.

30. McCandless, B. R. "The Rorschach as a Predictor of Academic Success." Journal of Applied Psychology, 1949, 33, pp. 43-50.

31. McDaniel, E. D. and Mary Sue Forenback. "Kentucky's Top 15 Per Cent, a Study of the College Attendance Patterns of Superior High School Students." Lexington, Kentucky: Special Research Report, Kentucky Cooperative Counseling and Testing Service, University of Kentucky, No. 1, May, 1960.

32. Maxwell, Martha J. "An Analysis of the California Psychological Inventory and the American Council on Education Psychological Tests as Predictors of Success in Different College Curricula." American Psychologist, 1960, 15, 425 (abstract).

33. Mitchell, Blythe C. Test Department, Harcourt, Brace & World, Personal Communication. April 27, 1961.

34. Montana State Department of Public Instruction. "A Report on the Activities of the 1958 Montana High School Graduates Enrolling in College, Autumn, 1958." Helena, Montana: Guidance and Counseling Service, Montana State Department of Public Instruction. Multilithed Report, February, 1960.

35. Mosier, C. I. Evaluating Rural Housing. Gainesville, Florida: University of Florida, 1942.

36. Mosier, C. I. "Machine Methods in Scaling by Reciprocal Averages." In Proceedings of the Research Forum. New York: IBM Corporation, 1946.

37. Munroe, Ruth Learned. "Prediction of the Adjustment and Academic Performance of College Students by a Modification of the Rorschach Method." Applied Psychological Monograph of American Association for Applied Psychology. Stanford, California: Stanford University Press, 1945.

38. Osborne, R. T. and Wilma B. Sanders. "Multiple-Choice Rorschach Responses of College Achievers and Non-Achievers." Educational and Psychological Measurement, 1949, 6. No. 3, pp. 685-691.

39. Osborne, R. T., Wilma B. Sanders, and J. E. Greene. "The Prediction of Academic Success by Means of 'Weighted' Harrower Rorschach Responses." Journal of Clinical Psychology, 1950, 6, No. 3.

40. Otis, Arthur S. Manual of Directions for Otis Quick-Scoring Mental Ability Tests: Gamma Test. New York: World Book Company, 1954.

41. Otis, Arthur S. Otis Quick-Scoring Mental Ability Tests: Gamma Test. New York: World Book Company, 1937.

42. Parker, C. A. and E. W. Wright. "Do Scholarships Influence College Attendance?" Journal of Higher Education, 27, pp. 147-150, March, 1956.

43. Phearman, L. T. "Comparisons of High School Graduates Who Go to College with Those Who Do Not." Journal of Educational Psychology, XL (November, 1949), pp. 405-414.

44. Pierce, J. V. and P. H. Bowman. "Motivation Patterns of Superior High School Students." In The Gifted Student, Washington: U. S. Department of Health, Education and Welfare, Cooperative Research Monograph No. 2, 1960.

45. Segal, Arlene Stern. "Personality Evaluation of Adolescents by Means of the Structured Objective Rorschach Test." Unpublished Master's Thesis, University of Georgia, 1960.

46. Stone, J. B. Manual, S-O Rorschach Test. Los Angeles: California Test Bureau, 1958.

47. Stone, J. B. Structured Objective Rorschach Test. Los Angeles: California Test Bureau, 1958.

48. Stroup, E. and D. C. Andrew. "Barriers to College Attendance." Washington: Cooperative Research Project No. 0008, Unpublished Report. Office of Education, U. S. Department of Health, Education and Welfare, May, 1959.

49. Sullivan, Elizabeth, W. W. Clark and E. W. Tiegs. California Short-Form Test of Mental Maturity, Intermediate Level. Los Angeles: California Test Bureau, 1950.

50. Sullivan, Elizabeth, W. W. Clark, and E. W. Tiegs. Manual, California Short-Form Test of Mental Maturity, Intermediate Level. Los Angeles: California Test Bureau, 1950.

51. Thompson, Grace M. "Non-intellective Factors and Grades: the Group Rorschach." American Psychologist, 1947, 2, p. 415.

52. Topps, H. A. "The Prediction of College Going." School and Society, 51, 1940. March, pp. 257-261.

53. Witherspoon, P. and M. E. Melberg. "Relationship Between Grade-Point Averages and Sectional Scores of the Guilford-Zimmermann Temperament Survey." Educational and Psychological Measurements, 19, No. 4, 1959, pp. 673-674.

54. Wolfle, D. *American's Resources of Specialized Talent*. New York: Harper & Brothers, 1954.

55. Wright, W. W. and C. W. Jung. "Why Capable High School Students Do Not Continue Their Schooling." Bloomington, Indiana: Bulletin of the School of Education, Indiana University, Vol. 35, No. 1, January, 1959.

APPENDIX A

Numerical Values Assigned to Questionnaire Response Choices

1. How important to you is getting a college education?
   - (50) Very important
   - (40) Important
   - (30) Of average importance
   - (20) Unimportant
   - (10) Very unimportant
2. If you were to enter college next year (1961-1962), to what extent would your family pay your expenses?
   - (50) Pay all my expenses
   - (40) Pay most of my expenses
   - (30) Pay about half of my expenses
   - (20) Pay some of my expenses
   - (10) Pay none of my expenses
3. How do you feel about going to college?
   - (10) I would not go to college under any circumstances.
   - (20) I do not wish to attend college.
   - (30) I am indifferent about going to college.
   - (40) I would like to go to college.
   - (50) I am very anxious to attend college.
4. How much more money would you need to attend college?
   - (50) No more; anticipate having enough money
   - (40) Enough to pay some of my expenses
   - (30) Enough to pay about half of my expenses
   - (20) Enough to pay most of my expenses
   - (10) Enough to pay all of my expenses
5. How does your family feel about your going to college?
   - (50) Insists that I go
   - (40) Wants me to go
   - (30) Is indifferent
   - (20) Prefers that I not go
   - (10) Doesn't want me to go
6. Could you afford to go to college if you wished to go?
   - (50) Could afford it easily
   - (40) Could afford it but not easily
   - (30) Could barely afford it
   - (20) Could afford it but it would involve many sacrifices
   - (10) Could not afford it
7. How important is it to your family for you to get a college education?
   - (50) Very important
   - (40) Important
   - (30) Of average importance
   - (20) Unimportant
   - (10) Very unimportant

NOTE: The numerical values assigned are listed in parenthesis to the left of each response choice.

APPENDIX B

Columns and Entries of Data in Basic Deck of IBM Cards

Column Number	Data
1	School Code
3	Sex of Student
5- 7	Student number
9	Status after high school
11-12	I.Q. Standard Score
14-15	High school average
17-19	Age in months
21-22	Desire score
24-25	Financial resources score
27-28	Parents' desire score
30-31	SORT W
33-34	SORT D
36-37	SORT Dd
39-49	SORT S
42-43	SORT F
45-46	SORT F-
48-49	SORT M
51-52	SORT FM
54-55	SORT FC
57-58	SORT CF
60-61	SORT FCh
63-64	SORT A
66-67	SORT H
69-70	SORT P
72-73	SORT O

APPENDIX C

Columns and Entries of Data in IBM Cards
Used in Analysis of Covariance

Column Number	Data
1	Five
3- 4	Dependent Variable (SORT Score)
5	Period
6	Zero
8- 9	I.Q. Standard Score
10	Period
11	Zero
13-14	High School Grade Point Average
15	Period
16	Zero
18-20	Chronological Age
21	Period
22	Zero
24-25	Desire Score
26	Period
27	Zero
29-30	Financial Resources Score
31	Period
32	Zero
34-35	Parents' Desire Score
36	Period
37	Zero

APPENDIX D

Status of Academically Able Male and Female Graduates of Six Fulton County High Schools During the Fall Following Graduation in June, 1961

Status	No. Boys	% Boys	No. Girls	% Girls	Total Number	% of Total
Attending College	116	72.5	116	63.4	232	67.6
Working	20	12.5	43	23.5	63	18.4
Attending Nursing School	0	0	8	4.4	8	2.3
In Armed Services	12	7.5	0	0	12	3.5
Attending Special School	5	3.1	6	3.3	11	3.2
Working and Attending Special School	4	2.5	3	1.6	7	2.0
Housewife	0	0	6	3.3	6	1.8
Unemployed or Sick	3	1.9	1	.5	4	1.2
TOTAL	160	100.0	183	100.0	343	100.0

APPENDIX E

Colleges Entered and Number of Academically Able Male and Female Graduates of Six Fulton County High Schools Who Entered Each College in the Fall of 1961

Name of College	Boys	Girls	Total
Agnes Scott College	0	2	2
Arkansas State College	0	1	1
Asbury College	1	1	2
Atlanta Christian College	0	1	1
Bemidji State College	0	1	1
Berry College	0	1	1
Bob Jones University	1	1	2
Brenau College	0	1	1
Carson-Newman College	2	0	2
Clemson College	1	0	1
University of Colorado	0	1	1
Columbia Bible College	0	1	1
David Lipscomb College	1	0	1
Davidson College	1	0	1
Drury College	1	0	1
Duke University	2	0	2
Emory at Oxford	0	1	1
Emory University	7	5	12
Erskine College	0	1	1
Florida State University	1	4	5
University of Florida	0	1	1
Furman University	0	4	4
Georgia Southern College	0	3	3
Georgia State College	7	17	24
Georgia Institute of Technology	29	1	30
University of Georgia	16	20	36
Gulf Park College	0	1	1
Harding College	0	1	1
University of Kansas	1	0	1
University of Kentucky	0	1	1
King College	0	1	1
LaGrange College	2	3	5
Loyola University	0	1	1
University of Maryland	1	0	1
Marymount College	0	1	1
Maryville College	0	3	3
Memphis State University	0	1	1
Mercer University	2	0	2

Name of College	Boys	Girls	Total
University of Miami	0	1	1
Middle Georgia College	0	1	1
Midwestern Baptist Theological Seminary	1	0	1
Milligan College	1	1	2
Newberry College	0	1	1
University of North Carolina	6	0	6
North Georgia College	12	7	19
Oglethorpe University	2	1	3
University of Pennsylvania	1	0	1
Queens College	0	1	1
Reinhardt College	1	0	1
Rice University	1	0	1
Richmond Professional Institute	0	1	1
Shorter College	0	5	5
Southern Technical Institute	6	0	6
Stephens College	0	1	1
Tennessee Temple	1	0	1
University of Tennessee	0	3	3
Tift College	0	1	1
Truett McConnell College	2	0	2
Tulane University	1	0	1
United States Military Academy	1	0	1
Vanderbilt University	1	0	1
Virginia Intermont College	0	1	1
Virginia Polytechnic Institute	1	0	1
Wesleyan College	0	1	1
West Georgia College	0	3	3
Woman's College of Georgia	0	5	5
Yale University	1	0	1
Young Harris College	1	1	2
TOTAL	116	116	232

APPENDIX F

Date_____ Student Number_____

FULTON COUNTY SCHOOLS
1961

Please answer each of the following questions honestly and frankly to the best of your knowledge and ability by checking the most appropriate response listed. Do not omit any questions and do not sign your name.

1. How important to you is getting a college education?
   _____Very important
   _____Important
   _____Of average importance
   _____Unimportant
   _____Very unimportant

2. If you were to enter college next year (1961-1962), to what extent would your family pay your expenses?
   _____Pay all my expenses
   _____Pay most of my expenses
   _____Pay about half of my expenses
   _____Pay some of my expenses
   _____Pay none of my expenses

3. How do you feel about going to college?
   _____I would not go to college under any circumstances.
   _____I do not wish to attend college.
   _____I am indifferent about going to college.
   _____I would like to go to college.
   _____I am very anxious to attend college.

4. How much more money would

APPENDIX G

FULTON COUNTY SCHOOLS
Atlanta, Georgia
1961

In October, 1961, you will receive a letter asking about what you have done since leaving high school. The information requested below will assist us in locating you.

Name_____ **Phone No.**_____
Last First Middle

Permanent Address_____
Street Address City Zone State

Father's Name and Permanent Address_____
Last First Middle

_____
Street Address City Zone State

Father's Business Address and Phone Number_____
Company Street Address

_____
City Zone State Phone Number

List the name and permanent address of a relative or friend who will always know where to contact you.

Name_____ **Phone No.**_____
Last First Middle

Permanent Address_____
Street Address City Zone State

If you anticipate entering college this fall, list the name and address of the college you are most likely to attend.

Name of college_____

Address of college_____

APPENDIX H

REGENTS OF THE UNIVERSITY SYSTEM OF GEORGIA
244 WASHINGTON STREET, S.W.
ATLANTA

Dear Sir:

A special study is being made of a sample of the 1961 high-school graduating class of the Fulton County Schools, Atlanta, Georgia. A part of this study necessitates determining which of these graduates are enrolled in a college or university this Fall.

One or more of these students reported that they planned to enter your institution. These students are listed below. Will you please identify the students who are enrolled in your institution this term by writing "Yes" to the left of their names? Please ignore the number preceeding each name.

Your attention to this request will be appreciated. A self-addressed envelope is enclosed for your convenience in returning this information to me.

Sincerely,

Harry S. Downs
Associate Director
Testing and Guidance

APPENDIX I

Fulton County Schools
Atlanta, Georgia

November 14, 1961

Dear Graduate of 1961:

Last Spring you were selected to participate in a special study being made of high school seniors of Fulton County Schools. In order to complete this study, we need to know what you are doing this Fall. Please complete the questionnaire at the bottom of this page and return it to me in the enclosed envelope as soon as possible. Thank you for being so helpful.

Sincerely,

- -

QUESTIONNAIRE

Name _____ Date _____
First Middle Last

I. I am presently (check all that apply to you):

_____ a. Attending college

_____ b. Working

_____ c. Attending a special school (Business, Nursing, Beauty Culture, etc.)

_____ d. In the Armed Services

_____ e. Other (specify) _____

II. List the name and address of your college or school if you are attending full-time or part-time.

Name of College or School _____

Address _____

III. Comments:

APPENDIX J

S-O RORSCHACH
Secondary Edition

Devised by

Joics B. Stone, Ph.D.

INSTRUCTIONS

You will be shown a series of ten ink-blots, projected one at a time on the screen. These blots really do not represent anything in particular; however, people do see certain things in the blots. Different people see different things. You are to look at the blot and then at the list of possible things to be seen. You will notice that the things to be seen are arranged in groups of three and are numbered. With each group of three you are to do two things. First, choose the one of the three which you think is <u>most clearly represented</u> by the blot or by some part of the blot. Second, look at the number opposite that choice and blacken in the dotted lines opposite that number on the answer sheet.

Proceed to the next group of three and follow the same directions. Do this for all the groups of three corresponding to the blot shown on the screen. When the Examiner projects a new blot on the screen, you will follow the same directions as above which are:

1. Select the one response from each group of three that you think is <u>best represented</u> by the blot or some part of the blot.

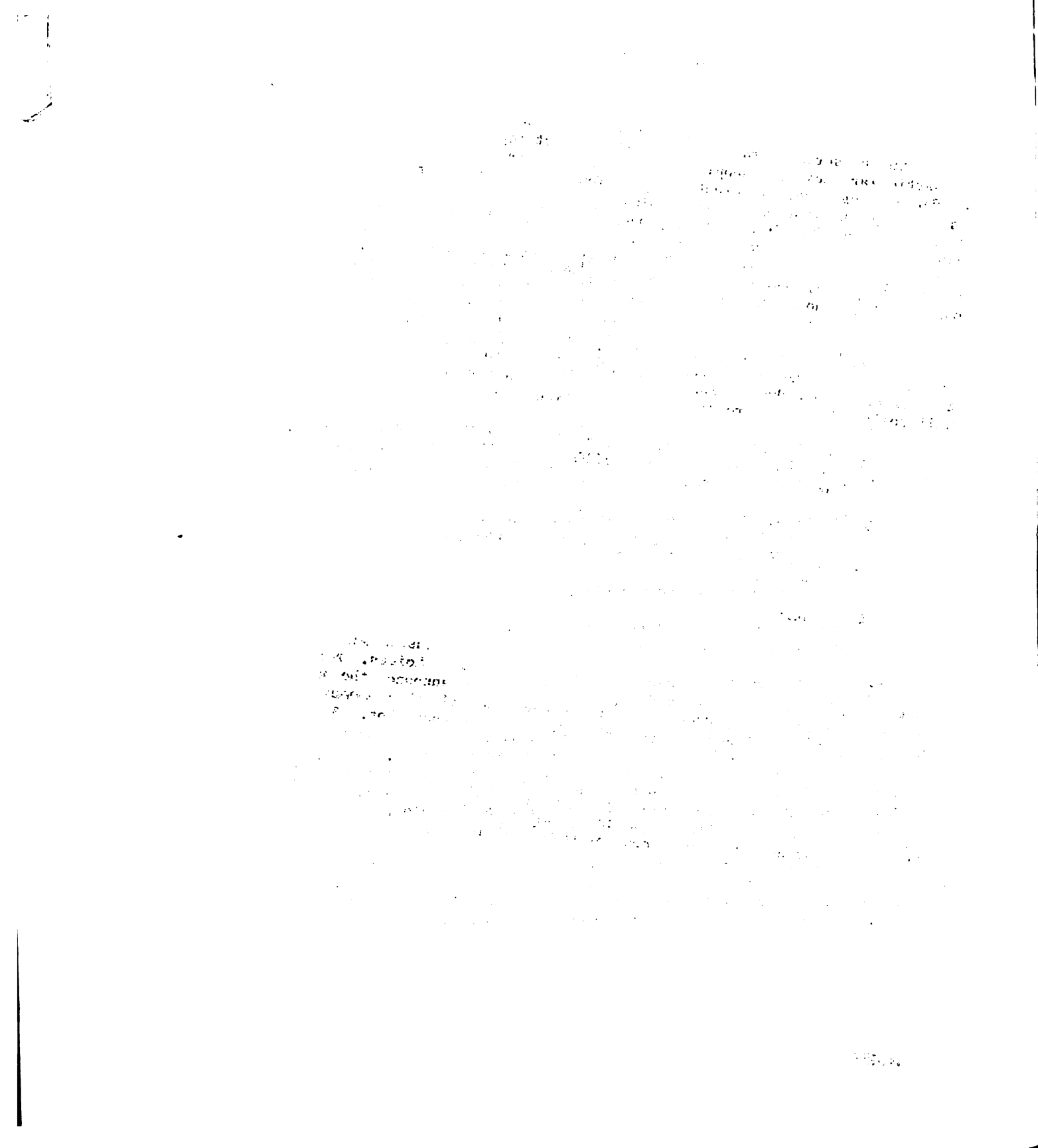
2. Note the number of your choice.

3. Blacken in the dotted lines opposite that number on the answer sheet.

4. Continue on to the next group of three and follow the same procedure.

Be sure that the numbers you blacken in on the answer sheet correspond to the numbers in the booklet opposite your choices. Make no marks of any kind in the booklet. The Examiner will announce the number of each blot as it is projected on the screen. He will also announce the first number in the booklet which corresponds to that blot. Be sure that you are marking in the proper place on the answer sheet.

There are no right or wrong answers to this test. If you decide to change an answer, erase your mark thoroughly and blacken in your new choice. However, your first impressions will probably be best in a test like this. Do not omit any groups of three or any blots.



BLOT #1

1. Bomber
2. Bird's beak
3. Arrow

4. Balloon
5. Boar's head
6. Insignia

7. Moth
8. Smoke
9. Jack O'Lantern

10. Fingers
11. Sculpture
12. Fungus growth

13. Vertebra
14. Crayfish
15. Shoulderblade

16. Salt shaker
17. Turkeys strutting
18. Chest X-ray

19. Butterfly
20. Hills and vales
21. Praying lady

22. Crab
23. Sherlock Holmes
24. Photograph of island

25. Goblin
26. Oriental god
27. Fox

28. Vampire
29. Mud puddles
30. Beetle

BLOT #2

31. Head of mule
32. Puppies muzzling
33. Punch and Judy

34. Old maids
35. Church
36. Indian head

37. Bat
38. Antennae
39. Ray fish

40. Zoology slide
41. Christmas stocking
42. Forest fire

43. Bamboo sticks
44. Calf
45. Clouds

46. Surrealist drawing
47. Fire Chief's hat
48. Sunrise

49. Knitted cap
50. Lamb's head
51. Russian dancers

52. Chandelier
53. Piece of fur
54. Rooster's head

55. Map of Minnesota
56. Ink
57. Chinese lantern

58. Exploded skyrocket
59. Modern swimming pool
60. Vertebra

BLOT #3	BLOT #4
61. Butlers	91. Arches
62. Cocoons	92. Seal's head
63. Bowl	93. Bearskin
64. Snow	94. Gangster dancing
65. Boots	95. Vertebra
66. Symbolic painting	96. Hands
67. Tarantula	97. Pouch
68. Ribbon bow	98. Mountain road
69. Windpipe	99. Gorilla ready to pounce
70. Adriatic Sea	100. Pygmy witch-doctor
71. Abdomen	101. Head of cow
72. Insiguia	102. River
73. Vertebrae	103. Head of cobra
74. Stone faces	104. Trunk of tree
75. Madagascar	105. Bear bowing
76. Mountain	106. Boy in fur coat
77. Paint splatters	107. Ponds and pools
78. Water-wings	108. Crocodile's face
79. Stick	109. Water reservoirs
80. Jumping Jacks	110. Clouds
81. Oriental Moth	111. Big boots
82. Crayfish	112. Lace collar
83. Coconut	113. Animal foot
84. Sea-horses	114. Branches
85. Foot	115. Squirrel
86. Sheep	116. Fir tree
87. Chest X-ray	117. Goose's neck
88. Skull	118. Human head
89. Flying chickens	119. Birds
90. Pot	120. Lion's head

BLOT #5

121. Bat
122. Horns
123. Animal's hoof

124. Part of tree
125. Pincers
126. Aerial map

127. Flattened insect
128. Dog's leg
129. Dead tree limb

130. Donkey's ears
131. Model wearing stiff hat
132. Dancing acrobat

133. Fighting bulls
134. Snake with mouth open
135. Victory signal

136. Rat's tail
137. Clouds
138. Devil with flowing robe

139. Anatomical cross-section
140. Man lying down
141. Arrow

142. Sea plants
143. Crocodile with mouth open
144. Clubs

145. Butterfly feelers
146. Head of person
147. Flower holder

148. Human arm
149. Peter Rabbit hopping
150. Snail's antennae

BLOT #6

151. Lava stream
152. Siamese twins
153. Bat

154. Animal cut open
155. Totem pole
156. Gulf

157. Zooming bumblebee
158. Knife
159. Flattened insect

160. Topographic map
161. Gravestone
162. Beetle in flight

163. Stick
164. Oak leaf
165. Goose flying

166. Valleys and hills
167. Turtle's head
168. Little hands

169. Antennae
170. Candlestick
171. Photo of guided missile in flight

172. Whirling dervish
173. Fur coat
174. Cotton balls

175. Cocoons
176. Weathercock
177. Woman's head

178. Chess heads
179. Soaring birds
180. Army tank with reflection

BLOT #7

181. Rising smoke
182. Fancy earrings
183. Crown

184. Chimpanzee
185. Beehive
186. Map of islands

187. Emblem
188. Sheep
189. Hummingbird's wings

190. Religious medallion
191. Plume
192. Dancing puppies

193. Mixing bowl
194. Map of Spain
195. Rolled-up coat

196. Toy top
197. Backbone
198. Sculptured figures

199. Aerial photograph
200. Dam
201. Vase

202. Tree
203. Football players
204. Chinese figurines

205. Grinning gargoyles
206. Gossiping old maids
207. Bear's foot

208. Bridge
209. Cat with tail up
210. Frothy mixture

BLOT #8

211. Canal
212. Iris
213. Stained slide

214. Fantastic painting
215. Woman's shortie coat
216. Flying dove

217. Baton
218. Bouquet
219. Royal crest

220. Chinese tapestry
221. Pansy
222. Backbone

223. Turret
224. Sea-lion
225. Painted porcelain dish

226. Distant iceberg
227. Moth
228. Little street

229. Dead wood
230. Fur
231. Paunch

232. Chest
233. Rooting woodchucks
234. Potato

235. Perfume bottle
236. Cushions
237. Blouse

238. Foliage
239. Goat's head
240. Seas

BLOT #9

241. Fairy-tale landscape
242. Clowns playing ball
243. Chandelier

244. Camel's head
245. Grimacing gargoyles
246. Water fountain

247. Palette of colors
248. Seal's head
249. Hour glass

250. Northern lights
251. Powder puffs
252. Colored map

253. Exotic vase
254. Flower cup
255. Bays

256. Stomach
257. Gunsmoke
258. Shaggy animal

259. Tropical moth
260. Thistle
261. Cavern

262. Tunnel
263. Teeth
264. Deer's head

265. Liver
266. Goblet
267. Talons

268. Sceptre
269. Cave entrance
270. Old lady crouching on cane

BLOT #10

271. Bluebirds
272. Mountain chain
273. Expressionistic painting

274. Tapestry figures
275. Gremlins
276. River

277. Clown
278. Peacocks
279. Emblem

280. Lobster
281. Wizard of Oz
282. Flower petals

283. Seed pods
284. Poodles
285. Memorial statue

286. Bunny
287. Man hanging in space
288. Walrus

289. Bamboo stick
290. Flame
291. Green fish

292. Cricket
293. Acrobats
294. Candelabra

295. Hatchet
296. Sea plants
297. Golden eagles

298. Stethoscope
299. Lovers leaning toward each other
300. Canyon

APPENDIX K

Definitions of The Structured-Objective Rorschach Test Variables

W Responses in which the entire blot is necessary to the interpretation of the response. By the whole inkblot is meant that which is superimposed upon the white card exclusive of the white space in and around the blot.

D Major blot details are those large portions into which the blot naturally divides. Because of their form or spatial distribution, these parts are structurally separate and are usually easily identifiable.

Dd Minor blot or rare details are responses that are rarely seen and interpreted. Meaning is found by some subjects in elements of the figures so tiny or obscure that they remain unnoticed by most persons.

S The use of a white space on the card in making a response. The S response is not initiated by the blot but by the white space which is usually considered to be a part of the background.

F Form responses are those which are determined solely by the outline or contour of the blot area selected. Good form responses are frequently seen and easily apparent.

F- Poor form responses are poorly visualized and infrequently seen. They usually represent vague ideas not conforming to the blot outline.

M When the subject interprets the figure as if it were in motion the response is called a kinesthetic or movement response. Form is necessarily implicit in most movement responses.

FM Responses in which animal forms or parts of animal forms are seen in animal-like action.

FC Responses interpreted largely on the basis of form but in which color serves to add something to the perception of a definite form.

CF Responses that are primarily determined by color and in which the form element is less definite.

Fch Responses made on the basis of shading effects. These include shading values of blacks and grays on the inkblot as well as effects of vista and perspective in which light and shade produce a three-dimensional impression.

A Responses in which some type of animal is seen. Animal responses constitute one of the two principal categories determining content of response.

H Responses in which the human figure or parts of the human figure are seen. Human responses constitute the second principal category determining content of responses.

P Responses commonly seen by one in every five persons. The modal or popular responses indicate a compliance with the thinking of the community with respect to conventional and stereotype terms.

O Responses with unique associative elaboration. Rare or original responses represent freedom in thinking and a capacity for perceiving new relationships.

APPENDIX L

Summary of Analysis of Covariance Methods

Analysis of Covariance, a modification of the procedure described by Gulliksen and Wilks, programmed for the Burroughs 220 computer provides for regression analysis for several groups of individuals using Gulliksen-Wilks tests for comparability. Available for analysis are K samples, with N (I) observation vectors on H variables in the I-th sample. The same H variables are involved in each of the K samples, and in each case the first variable is considered a dependent variable.

For each of the samples it is assumed that the rank of the observation matrix is H. This condition guarantees a unique determination of the equation which describes, for the I-th sample, the plane in H-space lying closest to the N (I) observation points in the sense of least squares.

In each sample it is also assumed that the observations on the dependent variable are chance variables, with each such observation being the sum of (1) an unknown constant term, (2) an unknown linear combination of the corresponding observed (nonrandom) values of the independent variables, and (3) a random error term. As a function of the H independent variables the constant term plus the specified linear combination of the independent variables define a plane, a so-called regression plane. The random error terms for the observation in all the samples are assumed to be

normally distributed and statistically independent, with expected values equal to zero. Within a given sample these normally distributed random errors are assumed to have a common (unknown) variance.

For the I-th sample, I=1, 2, ..., K, the unknown constant term and the coefficients in the linear combination or regression coefficients, are efficiently estimated by the constant term and coefficients in the equation describing the plane of closest fit to the N (I) observation points in the I-th group.

The Gulliksen-Wilks sequence of tests contrives to test various hypotheses about (1) the variance parameters for the several samples and (2) the comparability of the unknown but estimable regression planes.

Letting H (A) denote the hypothesis that all the K variance parameters (error variances) are the same, H(B) the hypothesis that the unknown regression coefficients for the K samples are the same (parallel regression planes), and H(C) the hypothesis that the K constant terms are the same, statistics are computed to enable the testing of (1) H(A), (2) H(B), given H(A), (3) H(C), given H(A) and H(B). Computed also is a statistic which makes possible the testing of (4) H(S), where H(S) is equivalent to H(A) and H(B) and H(C).

In case H(A) is rejected the estimation of the variance parameter, the regression coefficients, and the constant

term should be undertaken separately for each sample. To accommodate this case computed for each of the K sample groups are the means of the observations on each variable, the intercorrelations matrix, an unbiased estimate of the error variance, the multiple correlation coefficient, estimates of the regression coefficients and the constant term, and the T-ratios of the estimates of the regression coefficients to their estimated standard errors to facilitate the testing of the significance of the regression coefficients. Also computed for each group are the matrix of the sums of squares and cross-products, the covariance matrix, and the inverse of the intercorrelations matrix.

In case H(A) is assumed true (accepted) and H(B) is rejected the regression planes are still estimated separately for each sample group, but the common error variance is now estimated as a function of all the K samples. To accommodate this case the same items as in the previous case are needed and computed for each of the K sample groups, except that instead of individual group estimates of error variance and multiple correlation coefficients there are computed a single estimate of the computed error variance and a single measure of the fit of all the regression planes. The T-ratios computed for the different groups in this case are not the same as those in the previous case, nor are the degrees of freedom the same.

In case H(A) and H(B) are accepted while H(C) is rejected the regression planes are parallel, thus having

common regression coefficients but different constant terms. To accommodate this case are computed a single matrix of intercorrelations formed as a weighted average of the intercorrelations matrices for the different groups, an unbiased estimate of the common error variance, a single measure of the fit of all the data to the family of parallel regression planes (corresponding to a multiple correlation coefficient), estimates (based on all data) of the single set of T-ratios corresponding to the set of regression estimates. Also computed are a matrix of covariances formed as a weighted average of the covariance matrices for the different groups and the inverse of the weighted intercorrelations matrix referred to above.

Finally, in case H(S) is accepted, the regression planes are assumed identical, so that all the observations in the K groups are effectively pooled to estimate the common error variance and the common regression plane. From this pooled sample, to accommodate this case, are computed the grand means of all the observations on each variable, a single intercorrelations matrix (for all data pooled), an unbiased estimate of the error variance, a multiple correlation coefficient to measure the fit of all the data to the single regression plane, estimates of the regression coefficients and constant term for this regression plane (based on all data pooled), and the appropriate T-ratios for testing the significance of the regression

coefficients. Also computed are the matrix of the sums of squares and cross-products (based on all data pooled), the resulting covariance matrix, and the inverse of the pooled data intercorrelations matrix.

Description of Variables

X(1) = Rorschach Score

X(2) = Average I.Q. Standard Score

X(3) = High School Grade Point Average

X(4) = Age in months as of September 1, 1961

X(5) = Desire Score

X(6) = Financial Resources Score

X(7) = Parents' Desire Score

Floating Point Notation

Most of the output data is represented in floating point notation. The results include sufficient material to act in accordance with the following:

The rejection of H(A).

The acceptance of H(A) and the rejection of H(B).

The acceptance of H(A) and H(B) and the rejection of H(C).

The acceptance of H(S).