

CHARACTERISTICS OF STUDENTS ATTAINING  
DIFFERENT ACHIEVEMENT LEVELS AT  
NORTHWESTERN STATE COLLEGE

By

Linda Joan Stewart

Bachelor of Arts in Education  
Northwestern State College  
Alva, Oklahoma  
1962

Master of Education  
Northwestern State College  
Alva, Oklahoma  
1964

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Thesis Approved:

Harry H Probst

Thesis Adviser

Donald Deun

Robert D Morrison

D. Arhan

Dean of the Graduate College

## PREFACE

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## TABLE OF CONTENTS

Chapter	Page
I. THE PROBLEM . . . . .	1
Introduction. . . . .	1
Purpose . . . . .	2
Hypotheses. . . . .	3
Definition of Terms . . . . .	5
Limitations of the Study. . . . .	8
II. REVIEW OF THE LITERATURE . . . . .	9
Intelligence Factors in College Performance . . . . .	9
Personality Factors in College Performance. . . . .	14
Personality Variables Associated with Academic Performance . . . . .	23
Academic Performance as Related to Sociological Determinants. . . . .	24
Summary . . . . .	31
III. METHOD AND PROCEDURE. . . . .	33
Subjects. . . . .	33
Data Gathering Devices Employed in the Investigation. . . . .	34
Administration of the Tests . . . . .	42
Design of the Study . . . . .	42
IV. RESULTS . . . . .	44
Application of the Analysis of Variance to Data for Groups A and B. . . . .	44
American College Tests (ACT) . . . . .	44
High School Grades . . . . .	47
Nelson-Denny Reading Test (NDRT) . . . . .	50
Henmon-Nelson Test of Mental Ability (HNTMA) . . . . .	53
Edwards Personal Preference Schedule (EPPS). . . . .	63
Guilford-Zimmerman Temperament Survey (GZTS) . . . . .	71
Tennessee Self-Concept Scale (TSCS). . . . .	80

Relationships Among Variables and Criteria for Groups A and E. . . . .	90
Relation of ACT Scores to the Criteria . . . . .	90
High School Grades Correlated with the Criteria. . . . .	90
Correlations of NDRT Scores with the Criteria. . . . .	92
Relationships of the HNTMA Scores with the Criteria . . . . .	92
Correlations of the Scales of the EPPS with the Criteria . . . . .	92
Relationships of the Scales of the GZTS with the Criteria . . . . .	95
Correlations of the Scales of the TSCS with the Criteria . . . . .	97
V. SUMMARY OF FINDINGS . . . . .	110
Discussion. . . . .	110
Recommendations . . . . .	119
BIBLIOGRAPHY . . . . .	121
APPENDICES . . . . .	
Appendix A. . . . .	130
Table A <sub>1</sub> . . . . .	132
Table A <sub>2</sub> . . . . .	135
Table A <sub>3</sub> . . . . .	138
Table A <sub>4</sub> . . . . .	141
Appendix B. . . . .	143
Questionnaire. . . . .	144

## LIST OF TABLES

Table	Page
I. Number of Subjects in Each Group Broken Down by Sex and Level of Academic Achievement . . . . .	33
II. Analysis of Variance Results for the ACT Battery (Group A) . . . . .	45
III. Mean Scores for ACT on Students Achieving at Three Different Levels of Academic Performance (Group A). .	46
IV. Mean Scores for ACT on Males and Females (Group A). . .	46
V. Analysis of Variance Results for the ACT Battery (Group B) . . . . .	48
VI. Mean Scores for ACT on Students Achieving at Three Different Levels of Academic Performance (Group B). .	49
VII. Mean Scores for ACT on Males and Females (Group B). . .	49
VIII. Analysis of Variance Results for High School Grades (Group A) . . . . .	51
IX. Mean Grade Point Averages at End of Junior Year in High School for Students Achieving at Three Different Levels of Academic Performance (Group A) . . .	51
X. Mean Grade Point at End of Junior Year in High School Reported by Sex (Group A) . . . . .	51
XI. Analysis of Variance Results for High School Grades (Group B) . . . . .	52
XII. Mean Grade Point Averages at End of Junior Year in High School for Students Achieving at Three Different Levels of Academic Performance (Group B) . . .	52
XIII. Mean Grade Point at End of Junior Year in High School Reported by Sex (Group B) . . . . .	52
XIV. Analysis of Variance Results for the NDRT (Group A) . .	54

(List of Tables Cont'd)

Table	Page
XV. Mean Scores for the Three Parts of the NDRT on Students Achieving at Three Different Levels of Academic Performance (Group A) . . . . .	55
XVI. Analysis of Variance Results for the NDRT (Group B) . .	56
XVII. Mean Scores for the Three Parts of the NDRT on Students Achieving at Three Different Levels of Academic Performance (Group B) . . . . .	57
XVIII. Analysis of Variance Results for the HNTMA (Group A) . .	58
XIX. Mean Scores for the Three Parts of the HNTMA on Students Achieving at Three Different Levels of Academic Performance (Group A) . . . . .	60
XX. Mean Scores for the HNTMA on Males and Females (Group A) . . . . .	60
XXI. Analysis of Variance Results on the HNTMA (Group B) . .	61
XXII. Mean Scores for the Three Parts of the HNTMA on Students Achieving at Three Different Levels of Academic Performance (Group B) . . . . .	62
XXIII. Mean Scores for the HNTMA on Males and Females (Group B) . . . . .	62
XXIV. Analysis of Variance Results for the EPPS (Group A) . .	64
XXV. Mean Scores for the Scales of the EPPS on Students Achieving at Three Different Levels of Academic Performance (Group A) . . . . .	66
XXVI. Mean Scores for the Scales of the EPPS on Males and Females (Group A) . . . . .	67
XXVII. Analysis of Variance Results for the EPPS (Group B) . .	68
XXVIII. Mean Scores for the Scales of the EPPS on Students Achieving at Three Different Levels of Academic Performance (Group B) . . . . .	70
XXIX. Mean Scores for the Scales of the EPPS on Males and Females (Group B) . . . . .	72
XXX. Analysis of Variance Results for the GZTS (Group A) . .	73



(List of Tables Cont'd)

Table	Page
XXXI. Mean Scores for the Scales of the GZTS for Students Achieving at Three Different Levels of Academic Performance (Group A) . . . . .	75
XXXII. Mean Scores for the Scales of the GZTS on Males and Females (Group A) . . . . .	76
XXXIII. Analysis of Variance Results for the GZTS (Group B) . .	77
XXXIV. Mean Scores for the Scales of the GZTS for Students Achieving at Three Different Levels of Academic Performance (Group B) . . . . .	78
XXXV. Mean Scores for the Scales of the GZTS on Males and Females (Group B) . . . . .	79
XXXVI. Analysis of Variance Results for the TSCS (Group A) . .	81
XXXVII. Mean Scores for the Scales of the TSCS for Students Achieving at Three Different Levels of Academic Performance (Group A) . . . . .	83
XXXVIII. Mean Scores for the Scales of the TSCS on Males and Females (Group A) . . . . .	84
XXXIX. Analysis of Variance Results for the TSCS (Group B) . .	86
XL. Mean Scores for the Scales of the TSCS for Students Achieving at Three Different Levels of Academic Performance (Group B) . . . . .	88
XLI. Mean Scores for the Scales of the TSCS on Males and Females (Group B) . . . . .	89
XLII. Correlations Between Each of the Criteria and Various Parts of the ACT Battery for Males and Females in Groups A and B . . . . .	91
XLIII. Correlations Between Each of the Criteria and High School Grade Point Average for Males and Females in Groups A and B . . . . .	91
XLIV. Correlations Between Each of the Criteria and Various Parts of NDRT for Males and Females in Groups A and B	93
XLV. Correlations Between Each of the Criteria and Various Parts of the HNTMA for Males and Females in Groups A and B . . . . .	93

(List of Tables Cont'd)

Table	Page
XLVI. Correlations Between Each of the Criteria and the Scales of the EPPS for Males and Females in Groups A and B . . . . .	94
XLVII. Correlations Between Each of the Criteria and the Scales of the GZTS for Males and Females in Groups A and B . . . . .	96
XLVIII. Correlations Between Each of the Criteria and the Scales of the TSCS for Males and Females in Groups A and B . . . . .	98
XLIX. Percentages of Students in the Three Criterion Groups Classified by Size of Graduating Class . . . . .	100
L. Percentages of students in the Three Criterion Groups Classified by Father's Occupation . . . . .	101
LI. Percentages of Students in the Three Criterion Groups Classified by Level of Family Income . . . . .	102
LII. Percentages of Students in the Three Criterion Groups Classified by Mother's Educational Background . . . . .	104
LIII. Percentages of Students in the Three Criterion Groups Classified by Father's Educational Background . . . . .	105
LIV. Percentages of Students in the Three Criterion Groups Classified by Home Community . . . . .	106
LV. Percentages of Students in the Three Criterion Groups Classified by Types of Secondary Schools Attended . . . . .	107
LVI. Areas of Expressed Interests of Freshmen and Sophomore Students in the Three Criterion Groups . . . . .	109

## CHAPTER I

### THE PROBLEM

#### Introduction

Northwestern State College was founded in 1897 after leading citizens of Alva, Oklahoma, had made courageous efforts for a period of more than two years to establish a college in the community. The bill to establish the school was passed by the Senate and signed into law by Governor W. C. Renfrow in March, 1897. By 1901 the faculty had increased to fifteen members and the student body had grown to 551.

The school was established following the opening of the Cherokee Strip. Within a short time a vast prairie land was filled with people determined to overcome hardships and to make sacrifices to establish permanent homes and the good life. In this respect the population of this great region represented those industrious and courageous Americans who tried continually to build and develop new communities and better institutions.

In earlier years the bulk of the student body came from rural areas and small communities in the northern and western parts of the state. Most of those in attendance were descendants of the pioneers who settled these regions. Since the second World War, however, gradual changes have taken place. At the present the student body is composed of individuals coming from all over the state, the surrounding states, and fifteen foreign countries. The out-of-state enrollment constitutes

approximately 20 per cent of the total enrollment.

Informal studies of the students have been undertaken by the staff members to obtain a broader understanding of the abilities and goals of the students, and to determine how various phases of the instructional program might meet the needs of the students most effectively. Recently it was deemed advisable by the administration to undertake an investigation which would look more closely at those characteristics which differentiated the achieving students from those meeting minimal academic standards.

#### Purpose

The investigation has been undertaken for the purpose of making an intensive study of the characteristics of the freshmen entering Northwestern State College (NWSC) in the summer and fall of 1965 (Group A) and the summer and fall of 1966 (Group B) who have achieved certain levels of academic proficiency. On the assumption that differences exist between satisfactorily and low-achieving students in a number of characteristics, the present study was designed to examine those differences. Since there was no policy currently in operation at NWSC which accepted or rejected students on the basis of weighted criterion predictors, the investigation was not oriented in the direction of a prediction study. Rather, the research concerns were centered around the differences which existed among satisfactorily-achieving and low-achieving students in intelligence, reading skills, temperament, psychological needs, self-concept, and background characteristics. Findings from this kind of investigation would be useful to advisor and counselors in assisting the students to achieve better

pictures of themselves, to plan more meaningful educational and vocational objectives, and to develop awareness in the staff members of the complex cognitive and emotional patterns which may be found to be characteristic of those students at NWSC manifesting different levels of academic productivity.

It was sound to assume that some of the outcomes reported in the study had been observed informally and utilized by the staff in dealing with students. In this investigation an effort has been made to study the data in a systematic manner so that greater confidence may be placed in the outcomes.

#### Hypotheses

The investigation was concerned with examining the extent to which measures of intelligence, high school performance, reading skills, needs, temperament, self-concept, and background characteristics differentiated among students who met certain standards of academic performance assessed by level of class work. The criterion of performance for Group A was the over-all grade point average at the end of the fall semester of the second year; the criterion for Group B was the over-all grade point average at the end of the first semester in school. Students from each group were divided into three levels of academic achievement: Level 1 consisted of those students meeting minimal academic standards (over-all grade point average of 1.99 or below); Level 2 consisted of those students meeting adequate academic standards (over-all grade point average of 2.00 to 2.99); Level 3 was composed of students achieving superior academic standards (over-all grade point average of 3.00 and above). The questions tested in this

investigation were stated as null hypotheses, or more explicitly:

(1) that differences among satisfactorily-achieving and low-achieving students on the following were no greater than could be expected to occur by chance:

- (a) the five scores on the American College Test Battery
- (b) high school grades in English, Mathematics, Social Science, and Natural Science
- (c) the three scores on the Nelson-Denny Reading Test
- (d) the three scores on the Henmon-Nelson Intelligence Test
- (e) the scores on the 15 scales measuring needs as assessed by the Edwards Personal Preference Schedule
- (f) the scores on the 10 scales of the Guilford-Zimmerman Temperament Survey
- (g) the scores on aspects of self-concept as measured by the 12 scales of the Tennessee Self-Concept Scale

and (2), that for the satisfactorily-achieving and low-achieving students none of the intercorrelations for the data referred to above were statistically significant.

In addition to the testing of the hypotheses, frequency counts were prepared and percentages calculated for various background data of students in Groups A and B who differed in levels of academic performance.

Differences between satisfactorily-achieving and low-achieving students on measures of intelligence and reading skills have been observed (31), but the extent to which temperament, needs, self-concept, and background characteristics contributed to the differences has not always been clear (66, 44, 36, 38, 101). Human behavior is based upon

complex cognitive and emotional patterns interacting among themselves and with the environment. Academic productivity and school adjustment must be conceived in terms of such complex interactions.

Within recent years various sophisticated theories have been developed to make more meaningful the dynamics of human behavior (43). It seems that the set of determinants affecting the directionality of human behavior can be found frequently in personality factors. The concept of self has a marked influence on the individual's expected level of performance and his choice of goals. Levels of aspiration set too high in relation to ability may result in establishing unrealistic goals for succeeding performances (89). Goals set too low in relation to ability may result in feelings of lack of challenge and lowered satisfaction. Individuals must learn to set for themselves goals which are within their ability of attainment and which are realistically perceived. When achievements do not meet expectation, performances may be affected. Students preoccupied with personal concerns and problems, and with feelings centering particularly around inability to achieve meaningful goals, often perceive themselves as inadequate and incompetent. Inability to attain unrealistic ideals leads to frustration and demoralization (11).

#### Definition of Terms

For the purposes of this research, the following definitions apply and are listed alphabetically:

##### Academic motivation

Academic motivation was interpreted as the intensity of a student's effort and desire to achieve a certain level of academic performance.

### Academic achievement

The knowledge attained or skills developed in school subjects, usually designated by test scores or by marks assigned by teachers.

### Adjustment

In this investigation adjustment was referred to as the process of finding and adopting modes of behavior suitable to the environment.

### Background characteristics

Background characteristics were interpreted as characteristics which emerged from various ecological and demographic factors which pertain to the student. Variables such as home community, type of school attended, size of graduating class, number of younger children living at home, number of other dependents living at home, intended vocation, vocation of parents, family income and family educational background are referred to as background characteristics.

### Grade point average

In this investigation grade point average was the accumulated grade point average for the total number of course hours completed by the student. Grade point average was obtained by dividing grade points by number of hours of course work taken when course marks were weighted by the following system:

### Group A

Group A was made up of those students who entered NWSC as freshmen in the summer and fall of 1965.

### Group B

Group B was made up of those students who entered NWSC as fresh-



men in the summer and fall of 1966.

### Level 1

Level 1 was composed of students attaining a grade point average of 1.99 or below.

### Level 2

Level 2 was composed of students attaining a grade point average between 2.00 and 2.99.

### Level 3

Level 3 was composed of students attaining a grade point average of 3.00 or above.

### Level of aspiration

Level of aspiration was the level of performance or the goal that a person or group desires to reach in a specific activity.

### Need

A need was a requirement of the organism for survival, growth, reproduction, health, or social acceptance.

### Scholastic aptitude

Scholastic aptitude referred to potentiality for achievement in general college work and indicated by test performance involving operations analogous to those basic to college academic achievement.

### Temperament

Temperament referred to the affective and emotional aspects of personality, with special reference to mood and degree of activity.

### Limitations of the Study

The treatment of the problem has been limited to include only those students attending Northwestern State College, Alva, Oklahoma, who entered as freshmen students in the summer and fall of 1965 and the summer and fall of 1966, and whose names were randomly obtained from a list of students compiled in the Office of the Dean of Students. Students having incomplete test data and transfer students were excluded from the study. The investigation was not designed as a prediction study, consequently no regression equations were developed for the purpose of obtaining regression weights to predict academic performance.

## CHAPTER II

### REVIEW OF THE LITERATURE

Information available in the area of research with which this study is concerned is fairly extensive (66). A number of studies have appeared within the last fifteen years which have been concerned with the effect upon academic performance of high school rank, level of intelligence, and level of reading skill. Experts are generally agreed that these three factors play important roles in determining the extent to which students will meet acceptable academic standards in a college setting. In addition, greater concerns have centered upon personality adjustment, needs and value systems, and the educational, social and family backgrounds of the students. Unfortunately, the extent to which these factors contribute to academic achievement is not clear (66). In this section certain pertinent studies are presented which utilize data obtained on college students to illustrate types of findings and to relate findings to the objectives of the present study.

#### Intelligence Factors in College Performance

The major aim of the majority of investigations is to determine those factors which will predict academic achievement most effectively. Lavin (66) pointed out that the relationships between such predictors and performance criteria are not very strong, due possibly to (1) the failure to isolate enough of the right variables, (2) measurement error

in predictors, and (3) uncontrolled sources of variation in grades themselves. The objective of this study, as mentioned earlier, was not to construct regression equations for predicting criteria of academic performance, but rather to examine systematically those variables which (1) appeared to differentiate between different levels of performance, and (2) appeared to be significantly interrelated. Such data would contribute to a richer understanding of students achieving at different levels and would be useful to counselors in working with students with academic, vocational, and emotional problems.

Success in academic work requires certain cognitive skills. These skills are measured to a significant degree by intelligence tests. The extent to which these types of psychological measures relate to successful academic work has been the major focus of much research. The literature is extensive. Cronbach (21) and Henry (46) reviewed the literature independently about twenty years ago and reported conclusions which have been substantiated by more recent research. The correlations of college level ability tests with grade point average range from about .30 to .70 with a median  $r$  of .50 (5).

Lavin (66) pointed out that the major respect in which studies vary is in their concern with global as against multidimensional prediction. In exploring the former, the investigators are interested in over-all measures of ability in relation to over-all assessments of academic performance, while in the latter the concern is with the relation of a number of measures of ability to more than one specific dimension of performance. Although regression equations are of assistance to the counselor in making judgments as to the probability of success in academic work, much of the variance in the criterion is

still unaccounted for in assessments based upon such data. There is assurance, however, in the conclusion that the predictions are still better than chance outcomes. It should be emphasized again in reiterating a statement made above that this investigation is not concerned with the development of regression equations for the prediction of academic achievement, but is concerned with the types of outcomes on certain psychometric instruments obtained by students manifesting different levels of academic performance.

The American College Test (ACT) has been widely used in assessing intellectual growth. Since they are indicators of the extent to which students can profit from learning experiences, it is legitimate to refer to them as measures of intellectual capacity. Data reported in 1965 (4) based upon 59,164 students, showed that the median  $r$  between composite score and the college over-all grade point average was .50. When high school grades for freshmen from sixty-two colleges were combined with the results of the four tests of the ACT battery, the median correlation with freshmen college grades was .64.

It has been pointed out (53, 33, 52, 93) that in studying the relative usefulness of ability tests, a sex difference is likely to confound the results. There appears to be evidence that females are somewhat less variable in performance than males. The correlations between measures of ability and criteria of academic performance are somewhat higher for females than for males.

When a battery of predictors is employed to assess academic performance in college work, the magnitude of the multiple  $r$  ranges from .60 to .70 (66). The average  $r$  is about .65 which is in line with the data reported above for the ACT battery.

Swensen and others (100, 44, 31) have found that academic performance in high school is significantly related to college achievement. Swensen noted that even though students were roughly equivalent in terms of ability, the ones who did superior work in high school received significantly higher grades at the end of the first semester in college. The research reported from numerous sources (31, 32, 44, 4) supports the contention that measures of achievement and ability relate positively to level of college productivity.

In addition to the methods described above, Horst and others (51, 103, 6) have developed procedures for investigating the relationships between various measures of ability and grades in specific courses or course areas. The obvious assumption is that the performance of students differs from one subject area to another. The various ability measures are correlated with different criteria of performance. The technique of multivariate analysis (97) has been employed to assess the degree to which each of the ability measures are differentially weighted for predicting specific criteria. According to Horst (51) the correlations range from .13 to .89 with a median  $r$  of .50. Berdie (9) reported that he had limited success in predicting grades in various kinds of courses from a battery of measures for which differential weights had been computed. Cronbach (21) did not think there was sufficient evidence to warrant asserting that multifactor tests were more effective than measures of a general intelligence factor in predicting performance in particular courses. The findings regarding differential prediction are contradictory and inconsistent. The difficulties which arise are due to the limitations inherent in the testing instruments themselves, as well as in the criteria (66).

Forehand and McQuitty (27) studied various patterns of responses on measures of aptitude, interest and achievement to determine if given configurations were positively related to particular criteria of academic performance. The data obtained on the initial sample resulted in higher correlations with the criteria than those obtained by the technique of multiple correlation. When an attempt was made to cross-validate the findings, the correlations from the configural analysis showed considerable shrinkage.

Garrett (31) reviewed a series of articles almost twenty years ago and concluded that coefficients of multiple correlations between predictors and academic criteria seldom reached .75. The degree of association of this magnitude results in a level of confidence about 34 per cent better than guess work. A number of studies (21, 103, 36, 30, 18, 55, 78) suggest that measures of ability on the average account for about 40 per cent of the variation in academic performance. Lavin (66) points out that, while no other single type of factor accounts for this much variation, more than half still remains unexplained. This would imply that other factors of a non-intellective nature are pertinent in contributing to academic performance.

These data illustrate that the kinds of academic performance which students manifest in school have some relationship to ability to learn. The relationship is not clear, however, because level of achievement seems to be dependent upon a constellation of other aspects of behavior in conjunction with cognitive capacities.

## Personality Factors in College Performance

Since measures of ability account for less than 50 per cent of the variation in academic performance, attention has been given to the other factors which appear to influence this type of activity (101). A review of research reported by Taylor (101) has shown that the following variables have been studied because they appeared as if they might have some promise: academic anxiety, free-floating anxiety, achievement motivation, feelings of self-sufficiency, impulse control, feelings toward authority, introversion, general activity level, attitudes toward self, activity patterns, and goal orientation. After making a careful assessment of more than fifty significant studies published since 1933, Taylor found that the following factors were positively related to level of academic achievement: (1) the degree to which a student is able to handle his anxiety; (2) the value a student places upon his own worth; (3) the ability to conform to authority demands; (4) student acceptance by peers; (5) conflict over independence-dependence; (6) activities centered around academic interests; (7) realism of student's goals.

The literature is such that vast amounts of unrelated and confused materials are reported without much in the way of orderly arrangement. Pertinent findings are presented in this review, following in a general manner the outline prepared by Lavin (66).

### Academic Anxiety

Klugh and Bendig (61) studied the relationship between data from the Taylor Manifest Anxiety Scale and college grades, and found the de-



gree of association to be low. Grooms and Endler (40) found that anxiety improved the predictability of grades; this outcome held mainly for subjects who had high levels of anxiety. Spielberger and Katzenmeyer (96) studied the relationship between results from the Taylor Manifest Anxiety Scale and grades for a group of males divided into low, medium, and high ability groupings. The results correlated  $-.18$  with subjects in the medium ability group, but were uncorrelated with grades for the other ability groups. Holland (48) concluded that achieving students have more self control, and Kimball and others (60, 69) observed that under-achieving and low-achieving students fail to deny their shortcomings, and frequently attempt to maintain a superior self-image. Alpert and Haber (2) examined the relationship between specific anxiety, as measured by experimental scales developed for the investigation, and academic performance. The outcome suggested that extremely low anxiety was an indirect index of a low level of achievement motivation. Anxiety at too high a level disrupted academic performance. It should be kept in mind that anxiety is not likely to be a unidimensional concept, and its relationship to performance is probably curvilinear.

#### Academic Motivation

Academic motivation implies the need to perform according to some standard of excellence. This behavior has been studied by means of pencil-and-paper questionnaires and projective techniques. Bendig (8) found a low positive relationship between academic performance and achievement motivation, using the need achievement scale of the Edwards Personal Preference Schedule. Hills (47) found no significant relation between grades in law school and questionnaires prepared for assessing

achievement motivation. The results of other studies which dealt with this problem, either directly or indirectly, indicated that the relationship between achievement motivation as measured by questionnaires and academic performance tended to be low. Lavin (66) contended that persons who are high on achievement motivation may also be high on fear of failure; anxiety may interfere with actual performance.

McClelland and co-workers (74) employed the Thematic Apperception Test in an investigation involving male college students and obtained a correlation coefficient of .39 between achievement motivation, as measured by this projective technique, and grades. Weiss, Wertheimer and Groesbeck (107) found that the Thematic Apperception Test and an aptitude measure gave a multiple  $r$  of .63 when correlated with grades. Haber (42) contended that achievement motivation as measured by the Thematic Apperception Test was unrelated to any performance criteria, and that was due probably to the low test-retest reliabilities of the projective test employed in the research. Mitchell (70), in an investigation using women students in a teacher training program, found a negligible relationship between the Thematic Apperception Test and grades. His study indicated that achievement motivation is made up of a number of dimensions and that it cannot be viewed as a unitary concept. In fact, the evidence suggested that the particular dimension of achievement motivation which seemed to be related to academic performance was more effectively measured by an objective instrument than by a projective device. In general, in light of the research which has been carried out, the results employing projective measures of achievement motivation have been inconsistent and of little significance. Part of the difficulty may be due to the low reliability of the projec-

tive instruments employed.

### Self-sufficiency

Erb (25) assessed level of conformity on the basis of the production of responses on Q-sorts, and observed that when intelligence was controlled there was a positive relationship between conformity and grade point average for girls, but for males the relationship was negligible. Weigand (106) observed that among freshmen admitted to college on probation, those who were removed seemed to make decisions as to plans and programs independently of others. Burgess (16) claimed that engineering students who were not achieving satisfactorily exhibited higher dependency needs than those achieving above the level of expectation. Kimball (60) reported that under-achieving students have prominent dependency needs. Merrill and Murphy (68) studied a group of low-ability college students, using the Edwards Personal Preference Schedule. The students who were making satisfactory progress scored higher on the autonomy scale of the test than those who were failing.

It would seem that independence or self-sufficiency may be one of the variables constituting achievement motivation. McClelland and co-workers (74) have suggested this possibility. The evidence from the literature would indicate that independence is related to academic performance.

### Authority Relations

The studies concerned with this problem deal in the main with young children rather than with older students. The studies of Gough (36, 37) and Kurtz and Swenson (64) suggest that the achieving and over-achieving students have positive attitudes toward their instructors and

feel that they are receiving fair treatment. These students attempt to create favorable impressions and are desirous of pleasing authority figures. In addition to establishing good relationships with authority outside the home, they attempt to conform to the demands and conventions important to the parents. The hostility and aggression, on the other hand, of the under-achiever and poor achiever have been observed by Horrall (50), Kimball (60), Shaw and Brown (91). The parents are indifferent to the student's academic success; and in addition to this lack of warmth and concern, the underachievers feel the parents have not given them all the advantages due them. These feelings generalize to instructors whom they learn to resent and dislike.

More extensive research should be undertaken on the problem concerning the effect of authority relations on academic performance at the college level. If a college student feels that he is having difficulty in receiving approval at home, he may very well seek another's approval of his academic achievements. It would seem to make sense to assume that this kind of reinforcement would be a strong impetus to meet acceptable levels of academic performance.

#### Introversion

Introversion referred to the tendency to withdraw from social contacts, while extroversion refers to the tendency to seek contacts with others. An investigation conducted by Kerns (59) showed that students who were not achieving up to levels of expectation obtained greatest satisfaction from fraternizing with others, while students who were achieving above levels of expectation derived greatest pleasure from academic pursuits. Elcomberg (12) observed that college students who were doing well in academic work were somewhat more introverted than

the weaker students. Travers (103) found that a small positive relationship existed between academic performance and level of introversion. Knaak (62) observed that low-achieving college girls rated higher on patterns of sociability than high-achieving college females. Beach (7) investigated the relation between academic performance and level of sociability in the following classroom situation: independent study groups, leaderless discussion groups, lecture groups, and discussion groups with a leader. He found that sociability was positively related to achievement in the leaderless groups, and negatively related to achievement in the lecture and instructor-led discussion groups. The correlation between sociability and achievement in independent study groups was close to zero. The outcomes indicate that there was some relationship between the classroom setting and personality which influences academic performance. Merrill and Murphy (68) concluded that on the basis of data obtained from the Edwards Personal Preference Schedule low-ability college students who were performing better than expected were lower on the need for affiliation than the students who were failing.

The evidence seems to suggest that introversion is positively related to academic performance. The student who is introverted may be self-contained and willing to decrease frequency of social contacts. The student who is extroverted may be preoccupied with social contacts to the exclusion of other activities. The tendency for the introvert to be somewhat bookish and self-centered is not out of line with expectancies.

### Impulse Control

The capacity to delay immediate rewards and to keep at tasks when the pay-off may be achieved in the distant future is an important requirement of the educational-vocational role. Parsons (82) has pointed out that this represents a middle-class value which is not shared by those in the lower socio-economic strata of society. Individuals in this strata of society prefer immediate rewards and do not react well to the concept of attainment of pay-off in the distant future. They have been denied so much for so long that this attitude fails to motivate protracted action.

Merrill and Murphy (68) administered the Edwards Personal Preference Schedule to a sample of low-ability students and discovered that the score on the Endurance Scale differentiated between those who made satisfactory grades and those who failed to meet adequate academic standards. Weigand (105) observed that students who had encountered scholastic difficulties and who continued to pursue their programs in face of difficulties more frequently improved than those who lost morale and slowed up. Frederiksen and others (28, 29) employed what he contended was a measure of compulsiveness and classified a group of engineering students into those who were high on this trait and those who were low on it. He found a small positive relationship between interest data and grades. The findings indicated that the grades and interest measures were more significantly correlated for the non-compulsive students than for the compulsive students.

### Attitudes Toward Self

Lavin (66), after reviewing the literature of self-concept, contended that the most apparent theme in the published studies was the

concern with the positive or negative aspects of the self-image. Like self-insight, a major interest centered around the concept of self as a positive-negative continuum.

Stevens (98) examined the relationship between self-concept and academic achievement in a sample of able college students. The students who were achieving had greater understanding of their intellectual abilities and more positive attitudes toward themselves. Lum (67) found that female college students who were over-achieving possessed greater self-confidence than those achieving below their levels of ability. Brim (13) discovered that students with high self-estimates of intelligence did better academic work than those with lower self-estimates of ability. McDavid (75) believed that the better students had a more positive self-image than those doing mediocre academic work. Shaw, Edison, and Bell (92) observed that for male students a more positive self-image was associated with academic achievement, while the same finding was not obtained for girls.

The research suggests that a positive self-image tends to be associated with higher academic performance. Certain issues, however, still need to be resolved. What measurement techniques are most reliable and valid in assessing self-concept? What dimensions of the self-image are relevant to academic performance? What kinds of self-concepts are correlated with levels of academic performance? Information currently available is vague and often based upon studies in which the variables are inadequately controlled.

#### Activity Patterns

Considerable research has been undertaken in recent years on activity patterns which differentiate the academically achieving students

from the ones who are failing or barely meeting minimal standards of performance. Holland (48) and Pierce (83) have concluded that the achieving and over-achieving students are generally able to work well under direction. The over-achieving students tend to be achievement oriented rather than individually oriented. These achievers have good work habits, get assignments in promptly, and generally have feelings of academic effectiveness. Kurtz and Swenson (64) contend that the students who are achieving above levels of expectancy are academically inclined, get satisfaction from book learning, relate school work to future educational goals, and look on education as a significant part of the preparation necessary to achieve vocational success. The students who are achieving below levels of expectancy or who are poorly motivated to achieve in the academic setting get satisfaction in other areas. Mitchell (71) and Terman and Oden (102) have noted that the under-achievers and poor achievers generally have strong activity interests as opposed to intellectual interests. They are motivated frequently toward pleasure seeking and extroversion and the tendency to go to college for personal reasons. Horrall (50) believed these students had strong affiliation needs, and possessed unclear and indefinite academic and occupational choices.

The patterns of activity which seem to be related to good academic performance appear to be similar to the patterns so significant to success in other areas of endeavor. The characteristics comprising these patterns are good work habits, desire to achieve, acceptance of the importance of satisfactory academic achievement in order to realize future goals, and a feeling of ego-involvement in the academic experience.



### Goal Orientation

Investigations by Diener (22), Holland (48), and Krug (63) have shown that students who were achieving above levels of expectancy, as well as those who were achieving in line with expectancy, seemed to have a desire to organize and to plan their lives. They were intellectually efficient, conscientious, and possessed realistic attitudes towards themselves and others. They were orderly and planful, and possessed a basic seriousness of purpose. On the other hand, the studies of Dowd (23), Holland (48), and Lum (57) showed that under-achievers and poor achievers lacked motivation to complete assigned tasks, to decide upon educational-vocational plans, and to have no stated goals or to have stated goals out of line with capabilities to attain them.

The evidence suggests that the students who succeed academically are planful, realistic, and capable of moving fairly efficiently toward outcomes which are important to them and which they feel serve their needs.

### Personality Variables Associated with Academic Performance

Lavin (66) has reviewed a series of studies in order to determine the personality factors which have been found to be useful in predicting academic performance. He concluded that higher levels of performance were associated with twenty-six variables. After a careful study of the list, he classified the variables according to six underlying dimensions. Dimension I was made up of those variables which he labeled Social Maturity in the Student Role. This constellation of personality variables suggested that academic achievement was related to greater social maturity. Dimension II, which he labeled Emotional Stability, indicated that academic achievement tended to be associated with high

morale and greater freedom from neurotic tendencies. The third dimension was labeled Achievement Motivation Syndrome, which was characterized by persistence, high activity level, and motivation to achieve. Dimension IV, called Cognitive Style, brought together a set of variables which included intellectual flexibility, intellectual curiosity, preference for activities involving thinking, and level of originality. The fifth dimension was titled Achievement via Conformance, which was characterized by the need for orderliness, and willingness to conform to classroom demands. Dimension VI, Achievement via Independence, showed a pattern in which elements like moderate impulsivity, independence, and low need for affiliation appeared to be associated with a higher level of academic performance. The findings reported in this section indicate that personality factors have been studied extensively in relation to the problem of academic achievement. Many of the studies have not been adequately controlled. In many instances, the reliability and validity of the measuring devices are open to question. Perhaps the findings can be considered as trends which may be used as guides for the development of more refined research methodology.

#### Academic Performance as Related to Sociological Determinants

##### Socio-economic Status

The extent to which socio-economic status is related to academic performance has been studied by a number of investigators over the past fifteen years (104, 33, 76, 77, 20). More than a dozen studies appear to suggest that the higher one's social status, the higher one's level of academic performance. On the other hand, several studies have resulted in findings that socio-economic status is inversely related to

academic achievement (94, 73). Lavin (66) has postulated two explanations for these outcomes. When the upper-class segment of the socio-economic range is included in the sample, subjects are obtained who do not feel that they need to enhance status, but only to maintain it. Graduating from college may be more important than the academic record achieved. In addition, there is the possibility that the representatives from the upper-class have a problem adjusting from the more structured program of the private school to the less structured college environment. The training and value differences of the upper-class and middle-class seem to be reflected in school achievement.

#### Rural-Urban Difference

Shaw and Brown (90) contended that samples of students drawn from urban areas had higher levels of academic performance than samples of students drawn from rural areas. Sanders, Osborne, and Greene (88) found urban students to be higher on aptitude measures than rural students, but the difference in academic performance was not statistically significant. Rossi (85) found that students in the South did more poorly on achievement measures than did students in the North. Variables like intelligence, level of schooling, etc., were not controlled, which makes it difficult to assess the factors which contributed to these outcomes.

#### Religious Orientation

Gerritz (33) concluded that Jews were likely to be high academic achievers. Jews tended to achieve better than non-Jewish students. Jewish culture has always placed a great deal of emphasis on education. The investigations in this area to date have not been adequately con-

trolled for socio-economic status.

### High School Size

The relationship between high school size and performance in college is not clear. Hoyt (52) contended that evidence obtained showed that graduates of small high schools received lower grades in college than students coming from large high schools when intelligence was controlled. Altman (3) found that high school size had a negligible relationship to performance in college.

### Sex Differences

Research in the area of academic achievement shows that females make better grades than males (33, 52, 53, 93). Over-achievement and underachievement occur more frequently in males, while females seem to perform more nearly in line with expectancy. Each sex learns to play a different role, and attitudes and values which become associated with these roles may have a marked influence on academic performance. Since the female tends to play a different role than the male, academic success probably has different meanings for each (66). With the large number of female teachers in the schools, the model of the good student may be the female model (81). Parsons (81) has contended that a deviation from the student role may constitute a conformation of masculinity.

### The Student-Teacher Relationship

The extent to which teachers can accurately and objectively assess the performance of students in academic programs has been a matter of discussion for years. The less-than-perfect correlations between academic performance and ability has been thought to be due in part to teacher error. Lavin (66) has contended, after extensively reviewing

the literature, that ability is usually more highly correlated with achievement test scores than with grades.

In an investigation by Kelley (58), an extensive effort was made to determine the factors responsible for differences in performance as assessed by common departmental term-end examinations and achievement as measured by instructor grades. The students who obtained higher instructor grades than term-end examination grades were lower in ability, more insecure, more compulsive and more conforming than those who obtained higher scores on the latter. The investigator believed that the students' behavioral characteristics interacted with teacher expectations to produce outcomes not closely related to results as measured by more objective procedures. In studying the scholarship aspects of the student role involved in grades, Carter (19) found that the sex of student and teacher influenced the extent of the relationship between algebra grades and results on achievement tests in algebra. When the teacher was a male, the relationship between grades in algebra and scores on algebra achievement tests was higher for male students than female students. When the teacher was a woman the same difference was not significantly different. The evidence would seem to indicate that the sex of the student influenced the male instructor. The female instructor seemed less objective but the sex of the students did not seem significant in reducing the objectivity.

#### The Student-Student Relationship

Data available for students at the college level on this question are not plentiful. The better known investigation is the one published by Johnson in 1958 (56). He discovered that peer ratings of popularity and peer ratings of performance were related to scholastic performance.

Lavin (66) has pointed out that sex and intelligence were not controlled. If intelligence had been held constant the correlations might have been reduced. Ryan and Davie (86) working with high school students found a small positive correlation between grades and social acceptability. No effort was made to hold intelligence constant. Keisler (57) noted that boys with average grades had a greater chance of obtaining favorable peer ratings on the trait of social acceptability than boys with very high or very low grades. On the other hand, girls with higher grades had higher social acceptability ratings than girls with poor academic records. Girls with low grades were found to be more socially acceptable to boys than girls with high grades.

Results tend to be conflicting. In some groups, academic performance may be a valued achievement. In this type of setting social acceptability, based upon peer ratings, might correlate positively with academic performance. If average work is considered the most acceptable type of behavior, the association between peer ratings on social acceptability and high grades may be relatively negligible.

#### Influence Exerted by Teacher Behavior

The studies in this area have been concerned in the main with high school students. Rosenfeld and Zander (84) have demonstrated that when teacher influences were perceived as fair, legitimate, and rewarding, the aspirations of the students were congruent with perceived capacity, while if the behavior of the teacher was seen as indiscriminate and coercive, this type of congruence did not seem apparent. Ryans (87) observed that the characteristics of teacher behavior seemed to be less significantly related to the classroom behavior of high school students than to the classroom behavior of elementary school students. He be-

lieved that the high school students were influenced more effectively by the behavior of the peer group. This would imply that classroom behavior would be influenced more by the students than by teacher expectations at the secondary school level.

#### Size of Family

The research data on this problem present some contradictions. Hunt (54) has contended that the evidence he has obtained indicated that family size was independently related to both intelligence and academic performance. Bernstein (10) has reported that the larger the number of siblings, the lower the level of school achievement. Nisbet (80) attempted to explain Bernstein's findings by hypothesizing that bigger families as compared to smaller families may be lower in intelligence and lower in socio-economic status. Brim (14) noted that male siblings with older sisters were likely to exhibit higher academic achievement than male siblings with older brothers. Weitz and Wilkinson (108) found that the academic performance of only-children was lower than that of children with siblings when matched for intelligence. Lavin (66) hypothesized that the only-child could experience greater adjustment problems in school which might be reflected in academic performance.

#### Patterns of Family Interaction

Strodtbeck (99) has come up with some interesting findings concerning the characteristics of family interaction. He observed that decision-making and power distribution in the family were associated with personality traits which were to some extent related to school performance. The power the mother and the son had relative to the father

seemed to determine in a measure the son's scores on a test of achievement values. An investigation by Gilmore (35) found that higher achieving college males had positive relations with the father. Kimball (60) discovered that males doing poorly in high school had unsatisfactory relations with the father.

Although the literature shows findings which appear to be inconsistent, it may be hypothesized that the better student comes from a family with a small number of children, in which the parents exhibit warmth and interest, where the child's concerns are given due consideration, and where the family can arrive at agreement on important courses of action without too much emotional stress.

Reference may be made to an extensive study prepared by Spencer and Stallings (95) based upon data obtained from the Student Profile Section of the American College Test battery (ACT). Non-intellective factors such as home town population, family income, part-time work interests, age, marital status, career interests and goals were studied in relation to academic success based upon first semester grade point average. Although an extensive analysis of findings was undertaken based upon the development of three different keys, the correlations were too low to be of practical value. The authors concluded that the non-intellective data were not significantly related to first-semester grade point average. An investigation reported by Holland and Richards (49), based upon data from a representative sample of high school students drawn from a population of 612,000 students, suggested that the relationship between aptitude test scores and grades in high school, and between aptitude test scores and scholastic performance in college were positive. On the other hand, academic potential and achievement



had little relationship to certain kinds of non-academic potential and socially important performance. The relationships between measures of academic capacity and various measures of real life achievement tended to be negligible.

#### Summary

The findings reported in the literature suggest that level of performance in college is related significantly to high school academic record. This is probably due to the fact that high school grades are determined by many factors in addition to measured intellectual ability. The correlations between ability and performance are higher for females than for males, and this holds at both the high school and college levels. Measures of ability on the average account for 40 per cent of the variation in academic performance. Considerable evidence has been accumulated to show that performance on tests of academic aptitude, in conjunction with high school academic data, correlate significantly in most samples with academic productivity.

The relationships between personality variables and academic performance tend to be low and inconsistent. Some generalizations can be drawn from outcomes based upon studies of various groups of students, but these outcomes may be the results of the various social settings in which the subjects functioned. For example, students who are independent, somewhat introverted, low in impulsivity, and fairly self-contained in the choice of vocational interests are likely to do better work in an academic setting. Generalizations from other sources imply that the better students tend to have positive self-concepts, tend to be interested in the course areas in which they achieve most effective-

ly, tend to be less defensive in revealing personal inadequacies, and have better concepts of their vocational interests. These inferences have been drawn on the basis of trends which seem to appear in the data, although the trends are not always clear cut.

The relationships between ecological and demographic variables and academic performance are reasonably clear. The correlations between socio-economic status and grades tend to be positive except at the upper socio-economic level where the relationships become inverse. Studies undertaken on the student-teacher relationship have shown that the more the student's attitudes and values coincide with those of the teacher, the higher the student's grades. Research on the effects of family relationships upon academic work have indicated that the more successful student often comes from a family where the parents have real interest in the child, where the child has a strong voice in decision-making in the family, and where the family tends to agree regarding those aspects of behavior it considers important to cultivate and attain.

It must be assumed that all of these factors constitute a complex pattern which influences differentially the academic behavior of students.

## CHAPTER III

### METHOD AND PROCEDURE

#### Subjects

Two groups of students were studied in this investigation. Group A consisted of students who entered NWSC as freshmen in the summer and fall of 1965. Group B was composed of students who entered as freshmen in the summer and fall of 1966. The students' names were drawn at random from a list of names in the files of the Office of the Dean of Students. The names of the individuals drawn from each group represented three levels of academic achievement. The numbers of cases in each group broken down by sex and level of achievement are given in Table I.

TABLE I

NUMBER OF SUBJECTS IN EACH GROUP  
BROKEN DOWN BY SEX AND LEVEL  
OF ACADEMIC ACHIEVEMENT

		Males	Females	Total
Group A	Level 1	31	12	
	Level 2	45	51	
	Level 3	34	51	
		110	114	224
Group B	Level 1	33	26	
	Level 2	44	54	
	Level 3	39	59	
		116	139	255

The mean age of the total number of subjects in Group A at the time of admission was 18 years, 6 months with a standard deviation of

$\pm$  1 year, 8 months; the mean age of the students in Group B at the time of admission was 18 years, 7 months with a standard deviation of  $\pm$  1 year, 6 months. The difference between the mean ages was not statistically significant.

#### Data Gathering Devices Employed in the Investigation

Most of the data were obtained by means of standardized psychometric instruments. The exceptions were results secured from a questionnaire developed for use in the study, and an over-all grade point average based upon high school grades reported by the students employed in the study, at the time they took the American College Tests (ACT). The tests were utilized because research outcomes available on them suggested they appeared best to meet the needs of this study (4).

The psychometric measures are listed below:

1. The American College Test battery (ACT) was composed of an English usage examination that measures the understanding and use of the basic elements in correct and effective writing; the mathematics usage test measures mathematical reasoning ability; the social studies reading examination measures the evaluative reasoning and problem-solving skills required in the natural sciences. The median reliabilities of the American College Tests ranged from .84 for a single test to .95 for the composite score. The median predictive validity of the individual tests ranged from .37 to .50 (4).

2. The Nelson-Denny Reading Test (NDRT) consisted of three subtests measuring reading rate, level of vocabulary, and level of comprehension (79). Buross (17) pointed out that the reliability and validity of the test suggested that part scores may be employed with considerable confidence. An unpublished study of the reliability of the test, carried out at the Bureau of Tests and Measurements, Oklahoma State University, using the method of rational equivalence, gave a reliability coefficient of .89 for data based upon the total score. In this procedure the intercorrelation of the items must be obtained in addition to the correlations of the items with the test as a whole. Garrett (31) found that the NDRT correlated .67 with academic achievement.
  
3. The Henmon-Nelson Tests of Mental Ability (HNTMA), Revised Edition, is composed of 90 test items arranged in order of increasing difficulty (45). The reliability coefficients for Forms A and B based on twelfth grade students were .93 and .91, respectively (45). The correlations of the test with academic criteria ranged from .13 to .74 (45). In an unpublished investigation undertaken at the Bureau of Tests and Measurements, Oklahoma State University, the correlation between HNTMA and total score of the ACT battery was found to be .62.
  
4. The Edwards Personal Preference Schedule (EPPS) has been developed to measure fifteen relatively independent normal personality variables (24). The items are purported to be re-

lated to content arising out of Murray's list of manifest needs (24). The needs associated with each of the 15 EPPS variables were as follows:

- (a) Achievement--to accomplish tasks requiring training and skill, to do a job well, to be recognized as outstanding.
- (b) Deference--to do what is expected, to accept the leadership of others, to get suggestions from others, to discover what others think.
- (c) Order--to have things organized, to keep things neat, to make plans ahead, to maintain a structured schedule.
- (d) Exhibition--to talk about personal achievements, to be the center of attention, to say clever things, and to ask questions others cannot answer.
- (e) Autonomy--to be independent of others in making decisions, to avoid situations where conformity is demanded, to feel free to do what one wants.
- (f) Affiliation--to be loyal to others, to share things and to do things with friends, to form new friendships.
- (g) Intraception--to try to understand the feelings of others, to analyze the motives of others, to analyze one's own motives and feelings.
- (h) Succorance--to get affection from others, to be helped by others when depressed, to have others do favors cheerfully.

- (i) Dominance--to be a leader in groups to which one belongs, to settle arguments and make decisions, to persuade and influence others.
- (j) Abasement--to feel the need for punishment for errors committed, to accept blame when things go wrong, to feel better when giving in and avoiding a fight, to feel timid in the presence of superiors.
- (k) Nurturance--to help others in trouble, to be forgiving, to be generous to others, to have others confide in one about personal problems.
- (l) Change--to do new and different things, to travel and meet new people, to experience novelty and change in daily routines.
- (m) Endurance--to stick to a job until it is finished, to put in long hours without distractions, to stick to a problem even though it may seem no progress is being made.
- (n) Heterosexuality--to fraternize with the opposite sex, to be in love with someone, to be interested in activities involving the opposite sex.
- (o) Aggression--to tell others off when disagreeing with them, to attack contrary points of view, to become angry, to blame others when things go wrong.

Split-half reliabilities for the scales ranged from .60 for Deference to .87 for Heterosexuality, with a median reliability coefficient of .78 (24). A number of studies have been undertaken in which the validity of the scales have been in-

vestigated (24). Ratings of personality characteristics by experts, other temperament and personality measures, and performance indices have been employed as criteria (24). The validity coefficients have ranged from  $-.32$  to  $.32$ . None of the outcomes suggested substantial relationships with the criteria employed.

5. The Tennessee Self-Concept Scale (TSCS) was composed of five scales, two of which were broken down into sub-scales (26).

The scales were as follows:

- (a) The Self-Criticism Score (SC) purports to measure capacity for self criticism; high scores indicate healthy openness and capacity for self criticism, low scores indicate defensiveness.
- (b) The Positive Score (P) measures over-all level of self-esteem, how the respondent sees himself, his degree of self-acceptance, his perception of the way he acts, his sense of personal worth, his concept of himself from a moral-ethical frame of reference, his sense of worth and adequacy in his social interactions.
- (c) The Variability Score (V) provides an assessment of the variability or inconsistency from one area of self-perception to another, or the degree to which the individual's self-concept is so variable from one area to another as to reflect little unity or integration.
- (d) The Distribution Score (D) is a measure of the cer-



tainty with which one sees himself; extreme scores are most often obtained by disturbed people.

- (e) The Time Score is a measure of the time the examinee requires to complete the scale.

The instrument is in the process of development and can be thought of as an experimental psychometric device. The test-retest reliabilites of the scales ranged from .60 to .92. The reliability data were obtained on sixty college students over a two-week period (26). Validity studies have been completed which suggested that the TSCS was useful in differentiating between normal subjects and those who manifest psychotic material (26). The correlations of the TSCS scales with the Minnesota Multiphasic Personality Inventory Scales tended to be low, but in some instances the relationships were statistically significant (26).

- 6. The Guilford-Zimmerman Temperament Survey (GZTS) was composed of scales measuring ten bipolar traits (41). The bipolar traits of temperament have been described as follows:

- (a) Slowness vs. Energy—a high score indicates strong drive and high energy level; a low score, slowness of action and low production.
- (b) Impulsiveness vs. Restraint—a high score indicates serious-mindedness and self-control; a low score indicates impulsive and carefree behavior.
- (c) Submissiveness vs. Ascendance—a high score signifies outgoing and aggressive behavior; a low score

indicates submissive and hesitant responses.

- (d) Seclusiveness vs. Sociability--a high score suggests socially extroverted behavior; a low score, withdrawing behavior and shyness.
- (e) Emotional instability vs. Emotional stability--a high score suggests evenness of moods and composure; a low score, unevenness of moods, daydreaming and depression.
- (f) Subjectivity vs. Objectivity-- a high score signifies a lowered degree of egoism; a low score means touchiness and hypersensitivity.
- (g) Belligerence vs. Agreeableness--a high score indicates capacity to tolerate hostile action; a low score, resentment, hostility, and the desire to dominate.
- (h) Unreflectiveness vs. Reflectiveness--a high score suggests mental poise; a low score, mental disconcertedness.
- (i) Intolerance vs. Cooperativeness--a high score indicates capacity to tolerate people; a low score suggests the tendency to be hypercritical and suspicious of others.
- (j) Femininity vs. Masculinity--a high score indicates interest in masculine activities, values, and vocations; a low score, interest in feminine activities, values and vocations.

Estimates of the reliability of the various scales of the

GZTS were assessed by odd-even and first-half and second-half correlations based upon large samples of male and female college students (41). The reliability coefficients ranged from .75 for the Objectivity-Subjectivity scale to .87 for the Sociability-Seclusiveness scale, with a median  $r$  of .80 for the ten scales. The internal validity of the GZTS has been investigated by means of factor analysis (41), and the practical validity of the instrument has been studied in connection with efforts to differentiate between the personality characteristics of those who were productive in a work setting as compared to those who were not.

7. The high school grade point averages utilized in the research were based on data reported at the time the ACT tests were administered. The grades obtained in English, Mathematics, Social Studies, and Natural Science at the end of the Junior year in high school were averaged on a four point scale.
8. The questionnaire employed in the study contained the following items: names, sex, age, classification, type of home community, type of school attended, size of graduating class, number of younger children living at home, number of dependents living in the home other than children, intended vocation, extra-curricular activities and annual family income. A copy of the questionnaire is presented in Appendix B.

The ACT answer sheets were machine scored at the American College Test Center at Iowa City. The answer sheets for the remainder of the tests employed were hand scored. The frequency counts for responses to the items on the questionnaire were done on the IBM computing equipment

in the Oklahoma State University Statistical Laboratory.

#### Administration of the Test

After the subjects in Group A and B had been selected they were mailed letters from the Office of the Dean of Students asking them to participate in the study. No details of the investigation were outlined in the communication. All testing was done on the campus of NWSU. The students were scheduled daily for testing which required from one hour to one and one-half hours per individual. During the testing period, the following were administered by the experimenter: (1) the Tennessee Self-Concept Scale; (2) the Guilford-Zimmerman Temperament Survey; (3) the questionnaire. The results for the other tests were already available in the participant's personal file in the Office of the Dean of Students. All the data from the various sources were punched on IBM cards to facilitate processing and statistical treatment.

#### Design of the Study

Three steps were undertaken in the analysis of outcomes. In the first step certain of the hypotheses were tested by means of the technique of analysis of variance (AOV). The sources of variation in each AOV consisted of total sum of squares, sums of squares for criteria, sex by criteria, and error sum of squares. The special problem encountered in the AOV analysis centered around the fact that the number of cases in the blocks were not equal. This involved the following statistical steps (97): (1) calculating the reciprocals for the values in each block and obtaining the mean of the reciprocals; (2) multiplying this value by the mean square for individuals within cells;

(3) multiplying the outcome obtained in (2) by the sum of squares for error in order to convert it to the same basis or unit as the criterion, sex, and interaction sums of squares.

In the second step the variables and criteria were intercorrelated separately for (1) group, and (2) sex. The degrees to which significant associations were found to exist among the variables and between the variables and the criteria were indicated by the levels of statistical significance attained by the coefficients of correlation.

In the third step frequency counts were tallied and comparisons were made of the percentages for various background data of students in both groups who differed in levels of academic performance.

The outcomes resulting from the analyses indicated above, along with the interpretations of findings, are presented in the last two sections of the report.

## CHAPTER IV

### RESULTS

#### 1. Applications of the Analysis of Variance to Data for Groups A and B

Data for the Groups A and B were treated independently in the analysis. As described earlier, each of the groups were divided into three levels based on over-all college grade point average. The statistical procedure consisted of utilizing the analysis of variance to determine the extent to which real differences existed on various measures among students in each group who were achieving satisfactory academic work as compared to those who were not. Analyses of data based upon various psychometric devices, including high school performance, are presented in this section. The analysis based on the results of the American College Test battery (ACT) for Groups A and B are discussed below.

#### American College Tests (ACT)

The findings for Group A in Table II indicate that the p values are significant at the .05 level and below for level of academic achievement and sex. The exception was the source of variation for sex on the Social Studies test. The means for tests by level of academic achievement are given in Table III. The means for the tests are presented in Table IV. The means for each of the tests in Table III indicate trends

TABLE II  
ANALYSIS OF VARIANCE RESULTS FOR THE ACT BATTERY  
(GROUP A)  
N=224

Variable	Source of Variation	df	ms	f	p
English	Level	2	12.129	21.558	.01
	Sex	1	2.912	5.176	.05
	Interaction	2	.196	.348	
	Total	5			
Math	Level	2	22.788	26.328	.01
	Sex	1	27.221	31.452	.01
	Interaction	2			
	Total	5			
Social Studies	Level	2	20.681	20.403	.01
	Sex	1	.015	.015	
	Interaction	2	.903	.891	
	Total	5			
Natural Science	Level	2	12.668	13.805	.01
	Sex	1	4.386	4.780	.05
	Interaction	2	.467	.509	
	Total	5			
Composite	Level	2	16.698	32.512	.01
	Sex	1	2.148	4.182	.05
	Interaction	2	.201	.391	
	Total	5			

TABLE III

MEAN SCORES FOR ACT ON STUDENTS ACHIEVING AT  
THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
(GROUP A)

Variable	Level 1 N =43	Level 2 N =96	Level 3 N =85
English	15.41	17.67	20.33
Math	14.49	17.39	21.22
Social Studies	15.11	18.21	21.54
Natural Science	17.03	19.07	22.04
Composite	15.67	18.20	21.43

TABLE IV

MEAN SCORES FOR ACT ON MALES AND FEMALES  
(GROUP A)

Variable	Male N=110	Female N=114
English	17.10	18.50
Math	19.83	15.57
Social Studies	18.33	18.23
Natural Science	20.23	18.52
Composite	19.93	17.83



that are approximately linear; the same trend holds for the means in Table IV. The males show up somewhat better as a group than females on the Mathematics and Natural Science tests, while the females do better than the males on the English test.

The outcomes of the analysis of variance of ACT data for Group B are given in Table V. The means for levels are given in Table VI. The p values are significant for level of achievement for all of the ACT measures. The p values for source of variation due to sex were statistically significant except for the Social Studies and Natural Science tests.

The magnitude of the means of Table VI suggested a linear relationship when compared against the criterion of performance. As would be expected, the students who turned in a better academic performance obtained higher mean scores as a group on all parts of the ACT battery. The results reported in Table VI are comparable to those obtained for Group A. The males as a group received higher mean scores on the Mathematics and Natural Science tests, while females as a group made a better mean score on the English test.

The significant p values obtained for level of achievement and for sex suggested that the differences tended to be such that the outcomes could not be attributed to the operation of chance alone. The outcomes were relatively comparable for both samples.

#### High School Grades

Grades for members of Groups A and B obtained at the end of the Junior year in high school were examined to determine if there were statistically significant differences among these data for sex and for

TABLE V

ANALYSIS OF VARIANCE RESULTS FOR THE ACT BATTERY  
(GROUP B)  
N=255

Variable	Source of Variation	df	ms	f	p
English	Level	2	15.760	27.780	.01
	Sex	1	3.713	6.544	.05
	Interaction	2	.242	.427	
	Total	5			
Math	Level	2	43.449	63.355	.01
	Sex	1	21.660	33.584	.01
	Interaction	2	.113	.165	
	Total	5			
Social Studies	Level	2	23.333	27.606	.01
	Sex	1	2.483	2.938	
	Interaction	2	.780	.932	
	Total	5			
Natural Science	Level	2	29.823	44.766	.01
	Sex	1	8.027	1.205	
	Interaction	2	.146	.219	
	Total	5			
Composite	Level	2	27.938	69.567	.01
	Sex	1	3.760	9.364	.01
	Interaction	2	.294	.731	
	Total	5			

TABLE VI

MEAN SCORES FOR ACT ON STUDENTS ACHIEVING AT  
THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
(GROUP B)

Variable	Level 1 N = 59	Level 2 N = 98	Level 3 N = 98
English	15.63	18.46	21.25
Math	13.60	17.64	22.90
Social Studies	15.35	18.87	22.18
Natural Science	15.26	19.31	22.98
Composite	14.92	18.68	22.40

TABLE VII

MEAN SCORES FOR ACT ON MALES AND FEMALES  
(GROUP A)

Variable	Male N=110	Female N=114
English	17.66	19.23
Math	19.94	16.14
Social Studies	19.44	18.13
Natural Science	20.34	18.03
Composite	19.46	17.87

levels of academic performance in college. The data in Table VIII showed p values at the .01 level for levels of academic performance and sex. The mean grade point average for high school work is shown in Table IX. The mean grade point average based upon high school work broken down by sex is presented in Table X.

The analysis of variance of high school grades for Group B is given in Table XI. The p value for levels of academic performance fell at the .01 level of confidence; the p value for sex fell at the .05 level of confidence. The mean grade point averages for the three levels of academic achievement appear in Table XII.

An overview of the analysis of high school grades for Groups A and B showed that the p values for levels of academic achievement reached acceptable levels of statistical significance. The mean grade point averages tended to progress in a linear fashion, although for Group A (Table IX) the means did not show the orderly progression observed for Group B (Table XII). The breakdown of high school grade point average by sex for Groups A and B (Tables X and XIII) represent the outcomes reported by others (66, 33, 53, 52, 93).

The p values for levels of performance (Tables VII and XI) in this part of the analysis make it appear likely that differences in high school grade point average between satisfactorily-achieving and low-achieving college students are greater than can be expected to occur by chance.

#### The Nelson-Denny Reading Test (NDRT)

The analysis of variance for data from the Nelson-Denny Reading Test for Group A is shown in Table XIV. The p values indicated that

TABLE VIII

ANALYSIS OF VARIANCE RESULTS FOR HIGH SCHOOL GRADES  
(GROUP A)  
N=224

Variable	Source of Variation	df	ms	f	p
High School Grades	Level	2	5554.409	54.925	.01
	Sex	1	1725.506	17.063	.01
	Interaction	2	55.192	.546	
	Total	5			

TABLE IX

MEAN GRADE POINT AVERAGES AT END OF JUNIOR YEAR IN HIGH SCHOOL FOR  
STUDENTS ACHIEVING AT THREE DIFFERENT LEVELS  
OF ACADEMIC PERFORMANCE (GROUP A)

Variable	Level 1 N = 43	Level 2 N = 96	Level 3 N = 85
Mean Grade Point Average	2.19	3.66	3.25

TABLE X

MEAN GRADE POINT AVERAGES AT END OF JUNIOR YEAR IN HIGH SCHOOL  
REPORTED BY SEX (GROUP A)

Variable	Male N=110	Female N=114
High School Grade Point Average	2.53	2.87

TABLE XI

ANALYSIS OF VARIANCE RESULTS FOR HIGH SCHOOL GRADES  
(GROUP B)  
N=255

Variable	Source of Variation	df	ms	f	p
High School Grades	Level	2	6256.701	63.164	.01
	Sex	1	459.719	4.641	.05
	Interaction	2	50.365	.508	
	Total	5			

TABLE XII

MEAN GRADE POINT AVERAGES AT END OF JUNIOR YEAR IN HIGH SCHOOL FOR  
STUDENTS ACHIEVING AT THREE DIFFERENT LEVELS  
OF ACADEMIC PERFORMANCE (GROUP B)

Variable	Level 1 N = 59	Level 2 N = 98	Level 3 N = 98
Mean Grade Point Average	2.02	2.56	3.14

TABLE XIII

MEAN GRADE POINT AVERAGES AT END OF JUNIOR YEAR IN HIGH SCHOOL  
REPORTED BY SEX (GROUP B)

Variable	Male N=116	Female N=139
High School Grade Point Average	2.49	2.66

there are statistically significant differences at the three levels of academic performance for the three parts of the test. The means for each part of the test at the three levels are given in Table XIV. The increase in means for the various parts of the test are given in Table XV. The increase in means for the various parts of the test were in line with increased quality of academic work. The directions of the means suggested a linear trend.

The analysis of variance for data from the same test for Group B is given in Table XVI. For this group, there are significant p values for levels of academic performance on each of the three parts of the examination. The means for each part of the test at the three levels are given in Table XVII. The direction of the means suggested a linear trend.

The data in Tables XV and XVII are similar in trend and magnitude. The students in Groups A and B who achieved grade point averages of 3.00 or better showed higher mean scores as a group on the three parts of the Nelson-Denny Reading Test than the students whose grade point averages fell below 1.99. The evidence suggested that performance on the various parts of the Nelson-Denny Reading Test differentiated among those individuals who achieved at different levels of academic proficiency. The differences were greater than those expected to occur by chance.

#### Henmon-Nelson Test of Mental Ability (HNTMA)

The data from this test were analyzed by means of the technique of analysis of variance. The outcomes of the analysis for Group A are presented in Table XVIII. The p values for levels of performance were

TABLE XIV

ANALYSIS OF VARIANCE RESULTS FOR THE NDRT  
 (GROUP A)  
 N=224

Variable	Source of Variation	df	ms	f	p
Vocabulary	Level	2	90.601	21.050	.01
	Sex	1	8.189	1.902	
	Interaction	2	1.708	.396	
	Total	5			
Comprehension	Level	2	89.179	24.295	.01
	Sex	1	10.036	2.734	
	Interaction	2	1.336	.364	
	Total	5			
Total	Level	2	364.811	26.519	.01
	Sex	1	38.659	2.810	
	Interaction	2	5.387	.392	
	Total	5			



TABLE XV

MEAN SCORES FOR THE THREE PARTS OF THE NDRT ON STUDENTS  
ACHIEVING AT THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
(GROUP A)

Variable	Level 1 N = 43	Level 2 N = 96	Level 3 N = 85
Vocabulary	24.94	31.31	38.39
Comprehension	30.89	39.02	44.13
Total	55.57	70.42	82.53

TABLE XVI

ANALYSIS OF VARIANCE RESULTS FOR THE NDRT  
(GROUP B)  
N=255)

Variable	Source of Variation	df	ms	f	p
Vocabulary	Level	2	109.949	28.722	.01
	Sex	1	.167	.044	
	Interaction	2	2.050	.536	
	Total	5			
Comprehension	Level	2	158.146	54.115	.01
	Sex	1	9.551	3.268	
	Interaction	2	3.542	1.212	
	Total	5			
Total	Level	2	530.985	45.711	.01
	Sex	1	11.816	1.107	
	Interaction	2	9.688	.834	
	Total	5			

TABLE XVII

MEAN SCORES FOR THE THREE PARTS OF THE NDRT ON STUDENTS  
ACHIEVING AT THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
(GROUP B)

Variable	Level 1 N = 59	Level 2 N = 98	Level 3 N = 98
Vocabulary	25.03	32.74	39.85
Comprehension	30.22	40.18	47.96
Total	55.25	72.80	87.80

TABLE XVIII  
 ANALYSIS OF VARIANCE RESULTS FOR THE HNTMA  
 (GROUP A)  
 N=224

Variable	Source of Variation	df	ms	f	p
Quantitative	Level	2	22.529	21.778	.01
	Sex	1	19.404	18.778	
	Interaction	2	.450	.435	
	Total	5			
Verbal	Level	2	57.157	19.403	.01
	Sex	1	.844	.286	
	Interaction	2	.677	.229	
	Total	5			
Total	Level	2	144.395	30.522	.01
	Sex	1	23.404	4.947	.05
	Interaction	2	2.240	.473	
	Total	5			

statistically significant for each of the three parts of the test. The source of variation for sex was not significant for the Verbal section of the examination, but did reach acceptable levels of significance for the Quantitative and Total scores. The means for each of the three tests at the different levels of academic performance are given in Table XIX. The means for males and females on the three parts of the examination are presented in Table XX.

It may be noted that the means in Table XIX showed a linear trend similar to the means for measures discussed previously. The students who achieved high grades in college gave better performances on the Henmon-Nelson Tests of Mental Ability than those who were making grade point averages of 1.99 or less. The results in Table XX indicated that as a group, the females did not do as well on this test as the males.

The results of the analysis of variance based on data from this test for Group B are given in Table XXI. The outcomes for the analysis were quite comparable to those reported in Table XVIII. The source of variation for sex on the Verbal section did not reach an acceptable level of statistical significance. The means for each of the three parts of the test at the different levels of criterion performance are given in Table XXII. The means for the three parts of the test broken down by sex are shown in Table XXIII.

The data in Table XXII indicated a linear trend similar to the outcomes reported in Table XIX. The data in Table XXIII were closely comparable to the results for Group A given in Table XX. As in the case of the Nelson-Denny Reading Test the various parts of the Henmon-Nelson Tests of Mental Ability differentiated among those individuals who achieved the three levels of academic proficiency. The differences

TABLE XIX

MEAN SCORES FOR THE THREE PARTS OF THE HNTMA ON STUDENTS  
ACHIEVING AT THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
(GROUP A)

Variable	Level 1 N = 43	Level 2 N = 96	Level 3 N = 85
Quantitative	13.14	14.75	19.59
Verbal	19.12	24.03	29.80
Total	32.09	38.79	48.97

TABLE XX

MEAN SCORES FOR THE HNTMA ON MALES AND FEMALES  
(GROUP A)

Variable	Male N=110	Female N=114
Quantitative	17.63	14.03
Verbal	24.69	23.94
Total	41.92	37.94

TABLE XXI  
 ANALYSIS OF VARIANCE RESULTS FOR THE HNTMA  
 (GROUP B)  
 N=255

Variable	Source of Variation	df	ms	f	p
Quantitative	Level	2	26.447	28.566	.01
	Sex	1	16.302	17.609	.01
	Interaction	2	.244	.263	
	Total	5			
Verbal	Level	2	56.375	26.684	.01
	Sex	1	.070	.033	
	Interaction	2	4.012	1.899	
	Total	5			
Total	Level	2	160.225	38.953	.01
	Sex	1	19.729	4.796	.01
	Interaction	2	2.621	.637	
	Total	5			

TABLE XXII

MEAN SCORES FOR THE THREE PARTS OF THE HNTMA ON STUDENTS  
ACHIEVING AT THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
(GROUP B)

Variable	Level 1 N = 59	Level 2 N = 98	Level 3 N = 98
Quantitative	12.98	15.79	20.19
Verbal	19.86	24.93	30.47
Total	32.83	40.71	50.69

TABLE XXIII

MEAN SCORES FOR THE HNTMA ON MALES AND FEMALES  
(GROUP B)

Variable	Male N=116	Female N=139
Quantitative	18.15	15.46
Verbal	25.33	26.54
Total	43.53	41.93



were greater than those arising as a result of chance fluctuations in random sampling.

#### Edwards Personal Preference Schedule (EPPS)

The analysis of data based on results for Group A are given in Table XXIV. It may be noted that there are significant p values for level of achievement on the Achievement and Change scales. The p values for sex were significant for the Intrasection, Abasement, Change, Heterosexuality, and Aggression Scales. The means for the scales at each of the three levels of academic performance are shown in Table XXV.

The mean values suggested a tendency for the better students in Group A to have a need to achieve, to be more dominant, to be conservative in seeking new experiences, to keep a reasonable balance in associations with members of the opposite sex. The means tended, in most instances, to follow a straight line trend. The means for each of the two sexes on the scales of the EPPS are shown in Table XXVI.

The outcomes suggested rather clearly that the females as a group were somewhat more likely to try to understand the feelings of others, to accept blame and to avoid a fight, to want to experience novelty and change in routine, to be a little less interested in fraternizing with the opposite sex, and to be less aggressive than the males. The males as a group manifested these feelings less markedly.

The analysis of variance for results based upon the same test for Group B may be examined in Table XXVII.

The only significant p value for level of academic performance was found for the Achievement Scale. In Table XXVIII, the mean value for this scale is higher for the students doing a superior level of academic

TABLE XXIV

ANALYSIS OF VARIANCE RESULTS FOR THE EPPS  
(GROUP A)

Scale	Source of variation	df	ms	f	p
Achievement	Level	2	1.964	3.751	.05
	Sex	1	1.251	2.390	
	Interaction	2	.114	.217	
	Total	5			
Deference	Level	2	.197	.415	
	Sex	1	.170	.361	
	Interaction	2	.018	.038	
	Total	5			
Order	Level	2	.082	.012	
	Sex	1	.269	.401	
	Interaction	2	.440	.656	
	Total	5			
Exhibition	Level	2	.359	.820	
	Sex	1	.308	.705	
	Interaction	2	.073	.167	
	Total	5			
Autonomy	Level	2	1.338	2.301	
	Sex	1	.874	1.504	
	Interaction	2	.335	.577	
	Total	5			
Affiliation	Level	2	1.400	2.669	
	Sex	1	1.480	2.821	
	Interaction	2	1.190	2.267	
	Total	5			
Intracception	Level	2	.167	.283	
	Sex	1	2.912	4.941	.05
	Interaction	2	.661	1.122	
	Total	5			

Suocrance	Level	2	.536	.786	
	Sex	1	1.782	2.615	
	Interaction	2	.028	.041	
	Total	5			
Dominance	Level	2	1.138	1.857	
	Sex	1	1.782	2.908	
	Interaction	2	1.149	1.874	
	Total	5			
Abasement	Level	2	1.339	2.089	
	Sex	1	3.110	4.852	.05
	Interaction	2	.076	.012	
	Total	5			
Nurturance	Level	2	1.153	1.556	
	Sex	1	1.197	1.615	
	Interaction	2	.135	.182	
	Total	5			
Change	Level	2	3.228	5.217	.01
	Sex	1	13.172	21.289	.01
	Interaction	2	.576	.931	
	Total	5			
Endurance	Level	2	1.132	1.018	
	Sex	1	3.856	3.450	
	Interaction	2	.199	.178	
	Total	5			
Heterosexuality	Level	2	.773	.507	
	Sex	1	15.138	9.931	.01
	Interaction	2	1.774	1.164	
	Total	5			
Aggression	Level	2	.185	.252	
	Sex	1	3.168	4.325	.05
	Interaction	2	.005	.007	
	Total	5			

TABLE XXV

MEAN SCORES FOR THE SCALES OF THE EPPS ON STUDENTS  
 ACHIEVING AT THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
 (GROUP A)

Scale	Level 1 N = 43	Level 2 N = 96	Level 3 N = 85
Achievement	12.05	12.61	13.98
Deference	12.66	12.77	12.18
Order	11.56	11.37	11.15
Exhibition	14.56	14.37	15.18
Autonomy	13.41	11.78	12.58
Affiliation	14.58	16.07	14.66
Intracception	15.13	15.12	15.62
Succorance	11.52	12.52	11.77
Dominance	12.42	12.82	13.88
Abasement	16.64	17.58	18.27
Nurturance	15.58	16.20	14.59
Change	17.62	16.41	15.08
Endurance	14.20	13.84	15.29
Heterosexuality	14.53	14.04	13.30
Aggression	12.84	12.35	12.28

TABLE XXVI

MEAN SCORES FOR THE SCALES OF THE EPPS ON MALES AND FEMALES  
(GROUP A)

Scale	Male N=110	Female N=114
Achievement	13.33	12.24
Deference	12.37	12.70
Order	11.57	11.15
Exhibition	14.48	14.93
Autonomy	12.96	12.20
Affiliation	14.60	15.60
Intracception	14.59	15.98
Succorance	11.39	12.48
Dominance	13.58	12.49
Abasement	16.78	18.22
Nurturance	15.04	15.93
Change	14.89	17.85
Endurance	15.24	13.64
Heterosexuality	15.54	12.37
Aggression	13.21	11.76

TABLE XXVII  
 ANALYSIS OF VARIANCE RESULTS FOR THE EPPS  
 (GROUP B)

Scale	Source of Variation	df	ms	f	p
Achievement	Level	2	1.311	3.483	.05
	Sex	1	6.141	16.315	.01
	Interaction	2	.106	.281	
	Total	5			
Deference	Level	2	.330	.869	
	Sex	1	2.926	7.714	.05
	Interaction	2	.072	.188	
	Total	5			
Order	Level	2	.649	1.352	
	Sex	1	.024	.050	
	Interaction	2	.398	.829	
	Total	5			
Exhibition	Level	2	.602	1.854	
	Sex	1	.023	.070	
	Interaction	2	.029	.089	
	Total	5			
Autonomy	Level	2	.721	1.780	
	Sex	1	10.062	2.486	
	Interaction	2	.211	.520	
	Total	5			
Affiliation	Level	2	.045	.109	
	Sex	1	10.962	26.389	.01
	Interaction	2	.486	1.169	
	Total	5			
Intracception	Level	2	.793	1.471	
	Sex	1	6.181	11.457	.01
	Interaction	2	.391	.724	
	Total	5			

Succorance	Level	2	.237	.605	
	Sex	1	7.370	18.782	.01
	Interaction	2	.064	.165	
	Total	5			
Dominance	Level	2	.417	.750	
	Sex	1	6.784	12.186	.01
	Interaction	2	.075	.135	
	Total	5			
Abasement	Level	2	.135	.289	
	Sex	1	10.114	21.666	.01
	Interaction	2	.814	1.745	
	Total	5			
Nurturance	Level	2	.241	.488	
	Sex	1	11.788	23.925	.01
	Interaction	2	.682	1.383	
	Total	5			
Change	Level	2	1.211	2.441	
	Sex	1	3.110	6.271	.05
	Interaction	2	.636	2.832	
	Total	5			
Endurance	Level	2	.597	.822	
	Sex	1	2.148	2.960	
	Interaction	2	.205	.283	
	Total	5			
Heterosexuality	Level	2	1.393	1.584	
	Sex	1	28.427	32.330	.01
	Interaction	2	2.514	1.722	
	Total	5			
Aggression	Level	2	1.026	2.551	
	Sex	1	11.788	29.316	.01
	Interaction	2	.008	.020	
	Total	5			

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TABLE XXVIII

MEAN SCORES FOR THE SCALES OF THE EPPS ON STUDENTS  
ACHIEVING AT THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
(GROUP B)

Scale	Level 1 N = 59	Level 2 N = 98	Level 3 N = 98
Achievement	11.85	12.76	13.47
Deference	13.24	12.66	12.46
Order	11.85	10.78	10.99
Exhibition	14.98	13.93	14.19
Autonomy	11.62	12.25	12.82
Affiliation	16.17	15.94	16.48
Succorance	11.92	12.54	11.97
Dominance	13.13	12.16	13.52
Abasement	17.05	17.61	17.44
Nurturance	15.34	15.47	14.82
Change	17.05	16.71	15.56
Endurance	13.98	14.35	15.06
Heterosexuality	12.95	14.58	14.07
Aggression	12.69	11.79	11.28



work. The means for the three levels of criterion performance appeared to follow a linear trend.

The source of variation for sex is significant for more than half the scales. Table XXIX presents the mean values of the fifteen scales. The females as a group seemed to be less motivated to be recognized as outstanding, to feel the need to do what is expected, to want to share and to do things with friends, to want to try to understand the feelings of others, to want affection from others, to be less dominant, to accept blame when things go wrong, to be of help to others, to seek changes from routine, and to be less aggressive than the males. The males, however, seemed to show greater needs for gaining recognition and achieving status, for gaining dominance, to engage in activities with the opposite sex, and to be aggressive.

The patterns of the students in Groups A and B appeared quite comparable. Measured needs seemed to manifest themselves somewhat more clearly in the freshman group than among the sophomore students. The sex differences were fairly clear. The EPPS did not seem to differentiate between students who were doing well academically and those who were not.

#### Guilford Zimmerman Temperament Survey (GZTS)

The outcomes of the analysis of variance on data from the temperament survey for Group A are given in Table XXX. Five of the scales reached levels of acceptable statistical significance at the .05 per cent level or beyond. Two of the significant outcomes were for level of academic achievement and three were for source of variation due to sex.

TABLE XXIX

MEAN SCORES FOR THE SCALES OF THE EPPS ON MALES AND FEMALES  
(GROUP B)

Scale	Male N=116	Female N=139
Achievement	13.73	11.93
Deference	12.08	13.34
Order	11.07	11.14
Exhibition	14.39	14.15
Autonomy	13.53	11.09
Affiliation	14.68	17.22
Intracception	14.90	17.18
Succorance	11.03	13.24
Dominance	14.14	12.03
Abasement	16.29	19.05
Nurturance	13.85	16.42
Change	15.72	16.90
Endurance	15.09	14.01
Heterosexuality	16.13	12.00
Aggression	13.28	10.36

TABLE XIX  
ANALYSIS OF VARIANCE RESULTS FOR THE QETS  
(GROUP A)

Scale	Source of variation	df	ms	f	p
Activity vs. slowness	Level	2	1.835	2.213	
	Sex	1	.365	.440	
	Interaction	2	2.337	2.819	
	Total	5			
Seriousness vs. impulsiveness	Level	2	9.519	11.361	.01
	Sex	1	.003	.004	
	Interaction	2	.113	.135	
	Total	5			
Ascendancy vs. submissiveness	Level	2	.004	.005	
	Sex	1	5.510	5.910	.05
	Interaction	2	.461	.495	
	Total	5			
Social interest vs. shyness	Level	2	1.537	1.089	
	Sex	1	.714	.506	
	Interaction	2	3.331	2.360	
	Total	5			
Emotional stability vs. depression	Level	2	1.193	1.176	
	Sex	1	.370	.365	
	Interaction	2	1.729	1.706	
	Total	5			
Objectivity vs. subjectivity	Level	2	1.040	1.163	
	Sex	1	.000	.000	
	Interaction	2	.466	.052	
	Total	5			
Friendliness vs. hostility	Level	2	1.452	1.830	
	Sex	1	3.619	4.568	.05
	Interaction	2	.043	.054	
	Total	5			
Thoughtfulness vs. unreflective	Level	2	2.478	3.354	.05
	Sex	1	.062	.084	
	Interaction	2	.044	.059	
	Total	5			
Personal relations vs. criticalness	Level	2	1.550	1.735	
	Sex	1	3.466	3.879	
	Interaction	2	.473	.529	
	Total	5			
Masculinity vs. femininity	Level	2	.261	.487	
	Sex	1	108.290	20.216	.01
	Interaction	2	.119	.222	
	Total	5			

The data in Table XXXI indicated that the students achieving at a high level of academic performance tended to be more thoughtful, serious, and restrained than those not doing as well in course work. The results in Table XXXII suggested that the males seemed to be somewhat more socially outgoing than the females but not as friendly. The outcomes on the masculinity-femininity scale were in line with the type of results to be expected. The responses showed the males to be more "masculine" than the females.

The outcomes of the analysis of results obtained from the GZTS for Group B are given in Tables XXXIII, XXXIV, and XXXV. Nine of the sources of variation were significant at the .05 per cent level or beyond (Table XXXIII). The distributions of means for the various bipolar traits at three levels of academic performance (Table XXXIV) indicated that the higher-achieving students appeared to be more serious-minded and more thoughtful in demeanor than those doing a poorer quality of course work.

The students who were performing in the middle range of achievement showed somewhat greater emotional stability (Table XXXIV). The students who were doing the poorest academic work appeared to display more depressive material and possibly greater emotional disquietude.

The findings in Table XXXV seemed to point out that the males in this group were more active and outgoing, more ascendant, and more "masculine" in feelings and values. The females appeared to be friendlier, more sociable, more thoughtful, more sensitive, and more "feminine" in values and feelings.

The patterns for Groups A and B were closely analogous. The better students appeared to be more thoughtful, reflective and serious, and

TABLE XXXI

MEAN SCORES FOR THE SCALES OF THE GZTS FOR STUDENTS  
ACHIEVING AT THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
(GROUP A)

Scale	Level 1 N = 43	Level 2 N = 96	Level 3 N = 85
Activity vs. slowness	17.36	17.85	19.21
Seriousness vs. impulsiveness	13.02	14.97	17.38
Ascendance vs. submissiveness	14.91	14.92	15.00
Social interest vs. shyness	17.73	19.42	18.96
Emotional stability vs. depression	15.86	15.85	17.19
Objectivity vs. subjectivity	14.65	15.69	16.04
Friendliness vs. hostility	13.00	14.34	14.59
Thoughtfulness vs. unreflective	17.66	17.78	19.65
Personal relations vs. criticalness	15.08	16.50	16.70
Masculinity vs. femininity	16.07	15.43	15.46

TABLE XXXII

MEAN SCORES FOR THE SCALES OF THE GZTS ON MALES AND FEMALES  
(GROUP A)

Scale	Male N=110	Female N=114
Activity vs. slowness	18.38	17.89
Seriousness vs. impulsiveness	15.14	15.10
Ascendance vs. submissiveness	15.90	13.98
Social interest vs. shyness	18.36	19.05
Motional stability vs. depression	16.05	16.55
Objectivity vs. subjectivity	15.45	15.46
Friendliness vs. hostility	13.20	14.75
Thoughtfulness vs. unreflective	18.46	18.26
Personal relations vs. criticalness	15.33	16.85
Masculinity vs. femininity	19.90	11.40

TABLE XXXIII

ANALYSIS OF VARIANCE RESULTS FOR THE OZTS  
(GROUP B)

Scale	Source of variation	df	ms	f	p
Activity vs. slowness	Level	2	.115	.176	
	Sex	1	3.729	5.714	.05
	Interaction	2	.837	1.283	
	Total	5			
Seriousness vs. impulsiveness	Level	2	2.472	4.899	.01
	Sex	1	1.084	2.148	
	Interaction	2	.196	.388	
	Total	5			
Ascendance vs. submissiveness	Level	2	.319	.455	
	Sex	1	5.762	8.219	.01
	Interaction	2	1.230	1.755	
	Total	5			
Social interest vs. shyness	Level	2	.517	.463	
	Sex	1	7.020	6.293	.05
	Interaction	2	1.539	1.379	
	Total	5			
Emotional stability vs. depression	Level	2	4.188	4.476	.01
	Sex	1	1.162	1.241	
	Interaction	2	.438	.468	
	Total	5			
Objectivity vs. subjectivity	Level	2	.974	1.124	
	Sex	1	1.571	1.813	
	Interaction	2	.536	.619	
	Total	5			
Friendliness vs. hostility	Level	2	.409	.553	
	Sex	1	9.805	13.255	
	Interaction	2	.420	.568	
	Total	5			
Thoughtfulness vs. unreflective	Level	2	2.322	3.795	.05
	Sex	1	4.084	6.674	.05
	Interaction	2	.133	.217	
	Total	5			
Personal relations vs. criticalness	Level	2	.218	.772	
	Sex	1	2.802	3.724	
	Interaction	2	.082	.109	
	Total	5			
Masculinity vs. femininity	Level	2	.409	.961	
	Sex	1	162.969	382.735	.01
	Interaction	2	.012	.275	
	Total	5			

TABLE XXXIV

MEAN SCORES FOR THE SCALES OF THE GZTS FOR STUDENTS  
ACHIEVING AT THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
(GROUP B)

Scale	Level 1 N = 59	Level 2 N = 98	Level 3 N = 98
Activity vs. slowness	16.99	17.31	17.46
Seriousness vs. impulsiveness	14.30	14.47	16.31
Ascendance vs. submissiveness	13.92	13.25	13.97
Social interest vs. shyness	18.40	17.84	17.38
Emotional stability vs. depression	13.51	16.32	15.51
Objectivity vs. subjectivity	13.95	14.61	15.34
Friendliness vs. hostility	13.26	14.02	14.07
Thoughtfulness vs. unreflective	16.72	17.82	18.88
Personal relations vs. criticalness	14.19	15.09	15.15
Masculinity vs. femininity	14.54	15.43	15.13



TABLE XXXV

MEAN SCORES FOR THE SCALES OF THE GZTS ON MALES AND FEMALES  
(GROUP B)

Scale	Male N=116	Female N=139
Activity vs. slowness	18.04	16.46
Seriousness vs. impulsiveness	14.60	15.45
Ascendancy vs. submissiveness	14.69	12.73
Social interest vs. shyness	16.79	18.95
Emotional stability vs. depression	15.55	14.67
Objectivity vs. subjectivity	15.14	14.12
Friendliness vs. hostility	12.50	15.06
Thoughtfulness vs. unreflective	16.98	18.63
Personal relations vs. criticalness	14.12	15.49
Masculinity vs. femininity	20.24	9.82

some degree, more emotionally stable. The males tended to be somewhat more aggressive, active, and outgoing than the females, but the males appeared to be more interested in relating to others and in attempting to be friendly and considerate.

#### Tennessee Self Concept Scale (TSCS)

The pattern of analysis of data obtained from the TSCS was similar that employed with the results obtained from the sources discussed above. The analysis of variance for the Tennessee Self Concept Scales (Group A) is given in Table XXXVI. The Moral-Ethical Self and Personal Self Scales manifested statistically significant  $p$  values for sources of variation for levels of academic performance. The Physical Self Scale showed a statistically significant  $p$  value for the source of variation due to sex. The mean scores for the scales of the TSCS at the three different levels of academic achievement are shown in Table XXXVII.

It was apparent that the Moral-Ethical Scale manifested an increase in mean values for levels. The students who were doing better academic work appeared to feel they were "good" individuals, relatively well-satisfied with their religious orientations and their relationships to God. Data for the Personal Self Scale showed similar statistical trends which suggested that the students who were doing better academic work had feelings of adequacy as persons, strong feelings of personal worth, and positive feelings about future performances. The data for the Physical Self Scale in Table XXXVIII suggested that the males viewed their state of health, physical appearance, sexuality, skills, and general health more positively than the females.

Data for four of the scales showed interactions for source of

TABLE XXXVI  
ANALYSIS OF VARIANCE RESULTS FOR THE TSCS  
(GROUP A)

Scale	Source of variation	df	ms	f	p
Self criticism	Level	2	.814	.722	
	Sex	1	4.369	3.879	
	Interaction	2	.831	.738	
	Total	5			
Total p score	Level	2	107.658	2.649	
	Sex	1	21.131	.519	
	Interaction	2	157.142	3.855	
	Total	5			
Identity	Level	2	11.562	2.589	
	Sex	1	2.344	.523	
	Interaction	2	9.643	2.152	
	Total	5			
Self satisfaction	Level	2	10.297	1.401	
	Sex	1	15.941	2.168	
	Interaction	2	19.438	2.644	
	Total	5			
Behavior	Level	2	10.334	2.151	
	Sex	1	.290	.060	
	Interaction	2	17.120	3.564	.05
	Total	5			

Physical self	Level	2	3.396	1.599	
	Sex	1	8.906	4.089	.05
	Interaction	2	8.836	4.057	.05
	Total	5			
Moral-ethical self	Level	2	7.728	3.159	.05
	Sex	1	.224	.916	
	Interaction	2	2.476	1.012	
	Total	5			
Personal self	Level	2	10.003	5.032	.01
	Sex	1	5.529	2.782	
	Interaction	2	13.249	6.665	.01
	Total	5			
Family self	Level	2	1.924	.779	
	Sex	1	.009	.003	
	Interaction	2	3.432	1.390	
	Total	5			
Social self	Level	2	2.198	1.072	
	Sex	1	.070	.034	
	Interaction	2	7.205	3.513	.05
	Total	5			
Total variability	Level	2	1.727	.364	
	Sex	1	1.696	.358	
	Interaction	2	11.053	2.331	
	Total	5			
Distribution score	Level	2	.272	.013	
	Sex	1	18.305	.854	
	Interaction	2	16.217	.757	
	Total	5			

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TABLE XXXVII

MEAN SCORES FOR THE SCALES OF THE TSCS FOR STUDENTS  
ACHIEVING AT THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
(GROUP A)

Scale	Level 1 N = 43	Level 2 N = 96	Level 3 N = 85
Self criticism	35.31	36.41	35.43
Total p	330.21	336.29	334.81
Identity	123.27	127.22	127.62
Self satisfaction	99.95	100.96	104.29
Behavior	106.99	109.00	111.47
Physical self	68.30	70.61	70.50
Moral-ethical self	64.92	66.01	68.74
Personal self	62.30	64.02	65.73
Family self	69.25	70.16	71.21
Social self	66.43	67.28	68.52
Total variability	49.99	50.21	48.50
Distribution score	13.73	14.31	14.73

TABLE XXXVIII

MEAN SCORES FOR THE SCALES OF THE TSCS ON MALES AND FEMALES  
(GROUP A)

Scale	Male N=110	Female N=114
Self criticism	36.54	34.83
Total p	338.98	335.23
Identity	126.66	125.41
Self satisfaction	103.36	100.10
Behavior	109.67	109.23
Physical self	71.02	68.58
Moral-ethical self	66.36	66.75
Personal self	64.64	62.72
Family self	70.17	70.24
Social self	67.52	67.30
Total variability	50.10	49.03
Distribution score	15.89	12.40

variation at the .05 level or beyond (Table XXXVIII). An examination of the data showed that the mean values tended to increase from level 1 to level 3 for the four scales (Table XXXVII) while the means for the females on each of the scales tended to be somewhat lower than those for the males (Table XXXVIII).

The outcomes based upon the analysis of the TSCS data for Group B are given in the next three tables. Table XXXIX showed that sources of variation for levels (Behavior and Total Variability Scales) were significant at the .05 per cent level or beyond. The distribution of means for levels of academic performance are shown in Table XL. The means for the scales based upon data collected separately for the sexes are listed in Table XLI.

It seemed to be apparent that the better students had a more veridical perception of their own behavior and of the manner in which they functioned. The lower variability mean for the better students suggested that they were more consistent in the way they perceived themselves. The self-perceptions of these students reflected greater stability, which may be indicative of better emotional maturity and extended capacity to deal with frustration and failure. The males in this group also seemed to have a more positive picture of their physical self than the females.

The data from the TSCS for the two groups suggested certain identical characteristics. The better students seemed to be less variable, more mature and well disposed in their feelings toward themselves. The data obtained from the TSCS were in some respects disappointing because of the number of scales which did not differentiate significantly among levels of performance for students in either Groups A or B.

Physical self	Level	2	4.579	2.462	
	Sex	1	5.703	3.067	
	Interaction	2	4.586	2.502	
	Total	5			
Moral-ethical self	Level	2	2.993	1.633	
	Sex	1	5.060	2.760	
	Interaction	2	4.586	2.502	
	Total	5			
Personal self	Level	2	4.117	2.618	
	Sex	1	6.222	3.956	.05
	Interaction	2	.480	.305	
	Total	5			
Family self	Level	2	3.121	1.476	
	Sex	1	.101	.048	
	Interaction	2	.649	.307	
	Total	5			
Social self	Level	2	1.373	.815	
	Sex	1	3.300	1.959	
	Interaction	2	2.935	1.742	
	Total	5			
Total variability	Level	2	21.460	4.987	.01
	Sex	1	3.936	.915	
	Interaction	2	.129	.029	
	Total	5			
Distribution score	Level	2	.936	.057	
	Sex	1	15.909	.967	
	Interaction	2	7.165	.436	
	Total				

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TABLE XXXIX

ANALYSIS OF VARIANCE RESULTS FOR THE TSCS  
(GROUP B)

Scale	Source of variation	df	ms	f	p
Self criticism	Level	2	.880	1.027	
	Sex	1	1.591	1.857	
	Interaction	2	.320	.374	
	Total	5			
Total p score	Level	2	73.884	2.626	
	Sex	1	.398	.014	
	Interaction	2	27.895	.992	
	Total	5			
Identity	Level	2	2.840	.977	
	Sex	1	1.696	.583	
	Interaction	2	3.601	1.239	
	Total	5			
Self satisfaction	Level	2	10.001	1.710	
	Sex	1	4.823	.825	
	Interaction	2	6.772	1.579	
	Total	5			
Behavior	Level	2	14.827	3.888	.05
	Sex	1	.096	.025	
	Interaction	2	1.635	.429	
	Total	5			

TABLE XL

MEAN SCORES FOR THE SCALES OF THE TSCS FOR STUDENTS  
ACHIEVING AT THREE DIFFERENT LEVELS OF ACADEMIC PERFORMANCE  
(GROUP B)

Scale	Level 1 N = 59	Level 2 N = 98	Level 3 N = 98
Self criticism	35.38	35.06	36.34
Total p	329.73	340.26	340.26
Identity	124.44	126.23	126.70
Self satisfaction	99.35	103.45	102.94
Behavior	105.94	110.57	110.73
Physical self	67.38	70.22	69.71
Moral-ethical self	65.81	67.89	67.97
Personal self	62.56	65.03	65.06
Family self	67.84	69.67	70.23
Social self	65.94	67.50	67.19
Total variability	54.04	49.55	47.67
Distribution score	14.82	13.64	14.83

TABLE XLI

MEAN SCORES FOR THE SCALES OF THE TSCS ON MALES AND FEMALES  
(GROUP B)

Scale	Male N=116	Female N=139
Self criticism	36.11	35.08
Total p	337.01	336.49
Identity	125.26	126.32
Self satisfaction	102.81	111.01
Behavior	108.95	109.20
Physical self	70.08	68.13
Moral-ethical self	66.30	68.14
Personal self	65.23	63.19
Family self	69.29	69.20
Social self	66.13	67.62
Total variability	49.61	51.23
Distribution score	16.05	12.80

## II. Relationships Among Variables and Criteria for Groups A and B

Tables  $A_1$ ,  $A_2$ ,  $A_3$ , and  $A_4$  in Appendix A present the intercorrelations among the tests, and the correlations of the tests with the criteria, for the males and females in Groups A and B. Since the issue primary concern in this section involved the association of the various measures with college grade point average, data have been abstracted from the large tables and summarized in this section for the purpose of simplifying presentation.

### Relation of ACT Scores to the Criteria

The correlation coefficients for the various sections of the ACT battery with the criteria for Groups A and B are given in Table XLII. With the exception of the English tests, the tests of the ACT battery correlated significantly with each of the criteria. Only in the case of the females in Group B did the English test show significant association with over-all grade point average. The Mathematics, Social Studies, and Natural Science tests exhibited correlations with the criteria that ranged from .32 to .62, with a median  $r$  of .42.

### High School Grades Correlated with the Criteria

High school grades have been found to be effective predictors of college performance (100, 44, 31). The correlation coefficients with the criteria for Groups A and B are shown in Table XLIII. The evidence suggested that interest, application, and ability manifested in secondary school programs tended to be related positively to academic

TABLE XLII

CORRELATIONS BETWEEN EACH OF THE CRITERIA AND  
VARIOUS PARTS OF THE ACT BATTERY FOR MALES  
AND FEMALES IN GROUPS A AND B

	Group A	Criterion	Group B	Criterion
	Male N=110	Female N=114	Male N=116	Female N=139
English	.17	.17	.03	.86*
Mathematics	.38*	.40*	.44*	.48*
Social Studies	.38*	.42*	.62*	.32*
Natural Science	.39*	.42*	.55*	.53*
Composite	.34*	.47*	.53*	.46*

\*significant at the .05 level or below

TABLE XLIII

CORRELATIONS BETWEEN EACH OF THE CRITERIA AND  
HIGH SCHOOL GRADE POINT AVERAGE FOR  
MALES AND FEMALES IN GROUPS A AND B

Variable	Group A	Criterion	Group B	Criterion
	Male N=110	Female N=114	Male N=116	Female N=139
Over-all High School Grade Point Average	.43*	.53*	.65*	.44*

\*significant at the .05 level or below

productivity at the college level. All four of the criterion correlations in Table XLIII differed significantly from a population  $r$  of zero.

#### Correlations of NDRT Scores with the Criteria

The relationships between various parts of the NDRT and the criteria for Groups A and B are given in Table XLIV. All of the correlation coefficients differed significantly from a population  $r$  of zero. The values ranged from .33 to .77 with a median  $r$  of approximately .50. The positive criterion correlations were in line with findings obtained from other investigations reported in the literature (22, 31).

#### Relationships of the HNTMA Scores with the Criteria

Significant correlation coefficients were obtained on the whole between each of the subtests of the HNTMA and the criterion for each group. Only one of the criterion  $r$ 's failed to reach the .05 level of confidence (Table XLV).

#### Correlations of the Scales of the EPPS with the Criteria

The correlations of the scales of the EPPS with the criteria for each group are given in Table XLVI. It may be observed that the data for the Achievement Scale related significantly in a positive direction to academic performance for the sex groups with the exception of the females in Group B. The high negative  $r$ 's for the females in Group B were the consequence of the association of low EPPS scales with higher over-all grade point averages. The negative outcome seemed to have little importance since the meanings of low scale score on the EPPS are not well understood. The academic work of the freshmen women appeared

TABLE XLIV

CORRELATIONS BETWEEN EACH OF THE CRITERIA AND  
VARIOUS PARTS OF THE NDRT FOR MALES AND  
FEMALES IN GROUPS A AND B

Variable	Group A	Criterion	Group B	Criterion
	Male N=110	Female N=114	Male N=116	Female N=139
Abulary	.67*	.61*	.62*	.37*
Prehension	.35*	.41*	.49*	.65*
al	.33*	.38*	.52*	.77*

significant at the .05 level or below

TABLE XLV

CORRELATIONS BETWEEN EACH OF THE CRITERIA AND  
VARIOUS PARTS OF THE HNTMA FOR MALES AND  
FEMALES IN GROUPS A AND B

Variable	Group A	Criterion	Group B	Criterion
	Male N=110	Female N=114	Male N=116	Female N=139
ntitative	.36*	.43*	.54*	.83*
bal	.35*	.49*	.47*	.02
al	.20*	.34*	.44*	.50*

significant at the .05 level or below

TABLE XLVI

CORRELATIONS BETWEEN EACH OF THE CRITERIA AND THE SCALES  
OF THE EPPS FOR MALES AND FEMALES IN GROUPS A AND B

Scale	Group A	Criterion	Group B	Criterion
	Male N=110	Female N=114	Male N=116	Female N=139
Achievement	.32*	.48*	.51*	-.77*
Deference	.03	.31*	.18	-.36*
Order	.02	-.13	-.07	-.81*
Exhibition	.04	-.09	.00	-.68*
Autonomy	-.03	.21*	-.05	-.63*
Affiliation	-.06	.01	-.05	.75*
Intracception	.04	-.12	.06	-.56*
Succorance	-.01	-.02	.07	-.32*
Dominance	.12	-.07	-.05	-.83*
Abasement	-.05	.27*	.04	-.48*
Nurturance	.22*	.01	.11	-.83*
Change	.01	-.16	.02	-.49*
Endurance	.09	-.23*	-.03	-.80*
Heterosexuality	.09	.14	.04	.37*
Aggression	-.15	-.03	-.08	-.70*

\*significant at the .05 level or below



to be more positively related to the need to form friendly attachments with others, and the need to be accepted by members of the opposite sex. As the female students matured, the relationship between the need to achieve and academic performance appeared to become more pronounced.

It should be noted that with the exception of the criterion correlations for the Achievement Scale, none of the remaining scales showed statistically significant positive criterion  $r$ 's for more than one sex sample. On examination Table XLVI showed that out of the remaining scales, a total of 56 criterion correlations, only 6 positive criterion  $r$ 's departed significantly from an  $r$  of zero. Such an outcome would be no better than chance. On the basis of these data, it would seem that for three of the samples, the need for achievement was more closely related to academic performance than any of the other needs.

#### The Relationships of the Scales of the GZTS with the Criteria

The scales of the GZTS based on data for three of the sex samples did not show clear cut patterns of association with the criteria. The females in Group B, however, responded to the bipolar scales in such a manner that high levels of general activity, emotional stability, thoughtfulness, good personal relations, and acceptance of sex role were correlated positively with academic performance (Table XLVII). The trends of data for the females in Group B on five remaining scales indicates that better grade point averages were related negatively to impulsiveness, submissiveness, shyness, subjectivity, and feelings of hostility. Out of the thirty criterion correlations for the two sex samples in Group A and for the males in Group B, only three departed significantly from an  $r$  of zero. Such findings represented outcomes

TABLE XLVII

CORRELATIONS BETWEEN EACH OF THE CRITERIA AND THE SCALES  
OF THE GZTS FOR MALES AND FEMALES IN GROUPS A AND B

Scale	Group A	Criterion	Group	Criterion
	Male N=110	Female N=114	Male N=116	Female N=139
Activity vs. slowness	.15	.04	-.21*	.76*
Seriousness vs. impulsiveness	.00	.31*	.10	-.56*
Ascendance vs. submissiveness	.18	.20*	.14	-.72*
Social interest vs. shyness	.00	.09	.15	-.78*
Emotional stability vs. depression	.06	.09	.00	.18*
Objectivity vs. subjectivity	-.09	.08	.07	-.51*
Friendliness vs. hostility	.07	-.08	.10	-.73*
Thoughtfulness vs. unreflective	.09	-.13	.09	.28*
Personal relations vs. criticalness	.20*	.13	.18	.61*
Masculinity vs. femininity	.07	.06	.15	.36*

\*significant at the .05 level or below

that could have occurred by chance.

#### Correlations of the Scales of the TSCS with the Criteria

The correlations between the 12 scales of the TSCS and the criteria for Groups A and B are given in Table XLVIII. It is interesting to note that the criterion correlation coefficients for the females in Group B tended to be high for 11 of the 12 scales. This pattern was not duplicated in the other three sex samples. The data for the freshmen girls seemed to suggest that those who made better grades were more prone to respond to the TSCS items in ways which indicated that they possessed positive self-feelings and healthy self-perceptions. The beginning female students who were succeeding academically appeared somewhat sensitive about criticism, but they seemed able to handle such feelings adequately. The outcomes for the other three sex groups were not clearly definable.

#### III. Background Data for Freshman and Sophomore Students Organized in Terms of Levels of Performance Based Upon College Grade Point Average

In addition to examining the differences between satisfactorily-achieving students on high school grades and various psychometric measures, and in addition to determining the relationships between these measures and academic performance, a third analysis consisted of compiling background information about each of the classes to determine if such data tended to be related to the level of academic work. The questionnaire developed by the research staff of the American College Testing Program (4) was employed in modified form to obtain the background information. A copy of the questionnaire used in the study is

TABLE XLVIII

CORRELATIONS BETWEEN EACH OF THE CRITERIA AND THE SCALES  
OF THE TSCS FOR MALES AND FEMALES IN GROUPS A AND B

Scale	Group A	Criterion	Group B	Criterion
	Male N=110	Female N=114	Male N=116	Female N=139
Self criticism	.01	.00	.13	-.44*
P score	-.03	-.03	.21*	.82*
Identity	-.01	.09	.22*	.88*
Self satisfaction	-.10	.17	.20*	.88*
Behavior	-.15	.08	.19*	.86*
Physical self	-.01	.20*	.18	.88*
Moral-ethical self	-.19*	.09	.16	.85*
Personal self	.00	.12	.17	.86*
Family self	-.09	.16	.15	.86*
Social self	-.02	.09	.20*	.88*
Total variability	-.13	.10	.18	.86*
Distribution score	.09	-.02	-.17	.76*

\*significant at the .05 level or below

presented in Appendix B. The procedure for presenting the findings may be observed by examining the tables that follow.

In Table XLIX, the students were classified in terms of size of graduating class on the basis of level of academic performance. It should be recalled again that level 1 consisted of those students with an over-all grade point average of 1.99 and below; level 2 consisted of those students with an over-all grade point average of 2.00 to 2.99; level 3 designated those whose over-all grade point average was 3.00 or better. There was a suggestion in the data that a larger percentage of sophomore girls who graduated from small high schools did a poorer quality of academic work than the rest of the students. On the other hand, it seemed that for freshmen and sophomores who were achieving adequate or superior academic performances, smaller percentages came from large high schools. A higher percentage of achievers came from small or medium-sized high schools.

When the students in the freshmen and sophomore classes were classified by father's occupation (Table L), it seemed apparent that regardless of level of academic performance or specification by sex, better than fifty per cent of the students' fathers were farmers, businessmen, or skilled workers. More than ten per cent of the students had fathers who were classified as professional workers. Despite this small number, approximately four-fifths of the students from professional families were doing acceptable or superior academic work.

The data in Table LI indicated little except that the students appeared somewhat reluctant to divulge the family income. There was an indication in the findings that the students who were making better grades were less defensive about revealing such information, but this

TABLE XLIX

PERCENTAGES OF STUDENTS IN THE THREE CRITERION GROUPS  
CLASSIFIED BY SIZE OF GRADUATING CLASS

Criterion	Size of Graduating Class					
	Less than 25	25-99	100-399	400-more		
Level 1	Group B	Male N=33	24	34	30	12
		Female N=26	27	27	15	31
	Group A	Male N=31	26	29	19	26
		Female N=12	58	25	17	00
Level 2	Group B	Male N= 44	20	41	30	09
		Female N=54	28	30	24	18
	Group A	Male N=45	24	38	22	16
		Female N=51	22	37	21	20
Level 3	Group B	Male N=39	24	26	42	08
		Female N=59	36	42	19	03
	Group A	Male N=34	21	35	35	09
		Female N=51	25	37	22	16

TABLE L  
 PERCENTAGES OF STUDENTS IN THE THREE CRITERION  
 GROUPS CLASSIFIED BY FATHER'S OCCUPATION

Criterion		Para- Agri.	Business	Skill Trade	Semi- Skill	Unskill	Professional	Other	Unknown	
Level 1	Group B	Male N=33	24	24	06	03	25	04	15	09
		Female N=26	35	08	07	12	12	00	14	12
	Group A	Male N=31	26	10	16	06	13	00	16	13
		Female N=12	42	17	00	08	08	17	00	08
Level 2	Group B	Male N=44	09	23	16	13	04	07	14	14
		Female N=54	50	09	07	09	07	07	04	07
	Group A	Male N=45	38	09	20	09	02	11	07	04
		Female N=51	39	22	17	06	02	02	06	06
Level 3	Group B	Male N=39	38	10	05	05	05	18	04	15
		Female N=59	37	07	09	08	14	08	07	10
	Group A	Male N=34	41	09	09	12	09	12	06	02
		Female N=51	44	18	15	12	00	05	04	02

TABLE LI

PERCENTAGES OF STUDENTS IN THE THREE CRITERION  
GROUPS CLASSIFIED BY LEVEL OF FAMILY INCOME

Criterion	Family income less than	Family income								Confiden- tial	Didn't know
		3,000	5,000- 7,499	7,500- 9,999	10,000- 14,999	15,000- 19,999	20,000- 24,999	25,000- over			
Level 1	Group B	Male N=33	03	06	03	03	00	03	00	70	12
		Female N=26	00	00	04	03	00	04	00	77	12
	Group A	Male N=31	13	00	04	06	06	04	03	61	03
		Female N=12	00	00	00	17	00	00	00	83	00
Level 2	Group B	Male N=44	05	18	11	07	02	00	02	50	05
		Female N=54	00	01	00	02	02	00	02	76	17
	Group A	Male N=45	07	11	04	07	02	00	04	53	12
		Female N=51	02	04	01	06	06	00	00	61	20
Level 3	Group B	Male N=39	08	05	03	00	05	00	05	64	10
		Female N=59	03	08	02	07	00	02	02	69	07
	Group A	Male N=34	02	21	06	09	06	03	00	47	06
		Female N=51	08	10	08	06	01	00	00	59	08



tendency was not well-defined.

It was thought that it might be informative to examine the educational background of the parents of the students in the freshmen and sophomore classes. These data are presented in Tables LII and LIII. The trend of the results showed that for all of the criterion groups, approximately half of the students' mothers were high school graduates. The findings in Table LIII suggested a somewhat similar trend for fathers. There was an indication that a number of students whose fathers had no more than grade school education were doing academic work of minimum quality.

The number of mothers who had taken some college work or who had graduated from college exceeded the number of fathers in the same category. This held true for the three criterion groups.

The percentages in Table LIV showed clearly that the bulk of the students in the two classes investigated came from farms in open country and from communities of less than 50,000. A somewhat larger percentage of students from farms were doing acceptable or superior academic work as compared to those who were meeting minimal standards. The distribution of percentages for the three levels of academic performance was approximately equivalent for students coming from communities of 50,000 or less.

It was deemed feasible to examine the types of secondary schools the students had attended. These data are given in Table LV. The distributions of findings did not exhibit any meaningful or consistent trends.

The freshmen and sophomores were given a list of questions and asked to respond to the items in order that a pattern of preferences

TABLE LII

PERCENTAGES OF STUDENTS IN THE THREE CRITERION GROUPS  
CLASSIFIED BY MOTHER'S EDUCATIONAL BACKGROUND

Criterion		Level of schooling						
		No school	Grade school	High school	College	Graduate	Unknown	
Level 1	Group B	Male N=33	00	12	42	15	04	27
		Female N=26	00	23	46	16	00	15
	Group A	Male N=31	00	32	26	13	00	29
		Female N=12	00	00	67	25	00	08
Level 2	Group B	Male N=44	00	16	43	16	02	23
		Female N=54	00	15	50	24	00	11
	Group A	Male N=45	00	13	51	22	03	11
		Female N=51	00	24	39	31	00	06
Level 3	Group B	Male N=39	00	07	44	23	00	26
		Female N=59	00	15	37	25	03	20
	Group A	Male N=34	00	15	46	21	00	18
		Female N=51	00	08	67	20	01	04

TABLE LIII

PERCENTAGES OF STUDENTS IN THE THREE CRITERION GROUPS  
CLASSIFIED BY FATHER'S EDUCATIONAL BACKGROUND

Criterion	Level of schooling							
	No school	Grade school	High school	College	Graduate	Unknown		
Level 1	Group B	Male N=33	00	27	36	12	04	21
		Female N=26	04	35	38	08	00	15
	Group A	Male N=31	00	19	42	04	00	35
		Female N=12	00	17	33	33	09	08
Level 2	Group B	Male N=44	00	14	52	07	03	24
		Female N=54	00	20	46	19	00	15
	Group A	Male N=45	00	16	53	18	04	09
		Female N=51	00	25	53	10	02	10
Level 3	Group B	Male N=39	00	13	41	13	10	23
		Female N=59	00	15	46	17	02	20
	Group A	Male N=34	00	18	44	15	08	15
		Female N=51	00	14	57	16	01	12

TABLE LIV  
 PERCENTAGES OF STUDENTS IN THE THREE CRITERION GROUPS  
 CLASSIFIED BY HOME COMMUNITY

Criterion		Farm- open country	Suburb of met. area- 2 million	Suburb of met. area- 500,000- 2 million	Suburb of 100,000- 499,999	Suburb of less than 100,000	City of 500,000- 2 million	City of 100,000- 499,999	City of 50,000- 99,000	Less than 50,000	
Level 1	Group B	Male N=33	45	00	00	04	15	00	00	00	36
		Female N=26	42	04	00	00	08	00	03	08	35
	Group A	Male N=31	55	04	00	00	06	03	00	00	32
		Female N=12	50	00	00	00	17	00	00	00	33
Level 2	Group B	Male N=44	50	00	00	05	07	02	00	00	36
		Female N=54	63	00	01	04	02	02	02	00	26
	Group A	Male N=45	62	00	00	00	07	00	04	03	24
		Female N=51	61	00	00	04	06	00	00	00	29
Level 3	Group B	Male N=39	62	00	03	00	02	00	00	00	33
		Female N=59	73	00	00	00	03	00	00	02	22
	Group A	Male N=34	63	00	00	02	02	06	00	00	27
		Female N=51	65	00	02	00	04	00	00	00	29

TABLE LV

PERCENTAGES OF STUDENTS IN THE THREE CRITERION GROUPS  
CLASSIFIED BY TYPES OF SECONDARY SCHOOLS ATTENDED

Criterion	Types of School Attended				
	Public	Private- Church related	Private- Non-denominational		
Level 1	Group B	Male N=33	09	58	33
		Female N=26	31	23	46
	Group A	Male N=31	42	23	35
		Female N=12	58	25	17
Level 2	Group B	Male N=44	25	48	27
		Female N=54	28	37	35
	Group A	Male N=45	51	25	24
		Female N=51	43	28	29
Level 3	Group B	Male N=39	26	37	37
		Female N=59	36	32	32
	Group A	Male N=34	38	30	32
		Female N=51	29	28	43

might be obtained for each individual and for the groups as a whole. Table LVI indicated clearly that for the females in both classes, at the three levels of academic performance, approximately half expressed preference for activities of a social service-religious-educational nature. This was true also in large measure for males who were doing acceptable or superior academic work. A larger percentage of males in both classes who were not doing acceptable academic work were more interested in activities of an agricultural-engineering-technical nature. The predominant interest among the students doing acceptable or superior academic work seemed to reflect one of the major thrusts of the curriculum, which is directed toward training teachers and personnel for the service professions.

In this chapter, efforts were made to present various aspects of the results of the investigation, in an organized manner. The following section contains discussions of findings and inferences which may be drawn from the outcomes.

TABLE LVI  
 AREAS OF EXPRESSED INTEREST OF FRESHMEN AND SOPHOMORE  
 STUDENTS IN THE THREE CRITERION GROUPS

Criterion		Social- Relig.- Educa.-	Admin.- Polit.- Person.-	Busin.- Finance	Scientific	Eng.- Agr.- Tech.-	Med.	Arts- Hum.	Other	Undecided	
Level 1	Group B	Male N=33	15	00	06	09	31	03	00	15	21
		Female N=26	54	00	12	00	00	11	00	19	04
	Group A	Male N=31	16	10	19	03	19	00	03	17	13
		Female N=12	42	00	16	00	00	08	17	17	00
Level 2	Group B	Male N=44	37	02	09	09	09	00	05	20	09
		Female N=54	37	00	24	04	00	07	11	13	04
	Group A	Male N=45	24	00	18	04	29	07	02	07	09
		Female N=51	45	03	16	02	00	10	04	18	02
Level 3	Group B	Male N=39	18	10	05	13	15	06	00	10	23
		Female N=59	51	00	25	02	00	04	05	10	03
	Group A	Male N=34	26	09	12	05	06	21	00	18	03
		Female N=51	51	02	17	00	00	08	08	12	02

## CHAPTER V

### SUMMARY OF FINDINGS

#### Discussion

It was stated previously in the study that the administrative offices at Northwestern State College (NWSC) were interested in learning more about the student body in order to improve the counseling and instructional programs. It was deemed advisable to look carefully at the characteristics which differentiated the achieving students from those who were meeting minimal standards. There was evidence from other studies (66, 101, 31, 32, 4, 15, 44, 65) to confirm that differences existed between satisfactorily-achieving and low-achieving students in intelligence and reading skills, but there was the question concerning the extent to which factors such as self-concept, needs, temperament, and background related to differences in achievement among students at NWSC.

Two groups of students were studied. Group A consisted of students who entered NWSC as freshmen in the summer and fall of 1965. Group B was composed of students who entered as freshmen in the summer and fall of 1966. The N's for both groups totalled 479.

A recapitulation of the procedure presented earlier pointed out that data for Groups A and B were analyzed independently; data for the sexes were treated separately. Students from the freshmen and sophomore classes were divided into three levels of academic achievement: Level 1 consisted of those students meeting minimal academic standards



(over-all grade point average of 1.99 and below); Level 2 consisted of those students meeting adequate academic standards (over-all grade point average of 2.00 to 2.99); Level 3 was made up of students doing superior academic work (over-all grade point average of 3.00 and above). The criterion of performance for Group A was the over-all grade point average at the end of the fall semester of the second year; the criterion for Group B was over-all grade point average at the end of the first semester in school.

The results of the statistical analyses are given in the preceding section. A discussion and summarization of the findings are given below:

- (1) Test data for the ACT battery, obtained from male and female students in Groups A and B, showed clearly that performance on the tests of the battery were related to academic performance. The p values for source of variation for levels were significant at the .01 per cent confidence level. When the test means for levels were examined, the means showed a well-defined linear trend. The data based upon analyses by sex indicated that the mean scores for the males in Groups A and B were significantly higher than the mean scores for females on the Mathematical Test, the Natural Science Test and the Composite Score. The correlations of the test data with the over-all grade point average criteria were statistically significant with the exception of the English Test, which did not meet this standard. The findings supported the research reported in the literature (4) that the skills and educational background measured by the ACT battery were related to the

kinds of performance demanded in college work.

- (2) High school grade point averages tended to exhibit linear trends for levels of academic performance in Groups A and B. The differences among the means for levels on the whole were statistically significant. The females in Groups A and B had significantly higher mean grade point averages than the males. College grade point averages were found to be statistically significant. In summary, it can be concluded that the positive and significant relationships between high school academic work and college academic work, which have been reported in other studies (31, 4, 1, 48), were repeated in this investigation.
- (3) When data for the subtests of the NDRT for Groups A and B were analyzed, it was observed that the differences among means for levels of academic performance were statistically significant. The students who had done well academically in college obtained better test scores. Correlation coefficients between the subtests and over-all grade point average for Groups A and B departed significantly in all instances from an  $r$  of zero. The outcomes were consistent with findings previously reported (31) that the students who did well academically in college were competent readers.
- (4) When the data from the Henmon-Nelson Test of Mental Ability were analyzed by means of analysis of variance, the differences among means for levels were statistically significant for subtests in Groups A and B. Analyses of the differences between means on the Verbal subtest for males and females did

not show them to be significantly different. On the other hand, males in both groups had higher means on the quantitative subtest than the females. The correlations of the subtests with over-all grade point average departed significantly from zero. The findings for Groups A and B indicated that this particular test related significantly to academic performance in college, and supported findings reported elsewhere (45).

In the attempt to get a more complete picture of the students attending NWSC, it was decided to determine if needs, temperament, and self-concept measures contributed to a better understanding of the students than that contributed alone by tests of intelligence and reading. The findings for these inventories are as follows:

- (1) Results obtained on the Achievement Scale of the Edwards Personal Preference Schedule appeared to be related to academic success. The mean scores for the Achievement Scale at three different levels of academic performance manifested a clearly defined linear trend. The students who were doing better academic work had a higher mean score than those who were meeting minimal standards. In addition, the criterion correlations for the Achievement Scale with over-all grade point average departed significantly from zero in all instances excepting for females in Group B. None of the remaining  $p$  values for source of variation due to level were statistically significant for both samples. Again, it would seem that the data based upon the two groups indicated clearly that the need for achievement was related to level and quality of aca-

ademic work. In both Groups A and B, sources of variation for sex were statistically significant for Intraception, Abasement, Change, Heterosexuality, and Aggression. The females in both groups differed from the males in that they expressed needs to be more analytical of their own feelings, to be more sensitive to the feelings of others, to try to understand others, to feel guilty and accept blame, to feel that personal pain suffered does more good than harm, to do new and different things, to travel about, and to participate in new fads and fashions. The males on the other hand manifested greater need to fraternize with the opposite sex, to be accepted by them, to tell others off when disagreeing with them, to blame others when things went wrong, and to attack contrary points of view. These sex differences in needs were compatible with findings reported by other investigations (34, 66).

- (2) Significant  $p$  values for sources of variation due to level of achievement were secured for two of the bipolar scales of the Guilford-Zimmerman Temperament Survey. The outcomes showed clearly that the students who had done better academic work were more serious and thoughtful in demeanor than those who did academic work of minimal acceptability. The correlations between the scales of the GZTS and over-all grade point average for males and females in Groups A and B were, however, disappointing. The source of variation for sex was statistically significant for both samples of males and females, which pointed to the fact that the males had the higher mean score

on the Ascendance and Submissiveness Scale. Stated another way, the better students took their studies seriously and considered them important. The females appeared to see themselves playing a more submissive role than the males in the academic community.

- (3) The Tennessee Self Concept Scale failed to furnish significant information about the students. Certain inferences were drawn from the analysis of the data for males and females in Group A and B separately, and were discussed previously (Chapter IV). The significant  $p$  values were not obtained for comparable scales in the two groups. Stated another way, the statistically significant findings for Group A were not replicated in Group B on any of the scales. The criterion correlations were fairly substantial and statistically significant for the females in Group B, but the criterion correlations for the remainder of the sex samples were low and, in the majority of instances, statistically insignificant. The TSCS seemed to be of limited value in this investigation.

Background materials were collected by means of a questionnaire for the purpose of ascertaining if such data were useful in furnishing a fuller understanding of the students in relation to their academic achievements. A recapitulation of the findings are presented below:

- (1) There was an indication from the data that a larger percentage of the satisfactorily-achieving students graduated from small or medium-sized high schools.

- (2) More than 50 per cent of the students' fathers were farmers, businessmen or skilled workers, but approximately four-fifths of the

students whose fathers were professional men were turning in acceptable or superior academic work.

- (3) The majority of students had parents who had graduated from grade school or high school; levels of parents' formal education seemed to have little relationship to the quality of academic work the students had achieved.
- (4) The majority of the students in the two classes investigated came from farms or small agricultural communities; a larger number of students from farms were doing acceptable or superior academic work as compared to those who were meeting minimal standards.
- (5) The expressed interests of students showed some relationship to grades; for example, 69 per cent of the students who expressed interest in work of a social service-religious-educational nature were making satisfactory or superior grades. 70 per cent who were interested in business and finance were doing acceptable academic work, while 54 per cent who indicated preferences for activities of an engineering-agricultural-technical nature were making over-all grade point averages of 2.00 or better.

When the outcomes presented above were reviewed in terms of the hypotheses to be tested in this study (Chapter I), the following conclusions appeared to be in line with the findings:

- (1a) Significant differences were found to exist between satisfactorily-achieving and low-achieving students in Groups A and B for the ACT battery, for high school grades, for the subtests of the NDRT, and for the sub-

tests of the HNTMA: null hypotheses (a), (b) (c), and (d) were rejected.

- (1b) The majority of the criterion correlations for Groups A and B for the ACT battery, for high school grades, for the subtests of the NDRT, and for the subtests of the HNTMA departed significantly from zero.
- (2a) Significant differences were found to exist on the EPPS for Groups A and B on the Achievement Scale; null hypothesis (e) was rejected in part since only one of the fifteen scales differentiated significantly among levels of academic performance for both groups.
- (2b) The criterion correlations based on the Achievement Scale for three of the sex groups departed significantly from zero while thirteen of the criterion correlations for the females in Group B departed from zero in a negative direction; since these negative coefficients are difficult to interpret in this situation, and since the bulk of the criterion  $r$ 's for the remaining three sex groups are low and in the main insignificant, the null hypothesis was tentatively retained.
- (3a) Significant differences were found for Groups A and B on the Seriousness vs. Impulsiveness Scale and the Thoughtfulness vs. Unreflectiveness Scale of the GZTS; null hypothesis (f) was rejected in part since only two of the ten scales of the GZTS significantly differentiated among levels of academic performance for both groups.

- (3b) The criterion correlations were low for the scales of the GZTS based upon data for three sex groups; all of the criterion  $r$ 's for the females in Group B departed significantly from zero; since these results were not replicated on the other three sex groups, the null hypothesis was tentatively retained.
- (4a) Significant differences were not obtained for any of the scales of the TSCS on Groups A and B; null hypothesis (g) was not rejected since none of the scales differentiated significantly among levels of academic performance for both groups.
- (4b) The criterion correlations were low for the scales of the TSCS based upon the results for three of the sex groups; as in the case of the GZTS all the criterion  $r$ 's for the females in Group B departed significantly from zero; again since the findings were not replicated on the other three groups the null hypothesis was tentatively retained.

Certain generalizations may be drawn from the findings of this investigation. The elements which appear to affect academic performance adversely are not clear, but those which contribute to satisfactory academic achievement at NWSA can be identified. These factors consist of adequate skills in readings which involve understanding of content and of the organization of the content into meaningful interrelationships, the capacity to comprehend problems and to solve them within a reasonable time, the discipline to work for protracted periods of time to achieve academically and to experience success, coupled with



thoughtful demeanor, and serious concern on the part of the student about himself and the nature of the world. Examinations of sex differences and background data furnished no additional clear-cut evidence which was useful in adding to the generalizations above. The outcomes of the research on the two groups employed in this study have been obtained in part in investigations conducted elsewhere (39, 34, 49).

#### Recommendations

The information above is useful to advisors and teachers in arriving at some general recognition of the students who should be expected to do well the first year at NWSC. Such findings should prove to enlighten even though the policy at the college is not to select students on the basis of test scores or high school grades alone. The philosophy which has proved workable admits students and gives them the opportunity to demonstrate what they can do in an academic environment where they are given considerable individual attention and full opportunity to develop scholastically and socially. At Northwestern State College this has been a major educational objective since the institution was founded.

It is realistic to conceive that the student body will increase as time goes on. Such an increase will demand more up-to-date facilities and possibly a modification in admission policy. The following suggestions are listed as possible concerns for implementation in the not too distant future:

- (1) A follow-up of students who seem to manifest the characteristics of the successful freshmen as compared to those who do not manifest these characteristics, to determine survival and

attrition rates.

- (2) A factor analysis of the battery of tests given the students in these samples to determine if meaningful factors can be extracted.
- (3) Develop a new test based upon these extracted factors and validate it against grades and possibly other criterion.
- (4) Develop regression equations based upon this test for predicting the criterion of over-all grade point average, and for predicting performance in various courses and concentrations of courses.
- (5) Develop a program of in-service training for staff to assist them in becoming adept in the use of these materials in advising and counseling incoming freshmen.

## BIBLIOGRAPHY

1. Abe, Clifford, John L. Holland, Sandra W. Lutz, and James M. Richards, Jr. A Description of American College Freshmen, Iowa City: American College Testing Program, 1965.
2. Alpert, Richard, and Ralph N. Haber. "Anxiety in Academic Achievement Situations," Journal of Abnormal and Social Psychology, Vol. 61, 1960, pp. 207-215.
3. Altman, Esther R. "The Effect of Rank in Class and Size of High School on the Academic Achievement of Central Michigan College Seniors, Class of 1957," Journal of Educational Research, Vol. 52, 1959, pp. 307-309.
4. American College Testing Program. Technical Report, Iowa City: American College Test, Inc., 1960-65.
5. Anderson, Mary R. and Erwin J. Stegman. "Predictors of Freshmen Achievement at Fort Hays Kansas State College," Educational and Psychological Measurement, Vol. 14, 1954, pp. 722-723.
6. Anderson, Rodney E. "The Use of Entrance Tests in Differential Prediction of Freshman College Achievement, and the Effect of an Item Analysis on the Efficiency of the Predictive Batteries," Dissertation Abstracts, Vol. 16, 1956, p. 2344.
7. Beach, Leslie R. "Sociability and Academic Achievement in Various Types of Learning Situations," Journal of Educational Psychology, Vol. 51, 1960, pp. 208-212.
8. Bendig, Albert W. "The Validity of Temperament Scales in Predicting Student Achievement in Psychology," Journal of Educational Research, Vol. 50, 1957, p. 571.
9. Berdie, Ralph F. "Aptitude, Achievement, Interest, and Personality Tests: A Longitudinal Comparison," Journal of Applied Psychology, Vol. 39, 1955, pp. 103-114.
10. Bernstein, B., "Some Sociological Determinants of Perception: An Enquiry into Sub-Cultural Differences," British Journal of Sociology, Vol. 9, 1958, pp. 159-174.
11. Blair, Glenn Myers, Stewart R. Jones and Ray H. Simpson. Educational Psychology, New York: Macmillan Co., 1968, pp. 178-180.

12. Bloomberg, M. "The Prediction of Scholastic Success Through the Use of a Forced-Choice Problems-and-Attitude Inventory," Dissertation Abstracts, Vol. 15, 1955, p. 2566.
13. Brim, Orville G., Jr. "College Grades and Self-Estimates of Intelligence," Journal of Educational Psychology, Vol. 45, 1954, pp. 477-484.
14. Brim, Orville G., Jr. "Family Structure and Sex Role Learning by Children: A Further Analysis of Helen Koch's Data," Sociometry, Vol. 21, 1958, pp. 1-15.
15. Brunkan, R. J. and F. Shen. "Personality Characteristics of Ineffective, Effective, and Efficient Readers," Personnel and Guidance Journal, Vol. 44, No. 8, 1966, pp. 837-843.
16. Burgess, Elva. "Personality Factors of Over-and Under-Achievers," Journal of Educational Psychology, Vol. 47, 1956, pp. 96-99.
17. Buros, Oscar Krisen (Ed.). The Sixth Mental Measurements Yearbook, Highland Park: The Gryphon Press, 1965.
18. Carter, Harold D. "Improving the Prediction of School Achievement by Use of the California Study Methods Survey," Educational Administration and Supervision, Vol. 45, 1959, pp. 255-260
19. Carter, Robert S. "Non-Intellectual Variables Involved in Teachers' Marks," Journal of Educational Research, Vol. 47, 1953, pp. 81-95.
20. Coster, John K. "Some Characteristics of High School Pupils From Three Income Groups," Journal of Educational Psychology, Vol. 50, 1959, pp. 55-62.
21. Cronbach, Lee J. Essentials of Psychological Testing, New York: Harper and Brothers, 1949.
22. Diener, Charles. "Similarities and Differences Between Over-Achieving and Under-Achieving Students," Personnel and Guidance Journal, Vol. 5, 1960, pp. 396-400.
23. Dowd, R. "Underachieving Students of High Capacity," Journal of Higher Education, Vol. 23, 1952, pp. 327-330.
24. Edwards, Allen. Edwards Personal Preference Schedule, New York: The Psychological Corporation, 1959.
25. Erb, Everett. "Conformity and Achievement in College," Personnel and Guidance Journal, Vol. 39, 1961, pp. 361-366.
26. Fitts, William H. Tennessee Self-Concept Scale, Nashville: Counselor Recording and Tests, 1965.

27. Forehand, G. A., Jr., and Lous C. McQuitty. "Configurations of Factor Standings as Predictors of Educational Achievement," Educational and Psychological Measurement, Vol. 19, 1959, pp. 31-43.
28. Frederiksen, Norman O. and Arthur C. F. Gilbert. "Replication of a Study of Differential Predictability," Educational and Psychological Measurement, Vol. 20, 1960, pp. 759-767.
29. Frederiksen, Norman O. and S. Donald Melville. "Differential Predictability in the Use of Test Scores," Educational and Psychological Measurement, Vol. 14, 1954, pp. 647-656.
30. Friedhoff, W. H. "Relationships Among Various Measures of Socio-economic Status, Social Class Identification, Intelligence, and School Achievement," Dissertation Abstracts, Vol. 15, 1955, p. 2098.
31. Garrett, Harley F. "A Review and Interpretation of Investigations of Factors Related to Scholastic Success in Colleges of Arts and Science and Teachers Colleges," Journal of Experimental Education, Vol. 18, 1949, pp. 91-138.
32. Garrett, Henry E. Statistics in Psychology and Education, New York: Longmans, Green and Co., 1953.
33. Gerritz, Harold G. J. "The Relationship of Certain Personal and Socioeconomic Data to the Success of Resident Freshmen Enrolled in the College of Science, Literature and the Arts at the University of Minnesota," Dissertation Abstracts, Vol. 16, 1956, p. 2366.
34. Gibbs, D. N. "A Cross-Cultural Comparison of Needs and Achievement of University Freshmen," Personnel and Guidance Journal, Vol. 45, 1967, pp. 813-816.
35. Gilmore, John V. "A New Venture in the Testing of Motivation," College Board Review, Vol. 15, 1951, pp. 221-226.
36. Gough, Harrison. "The Construction of a Personality Scale to Predict Scholastic Achievement," Journal of Applied Psychology, Vol. 37, 1953, pp. 361-366.
37. Gough, Harrison. "What Determines the Academic Achievement of High School Students?", Journal of Educational Research, Vol. 46, 1953, pp. 321-331.
38. Gowan, J. C. "Factors of Achievement in High School and College," Journal of Counseling Psychology, Vol. 7, 1960, pp. 91-95.
39. Grand, Peter P. and Joseph P. Simons. "Personal Values and Academic Performance Among Engineering Students," Personnel and Guidance Journal, Vol. 45, 1967, pp. 185-188.

40. Grooms, Robert R. and Norman S. Endler. "The Effect of Anxiety on Academic Achievement," Journal of Educational Psychology, Vol. 51, 1969, pp. 299-304.
41. Guilford, J. P. and Wayne S. Zimmerman. The Guilford-Zimmerman Temperament Survey, Beverly Hills: Sheridan Supply Co., 1949.
42. Haber, Ralph N. "The Prediction of Achievement Behavior by an Interaction of Achievement Motivation and Achievement Stress," Dissertation Abstracts, Vol. 17, 1957, pp. 2686-2687.
43. Hall, Calvin S. and Gardner Linzey. Theories of Personality, New York: John Wiley & Sons, Inc., 1957.
44. Harris, Daniel. "Factors Affecting College Grades: A Review of the Literature, 1930-1937," Psychological Bulletin, Vol. 37, 1949, pp. 125-166.
45. Henmon-Nelson Tests of Mental Ability, Examiner's Manual, Boston: Houghton-Mifflin Co., 1957.
46. Henry, Erwin R. "Predicting Success in College and University," in Fryer, Douglas H. and Erwin R. Henry, (Ed.), Handbook of Applied Psychology, New York: Rinehart and Co., 1950, pp. 449-453.
47. Hills, John R. "Needs for Achievement, Aspirations, and College Criteria," Journal of Educational Psychology, Vol. 49, 1958, pp. 156-161.
48. Holland, John L. "The Prediction of College Grades from the California Psychological Inventory and the Scholastic Aptitude Test," Journal of Educational Psychology, Vol. 50, 1959, pp. 135-143.
49. Holland, John L. and James M. Richards. "Academic and Non-Academic Accomplishment In a Representative Sample Taken From a Population of 612,000," Research Report No. 12, Iowa City: American College Testing Program, 1966.
50. Horrall, Bernice M. "Academic Performance and Personality Adjustments of Highly Intelligent College Students," Genetic Psychology Monographs, Vol. 53, 1957, pp. 3-38.
51. Horst, Paul. "Differential Prediction in College Admissions," College Board Review, Vol. 33, 1957, pp. 19-23.
52. Hoyt, Donald P. "Size of High School and College Grades," Personnel and Guidance Journal, Vol. 37, 1959, pp. 569-573.
53. Hughes, Mildred C. "Sex Differences in Reading Achievement in the Elementary Grades," Supplementary Educational Monographs, No. 77, 1953, pp. 102-106.

54. Hunt, Joseph McVicker. Intelligence and Experience, New York: The Ronald Press, 1961.
55. Jacobs, James N. "Aptitude and Achievement Measures in Predicting High School Academic Success," Personnel and Guidance Journal, Vol. 37, 1959, pp. 334-341.
56. Johnson, Edward E. "Student Ratings of Popularity and Scholastic Ability of Their Peers and Actual Scholastic Performance of Those Peers," Journal of Social Psychology, Vol. 47, 1958, pp. 127-132.
57. Keisler, Evan R. "Peer Group Rating of High School Pupils with High and Low School Marks," Journal of Experimental Education, Vol. 23, 1955, pp. 375-378.
58. Kelley, Eldon G. "A Study of Consistent Discrepancies Between Instructor Grades and Term-End Examination Grades," Journal of Educational Psychology, Vol. 49, 1958, pp. 328-334.
59. Kerns, Byron L. "A Study of Under-Achieving and Over-Achieving First Semester College Freshmen as Revealed by the Way in Which They View the College Situation and Themselves As College Students," Dissertation Abstracts, Vol. 17, 1957, p. 2500.
60. Kimball, Barbara. "Case Studies in Educational Failure During Adolescence," American Journal of Orthopsychiatry, Vol. 23, 1953, pp. 406-415.
61. Klugh, Henry E. and Albert W. Bendig, "The Manifest Anxiety and ACE Scales and College Achievement," Journal of Consulting Psychology, Vol. 19, 1955, p. 487.
62. Knaack, Nancy. "A Study of the Characteristics of Academically Successful and Unsuccessful Freshmen Women Who Entered Northwestern University in the Fall of 1954," Dissertation Abstracts, Vol. 17, 1957, pp. 304-305.
63. Krug, R. E. "Over and Underachievement and the Edwards PPS," Journal of Applied Psychology, Vol. 43, 1959, pp. 133-136.
64. Kurtz, J. J. and Esther J. Swenson. "Factors Related to Overachievement and Underachievement in School," School Review, Vol. 59, 1951, pp. 472-480.
65. Lang, Gerhard, Amedeo G. Sferra, and Marjorie Seymour. "Psychological Needs of College Freshmen and Their Academic Achievement," Personnel and Guidance Journal, Vol. 41, 1962, pp. 359-360.
66. Lavin, David E. The Prediction of Academic Performance, New York: Russel Sage Foundation, 1965.

67. Lum, Mabel K. M. "A Comparison of Underachieving and Overachieving Female College Students," Journal of Educational Psychology, Vol. 51, 1969, pp. 109-114.
68. Merrill, Reed M. and Daniel T. Murphy. "Personality Factors and Academic Achievement in College," Journal of Counseling Psychology, Vol. 6, 1959, pp. 207-210.
69. Middleton, G. and G. M. Guthrie. "Personality Syndromes and Academic Achievement," Journal of Educational Psychology, Vol. 50, 1959, pp. 66-69.
70. Mitchell, James V. Jr. "An Analysis of the Factorial Dimensions of the Achievement Motivation Construct," Journal of Educational Psychology, Vol. 52, 1961, pp. 179-187.
71. Mitchell, James V. Jr. "Goal-Setting Behavior as a Function of Self-Acceptance, Over and Underachievement, and Related Personality Variables," Journal of Educational Psychology, Vol. 50, 1959, pp. 93-104.
72. Mueller, John H. "Class Structure and Academic and Social Success," Educational and Psychological Measurements, Vol. 13, 1953, pp. 486-496.
73. McArthur, Charles C. "Personalities of Public and Private School Boys," Howard Educational Review, Vol 24, 1954, pp. 256-262.
74. McClelland, David C. and Associates. The Achievement Motive, New York: Appleton-Century-Crofts, Inc., 1953.
75. McDavid, John. "Some Relationships Between Social Reinforcement and Scholastic Achievement," Journal of Consulting Psychology, Vol. 23, 1959, pp. 151-154.
76. McKnight, James A. "The Relation of Certain Home Factors to College Achievement," Dissertation Abstracts, Vol. 19, 1958, pp. 870-871.
77. McQuarry, John P. "Some Relationships Between Non-Intellectual Characteristics and Academic Achievement," Journal of Educational Psychology, Vol. 44, 1953, pp. 215-228.
78. Nason, Leslie J. Academic Achievement of Gifted High School Students, Los Angeles: University of Southern California Press, 1958, p. 92.
79. Nelson, M. J. and E. C. Denny. The Nelson-Denny Reading Test, Boston: Houghton-Mifflin, 1960.



80. Nisbet, J. "Family Environment and Intelligence," in Halsey, A. H., Jean Floud, and Charles A. Anderson (Ed.), Journal of Education, Economy, and Society, New York: The Free Press, 1961, pp. 273-287.
81. Parsons, Talcott. The Social System, Glencoe, Ill: The Free Press, 1951.
82. Parsons, Talcott. "Certain Primary Sources and Patterns of Aggression in the Social Structure of the Western World," in Patrick Mullahy, (Ed.), A Study of Interpersonal Relations, New York: Hermitage House, 1949, pp. 284-287.
83. Pierce, J. V. The Educational Motivation Patterns of Superior Students Who Do and Do Not Achieve in High School, Washington: U. S. Department of Health, Education and Welfare, Final Research Report, U. S. Office of Education Cooperative Project #268 (7136), 1959.
84. Rosenfeld, Howard M. and Alvin Zander. "The Influence of Teachers on Aspirations of Students," Journal of Educational Psychology, Vol. 52, 1961, pp. 1-11.
85. Rossi, Peter H. "Social Factors in Academic Achievement: A Brief Review," in Halsey, A. H., Jean Floud, and C. A. Anderson, (Ed.), Journal of Education, Economy, and Society, New York: The Free Press, 1961, pp. 269-272.
86. Ryan, F. R., and James S. Davie. "Social Acceptance, Academic Achievement, and Aptitude Among High School Students," Journal of Educational Research, Vol. 52, 1958, pp. 101-106.
87. Ryans, David G. "Some Relationships Between Pupil Behavior and Certain Teacher Characteristics," Journal of Educational Psychology, Vol. 52, 1961, pp. 82-90.
88. Sander, William B., Travis Osborne, and Joel E. Greene. "Intelligence and Academic Performance of College Students of Urban, Rural, and Mixed Backgrounds," Journal of Educational Research, Vol. 49, 1955, pp. 185-193.
89. Sears, P. S. "Levels of Aspiration in Academically Successful and Unsuccessful Children," Journal of Abnormal and Social Psychology, Vol. 35, 1940, 498-536.
90. Shaw, Merville and Donald J. Brown. "Scholastic Underachievement of Bright College Students," Personnel and Guidance Journal, Vol. 36, 1957, pp. 195-199.
91. Shaw, Merville C. and Donald J. Brown. "Socioeconomic Status, Urbanism and Academic Performance in College," Journal of Educational Research, Vol. 53, 1959, pp. 130-137.

92. Shaw, Merville C., Kenneth Edson, and Hugh M. Bell. "The Self Concept of Bright Under-Achieving High School Students As Revealed by an Adjective Check List", Personnel and Guidance Journal, Vol. 39, 1960, pp. 193-196.
93. Shaw, Merville C. and John T. McCuen. "The Onset of Academic Under-Achievement in Bright Children," Journal of Educational Psychology, Vol. 51, 1960, pp. 103-108.
94. Shuey, Audrey M. "Academic Success of Public and Private School Students in Randolph Macon Women's College: I. The Freshman Years," Journal of Educational Research, Vol. 49, 1956, pp. 481-492.
95. Spencer, Richard E. and Stallings, William M. "The Student Profile Section of ACT Related to Academic Success," The Journal of College Personnel, Vol. 19, 1968, pp. 177-179.
96. Spielberger, Charles D., and William G. Katzenmeyer. "Manifest Anxiety, Intelligence and College Grades," Journal of Consulting Psychology, Vol. 23, 1959, p. 278.
97. Steel, Robert G. D. and James H. Torrie. Principles and Procedures of Statistics, New York: McGraw-Hill, 1960.
98. Stevens, Peter H. "An Investigation of the Relationship Between Certain Aspects of Self-Concept Behavior and Students' Academic Achievement," Dissertation Abstracts, Vol. 16, 1956, pp. 2531-2532.
99. Strodbeck, Fred L., "Family Interaction, Values and Achievement," in McClelland, David C. and Associates, Talent and Society, Princeton, N. J.: D. Van Nostrand Co., Inc., 1958, pp. 135-194.
100. Swenson, Clifford H. Jr. "College Performance of Students with High and Low High School Grades When Academic Aptitude Is Controlled," Journal of Educational Research, Vol. 50, 1957, pp. 597-603.
101. Taylor, Ronald G. "Personality Traits and Discrepant Achievement: A Review," Journal of Counseling Psychology, Vol. 11, 1964, pp. 76-82.
102. Terman, L. M. and Melta Oden. "The Gifted Children Grow Up," Genetic Studies of Genius, Stanford University Press, 1947.
103. Travers, Robert M. W. "Significant Research on the Prediction of Academic Success," in Donahue, W. T. and Associates (Ed.) The Measurement of Student Adjustment and Achievement, Ann Arbor: University of Michigan Press, 1949.

104. Washburn, Norman F. "Socioeconomic Status, Urbanism, and Academic Performance in College," Journal of Educational Research, Vol. 53, 1959, pp. 136-137.
105. Weigand, George. "Adaptiveness and the Role of Parents in Academic Success," Personnel and Guidance Journal, Vol. 35, 1957, pp. 518-522.
106. Weigand, George. "Goal Aspirations and Academic Success," Personnel and Guidance Journal, Vol. 31, 1953, pp. 458-461.
107. Weiss, Peter, Michael Wertheimer, and Byron Groesbeck. "Achievement Motivation, Academic Aptitude and College Grades," Educational and Psychological Measurement, Vol. 19, 1959, pp. 663-666.
108. Weitz, Henry J., and H. Jean Wilkinson. "The Relationship Between Certain Non-intellective Factors and Academic Success in College," Journal of Counseling Psychology, Vol. 4, 1957, pp. 54-60.

APPENDIX A

Table A<sub>1</sub>--Test Intercorrelations and Correlations of the  
Tests with the Criterion for Group A (Male)  
N=110

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
(Vocabulary)		.45*																								
(Comprehension)			.80*																							
(Total)				.44*	.38*	.34*	.43*	.14	.04	.03	.06	-.03	-.12	-.07	-.01	.08	.14	-.11	-.11	.11	-.07	-.05	-.02	.29*	-.02	
(Quantitative)					.30*	.26*	.22*	.18	-.03	-.26*	.22*	.14	-.13	.04	-.13	.06	.10	-.11	-.02	.01	.08	-.08	-.02	.06	-.01	
(Verbal)				.33*	.65*	.64*	.72*	.14	-.05	-.22*	.23*	.13	-.02	.00	-.10	.04	-.09	.03	-.09	.15	-.15	-.02	-.04	-.00		
(Total)					.72*	.72*	.86*	.16	-.05	-.26*	.24*	.13	-.06	.01	-.11	.09	.08	-.10	-.01	-.04	.12	-.14	-.03	.01	-.01	
(Achievement)					.34*	.72*	.86*	.06	-.10	-.04	.06	.04	-.06	-.22*	.00	-.07	.09	-.09	-.15	.20*	.16	-.09	.15	.10	-.03	
(Deferred)								.16	-.08	-.18	.22*	.12	-.09	-.02	-.15	.03	-.08	-.18	.01	.05	.20*	-.02	.03	.01	-.01	
(Order)								.09	-.11	-.17	.20*	.11	-.07	-.07	-.12	-.04	.00	-.16	-.05	.13	.22*	-.09	.08	.05	.03	
(Exhibition)									-.03	-.06	.10	-.08	-.42*	-.18	.05	-.03	.04	-.18	-.01	.19	-.08	-.13	.05	.22*	-.04	
(Autonomy)										.31*	-.20*	-.26*	-.13	.12	.04	-.07	-.04	.01	-.23*	.21*	-.26*	-.25*	-.02	.16	-.06	
(Affiliation)											-.35*	-.12	-.23*	.01	-.04	-.12	-.04	-.08	-.19	.46*	-.37*	-.16	-.05	.35*	.02	
(Intrapsychic)												.20*	-.15	-.01	-.04	.07	-.04	-.26*	-.04	-.33*	.07	.09	-.06	-.23*	-.21*	
(Suicidality)														.06	-.18	.00	-.17	.43*	.30	-.20*	.08	.19	-.09	-.20*	-.05	
(Dominance)																			.09	-.29*	.09	-.07	-.17	.14		
(Apathy)																			.01	.00	.03	-.35*	-.17	.02	.07	
(Participation)																			-.31*	-.30*	-.16	.00	-.20*	-.06	-.03	-.18
(Change)																			-.19*	-.01	-.16	-.09	.09	.13	.05	.27*
(Substance)																			.11	-.14	.12	-.27*	-.11	-.01	.10	-.19*
(Heterosexual)																				-.36*	-.15	-.00	-.28*	-.03	-.04	.00
(Aggression)																					.18	.13	-.07	-.11	.01	
(General activity vs. slowness)																					-.46*	.13	-.02	-.36*	.04	
(Seriousness vs. impulsiveness)																						.05	-.16	.03	.15	
(Ascendance vs. submissiveness)																										
(Social interest vs. aloofness)																										
(Emotional stability vs. depression)																										
(Objectivity vs. subjectivity)																										
(Pridefulness vs. hostility)																										
(Thoughtfulness vs. hostility)																										
(Personal relations vs. criticalness)																										
(Masculinity vs. femininity)																										
(Self criticism)																										
(F score)																										
(Identity)																										
(Self satisfaction)																										
(Behavior)																										
(Physical self)																										
(Moral-ethical self)																										
(Personal self)																										
(Family self)																										
(Social self)																										
(Total variability)																										
(Distribution score)																										
(Math)																										
(Social Science)																										
(Natural Science)																										
(Composite)																										
High school grade point average																										
College grade point average																										

2.54	30.66	37.08	67.65	17.63	24.76	42.04	13.32	12.38	11.51	14.46	12.90	14.63	14.53	11.45	13.67	16.83	15.08	14.88	15.15	15.56	13.20	18.32	15.18	15.87
.67	12.82	12.09	23.30	6.05	10.06	13.20	3.58	3.43	4.17	3.50	4.53	3.94	4.12	4.50	4.06	4.65	4.88	3.76	5.63	6.52	4.47	5.03	5.57	5.28

Correlation coefficients significant at 0.5 level or below



Table A<sub>2</sub>—Test Intercorrelations and Correlations of the  
Tests with the Criterion for Group A (Female)  
N=114



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
1. NDEP (Vocabulary)																											
2. NDEP (Comprehension)																											
3. NDEP (Total)																											
4. HFTMA (Quantitative)																											
5. HFTMA (Verbal)																											
6. HFTMA (Total)																											
7. EPPS (Achievement)																											
8. EPPS (Deference)																											
9. EPPS (Order)																											
10. EPPS (Exhibition)																											
11. EPPS (Autonomy)																											
12. EPPS (Affiliation)																											
13. EPPS (Intracception)																											
14. EPPS (Submissiveness)																											
15. EPPS (Dominance)																											
16. EPPS (Abasement)																											
17. EPPS (Martyrdom)																											
18. EPPS (Change)																											
19. EPPS (Endurance)																											
20. EPPS (Heterosexuality)																											
21. EPPS (Aggression)																											
22. GEYS (General activity vs. slowness)																											
23. GEYS (Seriousness vs. impulsiveness)																											
24. GEYS (Ascendance vs. submissiveness)																											
25. GEYS (Social interest vs. aloyness)																											
26. GEYS (Emotional stability vs. depression)																											
27. GEYS (Objectivity vs. subjectivity)																											
28. GEYS (Friendliness vs. hostility)																											
29. GEYS (Thoughtfulness vs. unreflective)																											
30. GEYS (Personal relations vs. criticalness)																											
31. GEYS (Masculinity vs. femininity)																											
32. TSOS (Self criticism)																											
33. TSOS (P score)																											
34. TSOS (Identity)																											
35. TSOS (Self satisfaction)																											
36. TSOS (Behavior)																											
37. TSOS (Physical self)																											
38. TSOS (Moral-ethical self)																											
39. TSOS (Personal self)																											
40. TSOS (Family self)																											
41. TSOS (Social self)																											
42. TSOS (Total variability)																											
43. TSOS (Distribution score)																											
44. ACT (English)																											
45. ACT (Math)																											
46. ACT (Social Science)																											
47. ACT (Natural Science)																											
48. ACT (Composite)																											
49. High school grade point average																											
50. College grade point average																											
M.	2.84	34.70	42.81	76.54	15.02	25.95	40.96	12.80	12.67	11.18	14.91	11.75	16.06	16.27	12.62	12.61	18.44	16.00	17.24	13.83	11.96	11.63	18.57	15.90	14.18		
S.D.	.62	11.99	10.44	21.01	6.07	9.81	13.28	4.26	3.90	4.61	3.61	3.67	3.98	4.13	4.36	4.50	3.97	4.42	4.78	5.74	6.77	4.68	4.90	4.69	5.06		

Table with 50 columns (26-50) and 50 rows (1-50). Rows include various psychological and academic measures such as KENT Vocabulary, KENT Comprehension, KENT Total, KFTMA Quantitative, KFTMA Verbal, KFTMA Total, KFPS Achievement, KFPS Defensiveness, KFPS Order, KFPS Exhibition, KFPS Autonomy, KFPS Affiliation, KFPS Intracception, KFPS Snoreness, KFPS Dominance, KFPS Shame, KFPS Murturance, KFPS Change, KFPS Endurance, KFPS Heterosexuality, KFPS Aggression, GENES General activity vs. slowness, GENES Seriousness vs. impulsiveness, GENES Ascendancy vs. submissiveness, GENES Social interest vs. shyness, GENES Emotional stability vs. depression, GENES Objectivity vs. subjectivity, GENES Friendliness vs. hostility, GENES Thoughtfulness vs. unreflectiveness, GENES Personal relations vs. criticalness, GENES Masculinity vs. femininity, TESCS Self criticism, TESCS P score, TESCS Identity, TESCS Self satisfaction, TESCS Behavior, TESCS Physical self, TESCS Moral-ethical self, TESCS Personal self, TESCS Family self, TESCS Social self, TESCS Total variability, TESCS Distribution score, ACT English, ACT Math, ACT Social Science, ACT Natural Science, ACT Composite, High school grade point average, College grade point average. Each cell contains a numerical value.

19.89 16.96 15.75 15.10 18.50 17.23 11.23 34.97 340.82 127.12 101.85 111.20 69.78 67.72 64.51 70.93 68.38 48.05 112.54 19.25 16.82 19.06 19.19 18.69 302.31

n.  
S.D.

4.29 5.74 4.72 4.53 4.84 5.06 4.03 5.25 34.82 12.65 14.32 12.37 7.42 8.20 8.02 8.62 7.94 11.39 22.67 4.27 5.27 5.37 4.93 3.98 66.07

Table A<sub>3</sub>—Test Intercorrelations and Correlations of the  
Tests with the Criterion for Group B (Male)  
N=116

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
1. NWT (Vocabulary)																										
2. NWT (Comprehension)																										
3. NWT (Total)																										
4. HWTM (Quantitative)																										
5. HWTM (Verbal)																										
6. HWTM (Total)																										
7. EPPS (Achievement)																										
8. EPPS (Deference)																										
9. EPPS (Order)																										
10. EPPS (Exhibition)																										
11. EPPS (Antonymy)																										
12. EPPS (Affiliation)																										
13. EPPS (Intracception)																										
14. EPPS (Successance)																										
15. EPPS (Dominance)																										
16. EPPS (Abasement)																										
17. EPPS (Burturance)																										
18. EPPS (Change)																										
19. EPPS (Endurance)																										
20. EPPS (Heterosexuality)																										
21. EPPS (Aggression)																										
22. GZTS (General activity vs. slowness)																										
23. GZTS (Seriousness vs. impulsiveness)																										
24. GZTS (Ascendance vs. submissiveness)																										
25. GZTS (Social interest vs. shyness)																										
26. GZTS (Emotional stability vs. depression)																										
27. GZTS (Objectivity vs. subjectivity)																										
28. GZTS (Friendliness vs. hostility)																										
29. GZTS (Thoughtfulness vs. unreflective)																										
30. GZTS (Personal relations vs. criticalness)																										
31. GZTS (Masculinity vs. femininity)																										
32. TSCS (Self criticism)																										
33. TSCS (P Score)																										
34. TSCS (Identity)																										
35. TSCS (Self satisfaction)																										
36. TSCS (Behavior)																										
37. TSCS (Physical self)																										
38. TSCS (Moral-spiritual self)																										
39. TSCS (Personal self)																										
40. TSCS (Family self)																										
41. TSCS (Social self)																										
42. TSCS (Total variability)																										
43. TSCS (Distribution score)																										
44. ACT (English)																										
45. ACT (Math)																										
46. ACT (Social Science)																										
47. ACT (Natural Science)																										
48. ACT (Composite)																										
49. High school grade point average																										
50. College grade point average																										

M.	2.51	32.69	38.65	71.32	18.15	25.33	45.53	13.73	12.08	11.07	14.39	13.53	14.68	14.90	11.08	14.14	16.29	13.85	15.72	15.09	16.13	13.28	18.12	14.60	14.72
S.D.	.81	13.44	12.96	24.77	6.99	9.75	14.69	4.15	4.12	4.29	3.64	3.96	4.26	4.93	3.92	4.77	5.00	4.54	4.42	5.66	6.59	4.19	5.36	4.84	5.47

\*Correlation coefficient significant at the 0.5 level or below



Table A<sub>4</sub>—Test Intercorrelations and Correlations of the  
Tests with the Criterion for Group B (Female)  
N=139

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. HDHT (Vocabulary)																									
2. HDHT (Comprehension)	.45*																								
3. HDHT (Total)	.49*	.86*																							
4. HDMA (Quantitative)	.41*	.91*	.96*																						
5. HDMA (Verbal)	.49*	.27*	.17	.79*																					
6. HDMA (Total)	.51*	.88*	.88*	.79*	.74*																				
7. EPTA (Achievement)	.04	-.16	-.17*	-.08	-.18	.15	-.12	.05	-.15	-.13	-.18	-.19*	-.21*	-.05	-.15	.13	-.08	-.11	-.15						
8. EPTA (Deferred)	-.47*	-.41*	-.58*	-.49*	-.42*	.54*	-.38*	-.04	-.60*	-.19*	-.60*	-.43*	-.58*	.09	-.49*	.56*	-.35*	-.49*	-.52*						
9. EPTA (Order)	.88*	-.47*	-.75*	-.65*	-.60*	.67*	-.51*	-.12	-.78*	-.36*	-.78*	-.46*	-.73*	.31*	-.67*	.71*	-.46*	-.61*	-.65*						
10. EPTA (Exhibition)	.79*	-.35*	-.82*	-.69*	-.61*	.74*	-.57*	-.20*	-.84*	-.40*	-.84*	-.51*	-.80*	.29*	.72*	-.77*	-.50*	-.67*	-.71*						
11. EPTA (Autonomy)	.38*	.32*	.04	.18	.13	-.18	.06	.34*	.18	.17	.18	-.02	.18	-.13	.20*	-.20*	.09	.11	.11						
12. EPTA (Affiliation)	-.30*	-.17	-.44*	-.40*	-.34*	.40*	.34*	.06	-.45*	-.14	-.45*	-.32*	-.44*	.05	-.36*	.42*	.26*	-.36*	-.39*						
13. EPTA (Intracception)	.35*	.90*	.74*	.64*	.64*	-.64*	.59*	.48*	.94*	.53*	.92	-.26*	.86*	.43*	.78*	-.83*	.58*	.77*	.79*						
14. EPTA (Successance)	.40*	.31*	.55*	.36*	.29*	.18	.41*	.23*	.37*	-.21*	.40*	-.18*	.55*	-.37*	.20*	.24*	.29*								
15. EPTA (Debasance)		.78*	.70*	.85*	.62*	.46*	.94*	.56*	.94*	-.50*	.90*	-.41*	.83*	-.84*	.60*	.79*	.81*								
16. EPTA (Abasance)			.78*	.70*	.78*	-.70*	.64*	.34*	.75*	.41*	.75*	-.32*	.68*	-.25	.68*	-.66*	.45*	.62*	.64*						
17. EPTA (Furturance)																									
18. EPTA (Change)																									
19. EPTA (Endurance)																									
20. EPTA (Heterosexuality)																									
21. EPTA (Aggression)																									
22. GZTB (General activity vs. slowness)																									
23. GZTB (Seriousness vs. impulsiveness)																									
24. GZTB (Asceticism vs. sensuality)																									
25. GZTB (Social interest vs. apathy)																									
26. GZTB (Emotional stability vs. depression)																									
27. GZTB (Objectivity vs. subjectivity)																									
28. GZTB (Friendliness vs. hostility)																									
29. GZTB (Thoughtfulness vs. unreflective)																									
30. GZTB (Personal relations vs. criticalness)																									
31. GZTB (Masculinity vs. femininity)																									
32. TSGB (Self criticism)																									
33. TSGB (P score)																									
34. TSGB (Identity)																									
35. TSGB (Self satisfaction)																									
36. TSGB (Behavior)																									
37. TSGB (Physical self)																									
38. TSGB (Moral-ethical self)																									
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42. TSGB (Total variability)																									
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44. ACT (English)																									
45. ACT (Math)																									
46. ACT (Social Science)																									
47. ACT (Natural Science)																									
48. ACT (Composite)																									
49. High school grade point average																									
50. College grade point average																									
M.	2.75	27.95	30.87	51.00	16.99	22.78	148.10	21.00	334.23	21.33	172.97	6.23	133.23	18.03	94.08	14.24	95.45	17.79	84.40	12.38	110.65	5.71	24.10	27.45	40.77
S.D.	.81	12.04	16.17	33.96	6.37	9.14	127.90	24.62	382.92	15.51	253.72	6.23	208.76	3.66	92.85	5.48	89.24	3.73	81.77	4.48	130.44	5.72	14.26	16.45	37.09





APPENDIX B

## QUESTIONNAIRE

NAME \_\_\_\_\_ SEX \_\_\_\_\_ AGE \_\_\_\_\_

CLASSIFICATION (circle one) FR SO JR SR

TYPE OF HOME COMMUNITY (check one)

FARM	SURBURB OF METROPOLITAN AREA	CENTRAL CITY OF:
OR OPEN	OF:	MORE THAN 2 MILLION _____
COUNTRY _____	MORE THAN 2 MILLION _____	500,000 to 2 MILLION _____
	100,000 to 2 MILLION _____	100,000 to 499,999 _____
	100,000 to 499,999 _____	LESS THAN 100,000 _____
	LESS THAN 100,000 _____	

TYPE OF SCHOOL ATTENDED: (check one)

PUBLIC \_\_\_ PRIVATE: CHURCH RELATED \_\_\_\_\_ PRIVATE: NON-DENOMINATIONAL \_\_\_\_\_

SIZE OF GRADUATING CLASS (check one)

LESS THAN 25 \_\_\_\_\_ 25-99 \_\_\_\_\_ 100-399 \_\_\_\_\_ 400 or more \_\_\_\_\_

NUMBER OF YOUNGER CHILDREN LIVING AT HOME \_\_\_\_\_

NUMBER OF OTHER DEPENDENTS LIVING AT HOME \_\_\_\_\_

LIST YOUR INTENDED VOCATION \_\_\_\_\_

LIST YOUR EXTRA-CURRICULAR ACTIVITIES \_\_\_\_\_

LIST ANNUAL FAMILY INCOME (If you consider this confidential, please omit) \_\_\_\_\_

VITA ↵

Linda Joan Stewart

Candidate for the Degree of

DOCTOR OF EDUCATION

Thesis: CHARACTERISTICS OF STUDENTS ATTAINING DIFFERENT ACHIEVEMENT LEVELS AT NORTHWESTERN STATE COLLEGE

Major Field: Student Personnel and Guidance

Biographical:

Personal Data: Born in Monterey Park, California, October 17, 1938, the daughter of Ralph E. and Maude I. Williams.

Education: Attended elementary school in Wichita, Kansas and Hazelton, Kansas; graduated from Hazelton High School in 1957; attended Friends University, Wichita, Kansas, 1958-59; received the Bachelor of Arts in Education degree from Northwestern State College, Alva, Oklahoma, with a major in English, 1962; attended Kansas State Teachers College, Emporia, Kansas, 1963; received the Master of Education degree from Northwestern State College, Alva, Oklahoma, with majors in Speech and Guidance, 1964; completed requirements for the Doctor of Education degree at Oklahoma State University in May, 1970.

Professional Experience: Served as secondary public school teacher of English and Speech in Medicine Lodge, Kansas, 1963; served as a graduate assistant in Speech at Northwestern State College in Alva, Oklahoma, 1964; served as secondary public school teacher and guidance counselor, 1965-66; served as instructor of Speech at Northwestern State College, Alva, Oklahoma, 1968; served as acting chairman of the Department of Speech at Northwestern State College, Alva, Oklahoma, 1969.

Professional Organizations: American Personnel and Guidance Association; Speech Association of America; and The Educational Theater Association.