Personality Differences between High and Low Academic Achievers in High School; a Rorschach and Thematic Apperception Test Study

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PERSONALITY DIFFERENCES BETWEEN HIGH AND LOW ACADEMIC
ACHIEVERS IN HIGH SCHOOL: A RORSCHACH AND THEMATIC
APPRECIATION TEST STUDY

by

Louis B. Snider, S.J.

A Dissertation Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment of
the Requirements for the Degree of
Doctor of Philosophy

February
1953
LIFE

Louis B. Snider, S.J., was born in Cincinnati, Ohio, January 10, 1913.

After graduation from St. Xavier High School, he entered the Society of Jesus at Milford, Ohio, August 31, 1931. While studying philosophy at West Baden College, 1935-1938, he received the degrees of Bachelor of Arts, June, 1936, and Master of Arts, August, 1938, from Loyola University. From 1938 to 1941 he taught at Loyola Academy, Chicago. He returned to West Baden College to study theology in 1941 and was ordained to the priesthood, June 14, 1944.

The writer began graduate studies as a Teaching Fellow in psychology at Loyola University in September, 1946. For six years he did part-time work in clinical psychology under the supervision of Rev. Charles I. Doyle, S.J., at the Loyola Center for Guidance and Psychological Service. In the summer of 1949, he studied at Fordham University and worked in vocational guidance under the direction of Mrs. Genevieve P. Hunter at the Archdiocesan Vocational Service, New York. He taught psychology at Xavier University, Cincinnati, and at the University of
Seattle during the summers of 1951 and 1952 respectively.


The Rorschach section of the present investigation was reported at the Convention of the American Psychological Association, September, 1951. An abstract appears under the title, "A Rorschach Study of High School Achievement," The American Psychologist, 1951, 6, 374. The project was reported as "A Personality Study of High School Achievement," Research Relating to Children, Supplement No. 5, Federal Security Agency, Social Security Administration, Children's Bureau, May-December, 1951.
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CHAPTER I
INTRODUCTION

Thirty years ago, intelligence testing was the chief psychological interest in the field of education. Today, an ever-growing emphasis falls on personality testing. Many factors are responsible for this shift of interest; not least among them, the increase in counseling service offered to the student by the school. Focus of attention on the individual student has created a demand for more and more tools of measurement in order to assay his abilities, aptitudes, interests, and ultimately to help in his guidance toward a productive role in society.

It is common knowledge that the development of the Army Alpha during World War I gave impetus to group mental testing in education. Educators became interested in prediction of academic success as an aid in selection of students, in educational and vocational guidance, in the construction of curricula, in the grouping of classes, and in many other practical ways.

Early studies, however, revealed that intelligence alone does not insure academic success. When achievement as measured by school marks was correlated with intelligence as
measured by a standardized test, the coefficient of correlation usually fell between + .40 and + .60. While a correlation coefficient of this size might have value in group predictions, it is relatively valueless for prediction of individual success.¹

In 1921, Haggerty suggested a reason for the unreliability of the correlation between achievement and intelligence:

One might infer . . . that the tests are inadequate to measure intelligence. It may be granted that the inadequacy of the tests is a source of error and that a better test would give a more accurate prognosis of success or failure. The probabilities, however, lie in another direction, namely that intelligence in itself is inadequate to produce success. It is not at all probable that a perfect measure of intelligence would give a perfect correlation with school success or with success in later life. A more accurate measure of intelligence would only render the inadequacy of intelligence more apparent for the simple reason that success is not quantitatively coterminous with intelligence but with intelligence in combination with other significant human traits not subject to evaluation by tests of the type currently used as measures of intelligence (84, pp. 246-247).

Despite the great number of tests which have been devised to measure intelligence, and despite their greater perfection, as Haggerty predicted in 1921, there has been no appreciable increase in the correlation between intelligence and academic success. The correlation usually reported between the ACE and college grades, for instance, is approximately + .60. Ap-

¹ For a summary of early studies (1916 to 1927) on the relationship between intelligence and academic success, see Turney (218).
parently, the problem of the relationship between intelligence and academic success has been solved; but its solution opens a broader question: "What factors other than intelligence have a bearing on academic achievement?"

Early efforts to answer this question concentrated on temperament, character, and personality. Some of these investigations will be discussed in Chapter II. Health, except of course when seriously impaired, seems to have little bearing on academic success. There have been conflicting reports about the relationship between socio-economic conditions and achievement. Many investigations have centered on study habits, interests, extra-curricular activities, perseverance, drive, and the like. Some of these studies suffer from want of clear definition or from faulty design in experiments. Most of them touch, in some way or other, the area of personality.²

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2 Borrow (45) discusses vocational motives, educational motives, use of time, study practices, health, extra-curricular activities, and employment as current problems in the prediction of college performance.

Crosby (60) shows the value of the Kuder Preference Chart for the prediction of success in chemistry and biology. Large and statistically significant differences in average grades were found for those above the 90 percentile in scientific interest and those below the 10 percentile.

Kendall and Ostrom (108) demonstrated that the Occupational Level Scale of the Strong Vocational Interest Blank for Men can be used as a measure of drive at the freshman college level; but Ostrom (138) found no relationship between OL and
The Problem. Unlike the majority of previous studies, the present investigation is not primarily interested in the prediction of academic success; though that aim is not entirely foreign to the present research.

Primarily, the present investigation seeks an answer to the question: "What is the difference between the personality of a high achieving boy in high school and the personality of a low achieving boy in high school?"

If that difference, provided that there is a difference, can be defined clearly, educators may be able to help in the development of personality characteristics associated with fuller realization of a student's intellectual potential. The counsellor, knowing the personality pattern of high achievers, may be in a better position to help low achievers up the ladder of academic success. Most important of all, low achievers may learn to recognize that they are not doomed to function at reduced efficiency because of factors which they may have believed to be beyond their control.

As a secondary purpose, the present investigation attempts to demonstrate an original method of TAT research. Too long, it seems, the study of personality has been enslaved to psychometric procedures required by atomistic assumptions.

high school grade averages.
Freedom from these assumptions has been promised by the appearance of the projective techniques, but there is a tendency on the part of those who use the new tools in research to use them in the old way.

The present study relies on two instruments: the Rorschach method and the Thematic Apperception Test. The Rorschach is employed as though the scores indicated measurable qualities—the common method in most current research. The TAT is applied to the same problem of finding the personality differences between high and low academic achievers, but the instrument is used in a way intended to preserve the "holistic" approach to personality study. How that way is different, and with what success it has been followed, are matters for discussion in Chapters V and VI.
CHAPTER II

REVIEW OF LITERATURE ON THE PROBLEM

The history of the present research problem is largely the history of the use of various psychological tools devised to measure personality.¹ Teachers' ratings, self ratings, questionnaires, standardized inventories, interest blanks, projective techniques—all these and more have been employed in an effort to determine the relationship between personality and academic success. Most of these investigations were completed before 1940 and have been summarized by Stagner (165), Wolf (184), Conklin (195), and Harris (85).

In general, it might be said that there is little agreement, and frequently contradiction, among the reported

1 For a discussion of several concepts of personality, see Allport (2) or Murphy (13). Stagner (25) discusses some of the tools of personality study in relation to definitions of personality in terms of stimulus, response, “traits,” and dynamics.

Watson (176) reviewed all the important research in this area prior to 1930. Every third volume of the Review of Educational Research, beginning with volume II, reports the application of personality tests to research and makes frequent mention of investigations focused on the problem of the relationship between personality and scholarship.
investigations. The findings in much of this research are scarcely commensurate with the time and energy expended by the investigators. Various reasons have been adduced for the barrenness of the labor; not least cogent of them being inadequate experimental designs, invalidity of measurements, and faulty statistical reasoning.

Ratings and Rating Scales. For personality as a stimulus value, ratings are considered a satisfactory technique. Uniformity is introduced by the use of a standard form, the most widely used being the graphic rating scale. However, the validity of these ratings is questionable because of errors that arise from inadequate definition and quantification of traits, inequality of the units on the scales, halo effect, stereotypes, and variable perspicacity of the judges.

Teachers' ratings have commonly been used to estimate the personality of students. In 1914, Kelley (205) published the results of a study in which teachers rated elementary school children in grades four to seven. Positive correlations were found between average grades and the following traits: intellectual ability, .72; conscientiousness, .62; emotional interest, .58; and oral expression, .63.

It will be noted that the correlation of .72 between intellectual ability and average grades is higher than the correlation usually obtained when intelligence is measured by
standardized tests. Moreover, Kelley reports a positive correlation of .82 between intellectual ability and oral expression. This suggests that the estimate of intelligence and grades may be influenced to some degree by the students' ability to verbalize.

Studying a seventh grade sample, Pressey (147) obtained the following correlations with school marks: health, -.19; school attitudes, .43; ability, .49; industry and application, .69. Keys and Whiteside (109), using the Woodworth-Gady Questionnaire, asked three teachers to rate 182 children in sixth, seventh, and eighth grades on six points of emotionality. The authors concluded that those characterized as conspicuously nervous and emotional display a strong and reliable tendency to be retarded in grade placement, mental age, and rate of mental growth. English children, ten and eleven years old, were studied with the rating technique by Russell (157) who concluded that attention and persistence are of fundamental importance in the temperament of an achiever.

Unlike most of the other investigators, Russell defined the traits to be rated. Attention is the "ability to resist distractions in class and during preparation." Persistence is "perseverence in spite of difficulty or when the task is disagreeable."

Teacher ratings have also been used on the high school
level. Côtés (136) had fourteen members of a school staff rate 297 boys for persistence, control of attention, drive or impulse, and speed. He found a correlation of .583 between temperament and scholastic ability. He concluded that "persistence is found to be the most important factor in determining school success." Garrison and Howell (77) discovered "positive and reliable correlations" between scholarship and persistence, attention, and initiative. Turney (174) studied twenty-four achieving and twenty-one nonachieving high school pupils. Ratings were made by fifteen faculty members. Positive correlations were obtained between grades and industry, .608; ambition, .678; accuracy, .710; common sense, .680. Total rating correlated .767 with grades. This study was based on marks obtained in freshman year. In a later study, Turney (218) found that industry, perseverance, dependability, and ambition tended to correlate highly with grades; though there is evidence that the correlations are lower in senior year than in any of the other three years.

One interesting fact stands out in these studies made with rating scales—the tendency of academic success to correlate positively with characteristics apparently associated with a "will-factor." Industry, perseverance, dependability, ambition, persistence, initiative, control of attention, "drive" are all observable to some extent in behavior. However, if the
dynamics of this behavior are analyzed in a rational person, it will be seen that self-determination, decision to sacrifice lesser goals, clear perception of major goals, selection of adequate means, and the like are involved as basic psychological processes behind the behavior. Assuming the validity of rating scales for studies of this type, further investigation along the lines of a "will-factor" would seem to have been indicated in the early 1930's. This vein of research, however, was not worked; probably because "striving," "drive," and "perseverance" were equated with physical tension. 2

**Downey Will-Temperament Test.** The first of the objective personality tests appeared in 1912. It sought to investigate personality through the effect produced on handwriting under experimental conditions calculated to show "resistance to opposition," "interest in details," "finality of judgment."

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2 Howells (104) in an experimental study of persistence found that high scores for ability to stand fatigue when holding a dynamometer; for endurance of pain from pricking, heat from a grill, electric shock, pinching, and a blunt peg forced into the flesh tended to accompany willingness to endure pain for higher grades as well as actual high academic grades.

In a more recent study, McCurdy (121), investigating the relationship between BMR and academic achievement, found in thirty college women subjects a significant correlation between BMR and achievement.

Ryan (158) reviewed the literature on measurement of persistence published before 1939.
Despite early manifestation of invalidity, the Downey Will-Temperament Test was used extensively in research.

Poffenberger and Carpenter (146) report certain traits characteristic of successful and failing elementary school children (grades six to eight) tested with the Carnegie modification of the Will-Temperament Test. Successful children, those who did better than expected on the basis of their IQ's, showed the following traits: care for details, self-assurance, low motor inhibition. The "failures," those who did worse than expected, lacked these traits. Flemming (198), using the same adaptation of the test on 268 boys in Horace Mann School (grades seven to twelve) found no correlation above .50 between achievement and any of the tests of Will-Temperament in senior high school; though in junior high school success correlated positively with school attitude, .74; will and perseverance, .72; and desire to excel, .70.

Miner (128) found the Downey Will-Temperament Test of no apparent discriminating value when administered to thirty-two students of extreme disparity between achievement and intelligence at Kentucky University. He sent his data to Downey who separated the achievers from the nonachievers. Her identification was 50 per cent correct.

**Pencil and Paper Tests of Personality.** Woodworth developed a Psychoneurotic Inventory (Personal Data Sheet)
during World-War I in an effort to eliminate the emotionally unstable from military service. Freyd (75), Laird (15), House (204), Allport (35) and L. L. and T. G. Thurstone (171) all published instruments of personality measurement between 1924 and 1930.

It was only to be expected that these tests should be applied to the study of factors other than intelligence involved in academic success. Thus, interest shifted away from finding character traits responsible for achievement and turned to estimating the relationship of scholarship to neuroticism, introversion-extroversion, ascendance-submission, emotional stability, and so forth.

Laird (113) gave Woodworth's Psychoneurotic Inventory to two hundred college students. He found that twenty-six of the highest scores were made by students with intelligence about six points above the campus median. There was a positive correlation of .32 between intelligence and school grades. The twelve lowest personality inventories came from students whose median intelligence was the same as the median intelligence score on the campus. Between intelligence and grades, the correlation on this group was .61. Since a high inventory score is

3 For a discussion of early endeavors in the field of group testing, see Franz (11); also, National Education Association (210).
presumably a bad sign, Laird argued that the low achievers were
"healthier minded" than the high achievers.

In a study of ten gifted (IQ of 120 or more) elementary school children reported as failing by at least two teachers, Van Alstyne (175) found six children emotionally unstable when tested by the Woodworth-Mathews Emotional Instability test. Conklin (195) studied failing gifted pupils whose IQ's ranged from 130 to 163. Using a control group of achieving pupils matched for intelligence, Conklin found no differences discernible on the Woodworth-Mathews, the Frensey X-O, or the Symonds' Studiousness Questionnaire. Suggestions for therapy after a psychiatric interview, however, seemed to differentiate the groups—the greater need for therapy being among the failing children.

**Colgate Mental Hygiene Tests.** The Colgate Mental
Hygiene Tests (B-2 and C-2) were developed by Laird from the
Woodworth Psychoneurotic Inventory. Unlike the latter instrument, however, the Colgate is a self-rating scale. Colgate B-2
records psychoneurotic traits. Colgate C-2, designed to measure
introversion, incorporates a number of items published by Freyd
(75). Laird (15) claimed that this test predicted college suc-
cess more satisfactorily than intelligence tests, but other in-
vestigators failed to substantiate his claim.

Most of the studies employing the Colgate have been
made on college populations. C. W. Young and Estabrooks (189) reported a positive correlation of .27 between grades and B-2, and a positive correlation of .21 between grades and C-2.

Gilliland and Voas (78) found the Colgate and Pressey X-0 "of little or no use" for the purpose of predicting college grades. On the basis of B-2 and C-2 scores, J. B. Young (190) concluded that the smallest number of failures at Colgate are unstable extroverts and the greatest number of failures are stable extroverts. The emotionally stable and extrovert group had twice as many failures as any other group. Guthrie (83) discovered "an almost negligible relationship" between scholarship and the Colgate personality inventory.

From his study of students at Wisconsin and at Gustavus Adolphus, Stagner (165) concluded that "linear correlations of intelligence, achievement, and personality measures are low and are probably so as a result of the inherent nature of the relationship." Stagner used the C-2, the Pressey X-0, the Allport A-S Reaction Study, the Neyman-Kohlstedt, and the Bernreuter. From this battery, the investigator was able to say:

Extreme personality trends seem to counterbalance advantages in aptitude, making for equal achievement in opposed groups. High emotionality and high self-sufficiency lead to lower achievement than would be predicted from intelligence scores (165, p. 655).

McGeoch and Whitely (122) attempted to test the
hypothesis that personality traits are among the factors associated with learning. The learning task imposed was poetry to be memorized. Fifty-seven male students of Franklin and Marshall College were the subjects. Personality was measured by the Colgate B-2 and C-2, Flessey X-0, Allport A-S Test, and the Conklin I-E Test with the Neyman-Kohlstadt as measures of introversion-extroversion. The investigators found that the Allport A-S Test and the Conklin I-E Test gave consistent but very low negative correlations with learning and recall scores. However, the slight tendency for retention and recall to be associated with submission and introversion cannot be generalized because the Neyman-Kohlstadt scores indicated a positive relationship between learning and extroversion.

Introversion-Extroversion. For more than a decade, Jung's types engaged the attention of psychometrists, but research shed little light on the relationship between achievement and personality measured in terms of introversion and extroversion.4

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4 The meanings of the terms introversion and extroversion have been vague in psychology, especially among those who have constructed measuring instruments. Perhaps this is one of the reasons why conflicting results have appeared in studies of relationships between introversion or extroversion and sex differences, age, intelligence, mental disorders, participation in sports. For a discussion of the shades of meaning that have been attached to these concepts, see Roback (21) or Guilford and Braly (82).
Hendrickson and Huskey (95) had three members of a school staff rate forty-eight boys and seventy-two girls on the Harston Rating Scale for Introversion-Extroversion. In addition, each child rated himself and was rated by two classmates of the same sex on the Freyd list of introvert traits as used by Heidbreder. Partial correlations indicated that extroversion is positively related to achievement and negatively related to intelligence for boys in the fifth and sixth grades. There was practically no relationship between these factors in the case of girls. These findings run counter to data of studies with other tests and older subjects.

Research on high school and college students tends to show no correlation between extroversion or introversion and achievement, e.g., Strange (27); or some correlation between introversion and academic success. St. Clair (164), working with the Bernreuter and the Thurstone Psychological Examination found no relationship between personality and scholastic aptitude; though he states that withdrawing tendencies seemed to be important. In more recent years, Owens and Johnson (139) using the MMPI, found that underachievers tend to be more socially extroverted. Altus (36) reports the same tendency in his investigation with the MMPI. He interpreted his item analysis to mean that achievers are more introverted socially; nonachievers manifest more love of and dependence on people.
Pressey X-O Test. In 1921, Pressey (211) introduced a new type of personality test, designed to measure "affectivity" and "idiosyncrasy." The score for the latter is derived from a multiple choice type of sub-test. "Affectivity" is measured by having the subject cross out (X-O) words in a series. The Pressey X-O Test enjoyed great popularity in research projects, but the results were scarcely more revealing than those obtained with the Woodworth type of inventory.

Wolf (222) found that the Pressey X-O had a tendency to differentiate the fifty achieving and the fifty nonachieving sixth grade girls in her study. The difference was represented by a critical ratio of 2.35. When the crossed out words were analyzed, it would appear that successful girls crossed out "betting," "lawlessness," "boasting," and slang" significantly more often than the unsuccessful girls. The letter crossed out "recklessness" significantly more often than the successful girls. Wolf offers no interpretation of these preferences.

Conklin (195) also used the Pressey X-O in her controlled study of fifty achievers and fifty highly intelligent but failing students in high school. Thirty-two boys (IQ range, 130 to 163) and eighteen girls (IQ range, 130 to 140) were matched for intelligence with a group not failing in school. Conklin reports no significant differences between these two groups on vocational interests, adolescent weaning, criticism
of self, mental health, adaptations to groups, daydreams and night dreams, scores on the Woodworth-Mathews and the Pressey X-O.

On a college level, Gilliland and Voas (78), McGeoch and Whitely (122), and Stagner (165) used the Pressey X-O as part of test batteries without appreciable results. Although Flemming (72) found no significant differences between achievers and nonachievers in his use of the Pressey X-O, he suggests that it might be used with the Thorndike Intelligence Test, the Colgate Schedule C-2, and a rating of emotional steadiness to predict with some assurance the academic achievement of a college man in terms of grades.

In two studies, Chambers (49, 193) found positive correlations of .44 and .54 between scores on the Pressey X-O and achievement in college. He points out that this is approximately the same degree of correlation usually found between intelligence and achievement. However, a combination of the Pressey X-O and intelligence tests gave a comparatively small increase in the predictive value of success over intelligence tests alone.

Inspired perhaps by the psychometrists' efforts to establish a relationship between academic achievement and emotional stability, Lauer and Evans (116) conducted an experiment to measure the emotion of "startle" in relation to success
In college. "Isolated auditory and visual stimuli like the sound of a discharged rifle and the sight of a human brain invoked the "startle" response which was measured by a kymographic record of galvanometric curves. The results indicated no significant correlation between college success and the emotional stability studied.

**Allport Ascendance-Submission Scale.** The Allport A-S Scale, introduced in 1928, proved scarcely more apt than its predecessors for the study of the relationship between achievement and personality. Stagner (165) and McGeoch and Whitely (122) included the test in their batteries without apparent success; though the latter found that in memorizing poetry "higher learning and recall scores tended slightly to be associated with submissiveness." The Ascendance-Submission scores of four hundred Dartmouth students were studied by Bender (44) in relation to other factors in personality. The results, in the main, were negative; but there is a suggestion of greater submissiveness on the part of the higher achievers. Broom failed to substantiate Bender's findings. After an analysis of the test scores and academic records of 1233 juniors and seniors of San Diego Teachers College, Broom concludes:

> It is easy... to predict quite accurately within the dominant group on the basis of mental ability, roughly, at least, that a member of this group will excel submissive persons in academic endeavors. The personality trait of submission seems more important than mental
ability in achieving success within the two lower quartiles of the Allport test reactions. The submissive individual makes markedly lower academic records than the dominant individual on the average, and peculiarly enough mental ability does not seem especially important in making high marks among the submissive group (49, pp. 412-413).

Tests of ascendance-submission and tests of introversion-extroversion seem to be based on the assumption of a static trait. Actually, they fail to take into consideration the situation in which a particular reaction is elicited. Thus, the scholar may tend to be less interested in nonessentials, may consider ordinary social intercourse nonessential, and therefore may appear to be submissive or introverted. Nevertheless, he may attack an intellectual problem with vigor, possibly with highly altruistic motivation. Without an inquiry into the goals and rational motivation of an individual, it seems a highly questionable procedure to classify him according to the polarities of these tests. The important aspect of personality and character is to know the circumstances under which a person fights or flees, attacks or withdraws, gives primacy of consideration to self or to others—and why.

Tests of Maladjustment. Some investigators have found that high achievers are more introverted and more submissive; others, that they are more neurotic than low achievers. These labels, despite contradictory evidence in subsequent investigations, seem to stick long after the tests that put the labels
on the group are scientifically deed.

L. L. and T. G. Thurstone (171) published a report in 1930 on the use of the Thurstone Personality Schedule with 387 men and 307 women in the freshman class at the University of Chicago. The authors compiled six hundred questions from existing lists by Woodworth, House, Laird, Freyd, and Allport. These questions were to be answered "yes" or "no" by the subject. What constituted a "neurotic" or a "non-neurotic" response rested in large part on the a priori judgment of the authors. On the basis of this study, the Thurstones can say:

We make the conclusion, therefore, that the neurotic students are, on the average, better students than their well-adjusted classmates. This finding may be made to look reasonable by the assumption that the neurotic student has fewer social distractions than the well-adjusted student and that he therefore concentrates more on scholastic attainment (171, p. 21).

Stagner (165), Patrick and Rowles (141), Thompson (170), and St. Clair (164) all uniformly established negligible correlations between achievement and personality as measured by the Thurstone test.

Bernreuter Personality Inventory. The Bernreuter, constructed out of items from the Laird, Allport, and Thurstone tests with the addition of a scale for self-sufficiency, has frequently been employed to investigate the relationship between personality and academic performance. Stagner (164) and Thompson (170) found little or no agreement between college
success and Bernreuter scores.

Low scores on Bernreuter's neurotic scale and high scores on self-sufficiency and dominance are considered indicative of good adjustment. Stagner (25) selected college freshmen in extreme personality groups on the basis of the Bernreuter and found the following correlations with achievement: low neurotic, .60; high self-sufficiency, .59; high dominance, .71. These correlations may be compared with those found between achievement and high neurotic, .45; low self-sufficiency, .37; and low dominance, .44. In each instance the scales associated with good adjustment correlate higher with grades than those associated with poor adjustment.

On the high school level, Finch and Nemzek (71), Engle (68), and Nemzek (135) report insignificant correlations between Bernreuter scores and scholarship. Nemzek sought to evaluate the Bernreuter for direct and differential prediction of academic success in mathematics, English, languages, history, and social sciences. He concluded from his study of ninety-two boys and ninety-nine girls in the University High School at the University of Minnesota that B1-N, B2-S, and B4-D are of negligible value for direct or differential prediction in various school subjects.

Minnesota Multiphasic Personality Inventory. Summarizing the studies of validity on personality questionnaires
in 1949, Eltis (65) arrived at the general conclusion that paper-and-pencil tests suitable for group administration are of doubtful value in distinguishing between groups of adjusted and maladjusted persons. Of all such tests in use today, the Minnesota Multiphasic Personality Inventory is most highly regarded. Seldom, however, have investigators employed the MMPI to investigate the problem of personality and academic performance.

Studies by Winberg (180), Altus (36), and Owens and Johnson (139) uniformly suggest that low achievement in college may be associated with mild maladjustment. Altus found one MMPI scale (Ma) to discriminate achievers from nonachievers, at the one per cent level. He also noted a tendency for low achievers to score higher in femininity, immaturity, fearlessness, self-assertiveness, and social extroversion.

Owens and Johnson substantiated the social extroversion tendency of underachievers. They also found that underachievers manifest good adjustment in all areas except family relationships and neurotic-psychotic tendencies.

From this random sample of studies on the personality of high and low achievers, it might be inferred that the tests are inadequate to measure personality, at least when used in the usual way. In more recent years, a fresh approach to the measurement of personality has appeared in the so-called projective
techniques. "Clinically applied, this approach seeks to study individual personalities holistically, with emphasis on the whole personality rather than on discrete elements. Whether this holistic character of the projective techniques has been preserved in research is open to serious questioning.

Projective Techniques. Most standardized psychological tests depend on an objective criterion, usually established statistically on the basis of responses given by the "standardizing group." The responses of this group determine the "norms" for judging subsequent examinees. Thus, each answer has a "right" and a "wrong" aspect, depending on the quality to be measured. The validation of the test consists in the accuracy with which "right" is assigned to those items which truly indicate the presence of a particular quality or personality factor. But, even if the items of a questionnaire were objectively related to that which the test purported to measure, the difficulty of the testee's interpretation of the item would tend to invalidate the score.5 This difficulty might be obviated if the psychologist could see the meaning of the item as the subject sees it. As these tests are given, however, especially when they are administered in groups, such knowledge is

5 For a discussion of individual interpretations of psychoneurotic items of personality tests, see Eisenberg (64).
denied to the one who interprets the test data. Thus, the testee is assumed to have interpreted the item in the same way as the subject in the normalizing group. The interpreter often ignores the individual meaning attached to various test items.

Projective techniques are about as old in the field of personality testing as are questionnaires. They date from the publication of Rorschach's *Psychodiagnostics* in 1921; though they were not popular in the United States until almost fifteen years later.  

From Frank's description of a projective method, it is clear how the "unstructured" approach of this technique differs from the approach of questionnaires and rating scales which have been discussed above:

A projective method for the study of personality involves the presentation of a stimulus-situation designed or chosen because it will mean to the subject, not what the experimenter has arbitrarily decided it should mean (as in most psychological experiments using standardized stimuli in order to be "objective"), but rather whatever it must mean to the personality who gives it, or imposes upon it, his private, idiosyncratic meaning and organization (73, p. 403).

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6 There is no need to sketch the history of projective techniques here. Sergent (161) has published an excellent review; Hertz, Ellis, and Symonds (102), and Frank (73) have contributed excellent studies toward an understanding of these techniques and their uses in research as well as in clinical diagnosis. For a discussion of the projective approach to personality evaluation, see Watson, (30, pp. 392-415).
Of the various projective techniques, only the Rorschach (both in its group and in its individual forms) has been used in the investigation of the relationship between personality and academic achievement.

**Group Rorschach.** Munroe has devised a special technique for quick analysis and interpretation of group Rorschach protocols. Using a check list at Sarah Lawrence College, she rated 343 entering girls in reference to emotional factors determined from Rorschach records. Adjustment ratings of A, B, C, or D, "predicted academic success slightly better than the ACE percentile scores, as indicated by a coefficient of contingency of .43 (corrected, .49) as against .36 (corrected, .39)." However, Munroe says:

> The ACE scores above the 80th percentile were more successful than the corresponding Rorschach adjustment ratings of A in predicting superior academic work: 29.5 per cent as against 18.2 per cent of the two groups did superior college work in first year.

> The Inspection Rorschach adjustment rating was much more successful than the ACE in predicting academic failure. Of 36 failing students, 34 had been rated as relatively maladjusted by the Inspection Rorschach, whereas the ACE did not discriminate among them at all. Half of them stood above the 60 percentile on the ACE, that is, slightly above the median for our group (208, p. 76).

Nevertheless, Munroe admits:

> These findings, however, have little value for practical problems of prediction. For every C or D student who failed, 4 at least got by, and some were among our best students. Nevertheless, from the point of view of understanding the reasons for failure to meet minimum require-
ments, the observation is very important. Failure in the freshman year at Sarah Lawrence College is due far more to personality factors than to lack of superior endowment in the special aptitudes required by the situation (in this instance intelligence) (208, p.48).

One feature of Munroe's work is particularly noteworthy. It tries to keep the "holistic" character of the Rorschach, evaluating each protocol as a whole and classifying each testee according to emotional factors derived from a consideration of interacting Rorschach categories. This approach is a landmark in personality research; but it has seldom been attempted, mainly perhaps because of the difficulty of arriving at objective standards for the classification of personalities in terms of A, B, C, D. Moreover, despite Munroe's efforts to define her "checks" objectively, Cronbach (59) and others have failed to obtain comparable results when working with different groups of subjects.

Montalto (129) investigated the problem of achievement and group Rorschach responses of ninety women, juniors and seniors in the University of Cincinnati. Forty-six achievers (mean age, 20.5) and forty-four nonachievers (mean age, 20.9) were classified on the basis of grade points (A = 3.0; B+ = 2.5; B = 2.0; C = 1.5; D = 1.0). Achievers were those who maintained a 1.5 average or better; nonachievers fell below 1.5. Intelligence was measured by the ACE.

Montalto examined the protocols for fourteen "signs"
of adjustment suggested by Harrower-Erickson, Hertzman, Rose, and Davidson. The number of "signs" present in a protocol was correlated with point grade averages. No relation was found between them. When irrelevant signs were eliminated, the investigator found a "pattern of signs" which she claims might be used to make "a quantitative attack on the problem of achievement in college through the instrumentality of the Rorschach Group test." Three of these signs are "positive": $F\% = 50\%$ or less; $FK + Fc = \text{two or more}; A\% = 50\%$ or less. Two signs are "negative": $WiM = 2:1$ and the per cent of responses on the last three cards falls between 40 and 60. From this pattern, Montalto draws the following conclusions:

These signs, then, would assign to the Achiever (women) a personality which has good intellectual control without rigidity, possesses a sense of tactfulness and social awareness, and is relatively free from stereotyped modes of thinking, but one which does not reveal the best balance between drive and creative capacity nor react in the optimal degree to environmental influences (130, p. 259).

Aside from the doubtful value of applying correlational techniques to a study of this kind, Montalto's experimental design seems to leave much to be desired. A grade point average of 1.5 establishes an arbitrary division in a continuum: sixteen of her forty-four nonachievers average 1.3 or 1.4 grade points; thirteen of her achievers average 1.5 or 1.6 grade points. More than half of her achievers (54.3 per cent) fall between 1.5 and 1.8 grade points; while 57.0 per cent of her
nonachievers maintain averages between 1.1 and 1.4 grade points.

There is also a considerable discrepancy between the intelligence scores of Montalto's two groups. Approximately 76.0 per cent of the achievers scored higher than the mean of the nonachievers, and 79.5 per cent of the nonachievers scored lower than the mean of the achievers. Since intelligence is admittedly a strong factor both in achievement and in Rorschach results, failure to control intelligence and sharply to differentiate degrees of achievement would seem to vitiate the findings in any study of the relationship between academic performance and personality.

Thompson (169) tried to use the Group Rorschach to predict academic success. Her subjects were 128 students in a beginning class in psychology at Santa Barbara College of the University of California; 63.0 per cent were men; 37.0 per cent were women. Beck's scoring, with the inclusion of Klopfer's FM and a categories, was followed.

To differentiate achievers and nonachievers, Thompson used the single criterion of the final grade in the psychology 1A class. She compared the two extreme quartiles on the basis of fifty-two Rorschach categories. If the number of students in one of these quartiles exceeded the number in the other quartile by four or more on any of the fifty-two items tested, that item was selected as indicative of a possible value for discriminating
the personality of the groups. In this way, Thompson limited her fifty-two Rorschach categories to thirty-four. She then gave each item an equal weighting of one, scored the Rorschach protocols on the basis of the number of these items contained, and correlated the scores with her criterion of achievement. The Pearson product-moment coefficient was .52, "indicating that there is a definite relationship between certain factors in the Rorschach and the present criterion."

Item analysis and elimination of those categories associated with intelligence as measured by the Altus Measure of Verbal Aptitude reduced the number of discriminatory items to twenty. These twenty "non-intellective" items resulted in an $r$ of .38 when correlated with the criterion of psychology grades.

Thompson found that achievers gave fewer responses, fewer content categories, less D; they shy away from color but use shading slightly more than nonachievers; and they give more popular responses. Their $M: Sum C$ ratio is balanced on the side of $M$: "in theory, a more introverted pattern."

Several criticisms might be offered on the design of this study. The advisability of considering a one semester grade in a single class subject as a criterion of academic success is evidently open to question. Moreover, it is doubtful whether the short verbal test of intelligence selected can be considered an adequate measure of intelligence for an investiga-
tion of this kind. The whole question of statistical application of correlational techniques to problems of this kind might profitably be reviewed in the light of Cronbach's (58) discussion of statistical methods applied to Rorschach scores.

It is interesting to note that Altus (36), using the same criterion of achievement as Thompson but including also the marks of two semesters, presumably investigated the same subjects with the MMPI. He paired the subjects on the basis of achievement and intelligence as measured by the Altus Measure of Verbal Aptitude and obtained an \( r \) of .39 when sixty "non-intellective" items selected from the MMPI by item analysis were correlated with psychology term grades of eighty-five students in a new group. This correlation of .39 between psychology grades and the MMPI items is approximately the same as the correlation of .38 obtained by Thompson between psychology grades and "non-intellective" items in the Rorschach. In the interests of economy, these two studies would seem to indicate that the MMPI is to be preferred to the Rorschach in the prediction of success in the 1A psychology class at Santa Barbara College.

Cronbach undertook to repeat Munroe's study on a sample of two hundred highly intelligent college students, seventy-one men and 129 women, in the College of the University of Chicago. Despite a median age of fifteen years in this group, approximately 53.0 per cent surpass the 90 percentile of
the national norms for college freshmen on the ACE. Relative to
achievement, Cronbach concludes:

Munroe check-list scores of first-year students corre-
related .17 with average grade on highly reliable and im-
partial comprehensive examinations. A subjective rating of
adjustment as shown in Rorschach performance correlated .25
with grades. Neither of these correlations is high enough
to enhance a multiple correlation at Chicago. Correlations
for students in the second- to fourth- year classes were
close to zero. A breakdown showing the interaction of
Rorschach and ACE scores suggests that good adjustment may
in part compensate for low academic aptitude, but this
finding is based on too few cases to be accepted with con-
fidence.

No statistically significant relationship could be
found between underscience (grade average with ACE held
constant) and any single Rorschach indicator...

There can be little difference of opinion about the
negative character of these findings. In the sample
studied, the Group Rorschach, objectively scored, failed
to predict scholastic success and gave only small cor-
relations with criteria of social and emotional adjustment.
Use of the Inspection Technique with the Group Rorschach
for purposes of guidance in the College at the University
of Chicago is not warranted by these findings (59, pp.
79-80).

In a final word, Cronbach recommends further research
with the Group Rorschach, "particularly since the literature is
still devoid of controlled studies on adequate samples in
typical college programs."

Individual Rorschach. Using the Rorschach adminis-
tered individually, Margulies (206) studied a group of sixty-
nine academically successful boys and girls (average chronolo-
gical age, 13-7 years, SD, six months) and a group of thirty-
eight unsuccessful boys and girls (average age, 13-9.5 years, SD, eight months). She equated her groups for IQ, age, socioeconomic status, birthplace of parents, birthplace and residence of subjects, religion, and language in the home. The mean IQ of the successful group (forty-eight girls and twenty-one boys) was 122.50 (SD, 8.40). The thirty-two unsuccessful boys and six girls had a mean IQ of 125 (SD, 10.35). Most of the children were born in New York City of foreign-born, middle and lower class Jewish parents. In two-thirds of the homes some language other than English was spoken.

School success was measured by teachers' ratings and grades. During two terms, the successful group maintained grades on the average of one sigma above the mean of their classes; the unsuccessful group, one sigma below the mean of their classes.

A third and intermediate group was employed as a further control.

Margulies set as her aim a two-fold purpose:

1. To investigate experimentally, the validity of the claim made by Rorschach workers on the basis of clinical experience that certain Rorschach responses show the efficient or inefficient use of mental capacities.

2. To investigate whether children successful and unsuccessful in school differ in their Rorschach records (206, p. 9).

To achieve her first aim, Margulies studied especially the W:M ratio, color shock, and shading shock. She found no difference between the groups in the distribution of the raw W:M
ratio. There was a significant difference, however, between successful and unsuccessful students for color shock, the unsuccessful students showing more signs. Unsuccessful boys showed significantly more signs of shading shock than successful boys. The distribution of shading and color shock occurring together significantly differentiated achievers from nonachievers, the unsuccessful students giving more signs.7

The disproportion of boys and girls, particularly in the unsuccessful group, admittedly is a weakness in Margulies' study. However, comparisons of successful and unsuccessful boys have been made to the advantage of the successful group. In view of the sex differences in Rorschach responses, generally conceded to exist, it would seem advisable to investigate boys and girls independently.

Steinzor (167) made a controlled study of students at Ohio State University. Thirty male subjects, selected on the basis of intelligence and grade point averages, comprised his sample. Seniors and students in attendance less than two complete academic quarters were excluded. All subjects scored at or above the 85th percentile ranking on the Ohio State Psychological Examination.

The fifteen achievers had a mean O.S.P.E. centile of

7 For a discussion of Margulies' use of statistics, see Cronbach (58).
94.0, a grade index of 3.20 or better with an average of 3.62, and a mean age of 19-11 years after an average of 4.7 academic quarters completed. The fifteen nonachievers had a mean O.S.F.E. centile of 91.3, a grade index of 1.70 or less with a mean of 1.60, and a mean age of 21-2 after an average of 4.4 academic quarters completed. A questionnaire revealed that the groups were equated in the mean hours of study each week, income and occupation of the father, number of children in the family, American nativity of the parents, religion, and residence in cities of 50,000 population or more.

Steinzor scored the records according to Klopfer and tested the significance of difference between the two groups on the basis of various Rorschach categories and ratios. He discovered differences at or below the 1 per cent level in the number of responses and in Fc, both in favor of achievers. Differences between the 2 and 5 per cent levels of confidence were yielded by d, DdS, F, Sum C, and the number of content categories entered. All these were likewise in favor of achievers.

In general, Steinzor concluded that achievers are better adjusted, more productive, more practical, more critical, more sensitive to environment, more responsive to emotional stimulation from outer environment, better adjusted socially, use their intellectual control more frequently, have a wider range of interests, and are less stereotyped in their thinking than
their less successful classmates.

On the question of maladjustment among students on the college level, Steinzor says:

On the whole, nonachievers gave indications, as measured by the Rorschach test, of being a less well-adjusted group. Though there were individuals in the successful group who showed Rorschach signs of severe maladjustment, it is expected that the personally and socially better adjusted individual will do more satisfactory school work (169, p. 504).

McCandless (120) selected thirteen pairs of men from approximately two hundred officer candidates in the U.S. Maritime Service Officers School, Alameda, California. Selection was made on the basis of eight criteria: AGCT score; average Mechanical Comprehension Test score; average Iowa Silent Reading Comprehension Test score; average Stanford Advanced Arithmetic Reasoning Test score; average age and amount of education; marital status (six of the men were married; two, divorced; five, single in each group); and enrollment in one of the divisions of the school (ten men in each group were enrolled in Deck training and three in Engine training).

Differentiation of the groups was on the basis of academic grade averages (A = 5.0; B = 4.0; C = 3.0; D = 2.0; E = 1.0). The high grade point group averaged 4.7 (range, 4.5 to 5.0); the low grade point group averaged 2.9 (range, 1.0 to 3.6). Both groups had means of 135.7 on the AGCT, which is 1.75 SD above the national mean. The groups averaged two standard
deviations above the mean on the mechanical comprehension test. In arithmetic and reading, they were about on the junior level in college. The high grade point men averaged 25.6 (range, 19 to 37) years of age and 12.3 (range, 10 to 15) years of education. The low point men averaged 24.4 (range, 19 to 32) years of age and 12.1 (range, 10 to 14) years of education.

Scoring of the individually administered Rorschach records was done both by the Klopfer and Beck systems. Only in one case did the difference between groups approach statistical significance. Achievers gave more popular responses than non-achievers. Neither Monroe's check list nor Beck's Z differentiated the two groups. Nevertheless, certain tendencies appeared which the author interprets:

The statistically non-significant, but consistent trends were toward more emotional control, more conformingness, less anxiety on most criteria, more attention to concrete details, and slightly greater productivity for the high grade point men (120, p. 50).

It is interesting to note that Steinzer and McCandless, controlling their groups so that achievers are clearly distinguished from nonachievers, and limiting their investigations to a single sex, have discovered personality factors at variance with those reported in some of the previous studies based on questionnaire test data. These two authors find achievers more well-adjusted than nonachievers, a finding in agreement with Margulies' study of color shock and shading shock
in younger subjects. Although McCandless found a slight tendency for the M to outbalance Sum C in the records of high achievers (ordinarily interpreted as an indication of introversive tendency), the M:Sum C ratio failed to be statistically significant. After a more intensive analysis of Klopfer's three introversive-extraversive configurations, Steinzor concluded that the achievers in his sample show a consistent tendency toward extroversion.

To the knowledge of the present writer, these three studies are the only published individually-administered Rorschach investigations of the relationship between personality and academic achievement carried out under controlled conditions. 8

8 Beckham (42) compared twenty-five high school students who failed in two or more semesters with twenty-five students in the same school who were members of the National Honor Society. He found that the failures had about half the number of responses, 15 per cent more W, a higher degree of stereotypy, less M, and rejected more cards than the better students. He concluded that honor students are more emotionally mature than the failures.

It may be surmised from Beckham's criterion of selection that intelligence played a major part in the differences he discovered between his two groups.

Wittenborn (182) investigated certain Rorschach response categories in their relationship to mental ability. His subjects were sixty-eight Yale students in an accelerated reading course. He used grade averages as one measure of scholastic ability but found no significant differences. However, "with the exception of first semester average, all the mental measurements
**Thematic Apperception Test.** Although the TAT is generally recognized as a complementary test to the Rorschach, the two have rarely been used together in research. Richardson (149, 212) used the two tests with thirty stutterers and a control group. He found significant differences in the areas of human movement and color on the Rorschach but no significant differences in the needs, attitudes, and behavior in frustration as revealed by his method of TAT analysis. To the knowledge of the author, there are no published studies of the use of the TAT with high and low academic achievers.

"show evidence of a positive relationship with the number of Rorschach responses."
CHAPTER III

METHODS AND PROCEDURE

The brief sketch of previous research given in Chapter II clearly indicates the need for a control group in an investigation of the relationship between academic achievement and personality. Moreover, previous research has shown that many factors affect scholastic success. It may not be feasible to isolate and control all these factors adequately; but in the present investigation there is an attempt to exercise rigid control over the variable of intelligence in the hope of finding some measurable personality factor independent of intelligence.

A school for boys was chosen for the investigation on the assumption that it would yield a population relatively free from the distraction of sex in an adolescent classroom. Moreover, the school which was chosen emphasizes humanistic studies and selects its students from a large group of applicants on the basis of competitive examinations. Consequently, the students work in a traditional atmosphere of serious mental application. Many of them are preparing for professional fields.

Of the 136 boys in the senior class, 122 had entered together in freshman year. To maintain constancy of academic
environment, it was decided that the experimental samples be selected from the 122 students who had spent seven semesters together in the same school. This decision was further supported by the thought that academic achievement is largely a relative matter, depending on the standards of the school, the intensity of competition, quality of instruction, and other factors.

At the time of entrance into high school, the 122 seniors had a mean IQ of 122.84 (SD = 11.6) as measured by the Henmon Nelson, Form A. In the first semester of junior year, their mean raw score on the ACE was 105.75 (SD = 16.6). The latter is equivalent to the 88th percentile ranking based on norms for juniors in Illinois high schools. It was assumed that an average of both these tests would yield a better measure of intelligence than either of them taken singly. Since the Henmon Nelson gives results in terms of IQ and the ACE in percentile rankings, the results of these two tests were averaged after converting the IQ's and the ACE raw scores into standard scores. It was decided that only those students whose averages were above the mean of the class should be included in the sample of the study. Thus, further selection was made from among those students whose standard scores for intelligence were fifty or more.

Differentiation of high and low achievers was made on the basis of actual success throughout six semesters of high
school as measured by teachers' grades. Aside from the fact that high school grades are generally considered to be the best single predictor of success in college,¹ and therefore also indicative of success in high school, several other considerations dictated the choice of grades as the criterion of academic achievement in this investigation. A variety of class subjects are represented in these grades: English, Latin, Greek, French, Spanish, History, Civics, Algebra, Geometry, Trigonometry, Sociology, Economics, Chemistry, and Religion. Moreover, each student received grades from approximately twelve teachers, thus mitigating the element of subjectivity inherent in an individual teacher's grading system. Furthermore, each year for three years, at the end of the first semester, an objective test in each major subject, standardized on approximately seven hundred students of comparable ability, entered into the determination of the students' grades. Thus, it seems that a high degree of objectivity may be expected from the present criterion.

An index of achievement was established by converting the average of each student's grades for six semesters into

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¹ For a discussion of the research in this matter see Harris (85). McGinnis (123) claims that students who have a high grade average in high school are six times as likely to graduate from college as those with a very low grade average in high school. Hartson (92) found no significant relationship between high school and college scholarship in his study at Oberlin.
standard scores. Since the calculation of the standard scores for intelligence included 122 members of the senior class, the same group was considered in calculating the standard scores for grades. The mean grade for the senior class was 83.54 (SD = 5.5). The difference between the standard scores of the grades and the standard scores of intelligence constituted an index of how far above or below expectancy each student was achieving. On the basis of this index, two groups were selected from among those students who had an average standard score above fifty for intelligence as measured by the Henmon Nelson and the ACE.

Table I presents the standard scores of the high achievers both for intelligence and achievement. It will be noted that all positive indices are evidence that the individuals are achieving beyond expectancy as measured by intellectual ability. The one negative index in the group of achievers (0.5) is sufficiently close to zero to be accepted as an indication that the individual is functioning at the level of expectancy. The subjects are arranged in an ascending order of intelligence so that comparison with low achievers in Table II may be made more easily.

There is a constant reduction of the index of achievement with the rise of intellectual level in this group. The subjects in the first quartile of intelligence average a positive index of 10.2; Q2 has an average of 8.1; Q3, 5.4; and
TABLE I

AVERAGE STANDARD SCORES FOR AGE AND HENMON NELSON, STANDARD SCORES FOR CLASS GRADES, AND INDEX OF ACHIEVEMENT (DIFFERENCE BETWEEN STANDARD SCORES FOR INTELLIGENCE AND GRADES) OF TWENTY HIGH ACHIEVING HIGH SCHOOL SENIOR BOYS

<table>
<thead>
<tr>
<th>Subject</th>
<th>Intelligence Standard Scores</th>
<th>Achievement Standard Scores</th>
<th>Index of Achievement</th>
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<td>-16.5</td>
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</tbody>
</table>
This would seem to indicate that the oversachievers in this group tend to be students whose intelligence is near the mean for the entire senior class.

Table II presents the same data for the selected group of low achievers. How nearly matched the two groups are on the basis of intelligence, and how different on the basis of achievement, may be seen by a study of this table in conjunction with Table I.

The mean standard score for intelligence of the high achievers is 57.18; of the low achievers, 57.30. The difference between groups, tested by the standard error of the difference between means, is represented by a $t$ of .118. Since there are thirty-eight degrees of freedom in the present study, the .50 level for $t$ is .683. Hence, there is extremely high probability that the two groups are homogeneous on the basis of intelligence.2

The mean standard score for achievement is 63.70 for high achievers and 44.35 for low achievers. This difference is represented by a $t$ of 17.763. With thirty-eight degrees of freedom, a $t$ of 2.71 is required for the .01 level of significance. Hence, the only conclusion warranted by the data is

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2 Since the groups in this investigation are uncorrelated, the formula for the reliability of the difference between means in small independent samples was used. See Garrett (12, p. 204).
that the two groups are heterogeneous on the basis of academic success. 3

Significant data relative to intelligence, grades, and chronological age of the two groups are summarized in Table III.

Since many factors other than intelligence and personality may contribute to success or failure in the classroom, an effort was made to evaluate some of the variables which might be responsible for individual success or failure. Whether or not these variables are entirely independent of personality is not within the scope of this study to decide. Mention of some of them, however, may open avenues for future research.

Frequent change of residence during the elementary school years may be responsible for an unsound foundation in basic school subjects and a slower pace of learning in high school. Some failures may be due to emotional disturbances brought about by a death, divorce, or tension in the home. Some students dissipate their energies in extracurricular activities which curtail the time which ought to be devoted to solitary study. Sufficient information to evaluate factors such as these

3 The present study has been reported in abstract in The American Psychologist, 1951, 6, 374 and in Research Relating to Children, Supplement 5. The differences between groups in intelligence and achievement reported in these publications were derived through another statistic. The differences would seem to be more accurately determined in the present instance.
### TABLE III

MEANS, STANDARD DEVIATIONS, AND MEASURE OF DIFFERENCES FOR INTELLIGENCE, CLASS GRADES, AND CHRONOLOGICAL AGE OF THE TWENTY HIGH AND TWENTY LOW ACHIEVING MALE HIGH SCHOOL SENIORS IN THE PRESENT STUDY

<table>
<thead>
<tr>
<th></th>
<th>High Achievers (N 20) Scores</th>
<th>Low Achievers (N 20) Scores</th>
<th>t</th>
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<tr>
<td>Henmon Nelson</td>
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<tr>
<td>Mean IQ</td>
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<td>129.05</td>
<td>.848</td>
</tr>
<tr>
<td>SD</td>
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<tr>
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<td>95.10</td>
<td>.113</td>
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<td>SD</td>
<td>3.96</td>
<td>3.40</td>
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<td>Combined Standard Scores</td>
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</tr>
<tr>
<td>Mean</td>
<td>57.15</td>
<td>57.30</td>
<td>.118</td>
</tr>
<tr>
<td>SD</td>
<td>3.77</td>
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<tr>
<td>Class Grades</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>91.04</td>
<td>80.28</td>
<td>16.550</td>
</tr>
<tr>
<td>SD</td>
<td>1.59</td>
<td>2.67</td>
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</tr>
<tr>
<td>Standard Scores of Grades</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>63.70</td>
<td>44.35</td>
<td>17.763</td>
</tr>
<tr>
<td>SD</td>
<td>2.83</td>
<td>4.07</td>
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</tr>
<tr>
<td>Chronological Age (months)</td>
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<tr>
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<tr>
<td>SD</td>
<td>3.43</td>
<td>5.21</td>
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</table>
was derived from a short interview and *Things I Like To Do* by Burgess.

All the subjects in the present investigation had attended the same high school for three full years and were midway through their senior year at the time of testing. Thus, there had been sufficient time to adjust to their current school placement. Some variations, however, occurred during the years of elementary schooling. The high achievers had attended an average of 1.85 elementary schools; the low achievers, an average of 2.30. However, the difference between groups on the basis of elementary schools attended is not statistically significant ($t = 1.042$).

The homes of two of the achievers had been broken by the death of one parent. The parents of two subjects among the low achievers were separated; and the mother of another low achiever was dead. Two high achievers and four low achievers had no brothers or sisters. In general, the low achievers tended to come from smaller families than the high achievers. There is an average of 4.00 children in the homes of the high achievers and an average of 3.00 in the homes of low achievers. An examination of the birth order revealed nothing of significance.

With one exception, all subjects were Catholic. Both parents were of the same religion in the case of achievers. Two
instances of mixed religion were reported in the homes of low achievers. In each instance, the mother was Catholic and the father Protestant.

When those extracurricular activities which consume an appreciable amount of time and attention were considered, it was found that students in both groups were about equally active in sports, dramatics, debating and school publications. During the first six semesters of high school, the high achievers devoted an average of 4.40 semesters to extracurricular activities; low achievers averaged 4.25 semesters.

While no special effort was made to control any of these variables, it would appear that none of them differentiates the two experimental groups in a degree sufficient to nullify the results of a personality study. Moreover, while some of these factors may directly or indirectly influence success or failure in the classroom, it is also likely that they have either been shaped by personality or have helped in the shaping of personality. In either event, it might be expected that the basic personality elements behind them will be reflected in the Rorschach and the TAT.

Having selected the forty subjects and grouped them into high and low achievers according to the criteria described above, the investigator personally administered to each subject the Rorschach, the TAT, and Burgess' questionnaire, Things I
Like To Do. This sequence of tests was maintained for all subjects.

In the administration of the Rorschach, as well as in its scoring, Klopfer's methods were followed. The administration was divided into three phases: free association, inquiry, and testing the limits. The scoring was supplemented by the use of norms for adolescents published by Hertz (202). In cases not covered by Hertz, particularly in regard to F+, Beck's norms became the guide. When neither Beck nor Hertz included a response, and the investigator had any doubt about its quality, the response was submitted to three judges.

The statistical treatment of the data, and the various categories analyzed, are presented in Chapter IV. These categories have been dichotomized for the use of chi square, the cutting points being quantities suggested in the literature as psychologically significant.

Murray (209) suggests that the TAT be given in two sessions with at least one day intervening between the first and second session. At each of these sessions, ten pictures are presented to the subject with the instruction to tell a story

4 The Rorschach is sufficiently well-known not to require further discussion at this point. For a detailed description of the method of scoring this test, reference should be made to the original monograph by Rorschach (22), as well as to Klopfer and Kelley (14) and Beck (4).
about each picture. The present investigation is a departure from this procedure: eleven pictures were used with each subject in a single session. Moreover, another innovation was introduced. After each subject finished the selected set of pictures, he was asked to weave as many of the pictures as he could remember into a new story, changing the characters and plots as much as he wished. Thus, in all, each of the forty subjects told twelve stories, from a total of 480 stories in the investigation.

Following are Murray's descriptions and numbering of the eleven pictures selected for this study:

1. A young boy is contemplating a violin which rests on a table in front of him.

2. Country scene: in the foreground is a young woman with books in her hand; in the background a man working in the fields and an older woman is looking on.

4. A woman is clutching the shoulders of a man whose face and body are averted as if he were trying to pull away from her.

5. A middle-aged woman is standing on the threshold of a half-opened door looking into a room.

5 Precedent for limiting the number of pictures used may be found in the literature. Rotter (156) indicates that it is frequently time saving to select a shorter series than is ordinarily given. He suggests that they be chosen from specific problems according as the age and sex of the characters allow easiest projection. Harrison and Rotter (89) approve of the practice. Murray and Stein (134) made use of a few pictures for the purpose of isolating specific traits rather than of gaining a global personality description.
6BM. A short elderly woman stands with her back turned to a tall young man. The latter is looking downward with a perplexed expression.

7BM. A gray-haired man is looking at a younger man who is sullenly staring into space.

8BM. An adolescent boy looks straight out of the picture. The barrel of a rifle is visible at one side, and in the background is the dim scene of a surgical operation, like a reversion.

10. A young woman's head against a man's shoulder.

12M. A young man is lying on a couch with his eyes closed. Leaning over him is the gaunt form of an elderly man, his hand stretched out above the face of the reclining figure.

14. The silhouette of a man (or woman) against a bright window. The rest of the picture is totally black.

16. Blank card.

To enable the investigator to get a verbatim account of each story a wire recorder was used, after being explained to each subject as a means of facilitating the administration of the test: he could talk without interruption or fear that the investigator was missing anything said. In all instances, the recorder was readily accepted; no one showed the slightest reluctance about having his voice recorded.

After an explanation of the purpose of the recorder, the TAT was introduced with the following instructions:

This is a test of imagination, one form of intelligence. I am going to show you some pictures, one at a time; and your task will be to make up as dramatic a story as you can for each.
At this point, a 6x4 card was handed to the subject. On it were written the key facts of the instructions. The subjects read silently from the card as the investigator proceeded:

1. Tell what led up to the event shown in the picture;
2. Describe what is happening at the moment;
3. What the characters are feeling and thinking;
4. And then give the outcome.

This card was kept before the subject throughout the administration of the test. His attention was called to any item which he might overlook in his stories.

Finally, the investigator concluded his instructions saying:

Speak your thoughts as they come to your mind. You may spend five minutes on each picture. Here is the first picture.

With these words, the investigator presented the subject with Picture I. Subsequent pictures were handed to the testee with the words: "Now take this one, and make up a dramatic story."

The investigator was free during the administration to see that the subject followed directions and to encourage the more hesitant to develop longer stories. This procedure presumably results in greater constancy of conditions than can be hoped for when the investigator distracts the subject by writing in his presence. Moreover, it makes for absolutely accurate
recording of the subject's words.

When the subject arrived at the sixteenth card, which is blank, the investigator said:

Imagine you see a picture on this card. It may be anything at all. Then describe the picture for me.

After the subject had described his imaginary picture, he was asked to tell a story in the manner of the other pictures. Finally, when the eleven stories were completed, the investigator said:

Now, without looking at any of these pictures again, make up a composite story in which you weave together as many of the pictures as you remember. You can change the characters and the plots all you wish. Just weave as many of the pictures together as you can.

It was assumed that the subject would remember most readily those pictures with which he had most closely associated himself, thus aiding in the interpretation of intensity by highlighting material significant to the subject.

At the end of the testing session, the subject was asked to fill out the questionnaire, Things I Like To Do. This questionnaire was intended to gather some information which might help in the interpretation of the tests and take the procedure out of the realm of "blind analysis." Since the present investigation is not a study of reliability, and therefore not

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6 Card 16 is the eleventh one in the present series.
primarily interested in correlating the present test data with data obtained from other personality measurements, it seems imperative that the personalities of the subjects be evaluated as accurately as possible within the limits of the instruments used so that high achievers may be compared with low achievers on the basis of personality.
CHAPTER IV

STATISTICAL ANALYSIS OF THE RORSCHACH

A statistical analysis of Rorschach data encounters difficulties peculiar to projective techniques. Part of the difficulty arises from a lack of validation for the meaning of individual scoring categories; part of it is due to the present stage of development in the science of statistics. Rorschach scores are not absolute values independent of other categories. Rather, each scoring symbol must be taken in the pattern of the whole record before it yields its full meaning. This is an assumption which has been denied by no one familiar with the rationale of the method. Therefore, to treat these scores with complete independence of each other, as though they were sub-tests of a battery or measures of "traits," is analogous to partialing out all the colors in an art collection with the purpose of constructing a painting "typical" of that collection. The interrelations of Rorschach scores, like the interplay of colors in a painting, tend to lose their real meaning when forced into mathematical formulae. To find ways of preserving this "holistic" character of the Rorschach in research is one
of the major problems confronting Rorschach workers and statisticians alike. The former have the task of defining personality "qualities"; the latter, that of quantification.

Since the present investigation has a two-fold purpose: (1) to delineate the personality of high and low achievers; (2) to propose a new research method for use of the TAT; there seems to be some justification for using the Rorschach in the traditional research manner. Comparisons between methods are thus possible. Moreover, presuming the validity of meaning assigned to Rorschach symbols, a statistical treatment of those symbols and certain patterns of symbols ought to yield at least some information about the personality components of the subjects, even if the dynamic interaction of the components is largely lost in the statistical treatment.

The purpose of this chapter is to find what statistical differences, as measured by Rorschach categories, exist between the high achievers and the low achievers in the present study. Rather than gerrymander scores at will in an effort to discover possible significant differences, regardless of psychological meaning, the writer has elected to adhere to an experimental design in which only those differences are investigated to which Rorschach workers, on the basis of clinical experience, have attached psychological meaning. The assumption is that in this way statistical findings will not be wholly divorced from
Several problems arise in the selection of statistical methods for testing the differences between groups. In the first place, since small samples are studied in the present investigation, corrections are demanded. Moreover, zero scores, small distributions, and extreme scores all tend to vitiate tests of significance based on normal distributions. Where these vitiating conditions prevail, counting procedures are preferred to additive methods.\(^1\) Nevertheless, in order to permit comparisons with previously published studies, an over-all view of the present research data appears in terms of means, standard deviations, and \(t\) in Table IV.

Since productivity (\(R\), the number of responses for all ten Rorschach figures) affects the quantity of all other scores to some degree, percentages have been computed for each category on the basis of total responses to prevent the greater productivity of the high achievers from spuriously elevating the values of the other Rorschach scores. Clinical interpretations of the Rorschach protocol, however, are not usually based on all the percentages which appear in Table IV. It should be noted, moreover, that \(P\%\) (per cent of popular responses) has little

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\(^1\) The present investigation has been guided in large part by the suggestions of Cronbach (58) relative to the application of statistical methods to Rorschach scores.
<table>
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<th>Categories</th>
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<th>SD (N 20)</th>
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<th>P</th>
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<td><strong>Sum C%</strong></td>
<td>8.5</td>
<td>10.8</td>
<td>4.8</td>
<td>5.5</td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>11.1</td>
<td>10.1</td>
<td>5.8</td>
<td>4.7</td>
</tr>
<tr>
<td><strong>A%</strong></td>
<td>30.8</td>
<td>32.9</td>
<td>12.6</td>
<td>11.3</td>
</tr>
<tr>
<td><strong>H</strong></td>
<td>5.6</td>
<td>4.8</td>
<td>3.0</td>
<td>3.6</td>
</tr>
<tr>
<td><strong>H%</strong></td>
<td>15.4</td>
<td>15.3</td>
<td>9.6</td>
<td>6.3</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>11.1</td>
<td>10.1</td>
<td>4.1</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>P</strong></td>
<td>6.8</td>
<td>6.8</td>
<td>3.2</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>P%</strong></td>
<td>19.3</td>
<td>24.5</td>
<td>6.1</td>
<td>9.1</td>
</tr>
<tr>
<td><strong>O</strong></td>
<td>8.6</td>
<td>6.5</td>
<td>6.9</td>
<td>5.9</td>
</tr>
<tr>
<td><strong>O%</strong></td>
<td>20.9</td>
<td>17.5</td>
<td>8.4</td>
<td>4.4</td>
</tr>
</tbody>
</table>
significance because of the limited number of possible popular responses.

To be considered statistically reliable, a difference between groups must be at or below the 5 per cent level of confidence in the present study. Since there are nineteen degrees of freedom, a \( t \) of 2.093 is required to reject the null hypothesis at the 5 per cent level; a \( t \) of 2.845, at the 1 per cent level.\(^2\)

Of all the categories tested, only Fe yields a \( t \) corresponding to a difference between high and low achievers statistically reliable at the 2 per cent level of confidence. In itself, one significant difference among so many categories tested tends to lose much of its significance; but McCandless, Steinzor, and Margulies have also found Fe more frequent in the records of high achievers than of low achievers. Aside from the area of Fe, the strongest tendency expressed in the data of

\[ t = \frac{M_0 - M_H}{\sqrt{\frac{\sum d^2}{n(n-1)}}} \]

Table IV is the readiness of low achievers to respond to color in the Rorschach figures. High achievers are somewhat more productive (R), respond with more content categories, give more original responses (O), and use Dd for location more freely than low achievers.

Though it may be somewhat premature to offer an interpretation of these findings, there is some evidence that low achievers may experience stronger reactions to their external environment and possibly give vent to their feelings and emotions more freely than their high-achieving classmates. The latter, in turn, may not be less stimulated by environmental impact; but their responses seem to be more reserved because of greater awareness of their relationship to their environment. This leads to greater tactfulness. Moreover, high achievers may be more resourceful since they tend to have a wider range of interests and greater originality.

The low values of $t$ for some of the categories in Table IV are also worthy of notice since a low value indicates that the null hypothesis may not be rejected. In the case of $M$ and $P+$, for example, the only conclusion possible is that the two groups are homogeneous. Since human movement responses and form level are generally among the factors associated with intelligence in the Rorschach, it would seem that the tests used to equate intellectual ability in the present study are
measuring the same aspect of intelligence as that reflected in M and F+ responses. High and low achievers are also homogeneous, in the present study, in the per cent of H (human figure in the content) and in the number of popular responses. This would seem to suggest likeness of interest in people and equal conformity to environment.

The t test for significance of differences between the groups was intended only as a means of getting an overview of the various Rorschach categories. Closer adherence to the meaning of the scoring symbols seems possible by taking a definite quantity suggested by a Rorschach worker as psychologically significant and by using this as a cutting point to dichotomize each group on the basis of those above or below the "critical score." The difference between groups can thus be tested by chi square.3

3 In recent years, a controversy was carried on in the Psychological Bulletin relative to the use and misuse of chi square. Among other criticisms, Lewis and Burke (117) deplored the use of this statistic with cell frequencies smaller than five, even when Yates' correction for continuity is applied. Various replies were made by Peters (142), Pastore (140), and Edwards (63). The upshot of the discussion, so far as the use of chi square in the present study is concerned, seems to be that one is justified in using chi square as a measure of "approximate accuracy" for theoretical frequencies smaller than five. Peters points out: "The number required for exactness in fulfilling the assumptions is infinite; for any number short of infinity the determination is only rough, but good enough" (142, p. 336, note 5).
There is fairly consistent agreement among Rorschach workers that the number of responses given to the ten figures usually falls between twenty and forty. In Table V the number of subjects within, above, and below this range has been counted; and the difference between groups has been tested by chi square for each category. In the same way, the norms published by Klopfer and Kelley have been used to test the differences between groups in each of the location categories. These categories refer to the area of the blot used in the determination of the response. Thus, if the whole blot is used as a stimulus for the response, the location is scored W. Likewise, D refers to a large usual detail; d, to a small usual detail; and Dd, to an unusual detail. S is scored when the white space of a card is used for the concept formation. Klopfer also scores a cut-off W (\$) when most of the blot has been included in the response, though minor details have been eliminated for the sake of precision. It should be noted that many of the W responses in the present study were of this kind. In the final summation, \$ is

4 Bochner and Halpern (7) give a somewhat higher range (twenty to fifty) for total responses; but this seems to be too broad a range.

5 In Table V the values of chi square are expressed in terms of probability (P). Since chi, the square root of chi square with one degree of freedom is distributed as a normal deviate z, it is possible to convert chi square to P by taking 2 z on the table of the normal curve. See Edwards (63, p. 343).
**TABLE V**

INCIDENCE OF HIGH AND LOW ACHIEVERS COMPAARED ACCORDING TO KLOPFER'S CRITERIA FOR PRODUCTIVITY AND LOCATION AREAS ON THE RORSCHACH

<table>
<thead>
<tr>
<th>Category and Range</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square*</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>R: Above 40</td>
<td>6</td>
<td>4</td>
<td>.133</td>
<td>.72</td>
</tr>
<tr>
<td>Normal (20 - 40)</td>
<td>12</td>
<td>12</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Below 20</td>
<td>2</td>
<td>4</td>
<td>.196</td>
<td>.66</td>
</tr>
<tr>
<td>W: Above 30%</td>
<td>14</td>
<td>17</td>
<td>.573</td>
<td>.45</td>
</tr>
<tr>
<td>Normal (20% - 30%)</td>
<td>2</td>
<td>2</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Below 20%</td>
<td>4</td>
<td>1</td>
<td>.914</td>
<td>.34</td>
</tr>
<tr>
<td>D: Above 55%</td>
<td>4</td>
<td>1</td>
<td>.914</td>
<td>.34</td>
</tr>
<tr>
<td>Normal (45% - 55%)</td>
<td>4</td>
<td>4</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Below 45%</td>
<td>12</td>
<td>15</td>
<td>.156</td>
<td>.68</td>
</tr>
<tr>
<td>d: Above 15%</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Normal (5% - 15%)</td>
<td>6</td>
<td>2</td>
<td>1.406</td>
<td>.23</td>
</tr>
<tr>
<td>Below 5%</td>
<td>14</td>
<td>18</td>
<td>1.406</td>
<td>.23</td>
</tr>
<tr>
<td>Dds: Above 10%</td>
<td>13</td>
<td>8</td>
<td>1.604</td>
<td>.20</td>
</tr>
<tr>
<td>Normal (10% or less)</td>
<td>7</td>
<td>12</td>
<td>1.604</td>
<td>.20</td>
</tr>
</tbody>
</table>

*Throughout this study, Yates' correction for continuity has been included in the formula for chi square. See McNemar (17, p. 207).*
included in the W total.

Although Table V yields no statistically reliable differences between high and low achievers in the areas tested, several tendencies may be noted: both groups exhibit trends in the same direction; the same number of subjects fall within the normal range for R, W%, and D%. At the same time, more high achievers than low achievers may be expected to go above the limits in D% and DdS%. Low achievers may be expected to surpass the limits of W% and fall below the limits of d% more frequently than high achievers. Tables IV and V reveal that the Erfassungstyp of high achievers is $\bar{w}$ (D) (d) DdS; of low achievers, it is $\bar{w}$ (D) (d) DdS, indicating that both groups are considerably above the average in production of W, somewhat below the average in D and d. They differ in DdS, high achievers having a tendency toward greater production.

In a Rorschach record, the quality of responses is often more important than the quantity. However, a calculation of the form level and an examination of types of responses reveal no appreciable disparity between the present groups.6

---

6 According to Klopfer's method of analyzing form level, a numerical value is assigned to each response on the basis of accuracy, organization, and specification of the blot material. Scores of 2.5 or more are doubled. This weighting aims at a better differentiation of final ratings on the higher levels. Results in this study reveal no significant difference between groups ($t = .62$).
A few subjects in each group gave vague and noncommittal W responses in excess of half the W's produced, but this is not statistically significant. While "quality ambition" does not differentiate the groups, there is evidence that it is present in some records and constitutes a partial explanation of the high W noted in both samples.

An analysis of differences in frequency of S (white space responses), when each main response is given a value of one and each additional S a value of 0.5, reveals no statistically significant difference between groups; though there is a trend on the part of high achievers to produce S responses more frequently than low achievers ($t = 1.28$).

According to Klopfer, the ratio W:M evaluates intellectual efficiency. If this hypothesis is true, a difference between high and low achievers of equal intelligence might be expected. Five classes of subjects may be set up on the basis of suggestions made by Klopfer (14) and Piotrowski (144). These classes are analyzed in Table VI.

**First Class.** Subjects who have approximately five M and twice as many W's as M's. Klopfer, referring to adults, calls this the optimum ratio.

**Second Class.** Subjects who have three or four times more W than M. Such subjects, says Klopfer, seem "always to be lacking in the best use of their creative powers." However,
TABLE VI

TWENTY HIGH AND TWENTY LOW ACHIEVERS COMPARED ACCORDING TO CRITERIA SUGGESTED BY KLOPPER AND PIOTROWSKI FOR THE W:M RATIO IN THE RORSCHACH

<table>
<thead>
<tr>
<th>Classes of W:M</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Class</td>
<td>5</td>
<td>3</td>
<td>.156</td>
<td>.68</td>
</tr>
<tr>
<td>Second Class</td>
<td>7</td>
<td>8</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Third Class</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Fourth Class</td>
<td>6</td>
<td>7</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Fifth Class</td>
<td>2</td>
<td>2</td>
<td>.000</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Piotrowski maintains that adolescents tend toward a 4:1 ratio. Since the subjects of the present investigation are adolescents, many might be expected to fall into this class.

Third Class. Subjects who have three or four times more M than W.

Fourth Class. Subjects whose W outnumber M more than 4:1. This classification is introduced in view of Piotrowski's statement: "The larger the number of W than four times the number of M, the less is the drive based on real capacity for achievement and the more has it the significance of compensation for feelings of insecurity and personal inadequacy."

Fifth Class. Subjects who fall into none of the
other four classes. This classification is needed because the other four divisions do not exhaust the W:M ratios in the present samples, e.g., ratios approximating 1:1 or those whose production of M exceeded five but failed to meet the W criterion. The data of Table VI permit but one conclusion: the present samples of high and low achievers are homogeneous in whatever personality element is measured by the W:M ratio. This does not deny that the W:M ratio may be associated with mental efficiency; but if it is, perhaps lack of efficiency is offset by other personality factors in the case of the 40 per cent of high achievers who fail to meet the criteria tested in the present study. Further research in this area seems to be indicated.7

It is evident that the W:M ratio is strongly affected by the high production of W in the present samples. A quality analysis of the W responses reveals no definite tendency toward a superiority of one group over the other. This analysis was based on Piotrowski's suggestions: (1) the degree of acuity with which the W are projected into the ink blots; (2) the degree of originality of the W; (3) the degree of differentiation (organization of parts into a whole); (4) the ease and speed with which the W are projected.

---

7 Margulies (206) failed to validate the W:M ratio with a population about four years younger than the present one.
On the assumption that differences in academic achievement are due to differences in mental efficiency when intellectual capacity is held constant, other Rorschach categories usually associated with mental efficiency were investigated. These are commonly listed as the following: F (form responses); P (popular responses); O (original responses); content categories, especially H (human figures) and A (animal figures); and M (human movement responses).

In a general way, F indicates an intellectual and unemotional approach to life. Klopfer maintains that a subject who produces only popular F's or F's of a noncommittal type has reduced mental efficiency connected with emotional elements in his personality. This interpretation, of course, like all interpretations of individual Rorschach scores, must be considered relative to other factors in the protocol.

A subject whose F responses exceed 50 per cent of the total number of responses in a record is presumably exercising excessive rigidity in his emotional control. This rigidity of control may reduce intellectual efficiency. To test the possibility of this function as a differentiating factor between high and low achievers, an F% of 50 was taken as a cutting point to dichotomize the groups. Another cut was made at 80 per cent on the grounds of Klopfer's statement:

F percentages above 80 are, as a rule, only to be found in
pathological cases, not in merely neurotic ones. Among presumably normal adult subjects any F% between 50 and 80 invariably corresponds to signs of inflexibility, or, in clinical terms, constriction with compulsive elements.

The same conclusions seem to be valid for children of school age (14, p. 234).

Piotrowski (144) has isolated various formulae of Rorschach scores for use in educational and vocational guidance in adolescence. He associates F+ with performance, persistence, authority, and ability to relate with one's own age group. Since he has considered the F+ score independently of configurations in the estimate of performance, his norms have been adopted for the present analysis.

In general, Piotrowski interprets F+ as the main measure of uniformity of performance level; the greater the F+, the more uniform and more consciously controlled is the rational behavior of the subject. In F+ of 90 or more indicates almost complete conscious control over attention; 70 - 90, about average conscious control over attention; less than 70, very poor conscious control over attention.

Since popular responses by definition require statistical validation, in scoring P the norms established by Hertz (201) for adolescents have been followed. On the quantitative criteria of P, Klopfer states:

However, it seems certain that a use of less than four popular concepts indicates a lack of conformity on the part of the subject. Not to use the most obvious con-
cepts used by the great majority of other subjects may mean
that the subject is not able to think along the lines of
other people or that he is not willing to do so.

The use of five or more popular concepts seems to
assure that the subject possesses capacity and interest in
thinking along the same lines as other people in suffi-
cient degree (14, p. 216).

Beck maintains that a person who produces less than
four popular responses is certainly "one whose thinking fails
in identification with that of the group." He also places the
upper limit of P at nine. A score of nine is sufficiently "at
the high end of the normal range to be a sign of overconvention-
ality; anything above 9 is naturally more so" (5, pp.16-17).

Subjectivity enters into the scoring of O responses
perhaps more than into any other category of the Rorschach. To
attain some degree of objectivity, the norms published by Hertz
were used when applicable. For cases not listed in her tables,
the consensus of opinion of two or three judges was followed.
Klopfer offers a quantitative norm which might be used as a
cutting point for O:

As a rule, in the record of a definitely superior subject
the number of O reaches or exceeds the number of P, pro-
vided that there is a minimum of five in either case and
that the quality of the original responses is sufficiently
high (14, p. 217).

As may be seen in Table IV, three of the Rorschach
elements associated with mental efficiency failed to differ-
entiate high from low achievers. These categories are H%, A%,
and the number of content categories entered. While the latter was not statistically reliable, there seems to be evidence that high achievers tend to enter more content categories than low achievers.

Since a numerical value has been attached to $A^2$ in the traditional clinical interpretation, chi square may be used to test the groups on a meaningful level. Subjects whose animal responses exceed 50 per cent are thought to be stereotyped mentally, sterile of thought, lacking in creative energy, conformists in thinking.

The various categories and "critical scores" discussed in relation to intellectual efficiency have been tested by chi square. The results are tabulated in Table VII. Also included in this table are two ratios: $Hd + Ad : H + A$ and $H : Hd$.

The former, according to Klopfer, indicates a critical attitude when $Hd + Ad$ exceeds half the number of $H + A$. Of the other ratio, Beck says:

The ratio of $H$ to $Hd$ becomes . . . a valuable sign of intrapsychic constriction. The healthiest respond with a clear excess of $H$ over $Hd$; the more the balance shifts in the direction of $Hd$ accent, the more hemmed in the person (5, p. 43).

For the purpose of the present investigation, "a clear excess of $H$ over $Hd$" has been interpreted to mean a ratio of 2:1 by analogy with Klopfer's norm for the ratio $Hd + Ad : H + A$.

None of the criteria differentiates the present group
**TABLE VII**


<table>
<thead>
<tr>
<th>Categories</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>F% (50% - 80%)</td>
<td>3</td>
<td>3</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>F% (&gt;80%)</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>F+% (90% or more)</td>
<td>5</td>
<td>4</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>F+% (70% - 90%)</td>
<td>12</td>
<td>15</td>
<td>.456</td>
<td>.50</td>
</tr>
<tr>
<td>F+% (&lt;70%)</td>
<td>3</td>
<td>1</td>
<td>.278</td>
<td>.60</td>
</tr>
<tr>
<td>P (≤5)</td>
<td>3</td>
<td>2</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>P (5 - 9)</td>
<td>13</td>
<td>16</td>
<td>.502</td>
<td>.48</td>
</tr>
<tr>
<td>P (&gt;9)</td>
<td>4</td>
<td>2</td>
<td>.196</td>
<td>.66</td>
</tr>
<tr>
<td>O (= or &gt;P if O or P = 5)</td>
<td>7</td>
<td>3</td>
<td>1.200</td>
<td>.27</td>
</tr>
<tr>
<td>A% (&gt;50%)</td>
<td>3</td>
<td>2</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>HD : AD : H - A (&gt;1:2)</td>
<td>3</td>
<td>1</td>
<td>.278</td>
<td>.60</td>
</tr>
<tr>
<td>H : HD (&gt;2:1)</td>
<td>6</td>
<td>4</td>
<td>.133</td>
<td>.72</td>
</tr>
</tbody>
</table>

of high achievers from low achievers; hence, the null hypothesis may not be rejected. Furthermore, the only conclusion warranted by the data in Tables V, VI, and VII is that high achievers are not differentiated from low achievers on the basis of intellectual efficiency as revealed in Rorschach scores analyzed according to the experimental design of the present
invesigation.

However, a crucial factor related to mental efficiency has not been analyzed. This is the M response. A response is scored M if movement of a living person constitutes the subject's concept. Since M is associated with the emotional life of the subject and is indicative of aspects of intelligence other than that already considered in the W : M ratio, it has been reserved for separate statistical analysis. Under the aspect of intellectual functioning, M betokens creative imaginativeness; though qualifications are necessary in terms of other Rorschach factors. As an indicator of emotionality, M signifies a tendency to live within oneself. As Rorschach workers have phrased the meaning of M, it indicates a tendency toward "inner life," by which is meant "all the different promptings from within, whether they are instinctive drives, or the creations of our fantasy and imagination, or simply anxieties" (111).

In Rorschach thinking, M is associated with introversial tendencies, with the ability of a person to adjust within himself, with "inner control." Speaking of "inner control," Klopfer says:

A well-adjusted subject of more than average intellectual capacity should produce a minimum of three M responses, even if his natural inclination goes more in the extroversial direction. If an introversial direction is indicated by the total record, the number of M responses should be five or more. Otherwise the inner life of such a subject is not rich enough to give him the necessary
poise and security for his dealings with the outer world (14, p. 231).

A mature, well-adjusted person, of not more than average intelligence, usually does not produce more than three M, unless he has very strong introversional inclinations. An adult with superior capacities should show at least five M, regardless of whether he is more on the introversional or the extraversional side, unless he limits himself to one response per card (14, p. 250).

From this it is clear that M production is a function both of intellectual maturity on a high level and of a personality type. Since the present groups are comprised of adolescents with better than average intelligence, three M might be expected in their records. Therefore, the cutting point for M has been set at three in Table VIII.

**TABLE VIII**

**TWENTY HIGH AND TWENTY LOW ACHIEVERS COMPARED ACCORDING TO CRITERIA SUGGESTED BY KLOPFER FOR MOVEMENT RESPONSES**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (3 or more)</td>
<td>16</td>
<td>12</td>
<td>1.071</td>
<td>.30</td>
</tr>
<tr>
<td>FM greater than M unless M exceeds 4</td>
<td>8</td>
<td>6</td>
<td>.110</td>
<td>.74</td>
</tr>
<tr>
<td>m (greater than 2)</td>
<td>2</td>
<td>1</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Favorable M-FM-m</td>
<td>11</td>
<td>10</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Absence of M</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Klopfer introduced two additional categories of Rorschach scores into the area of movement: FM (animals in movement) and m (abstract or inanimate movements). The rationale of these responses, as suggested by Piotrowski, is that FM and m indicate less well-integrated strivings within a person. The three movement scores may be looked upon as a continuum progressing from a well-ordered "inner life," represented by M, downward to "instinctual strivings" and "tendencies which are not well integrated in the total personality and which do not have a sufficiently strong driving power to influence the subject's handling of reality" (143). These latter tendencies are represented by m responses. Between the two stands FM, usually interpreted as "immaturity."

The desirable relationship between M and FM in an adolescent population is one in which FM does not exceed M, unless M is five or more. If M exceeds or equals five, a slight excess of FM over M is not considered significant. More than two m in a record casts suspicion on the inner adjustment of the subject. A favorable M-FM-m is one in which there are at least three M and the FM + m does not exceed 1.5 M and there is at least one FM response (14, pp. 250-251).

Hertz (98) accounts for the absence of M as an indication of a relaxed attitude toward one's own instincts or "a hostile relationship to one's instinctual drives and an
inhibited attitude toward one's own unconscious."

None of the "critical scores" in this analysis yields a significant difference. The only conclusion warranted by the data is that the two groups are homogeneous in the areas tested.

An effort was made to estimate \( M \) qualitatively. In this matter, the suggestions of Beck were followed:

In evaluating the significance of the separate \( M \) responses, it is necessary to note (a) the form quality of the percept, i.e., whether it is \( M^+ \) or \( M^- \), (b) how original or individualized the associational content is, (c) whether the \( M \) is seen in a \( Dd \) or in any very unusual portion of the figure, (d) whether the content is a part-human, \( Hd \), (e) whether there is any \( M \) in the animal content, (f) the extensor or flexor stance in the \( M \), (g) most important, the response pattern as a whole---i.e., what kind of person is engaging in the fantasy (5, p. 23).

Table IX presents the differences between high and low achievers on the basis of Beck's suggestions for the evaluation of \( M \). Instead of Beck's \( M^+ \) and \( M^- \), the form quality of \( M \) was scored according to Klopfer's method. Since Beck's \( Dd \) category embraces several categories in the Klopfer scoring, the location of \( M \) had to be rescored in all the records. Beck's last suggestion about the kind of person who is engaging in the fantasy does not lend itself readily to statistical analysis; so it has been omitted from Table IX. In interpreting an individual protocol, however, it would be most helpful. As a cutting point for 0, 40 per cent was used. This is an arbitrary quantity decided upon in the light of Beck's statement:
### TABLE IX

Twenty High and Twenty Low Achievers Compared in Each of the Categories Suggested by Beck for Testing the Quality of M

<table>
<thead>
<tr>
<th>Categories</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Level*</td>
<td>2.21</td>
<td>2.21</td>
<td>.000</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Original M (40% or more)</td>
<td>12</td>
<td>12</td>
<td>.000</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>M in Dd</td>
<td>9</td>
<td>5</td>
<td>.989</td>
<td>.32</td>
<td></td>
</tr>
<tr>
<td>M in A</td>
<td>3</td>
<td>1</td>
<td>.278</td>
<td>.60</td>
<td></td>
</tr>
<tr>
<td>M in H4</td>
<td>4</td>
<td>2</td>
<td>.196</td>
<td>.66</td>
<td></td>
</tr>
<tr>
<td>Ejector M*</td>
<td>1.41</td>
<td>1.95</td>
<td>1.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extensor M*</td>
<td>2.70</td>
<td>1.50</td>
<td>2.19</td>
<td>.05</td>
<td></td>
</tr>
</tbody>
</table>

*Since cutting scores for chi square are not available, the difference between groups is based on means.

The majority of M percepts produced by the healthy adult of average caliber are the common ones. Persons of superior endowment produce these common ones but many individualized ones as well (5, p. 24).

The obtained value of t in the category of extensor M is 2.19. Since, with nineteen degrees of freedom, a t of 2.093 corresponds to the 5 per cent probability, the data suggest that extensor M responses are associated with academic achievement. While the difference between groups is not signi-
significant for flector M responses, it may be noted that low achievers tend to give this kind of response.

Interpretatively, extensor M suggests that the high achievers are more self-assertive, active, dominant—in short, they have more eloquence than low achievers. They have the drive to put their dreams into action—an interpretation which is supported by their tendency to produce somewhat more M in Dd.

Rorschach workers consider the emotional aspects of personality under two headings: promptings from within and promptings from without, the "inner life" and the relation to "outer reality." The former is associated with movement responses; the latter, with bright color responses. In this frame of reference, M plays an important role since it is perhaps the best diagnostic indicator of what is going on within a subject, insofar as he exercises control over his basic strivings. From the analyses already completed, it may be suggested that high achievers show a slightly better inner control than low achievers.

If the K response (shading as diffusion) "clouds" in Card VII is excluded, it may be said that every K or k (shading as a three dimensional expense projected on a two dimensional plane) expresses some anxiety in the subject. However, anxiety does not enter the personality picture as a predominant factor unless at least 3K or k are present.
Other scoring symbols generally associated with emotional life are the achromatic responses: Fc (shading as surface appearance or texture, differentiated by F), c (undifferentiated shading as texture), and C' (achromatic surface color). It cannot be too often repeated, however, that in isolation these categories are practically meaningless. Speaking of the achromatic responses, Klopfer says:

Achromatic responses in general (Fc, c, and C' are indicative of depressive tendencies only if they outnumber bright color responses (FC, CF, and C) at least two to one (14, p. 243).

Table X summarizes the responses in these areas and dichotomizes the groups of subjects on the basis of "have - have not," by cutting them at the suggested points of psychological significance.

The obtained chi square of 3.683 for k corresponds to a probability of 5 per cent, suggesting that high achievers tend to produce more k responses than low achievers. The k response, like the K, is interpreted to mean "insecurity and anxiety of the free-floating type." However, since k indicates an intellectual attempt to "de-personalize" or objectify the haziness expressed in K, it may be that high achievers are more successful than their low achieving classmates in covering up their feelings of insecurity and anxiety. Perhaps, they are also more aware of their insecurity and anxiety—a fact which
TABLE X
TWENTY HIGH AND TWENTY LOW ACHIEVERS COMPARED ACCORDING TO SOME RORSCHACH SCORES ASSOCIATED WITH EMOTIONAL LIFE: K, k, c, c’ AND THE RATIO OF ACHROMATIC TO BRIGHT COLOR RESPONSES

<table>
<thead>
<tr>
<th>Categories</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>8</td>
<td>10</td>
<td>.101</td>
<td>.75</td>
</tr>
<tr>
<td>k</td>
<td>12</td>
<td>5</td>
<td>3.683</td>
<td>.05</td>
</tr>
<tr>
<td>K or k (3 or more)</td>
<td>2</td>
<td>1</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>c</td>
<td>5</td>
<td>3</td>
<td>.156</td>
<td>.68</td>
</tr>
<tr>
<td>c’</td>
<td>10</td>
<td>9</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Achromatic : Color (&gt;2:1)</td>
<td>3</td>
<td>1</td>
<td>.278</td>
<td>.60</td>
</tr>
</tbody>
</table>

enables them to cope with tension realistically and economically in terms of psychic energy. This significantly greater production of k by high achievers also suggests a reason why previous investigators so frequently found "neuroticism" higher in successful students. If k indicates greater awareness of insecurity and anxiety, high achievers are more likely to find symptoms of "neuroticism" in themselves than are low achievers who fail to recognize their own insecurity and anxiety.

In individual interpretations of the Rorschach, a
fuller picture of insecurity may be derived from a qualitative analysis of a subject's responses. Such insecurity responses are marked by evasiveness as well as by overt expressions such as: "It might be a . . . but it doesn't look like it"; "I can't see much, but I would say . . ."; "If I told you, you would think I am nuts."

In the data presented in Table XI, various types of responses indicative of insecurity and inferiority feelings have been analyzed. Included in the noncommittal responses are the easy popular responses, those made without any effort to elaborate details, and responses which rest on vague and general outlines: islands, bones, birds, leaves, trees, spattered paint. Other signs of insecurity are found in content material such as: geographical responses; anatomy; precarious positions, e.g., rocks about to tumble down; and architectural or nature responses.

Beck interprets his V (vista) score as an indicator of inferiority feelings. Klopfer's FK (shading as a three dimensional expanse in vistas or perspective) is somewhat broader than Beck's V. FK is interpreted as an introspective quality in a subject, not always damaging to the personality. Beck, however, argues, perhaps with some justification, that one who is constantly evaluating himself ends up by depreciating his own value (5, p. 33). Beck's logic may be accepted for the purpose
of the present investigation, and his score of V is included in Table XI as indicative of feelings of inferiority.

TABLE XI

TWENTY HIGH AND TWENTY LOW ACHIEVERS COMPARED FOR SOME RORSCHACH INDICATORS OF INSECURITY: NONCOMMITTAL RESPONSES, EXPRESSIONS OF INSECURITY, V RESPONSES, CONTENT

<table>
<thead>
<tr>
<th>Categories</th>
<th>High (mean)</th>
<th>Low (mean)</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noncommittal R</td>
<td>29.57%</td>
<td>29.07%</td>
<td>.09</td>
</tr>
<tr>
<td>Expressions of Insecurity</td>
<td>0.97</td>
<td>1.27</td>
<td>.38</td>
</tr>
<tr>
<td>V</td>
<td>1.71</td>
<td>1.01</td>
<td>.66</td>
</tr>
<tr>
<td>Content (islands, maps, etc.)</td>
<td>2.10</td>
<td>1.70</td>
<td>.71</td>
</tr>
</tbody>
</table>

Since cutting points for the categories tested in Table XI are not available in the literature, t is used instead of chi square to test the difference between groups for each category. To allow for the function of productivity, the difference between groups for noncommittal responses was calculated on the basis of percentage of the total number of responses given by each subject.

With nineteen degrees of freedom, a t of 2.093 is required in order that a difference be significant on the 5 per
cent level. Therefore, all areas tested in Table XI are statistically unreliable. As measured by the selected Rorschach indicators, feelings of insecurity and inferiority do not differentiate high from low achievers in the present study.

In the consideration of emotional elements in personality, the type of control a subject exercises over the forces within him and over the environmental forces he is called upon to channel must be investigated. In the matter of "inner control" as expressed by M, it has already been seen that there is little difference between high and low achievers. But there is another type of control which is called "intellectual" to distinguish it from the graceful ease with which "inner life" presumably is controlled by those who produce M. In the Rorschach, "intellectual control" is expressed by the response to the form qualities of the ink blots. The area of "intellectual control" includes particularly Fk, F, and Fc. It is generally conceded that one's control is impersonal and rigid if the F responses exceed 50 per cent of the total production. This indicates that the subject cannot afford to be spontaneous. He finds avoidance of emotional situations necessary and tries to crush rather than channelize the inner forces which arise from instincts, desires, and impulses. At the same time, however, sufficient intellectual control is necessary if the subject is to make adequate adjustment within himself and to his
environment:

No definite numerical value can be attached to the optimum requirements of this control because the degree of control necessary will vary in proportion to the amount of "vividness of his imagination, the strength of his emotional impulses in dealing with outer reality, the degree of security or anxiety, and the amount of sensuality he has to control" (14, p. 235). Speaking of the area of FK, F, Fo, Klopfer suggests:

The whole center area usually contains at least 20 per cent of the total R in records of subjects who show efficient control in their personality picture (14, p. 236).

FK and Fo are refinements of control. Klopfer interprets FK as expressive of introspection, but he also looks upon it as a "shock absorber" in the subject's relationship with his inner life. Where FK exceeds three responses in a record, there is indication of self-consciousness. Fo functions as a refinement of control in the direction of outer reality much as FK functions in the direction of inner life. Fo shows the value that a subject sets on his environment, the amount of sacrifice he is willing to make for others. In a word, Fo indicates something of a submissive and conscientious adaptation to others. It represents what is commonly called "tact."

If there is no FK nor Fo in a record, maladjustment of the individual may be suspected. However, lack of Fo is more serious than lack of FK.
In the present study, Fc favors the high achievers. From Table IV it may be seen that the difference between groups is statistically reliable at the 2 per cent level of confidence. In Table VII, however, the groups are not different on the basis of F%. Therefore, it remains for the investigator to test the other categories presumably indicative of "intellectual control." The results of this analysis are presented in Table XII.

**TABLE XII**

Rorschach Responses of Twenty High and Twenty Low Achievers Compared According to Various Criteria of "Intellectual Control"

<table>
<thead>
<tr>
<th>Categories</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>FK, F, Fc (&gt;20%)</td>
<td>0</td>
<td>0</td>
<td>.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Absence of FK</td>
<td>9</td>
<td>9</td>
<td>.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Absence of Fc</td>
<td>1</td>
<td>1</td>
<td>.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Absence of FK and Fc</td>
<td>1</td>
<td>1</td>
<td>.00</td>
<td>1.00</td>
</tr>
<tr>
<td>FK (&gt;3)</td>
<td>3</td>
<td>2</td>
<td>.00</td>
<td>1.00</td>
</tr>
<tr>
<td>FK + Fc = 1/2 F</td>
<td>7</td>
<td>7</td>
<td>.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Favorable Record (FK, F, Fc)</td>
<td>14</td>
<td>12</td>
<td>.110</td>
<td>.74</td>
</tr>
</tbody>
</table>

Besides the categories already discussed, two others, suggested by Klopfer as favorable quantitatively, appear in
Table XII. Normally, the sum of FK and Fo equals approximately one half of F. A favorable record of control will have less than 50 per cent F and the sum of FK and Fo will fall within the range of 25 per cent and 75 per cent of F.

The only conclusion warranted by the data is that the high and low achievers in the present study are homogeneous for the selected Rorschach factors indicative of "intellectual control."

Subsequent investigators have supported Rorschach's initial hypothesis that bright color responses measure the stability of emotional life. In general, the bright colors are interpreted as a stimulus similar to that of outer environment. How a person accepts the bright colors, whether he is shocked by them, whether he tries to avoid their use, whether he uses them with form qualities and with what success—all these factors are significant in determining how an individual reacts to environmental influences about him.

FC is taken as the best indicator of emotional adjustment to outer reality. This score shows that a person is ready and willing to react to emotional stimuli, but he does so only when he thinks he is rational in his actions. His emotionality is adaptable, enabling him to form adequate rapport with his

8 For a discussion of the validation studies in the area of color responses, see Hertz and Baker (99).
environment; but even when his ability to adapt falls short, he maintains the will to make the adaptation. FC reveals the latter circumstance.

CF indicates a more impulsive reaction to emotional stimuli. Rational elements are not absent in this kind of response, but the emotion is in the ascendency. Rorschach interpreted CF as "affective instability, irritibility, sensitivitiy, and also suggestibility." In itself, however, the CF response is not an adverse sign in the personality. It must be interpreted in the light of form accuracy to establish its constructive or destructive proclivity in the personality structure.

C (color without form) represents the unstable type of personality who has thrown off all rational elements from his reaction to emotional stimuli. He gives himself up to unrestrained impulse. C and CF, therefore, represent egocentric, non-adapted affectivity, the kind of reaction which one might expect of a person functioning on an instinctual and elemental level. Consequently, C and CF may be taken as expressive of immaturity relative to outer reality.

The relation of FC to CF is similar to the relation of M to FM. The former is an index of maturity of emotional control in respect to outer reality as the latter is an index of emotional maturity in respect to the forces which surge up within oneself. Therefore, emotional immaturity may be suspected
when CF exceeds FC and FM exceeds M. Adequate control of impulsiveness seems assured if M is greater than FC + CF.

Rorschach says:

FC (capability for formation of rapport), CF (affective liability), and C (impulsiveness may be united in widely varying proportions. These variations are great even within the range of normal. JFC, LIC, and OC are probably the most usual values . . . . The greater the preponderance of FC's over CF's the more stable is the affect and the greater is the adaptability and the capacity for the formation of rapport. The closer the number of CF's comes to the number of FC's, the greater the moodiness, instability and egocentricity of the subject (22, p. 34).

Quantitative criteria for measuring the degree of outer control have been proposed by Klopfer as "rough indications" of what might be expected in the area of bright color.

(1) As a prerequisite for sufficient outer control, FC must as a rule equal or exceed the sum CF + C....

(2) If the total number of all achromatic responses exceeds the total number of all bright color responses, an excess of outer control is to be expected. This reaches the point of a real "contact shyness" or overcautiousness in emotional contacts if the total number of achromatic responses is at least twice the total number of bright color responses.

(3) ...If M exceeds twice sum C, and if F exceeds 50 percent of the total R, there are indications of too little affective energy in the emotional contact with the outside world, due either to withdrawal or to repression. Where sum C exceeds twice the number of M, especially where there are only three M or less and F is below 30 percent, color responses must be very well balanced within themselves to guarantee the necessary amount of outer control (14, p. 230).

"Contact shyness" has already been analyzed. From Table X it may be seen that this "overcautiousness in emotional
contacts" as measured by the ratio of achromatic to color responses does not differentiate high and low achievers in the present study.

Various measures of outer control have been tested by chi square and the results are tabulated in Table XIII.

**TABLE XIII**

TWENTY HIGH AND TWENTY LOW ACHIEVERS COMPARED ACCORDING TO VARIOUS CRITERIA FOR SOME RORSCHACH SCORES ASSOCIATED WITH "OUTER CONTROL"

<table>
<thead>
<tr>
<th>Categories</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF &gt; FC and FM &gt; M</td>
<td>2</td>
<td>1</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>M &gt; FC + CF</td>
<td>8</td>
<td>9</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>FC = or &gt; CF + C</td>
<td>15</td>
<td>18</td>
<td>.692</td>
<td>.41</td>
</tr>
<tr>
<td>Achromatic &gt; Chromatic</td>
<td>11</td>
<td>4</td>
<td>3.840</td>
<td>.05</td>
</tr>
<tr>
<td>M &gt; 2 ΣC and F &gt; 50%</td>
<td>1</td>
<td>1</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>ΣC &gt; 2M and M = or &lt; 3 and F &lt; 30%</td>
<td>0</td>
<td>1</td>
<td>.000</td>
<td>1.00</td>
</tr>
</tbody>
</table>

In Table X the criterion for the ratio of achromatic responses to chromatic responses was 2 : 1. Although there was a difference in favor of the high achievers, the difference was not statistically significant. However, when those subjects
whose achromatic responses exceed their chromatic responses are counted, as in Table XIII, a chi square value of 3.840 is obtained. Since, with one degree of freedom, this value corresponds to a level of confidence of 5 per cent, it is suggested that an excess of achromatic responses over chromatic responses is associated with achievement in the present investigation.

Interpretative, this difference between groups in the area of achromatic responses may mean that high achievers tend toward excessive outer control. There is no conclusive evidence apparent in the data, however, that their "excess" is detrimental to their personality, at least, so far as the group is concerned. Moreover, in view of their academic record, it would seem that a balance of responses on the side of achromatic may be expressive of a type of self-control which aids scholastic success. Perhaps, this tendency to check-rein emotions stimulated by outer reality is associated with the "introversion" reported for achievers by earlier studies carried out with questionnaires.

More important, perhaps, than knowing how a person reacts to the impact of environment is the knowledge of what that impact does to personality. This effect can be measured in the Rorschach by an analysis of the form level of color responses. In the present investigation, high achievers scored an average form level of .36 on color responses as against an
average of .84 for low achievers. This would seem to indicate homogeneity of reaction to environmental impact for the two groups. It appears, therefore, that neither group finds the impact of outer reality a destructive element in the personality structure.

It was suggested above that color responses ought to be interpreted in relation to M responses. Rorschach called this relationship *Erlebnistyp*. On the basis of the M : Sum C ratio, he divided personality types into extratensive, introversive, constricted, and ambiequal. There is also a "coartative" type, by which is meant a subject who gives neither M nor color responses.9

At the Brush Foundation in Cleveland, under the direction of Hertz, a refined classification has been set up for the study of *Erlebnistyp* in adolescents. This classification proposes "to indicate the extent of extratensiveness, the depth of introversiveness, and the degree of expansiveness (dilation) or constriction" in the personality (101, pp. 4-5).

This classification is used in the present study as a basis for dichotomizing high and low achievers to investigate differences of personality structure in terms of "inner life" and reaction to outer reality. In the formulae of the type

9 For a more complete discussion of *Erlebnistyp*, see Hertz (100).
divisions which follow, "X" and "Y" refer to different numerical quantities:

**Extratensive Type**

A. Pure and very extratensive, where Sum C is greater than M by 3.0 or more and no movement is given \((OM << Y \Sigma C)\).

B. Very extratensive, where Sum C is greater than M by 3.0 or more and M is greater than 0 \((XM << Y \Sigma C)\).

C. Extratensive, where Sum C is greater than M by less than 3.0, but the formula is not constrictive \((XM < Y \Sigma C)\).

D. Pure extratensive, where Sum C is greater than M by less than 3.0, i.e., by 1.5 to 2.5 and no M is given \((OM < Y \Sigma C)\).

**Ambiguous Type**

A. Very ambiguous, where M and Sum C are approximately equal and have values of 3.0 or more \((XM = X \Sigma C), (XM: (X + 0.5) \Sigma C), (XM: (X - 0.5) \Sigma C)\).

B. Ambiguous, where M and Sum C are approximately equal and have values of 1.5 to 2.5 \((XM = X \Sigma C), (XM: (X + 0.5) \Sigma C), (XM: (X - 0.5) \Sigma C)\).

**Constricted Type**

A. Very constricted, no movement nor color given \((OM = 0 \Sigma C)\)

B. Constricted, approximately no movement nor color given \((O-1)M:(O-1) \Sigma C; (O-1) M:0 \Sigma C; OM:(O-1) \Sigma C\).
**Introversive Type**

A. Pure and very introversive, where \( M \) is greater than Sum C by 3.0 or more and no color is given (\( XM \gg 0 \Sigma C \)).

B. Very introversive, where \( M \) is greater than C by 3.0 or more and Sum C is greater than 0 (\( XM \gg Y \Sigma C \)).

C. Introversive, where \( M \) is greater than Sum C by less than 3.0 but the formula is not constrictive (\( XM > Y \Sigma C \)).

D. Pure introversive, where \( M \) is greater than Sum C by less than 3.0 (2.5 to 1.5) and no color is given (\( XM > 0 \Sigma C \)).

According to Hertz's classification, a person may be extratensive or introversive and at the same time ambiequal (0.5 in either direction). A "dilated type" is one in which \( M \) and Sum C are four or more. Evidently, "dilated personalities" may also be introversive, extratensive, or ambiequal.

Table XIV presents the number of subjects in each group who fall into the various categories of Erlebnistyp as defined by the Brush Foundation. Each of the main categories is subdivided into the suggested subcategories with a view to determining the relative strength within the groups. Moreover, the dilation and ambiequality of each category is scored. Since a dilated record is also extratensive, ambiequal, or introversive, it is clear that it is not totalled as "dilated" in those categories. It may be noted that one achiever had a pure ambiequal pattern, a ratio of 1:1.
<table>
<thead>
<tr>
<th>Categories</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure and very extratensive</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Very extratensive</td>
<td>2</td>
<td>1</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Extratensive</td>
<td>1</td>
<td>6</td>
<td>2.771</td>
<td>.10</td>
</tr>
<tr>
<td>Pure extratensive</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Extratensive and ambiqual</td>
<td>2</td>
<td>2</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Extratensive and dilated</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Total extratensive</td>
<td>5</td>
<td>9</td>
<td>1.989</td>
<td>.32</td>
</tr>
<tr>
<td>Very ambiqual</td>
<td>5</td>
<td>0</td>
<td>3.657</td>
<td>.06</td>
</tr>
<tr>
<td>Ambiqual</td>
<td>2</td>
<td>2</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Ambiqual and dilated</td>
<td>1</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Total ambiqual</td>
<td>7</td>
<td>2</td>
<td>2.294</td>
<td>.13</td>
</tr>
<tr>
<td>Very constricted</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Constrictive</td>
<td>0</td>
<td>1</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Total constricted</td>
<td>0</td>
<td>1</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Pure and very introversive</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Very introversive</td>
<td>5</td>
<td>5</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Introversive</td>
<td>5</td>
<td>5</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Pure introversive</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Introversive and ambiqual</td>
<td>4</td>
<td>0</td>
<td>2.500</td>
<td>.11</td>
</tr>
<tr>
<td>Introversive and dilated</td>
<td>3</td>
<td>1</td>
<td>.278</td>
<td>.60</td>
</tr>
<tr>
<td>Total introversive</td>
<td>14</td>
<td>10</td>
<td>.938</td>
<td>.33</td>
</tr>
<tr>
<td>Total dilated</td>
<td>4</td>
<td>1</td>
<td>.914</td>
<td>.36</td>
</tr>
</tbody>
</table>
From an inspection of Table XIII it may be seen that high achievers tend to give an ambiqual Rorschach pattern for the Erlebnistyp; while low achievers lean somewhat toward an extratensive pattern. None of the data, however, is statistically significant.

One low achiever fell into the coartative or constrictive type. It may be noted that his scholastic record in three years of high school was the lowest in the low achieving group. It may be suggested that this individual's imaginative and emotional life has been extremely inhibited.

In the interpretation of these differences in Erlebnistyp, confusion of the terms extratensive and introversive with Jung's terminology must be avoided. Jung offered his introversion-extroversion typology as a set of contraries, the one excluding the other. Rorschach's concept is rather that of a mobile personality reactive force. Introversive shows the person's readiness to react to promptings from within; extratensive indicates a responsiveness to stimuli from without. The well-balanced personality will possess readiness in both areas; though a person's "type" is set by the predominance of one over the other.

In the present investigation, the problem of Erlebnistyp is probably complicated by the developmental stage of the subjects. Since studies by Hertz, Locabi-Usteri, and others
have found that adolescents tend to change toward the introverted type with the onset of puberty, it may be that the swing toward extraversiveness in the present study is a normal adolescent development. If this is true, it might be suspected that low achievers have developed more rapidly than high achievers, and this rapidity might have influenced earlier intellectual functioning. Only a controlled longitudinal investigation can throw light on this interesting hypothesis, and the psychological research ought to be supplemented by a biological investigation. At any event, it is quite likely that the personality structure of most of the present subjects is still in a formative stage, at least in respect to "typology."

From the data presented in Table XIV, therefore, it would seem that high achievers are inclined to be more cautious about responding to outer reality. This is corroborated by the evidence of Fe, previously discussed. At the same time, they do not withdraw within themselves much more than the low achievers. Rather, they seem to stand in readiness to respond in either direction with self-control. The fact that more of the high achievers belong to the "dilated type" may indicate that they live richer lives both in relation to themselves and in relation to their environment. Their ambiequality may serve to reduce the tension of anxiety which was noted above in the interpretation of k scores.
Klopfer has suggested a more intensive analysis of Erlebnistyp. He takes the $M : \text{Sum C}$ ratio in relation to two other factors: $FM + m : Fc + c + c'$ and the percentage of responses to Cards VIII, IX, X. It is claimed that when the two ratios, $M : \text{Sum C}$ and $FM + m : Fc + c + c'$, are at variance with each other, a swing is indicated from the direction of the first, either introversive or extratensive, to the direction of the second ratio. This ratio, $FM + m : Fc + c + c'$, represents introversive and extratensive tendencies which are not fully integrated into the personality yet exert an influence on the subject's readiness to respond to stimuli from within or from without. A difference in direction between the two ratios, therefore, may be indicative of conflicts.

Percentage of responses to Cards VIII, IX, X is Klopfer's third index of introversive-extratensive tendency. The percentage of responses to these bright color cards is interpreted as responsiveness to external stimuli less under conscious control than movement or color responses. Subjects producing less than 30 per cent of their total number of responses on the last three cards tend to be unresponsive to color and therefore introversive. If they produce more than 40 per cent of their responses on these cards, they are extratensive. Piotrowski associates this percentage with academic and vocational performance. He calls the percentage an approximate
measure of the influence of the emotional state upon the amount of work a subject will do. Those who possess zeal for work may have a percentage of 40 or more; those below 30 per cent suffer a decrease in the amount of work they produce because they are troubled by lack of interest or feelings of insecurity in their work (144).

Table XV shows the incidence of high and low achievers who fell into the categories based on Klopfer’s refinement of Erlebnistyp. The swings from one personality type to another are based on changes of direction noted in the ratios M : Sum C and FM + m : Fe + c + C’. The analysis in Table XV seeks answers to two questions: Does the presence of conflict differentiate high and low achievers? What further evidence is there that the subjects of this investigation are swinging from an introversion pattern characteristic of early adolescence to an extroversion Erlebnistyp?

On the assumption that a swing, if present, will be from introversion to extroversion at the particular developmental level of the present research population, and on the further assumption that the difference of direction indicated by the two ratios tested is suggestive of conflict, one might expect the presence of conflict when the swing is from extroversion to introversion Erlebnistyp. The chi square value of .000 obtained in the present data strongly suggests that the two
### TABLE XV

TWENTY HIGH AND TWENTY LOW ACHIEVERS COMPARED FOR CHANGES IN ERLEBNISTYP PATTERNS AS REFINED BY KLOPPER'S INDICES

<table>
<thead>
<tr>
<th>Categories</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unchanging Erlebnistyp</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introversive</td>
<td>8</td>
<td>8</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Extratensive</td>
<td>3</td>
<td>4</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Ambiequal</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>11</td>
<td>12</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Change toward introversive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From extratensive</td>
<td>2</td>
<td>3</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>From ambiequal</td>
<td>1</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3</td>
<td>3</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Change toward extratensive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From introversive</td>
<td>5</td>
<td>2</td>
<td>.692</td>
<td>.41</td>
</tr>
<tr>
<td>From ambiequal</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>From constrictive</td>
<td>0</td>
<td>1</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5</td>
<td>3</td>
<td>.156</td>
<td>.68</td>
</tr>
<tr>
<td>Change toward ambiequal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From extratensive</td>
<td>0</td>
<td>2</td>
<td>.526</td>
<td>.47</td>
</tr>
<tr>
<td>From introversive</td>
<td>1</td>
<td>0</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1</td>
<td>2</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>R% on Cards VIII, IX, X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above 40%</td>
<td>3</td>
<td>2</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Below 30%</td>
<td>2</td>
<td>2</td>
<td>.000</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The groups are homogeneous on this aspect, and therefore low achievement is not associated with conflict as measured by this criterion. An analysis of the data in Table XV warrants no other
conclusion than the homogeneity of high and low achievers in the areas analyzed.

In a final effort to evaluate the personalities of high and low achievers in terms of Klopfer's three indices of Erlebnistyp, each protocol was studied with the purpose of determining the constancy of Erlebnistyp on the three indices. Table XVI represents the number of subjects in each group who agreed on two or three indices in favor of extratensiveness or introversiveness. Also included are the number of subjects, no two of whose indices agreed in favor of any Erlebnistyp.

None of the differences in Table XVI approaches statistical significance. From this analysis, the only conclusion justified by the data relative to the use of Klopfer's refinements on Erlebnistyp is that it does not serve to discriminate between high and low achievers in the present investigation.

Several attempts have been made by investigators to isolate "signs" of adjustment. Davidson, Harrower Erickson, and Munroe have each published methods of analysis through the use of "signs."

Davidson's first six signs pertain especially to personal adjustment; the other eleven, to social adjustment. Margulies (206) reports a critical ratio of 3.05 between successful and unsuccessful boys when compared on a basis of
These signs. Had she used the formula for correlated groups, however, the value of OR would have been somewhat lower.

Miale and Harrower Erickson arrived at nine "signs" common to the forty-three clinically diagnosed psychoneurotics in their study (127). These subjects ranged from fifteen to fifty-five years of age. In a later investigation, Harrower Erickson (90) added At% as a tenth "sign." She considers the presence of five or more "signs" indicative of psychoneurosis.
She also suggests a system of weighting which has been used in Table XVII of the present study: refusal to respond to a card, absence of FC, and shading shock are given a value of 3.0; M (one or less) and color shock are weighted as 2.0; F% and A% (each 50 per cent or more) and R (less than twenty) received a weighting of 1.0. When FM is greater than M, it is weighted as 0.5. This weighting would seem to be necessary because of the occurrence of these signs in the records of normal individuals.

The most commonly accepted list of predictors of adjustment and academic performance is that of Munroe. Her subjects were all girls attending Sarah Lawrence College. Her "check list" is not a category of "signs" in the strict sense but rather "a means of marshalling the salient features of the protocol quickly and systematically" (208, p. 66). From this check list a "qualitative judgment" of the record must be made. Nonetheless, Munroe has striven to make her scoring objective, setting down definite quantities for each check. Ten checks, according to Munroe, are indicative of maladjustment. Six checks or less discriminated 77.3 per cent of the girls without maladjustment in her study. However, 16 per cent of those who had more than ten checks were not maladjusted.

As may be seen from Table XVII, the subjects of the present study scored somewhat higher than the girls at Sarah Lawrence on Munroe's check list. The mean number of checks for
### Table XVII

**TWENTY HIGH AND TWENTY LOW ACHIEVERS COMPARED FOR "SIGNS" OF ADJUSTMENT SUGGESTED BY MUNROE, DAVIDSON, MIALE, AND HARROWER ERICKSON**

<table>
<thead>
<tr>
<th>&quot;Signs&quot;</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harrower Erickson (5 signs)</td>
<td>0</td>
<td>0</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Munroe (over 10 checks)</td>
<td>13</td>
<td>13</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Davidson*</td>
<td>10.50</td>
<td>11.10</td>
<td>1.05</td>
<td></td>
</tr>
<tr>
<td>Miale and Harrower Erickson*</td>
<td>2.61</td>
<td>2.52</td>
<td>.38</td>
<td></td>
</tr>
<tr>
<td>Harrower Erickson (weighted)*</td>
<td>4.60</td>
<td>3.60</td>
<td>.83</td>
<td></td>
</tr>
<tr>
<td>Munroe*</td>
<td>12.12</td>
<td>11.74</td>
<td>.18</td>
<td></td>
</tr>
</tbody>
</table>

*Since cutting scores for chi square are not available, the difference between groups is based on means.

The high achievers is 12.1; of the low achievers, 11.7. Several factors may be involved in this difference: age, sex, and background of the subjects; use of individual rather than Group Rorschach; differences in refinement of scoring. While the present investigation is not in agreement with the norms of Munroe, it would seem to be in substantial agreement with the findings of McCandless and Cronbach, both of whom used subjects more comparable to those of the present study. McCandless reports an average of 11.4 checks for high grade point men and 12.1 checks.

for low grade point men. Cronbach has not published his averages, but he says in speaking of his study at the College of the University of Chicago:

The data may have been analyzed more intensively than Munroe's records, which would lead to somewhat higher check-list scores, on the average, for this group (59, p. 67).

Since individual Rorschachcs have been used in the present study, it is likely that the check-list scores have also been affected by the greater detail made possible by such administration.

Table XVII gives the results of the analysis of the present groups for various signs of adjustment and maladjustment.

The highest values yielded by the t test applied to the data of Table XVII fall far short of 2.093 which is required for significance of difference at the 5 per cent level when there are nineteen degrees of freedom. Hence, it may be concluded that high and low achievers in the present investigation are homogeneous in respect to the various signs of adjustment for which they have been tested. Since Davidson's "signs" are positive, and a higher mean is indicative of better adjustment, it may be noted that all the "signs" favor better adjustment of low achievers. Aside from the insignificance of the differences between groups, which prevents a favorable decision for either group, it is well to remark that this apparent constancy is largely a function of the Rorschach elements considered in the
various classifications of "signs," since the same scorings are repeated in several classifications. Thus, the apparently constant favorable picture of low achievers in Table XVII is probably an artifact of the "signs" in the various classifications.

**Summary and Conclusions.** Individual Rorschach protocols of twenty high and twenty low achieving male high school seniors were compared and tested for differences in various psychologically meaningful areas. The results are the following:

1. With the exception of Fe, none of the raw scores revealed a difference between high and low achievers significantly better than chance expectancy. For Fe, however, the difference between groups was significant at the 2 per cent level of confidence, in favor of the high achievers.

2. Various Rorschach elements clinically associated with mental efficiency were analyzed. In terms of statistical significance, the results were uniformly negative. However, an analysis of human movement responses revealed that high achievers responded more frequently with extensor M. The difference between groups is significant at the 5 per cent level.

3. In the area of emotions, high achievers surpassed low achievers in k responses and in numerical superiority of achromatic responses over chromatic responses. Both of these
Rorschach elements yield differences between groups at the 5 per cent level of confidence.

4 An analysis of Erlebnistyp revealed no significant differences in the major categories of introverted and extraverted types. Analysis of several indices of conflict in the area of Erlebnistyp revealed no significant differences between groups.

5 "Signs" of adjustment and maladjustment devised by Davidson, Niale and Harrower Erickson, Harrower Erickson, and Munroe failed to differentiate high and low academic achievers. This test of difference is based on quantitative measures and cannot be interpreted as indicating lack of value in these "signs" when used to arrive at a qualitative judgment of an individual record.

Since only four of the more than 150 "critical scores" tested yielded values that correspond to a level of confidence significant at or below the 5 per cent level, the Rorschach findings of this investigation may be considered as consistently negative. If a $P$ of ten, however, is taken as indicative of a trend, the following tendencies are revealed in the data:

1. Low achievers show a tendency toward a higher FC% and a Sum C%, but not in absolute values for these scores. Both of these tendencies are significant of a difference between groups at the 10 per cent level of confidence and therefore are
not statistically reliable.

2. Low achievers surpassed high achievers in an extratensive pattern in which "Sum C is greater than M by less than 3.0, but the formula is not constrictive." However, the difference between groups is significant at the 10 per cent level of confidence indicating at most a slight tendency for this pattern to be associated with low achievement. On the other hand, high achievers excelled in giving an ambiequal pattern of Erlebnistyp in which "M and Sum C are approximately equal and have values of 1.5 to 2.5." The difference is significant at the 6 per cent level, indicative of a somewhat more definite tendency than the low achievers' extratensive trend.

In a study of larger samples from the two populations, these tendencies may prove to be more highly significant. It is improbable, at least, that the difference will lie in a direction opposite to the one found in the present investigation.

Interpretatively, from the differences noted in the data, a few suggestions may be made about the personality structure of high and low achievers. Tendencies in the data acquire some meaning in the light of more substantial differences. However, the probability of objective truth shades off into mere conjecture as the statistical probability of a difference between groups decreases. Therefore, the following interpretations, based on the more substantial statistical differences in
the data, may be looked upon as a fairly well substantiated skeletal structure of personality associated with scholastic success in the particular school from which the subjects of this investigation were selected.

Intellectually, both in regard to capacity and to mental efficiency, the high and low achievers in this study appear to belong to the same population. However, high achievers show a tendency to produce somewhat more d and Ds than low achievers, a fact suggesting greater awareness of details other than the obvious. These d responses may indicate a tendency on the part of high achievers to be more critical than their low achieving classmates.

Emotionally, high achievers appear to be more aware of anxiety and depression than low achievers. Perhaps it is this awareness that leads them to try to reason out their anxieties (k responses). In the light of their actual academic success, high achievers may be presumed to have faced their tensions and anxieties more realistically and thus to have coped more effectively with their problems.

The type of M produced by the high achievers seems to support the interpretation of their greater realism. Extensor M suggests that this group is more self-assertive, active, somewhat dominant, perhaps possessed of high levels of aspiration. This inner striving may be associated with the
tensions of anxiety and insecurity noted in the k responses. It may generate a "competitive spirit" sufficient to call forth the necessary effort for success. 10

The tendency noted in the FC and Sum C percentages suggest that low achievers look for expression of their personalities outside themselves. They tend to be more adaptable socially. Whether lack of success in school has developed social interests and graces as a defense or whether social activities have detracted from academic interests and success is a question which cannot be answered apodictically by the Rorschach date of the present study. In either event, it seems that the low achiever tends to be more responsive to environment and perhaps more spontaneous in his control. The evidence of the present investigation, however, is merely suggestive.

High achievers are less easy of mind about their environment. Their strong tendency to produce FC suggests that they are more aware and perhaps afraid of the world about them. Being more sensitive, they have more anxiety, uncertainty, and feeling of being exposed to danger. Fears may also arise from

10 Since the Rorschach gives the structure of personality, it merely indicates the presence, strength, and utilization of a dynamic force. Such a factor as "striving for a goal" involves other elements as specific motives on the rational level. What these motives are will be investigated in the TAT analysis.
awareness of their own emotional lability. They react with
cautions, feeling their way tactfully. Thus, it might be ex-
pected that a high achiever will be less apt to show his actual
feelings in public. He tends to be circumspect and critical,
perhaps more cooperative if shown reasons for persistent effort.
This attitude, however, in view of actual achievement, cannot be
interpreted as detrimental to personality development.

Typologically, low achievers appear to be somewhat
more extratensive than high achievers; while high achievers are
more inclined toward an ambivalent balance in directional tenden-
cies. This does not mean that the high achiever is completely
absorbed in his own musings to the exclusion of the world about
him. Rather, it would seem to mean that he tends to stand back
and watch which way events are going before he participates in
any activity. This is consistent with the cautiousness and
critical judgment already suggested as characteristic of the
personality of high achievers.

It has been suggested, in view of the more pronounced
extratensive tendency to be found among low achievers, that they
have developed more rapidly than high achievers. Thus, the
adolescent years of high school may have been somewhat more dis-
turbing for the low achievers; and this disturbance affected the
educational process. A longitudinal study, with the variable of
physical development controlled, would seem to be indicated.
Discussion. One of the basic assumptions of the present investigation is the validity of the "critical scores" suggested in the Rorschach literature. Results obtained on the present controlled groups of high achievers and low achievers suggest that these "critical scores" may not be critical; or they may be critical for something not directly associated with achievement. Perhaps the quest for personality elements involved in academic achievement must be carried to some other area than "personality structure." The homogeneity of structure in the personalities of high and low achievers found in this study suggests that degrees of academic achievement are not solely a function of the interplay of dynamisms within an individual but perhaps the result of effectual self-determination whereby the individual directs the forces of his personality outward to the attainment of a self-evaluated goal.

The Rorschach method may reveal much about a person's potentialities and the destructive forces which are likely to impede success—and, therefore, may be an excellent instrument for differentiation of high and low achievers when pathological conditions are involved—but it says little about specific goals toward which the individual is likely to direct his energies or about the subjective values which the person has attached to his goal. The Rorschach method is apparently adequate to determine the degree of integration in the individual...
personality structure; but since high or low academic achievement seems to be a function of something other than "personality structure" as measured by the Rorschach technique, the present investigation enters into a study of the "content of personality" as revealed by the TAT.
CHAPTER V

DESIGN OF PRESENT TAT RESEARCH

Failure of the Rorschach to differentiate personality structure of high and low achievers in the present study may be due to any one of several limitations in the design of the research. The acceptance of a Rorschach symbol for individual statistical analysis is tantamount to designating that symbol as indicative of a unitary "trait"—a concept at variance with fundamental theory in the holistic approach to personality. Unless a scoring symbol represents the same quality in every person tested, numerical values assigned in quantification are spurious; yet in the Gestalt configuration of a Rorschach pattern, the quality represented by a scoring symbol varies with the variations of the other symbols in the configuration.

The traditional use of the TAT in research seems to fall into the same error. In their search for "variables" some investigators have set up hypothetical constructs, without due regard for what the subjects are actually saying about themselves in the stories, and have interpreted the material of the protocols to fit preconceived notions. Such approaches, aside
from failure to distinguish adequately between analysis and interpretation, frequently suffer a loss of the true meaning of the thematic material and end up with numerical values of dubious psychological significance.

In initial publication on the TAT, Morgan and Murray state:

Psychoanalysis attempts to represent the underlying dynamics of personality as an interaction of forces. Each force is a need which impels the individual person to pursue a certain course of activity—a course of activity which usually involves a certain kind of object. An inhibited or repressed force with its associated impressions of objects may manifest itself in the guise of fantasy which the subject can report on, or its presence may be inferred by the analyst on the basis of other phenomena. In the latter case the analyst is apt to speak of it as a repressed unconscious fantasy. Since the exposition of such hidden fantasies is one of the fundamental aims of analysis and since, at best, the customary technic for accomplishing it calls for a long period of watchful waiting, it seems that it would be helpful if a more expeditious method could be devised...

The method...is based on the well recognized fact that when someone attempts to interpret a complex social situation he is apt to tell as much about himself as he is about the phenomena on which his attention is focused. At such times the person is off his guard, since he believes that he is merely explaining objective occurrences. To one with "double hearing," however, he is exposing certain inner forces and arrangements—wishes, fears, and traces of past experience. Another fact which was relied on in devising the present method is that a great deal of written fiction is the conscious or unconscious expression of the author's experiences or fantasies. The process involved is that of projection—something well known to analysts (130, p. 289).

From this passage it is clear that historically the TAT came into existence out of a desire for a short-cut to
psychoanalysis. Not all TAT workers, however, have accepted psychoanalytic tenets in the analysis and interpretation of the test, nor the concept of needs developed from those tenets. Even the concept of projection as understood by the psychoanalysts, and upon which Murray and others base the theory of their TAT interpretation, has not been universally accepted.¹

Under the guidance of Murray at Harvard, TAT theory developed along with the development of a theory of personality. The dynamic-mechanistic philosophy behind these theories is clearly discernible in the hypothetical constructs of needs and press. Needs are forces in the brain region. These forces are set up through biological disequilibrium, the physico-chemical nature of which is unknown. The underlying thought of the Harvard group seems to be that when science discovers the valence of each need and press, prediction of behavior will be as accurate for men as for chemical compounds. Murray defines a need thus:

A need is a construct (a convenient fiction or hypothetical concept) which stands for a force... in the brain region, a force which organizes perception, apperception, intellection, conation and action in such a

¹ Freud used the term projection to identify a mechanism by which the ego defends itself against anxiety. Only on this basis can a TAT theme, e.g., hostility, be taken as an expression of actual and specific tension in a subject. In the present investigation, interpretation is based on different assumptions.
way as to transform in a certain direction an existing, unsatisfying situation (19, pp. 123-124).

A press, on the other hand, represents an environmental influence which induces action by the establishment of a physiological disequilibrium.

We have selected the term press (plural presses) to designate a directional tendency in an object or situation. Like a need, each press has a qualitative aspect—the kind of effect which it has or might have upon the subject (if the S comes in contact with it and does not react against it)—as well as a quantitative aspect, since its power for harming or benefitting varies widely. Everything that can supposedly harm or benefit the well-being of an organism may be considered pressive, everything else inert. The process in the subject which recognizes what is being done to him at the moment (that says 'this is good' or 'this is bad') may be conveniently termed pressive perception. The process is definitely egocentric, and gives rise almost invariably, to some sort of adaptive behaviour (19, pp. 118-119).

On the basis of needs and press, Murray has isolated an elaborate list of personality variables. This list includes "28 needs (or drives) classified according to the direction or immediate personal goals (motives) of the activity," "thirty or more press," to which are added "a few inner states and emotions." Moreover, a five-point scale is suggested as a means of scoring the strength of these variables according to "intensity, duration, frequency, and importance in the plot" (209).

Sanford attempted to develop a more complete and less subjective scheme for assessing dynamic content. He introduced analysis of needs and press through hero-identification as well
as the method of estimating the strength of needs and press.
Sanford's psychoanalytic orientation and method of fractionating thematic material are evidenced in the following statement:

To note all the manifestations of needs and press, a strict analytic attitude is necessary. The fantasy must be taken sentence by sentence or even phrase by phrase, for fusions of needs are common and the elements to be observed may be imbedded in complex behavioral patterns (213, p. 38).

Sanford summarizes his procedure:

This procedure is based on the assumption that since the dynamic content of a fantasy is made up of a succession of related events, each of which is typically a combination of one need and one press, the number of these elements present is a fair index of amount of content. By noting all the needs and press in a fantasy we are able to see, as it were, "what happened," without having the issue confused by individual peculiarities in manner of describing events (213, p. 49).

Aside from its basic psychoanalytic assumptions, this method of TAT analysis and interpretation seems to labor under many of the handicaps of atomistic personality theory. After the data has been broken down into "sentences" and "phrases," each indicative of a need or press presumed to be present on the basis of Freudian projection, the problem arises of putting Humpty-Dumpty together again. This can be done only with further applications of psychoanalytic theory. Without this theory, so far as the interaction of need with need, or even need with press, is concerned, it would seem that as much of personality is lost through this scheme of interpretation as was lost in tests of trait measurements.
Murray suggests a way of restructuring the isolated needs and press. He takes each unusually high need in the stories, noting the press with which it is most commonly combined. He then observes with which needs and emotions the unusually high press most often interact. In this way he obtains a list of the most prevalent themes (need-press combinations) to which he adds any other themes which, though not frequent enough to result in a high total score for the need and press involved, seem significant for one reason or another—uniqueness, vividness, intensity, explanatory value.

To the present investigator, TAT analysis in terms of needs and press has too much the appearance of analytic and synthetic chemistry with arbitrarily "guessed" valences for vaguely identified elements. There is no incontrovertible proof for the validity of the basic assumption of this type of analysis: "what the subject gives is what the subject feels." Only on that assumption can one say that the subject is voicing aggression, hostility or other emotion in story form.2

2 Rotter found the need-press theory of TAT interpretation untenable for three reasons: "(1) it was too closely dependent upon a theory of personality which itself has not been fully validated; (2) it appeared possible that some individual differences are covered up by their method; and (3) there is a tendency on their part to neglect content material with respect to attitudes, complexes, etc." (155, p. 21).

The large majority of TAT workers, however, have
Rotter introduced a method which he calls "semi-objective":

The procedure falls into two distinct divisions: (1) the analysis of the structure of the stories, which by its nature allowed for fairly objective methods; (2) the analysis of the content of the stories, which by its nature demanded a more qualitative approach (155, p. 21).

More recently Rotter has insisted on the necessity of reading all the stories as a whole before breaking down any single story into its themes. In this way, the interpreter can roughly estimate what is likely to be important in each story. Thus, Rotter's TAT analysis (156) may be expressed in four steps.

Step I. Read the stories, keeping in mind such aspects as: coherence, predominant mood, nature of endings and their relation to the rest of the story; repetitions of them, unusual wording, unusual plot, typical attitudes, typical methods of problem solution.

Step II. Analyze each story for basic trends of repeated ideas and for certain structural characteristics, e.g., mood, disturbance of thought, concern with details.

Step III. Determine the meaning of the stories as a whole.

Step IV. Organize the obtained data so that each story is considered in relation to the others.

Harrison, who worked with Rotter, stated that his

accepted the basic notion of projection. This is particularly true of those who have applied the TAT to research problems. The pattern usually followed is to set up a system of "variables" and treat their occurrence in terms of story elements in a statistical way. See Aron (191).
method of analysis was "complex and individual and was based on a great deal of preliminary practice analysis of the stories of patients and normal subjects." He accepts neither the need-press theory nor psychoanalytic interpretations.

The approach was eclectic and emphasized common-sense psychology from an empirical point of view in that it was gradually built up from preliminary work and followed principles of interpretation which appeared to work reasonably well with practice cases. (88: p. 123)

Balkan and Masserman rejected the theory of needs and press, but their thinking is also at variance with that of Rotter and Harrison. The former authors rated the stories on the basis of "certain psychoanalytic and psychiatric concepts." Their interest lay in intrapsychic conflicts, and they focused attention on style, structure, and other formal characteristics of the stories. In a study of neurotics, they set up eighty-five criteria of which they selected ten as most objective and significant, e.g., average number of words in a story, verb-adjective quotient, certainty-uncertainty quotient, etc. (40).

In a later study of schizophrenics, Balkan concluded:

The language analysis seeks to answer three questions: "How?", "Why?", and "What?" In the present experimental configuration the answer to the first is easily attained. The technique of eliciting fantasies and the method of validation impose definite restrictions on the extent to which the defenses (Why?) and the content (What?) may be tangibly delineated and clarified. (41: pp. 240-241)

Insofar as experiments of this kind are concerned with formal characteristics of the stories independently of content,
it is doubtful whether they can be indicative of personality in the holistic sense. Studies of this type stress "words" to the exclusion or at least to the ignoring of the "meanings" contained in the words. Numerical differences may be determined between groups in this way, but the question persists, "What do the differences mean in terms of personality?"

Rapaport, too, emphasizes formal characteristics of the stories, but he attempts to integrate them instrumentally in the determination of significant content.

The formal characteristics of the story structure, and their evaluation in terms of compliance and consistency, call attention to those stories in which essential ideational content may be sought. The formal characteristics of the story content provide the tools by means of which the essential ideational content may be reconstructed (20, p. 430).

While the trend of those who turned to TAT analysis on the basis of formal characteristics seems to have been motivated by the desire for time economy and fuller assessment of ego functioning than seemed available in the need-press orientation, there were others who sought still greater complications of variables than those proposed by Murray and his co-workers. Tomkins (29) devised an elaborate scheme of scoring the dynamic content of TAT stories in an effort to reduce the deficiencies in the need-press method of analysis. His aim was to tap many "levels of generality." Thus he employs four general classes of variables: vectors, levels, conditions, and qualifiers. He
attempts such problems as: degree of variance of level, the relative frequency level, cause-effect relations level, and sequence of levels.

Any approach to the TAT which emphasizes the importance of words, phrases, sentences, and themes tends to gravitate toward a nomothetic attitude in testing. Norms become necessary. Murray recognized this need from the start and gave the average total score and the range of scores for each of the variables in the Manual. Stein (26) lists "a distribution of common stories based on a study of 88 normal adult males." Eron (196), Rosenzweig (152), Rosenzweig and Fleming (153), Cox and Sargent (56), and Whitehouse (179) have all done specific research in quest of norms.

Desirable as norms are in a nomothetic approach, there seems to be no absolute necessity to make the psychometric approach of intelligence testing the model for personality study as has been suggested by Hartman (200). In the statistical treatment of the Rorschach in the present investigation, the tentative "norms" suggested in the literature failed to differentiate high and low achievers significantly. It is just as likely that isolating TAT themes and constructing differences on the basis of frequency of departure from "norms" would prove no less sterile of results because the same theme used by two different subjects will not necessarily have the same meaning.
for each. Since there are no "right" and "wrong" answers in the TAT, each theme must be taken in relation to all the other themes if its unique meaning is to be learned by the teacher.

Rotter, as mentioned above, recognized this dependence of single themes upon the others, and Murray also saw the importance of referring the part to the whole. He writes:

each of the subject's stories was read and diagnosed separately and then the attempt was made to find a unifying theme. If such was evident, each story, if necessary, was re-interpreted and with some elimination and curtailment the series was re-arranged in such a way as to emphasize the important trends, and demonstrate their interrelations (19, p. 534).

Joel and Shapiro (106) have insisted on the need to view each expression of the subject in its total context. Their interest in the TAT is focused mainly on the way in which a person copes with his social environment. According to them, the "ego function" is studied in relation to the several social situations which are projected in the TAT stories. It would seem that their approach, like that of Arnold (38), differs radically from the approaches that depend on isolating variables to be tested.

Not every verbalization of a desire, motive, conflict, or frustration in a story is necessarily indicative of a psychological state in the subject. Rather, the subject may be giving expression to conflicts and frustrations which he feels quite competent to handle. Therefore, a mere enumeration of
such psychological states as found verbalized in story material may be misleading in a system of variables. The important fact to be noted is how the subject reacts to a given situation. Joel and Shapiro stress this important aspect in their "ego-function analysis."

In order to understand how the subject's ego functions, it would help us little if we were to classify and tally the subject's reactions removed from the context in which they occurred. Rather what we need in ego-function analysis of thematic material is a careful examination of sequence. By making use of sequence interpretation we attempt to get a picture of the process of coping with the social environment. Thus in the analysis of a given story it is at times possible to predict in terms of ego-function what will happen in the next sentence (24, p. 120).

Arnold (38) has developed a method of TAT analysis and interpretation around the "sequential analysis." Story production, in her thinking, is an activity of creative imagination and therefore an activity which is controlled by the person who produces the story much in the same way in which that person controls life situations. Each picture of the TAT offers a stimulus to be interpreted by the subject as a real or possible situation in life. Therefore, the kinds of situations which the subject projects, the way the subject views himself in such situations, how he reacts to the situations, why he does what he does, etc.—such will be the important elements to consider in a search for the answer to the question, "What kind of person is the subject?"
It is clear that Arnold's rationale differs radically from that of most TAT workers. She keeps her attention focused on the person and therefore is not apt to lose him in a set of variables. Unlike Balken and Masserman, she is less interested in the formal expression of language and more interested in the meaning of words as they tell something about the person. She is not forced to fit facts to preconceived notions and theories but is free to study what the subject says about himself in the various situations. Moreover, like Joel and Shapiro, Arnold studies the subject as his personality unfolds little by little in the series of life situations expressed in the story material. Thus, Arnold obtains "a picture of the process of coping" not only with social environment but also with intrapsychic environment. One theme leads to another, revealing the patterning

3 For a discussion of the assumptions commonly underlying TAT interpretation, see Lindzey (119).

A unique research project conducted by Shneidman (24), with the collaboration of Joel and Little, published the results of fifteen TAT methods of analysis applied to the same clinical case. Each TAT method was presented by its own author. Included in the book are analyses by: Arnold, Aron, Bellak, Eron, Fine, Hartman, Holt, Joel and Shapiro, Klebanoff, Korchin, LaSage, Rotter and Jessar, Sargent, Symonds, and R. K. White. A comparison of these various methods reveals that all consist of various combinations of the approaches discussed in the present chapter.

The editors of this research project have promised a second volume which will give the statistical analyses of the data and presumably evaluate the effectiveness of each method included in the study.
of the whole person as he functions within himself and in relation to extramental reality.

Arnold's method of TAT analysis is fundamentally clinical in that it relies on a thorough study of individual records. In the present investigation, an effort will be made to obtain significant data from the stories by Arnold's method and to treat the data statistically without loss of psychological meaning.

The main problem in clinical research lies in the need for quantification of qualities to enable the investigator to draw comparisons objectively on the basis of test performance. Among others, Wyatt (188), White (178), and Frenkel-Brunswik (74) have been interested in this problem. Murray, as has been seen, proposed a point scale rating for variables; and this has been adopted with modifications by Aron (191), Eron (70), and Hartman (200). Check lists have been used by Bellak (192), Fine (197), and Klebanoff (110). Fine uses a psychogram; Balkan and Masserman, Sargent, and White compute ratios. Fine, Klebanoff, Sargent, Cox and Sargent, White, and Wyatt quantify the frequency of responses; Aron, Bellak, Hartman, and Murray, the intensity. Eron quantifies both frequency and intensity.

While some quantification is necessary in order that a statistical difference may be established between groups in the present study, care must be taken first to isolate qualities
of constant psychological meaning. As has been repeatedly stated in this study, selection of variables on the basis of themes, sentences, phrases, and words appears scarcely appropriate for the purpose of group personality study. Only by referring each theme or expression to the whole TAT protocol, it would seem, can one avoid Wyatt's condemnation of "calculator grinding methods" (185).

The basic design of this investigation may be described as a clinical approach since each set of TAT stories has been analyzed fully according to the Arnold method without any pre-conceived set of variables in mind. This method progresses in four steps: 4

I. Synopsis of Stories. The content of each story is summarized in a sentence by abstracting the important elements of the story, omitting details. Formal characteristics such as peculiar phrases are noted.

This procedure familiarizes the interpreter with the essential elements of the story and keeps before him the relationships between the answers to the questions: what, how, why. Other TAT workers include this device in their method of analysis. LaSage (114), for example, concentrates on the central points of the plot and summarizes each story in a few words, attending to the qualities attributed to the characters and to

4 Many of the details of this method were privately communicated to the writer by Dr. Magda Arnold.
the position they occupy. However, he looks for fundamental anxieties and sets up hypotheses which he later tests in an interview. By noting any differences between the characteristics of figures in the stories and the way the patient talks about them in the interview, he aims to uncover conflicts. His method, therefore, embraces the first three steps of Arnold's method.

In Arnold's method, the summary of each story is not directly related to interpretation. Rather, the synopsis aids in the development of the other steps of the analysis and in a more rapid recognition of common elements in the themes. It is a means of getting at the core-meaning of the story as a whole.

II. Situational Analysis: Various situations are recorded according to the card numbers. These situations include: parent-child situations (father, mother, parent figures), heterosexual situations (married, unmarried), same-sex situations, situations in which only one person figures, and miscellaneous (stories about people, animals, landscapes, etc.). Only the relevant parts of the stories are chosen for description in this analysis.

In this analysis the situations which have already been summarized in Step I are picked out for more intensive study. Emphasis in the analysis is on the relationship between story characters. In the clinical interpretation of this data, avoidance of certain situations, e.g., father-son situation, may be more significant than their presence. The assumption is that each picture represents a sample situation, and the subject
will react to the imagined situation in a way that is similar to what he will do in actual life situations of the same kind. Therefore, the situations as projected are not so important, especially in group study, as the outcome of the situation. Actually, the concrete situations in the stories are largely a function of the stimulus structure;\(^5\) though they offer valuable data when closely analyzed in relation to the whole TAT.

III. Analysis of Attitudes: This step elaborates the situational analysis. Here is recorded in simple words (preferably the subject's own) what he says about people. The plot is disregarded; and we describe what the men, women, children, and authoritative figures are doing and thinking, what they are like in the stories.

This analysis seeks a deeper understanding of the subject's attitude toward social relationships. It should be noted that this is an analysis and not an interpretation of attitudes. Therefore, only what the subject says about people is recorded. What the subject means by what he says can be learned only in the light of the interpretation which is based on the sequential analysis.

In the present investigation, an analysis of attitudes

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\(^5\) In a study such as the present in which age, background, intelligence, etc. are homogeneous, one would expect the situations to mirror this homogeneity. Investigation verified this a priori judgment. In the following chapter, only the more significant results of the situational analysis are reported; although many other situations were investigated without significant results.
was made for the purpose of a more complete clinical evaluation of each subject; but the attitudes of the two groups were not directly compared because inspection of the data revealed that such expressed attitudes are apparently not associated with academic achievement. More significant than attitudes toward people, as will be seen later, are attitudes toward work, sacrifice, cooperation, and the like.

IV. Sequential Analysis: This is an attempt to treat all the stories in the sequence in which they were told as if the subject were telling a continuous story about himself. Each story is abstracted, if possible in one sentence, but now with regard to the essential outcome. Each story is interpreted in the light of the preceding stories.

In this analysis, the emphasis is upon the outcome, what the character does about the situation. The situation itself is considered apart from concrete circumstances. It is, as it were, universalized as a typical kind of situation in which the subject would react in the manner indicated by the essential outcome of the story. Thus each situation with the solution of the problem it involves may be looked upon as a sample of many real life situations of like kind; and the continuous analysis of all the stories presents a reflection of a larger segment of the personality in its totality. From this analysis an interpretation can be made with some assurance that the desires, emotions, frustrations, conflicts, rational motivation, and so forth reflected in the stories are likewise operative in the
actual life of the person. But, more important, this analysis enables the interpreter to see how the subject uses his resources to cope with his environment, both external and intra-psychic.

Since Arnold's method of analysis and interpretation differs radically in its rationale from TAT methods which rely upon dynamico-mechanistic theories of personality, it is necessary to understand the basic assumptions upon which this analysis is based. Dr. Arnold has outlined these assumptions for the author:

1. Everything imagined must have been experienced before in some way (in real life or in thought).
2. Each story with its stated outcome has a moral, proposes a conviction (either a casual conviction or one strongly held; in the latter case, more than one story will express it).
3. When the stories are formulated as propositions, they will give a statement of the person's philosophy of life.
4. This philosophy is a working philosophy, i.e., it indicates how others are thought to act or how they should act, what actions are right, or wrong, what will lead to success, what are the things to strive for.
5. Each story with its outcome contains an indication of the way in which the person handles his impulses and emotions, rather than an indication of the kind of emotions he has or their intensity.

(Therefore, using "attitudes" or "themes" without regard to outcome of stories will give emotions without indicating whether they are the person's own emotions or those of someone else of whom he disapproves.)
Neither will such procedure give any indication how the person's emotions influence his actions.

Through the use of creative imagination, the subject reconstructs out of his fund of images new combinations, selected purposefully, modified perhaps to fit the unity which the subject has in mind, and organized according to a plan. Thus, there is thoughtful control of the images, since organization according to a plan implies intellectual evaluation and self-determination in the selection of images suited for the purpose. Therefore, if the imagination is allowed to work freely, it will give an unvarnished picture of the subject's principles as applied to life situations.

However, free activity of the imagination does not mean free association. Rather, imagination is given full rein in the sense that it is not employed in the service of action. It sets up various situations and works through their complications; but since this operation is under conscious control, solutions will be found in accord with the principles which the subject would apply to a similar situation in real life. It is this process which can be detected in operation when a situational analysis is made. Furthermore, since the unity of the person imparts unity to all the situations, it is clear that the sequence of outcomes will pattern the person's system of principles used in self-direction, i.e., his philosophy of life.
From this philosophy of life the interpreter can see the subject's hierarchy of values, habitual dispositions toward modes of action, proneness to emotional reactions or reasonable control of self or of environment. This is the type of information, it would seem, which is required if the psychologist is to succeed in the prediction of human acts.6

Since TAT stories, taken individually, can be stated in propositions which express the dispositional tendencies of the subject for action in life situations, it is clear that expressions of situations in the stories are subsidiary to fuller expression of what the subject does in the situations. Therefore, the outcome of the story is the most important part to be considered. From the outcome, the interpreter can see how the subject views his relation to the situation. Every story, as it were, contains a moral which can be found only when the action, the characters, and the outcome are taken together. It is not enough, therefore, to know that the character runs away from home to evade punishment. One must know whether the evasion is successful, whether the run-away makes good or

6 Moral certitude in the prediction of human acts is possible if the person has developed the habit of self-discipline, i.e., acts according to reason; or if the person has developed the habit of self-gratification, i.e., acts according to emotions. The TAT reveals the habitual tendency toward the one or the other if the test is used to ascertain the person's goals.
suffers, whether he is forced to return or returns willingly. It is the essential outcome that gives the key to the subject's thinking in the situation.

The TAT protocol of each subject was analyzed and interpreted clinically, according to Arnold's method, but the research problem still remained: How to abstract from the forty interpretations personality factors common to one group—either high or low achievers—and not possessed to the same degree by the other group? Certain elements had to be isolated according to objective criteria if a statistical measure of difference between the two groups could have psychological significance. It was decided that the statistical treatment be made on the basis of thematic material as understood in the sequential analysis of Arnold. Such a treatment, it was assumed, would assure both objectivity and psychological significance. How the thematic material is classified and what results it yields in statistical terms are matters for discussion in the following chapter.

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7 By thematic material in the present investigation is meant the full import of the story, what the story says in terms of the subject's thinking about a particular situation and the solution of its problem. Stories considered in this way must be evaluated in terms of their outcomes. Thus, the outcome assumes a far greater importance in the present research method than it has in those techniques which consider thematic material in terms of story fragments or expressions of emotions. Moreover, the term thematic material in the present investigation must not be confused with theme as used in need-press theory.
CHAPTER VI

STATISTICAL ANALYSIS OF THE THEMATIC APPERCEPTION TEST

Thematic material for the present analysis was selected on the assumption that self-determination is finally responsible for the way in which an individual channels the energies of his mind in an academic situation. Therefore, a series of reasoned hypotheses was set up to be tested by the empirical data of the TAT stories. These hypotheses, designed to measure goal-striving, are the following:

1. Academic success depends upon the clear perception of a rational goal.

2. Academic success also depends on the strength of motivation. Therefore, it will be associated with a strong desire to achieve rational goals.

3. Academic success depends not only on the clear perception of a rational goal and the desire to reach it; it is also necessary to perceive and select the appropriate means to the chosen goal.

Empirical verification from the data of the TAT is obtained by classifying thematic material associated with goal-striving in its various aspects and by testing the difference between groups by chi square. Each group is dichotomized on the basis of a subject's having or not having the defined thematic
material in a single story. It is recognized that this procedure fails to account specifically for differences of intensity within the group or between groups; but this does not seem to be a strong objection against the method since greater intensity, judged by repetition of thematic material in a subject's record, was found by inspection of the data generally in the group possessing a given quality in a greater number of its members. Therefore, if it makes any difference in the present investigation, failure to consider intensity of a quality seems to lessen the significance of the difference between groups. Thus, any difference actually found with the present method would be a minimum difference which would probably be increased if intensity also were considered.

As a part of the initial exploratory stage of the present investigation, various parental, peer, and sibling situations were analyzed for group differences. Statistical analyses were also made of situations in which the theme was death, anxiety, emotional relationships, docility (in the sense of readiness to consider opinions of others with a view to acceptance), parental interference with vocational plans, rejection, and dependence. The purpose of this approach was to test whether categories set up without reference to outcome of stories might, in the present data, yield statistical significances. The results were insignificant, suggesting that the
traditional method of TAT analysis offered little promise in the present data. Therefore, categories of thematic material were set up and analyzed with particular attention to the outcomes of stories. These categories include stories in which some catastrophe befalls the hero. The catastrophe selected is death of a parent. These stories are analyzed for successful or unsuccessful adjustment as well as for self-reliance or dependence in time of catastrophe. Other classifications include stories of rational or emotional motivation and stories representing the presence or absence of reasonable dependence. The results of this analysis are tabulated in Table XVIII.

This table has been constructed to show the way in which each pair of opposite tendencies in the thematic material differentiates high and low achievers. The consistency of these opposite tendencies is perhaps more revealing than the statistical values themselves, since the samples studied are small. The various categories will now be discussed in detail.¹

**Reaction to Catastrophe**

*Successful versus unsuccessful adjustment.* Successful adjustment was shown in the stories in which the son, after his

¹ In the discussions throughout this chapter, analysis is kept distinct from interpretation. Analysis consists in assembling the data of the protocols and relies merely on what is said in the stories. Interpretation necessarily depends on personality theory.
<table>
<thead>
<tr>
<th>Thematic material</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reaction to catastrophe</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After death of father, son goes own way successfully, perhaps providing for his mother</td>
<td>5</td>
<td>0</td>
<td>3.657</td>
<td>.06</td>
</tr>
<tr>
<td>or he finds difficulty breaking away from mother and gives up his own ambitions or suffers failure</td>
<td>0</td>
<td>5</td>
<td>3.657</td>
<td>.06</td>
</tr>
<tr>
<td>After death of a parent, son shows self-reliance</td>
<td>11</td>
<td>2</td>
<td>7.293</td>
<td>.01</td>
</tr>
<tr>
<td>or he shows emotional dependence</td>
<td>0</td>
<td>11</td>
<td>15.173</td>
<td>.0001</td>
</tr>
<tr>
<td><strong>Rational vs. emotional motivation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother tries to restrain son by emotional demonstration, but he succeeds without suffering or loss</td>
<td>9</td>
<td>2</td>
<td>4.389</td>
<td>.04</td>
</tr>
<tr>
<td>or he accedes to mother's emotional needs or suffers in emancipation</td>
<td>1</td>
<td>8</td>
<td>5.161</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Presence vs. absence of reasonable dependence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wife (or girl) dissuades from wrongdoing; or husband (boy) goes own way and suffers dire consequences</td>
<td>7</td>
<td>0</td>
<td>6.234</td>
<td>.01</td>
</tr>
<tr>
<td>Wife (or girl) dissuades from crime, violence, etc., or persuades to acceptable action, e.g., to undergo necessary surgery, to assume responsibility</td>
<td>12</td>
<td>1</td>
<td>11.396</td>
<td>.001</td>
</tr>
</tbody>
</table>
father's death, carries out his own plans for the future but makes thoughtful provision for his mother, if necessary. Unsuccessful adjustment is shown in stories in which the son, after his father's death, finds greater difficulty in breaking away from his mother to make his way in the world. He may give up his own ambitions or strike out for himself only to meet failure. It can be seen from Table XVIII that successful adjustment occurs in stories told by five high achievers and by no low achievers; while unsuccessful adjustment occurs in stories told

2 Both high and low achievers have a high prevalence of situations in which death takes a parent. This incidence of death themes is common in an adolescent population. The frequent recurrence of stories in which a father dies and the son is called upon to assume responsibility for the mother's welfare suggests the presence of frequent Oedipal situations; yet, on closer analysis, such an interpretation, apart from its reliance on an unproved theory of personality, is not warranted in the present stories.

These stories of a father's death emphasize the need for freedom from theoretical bias in the interpretation of the TAT. If one considers only the fact that an adolescent son tells a story in which a father dies and a mother needs a son's care, under pressure of psychoanalytic theory one might be tempted to interpret the situation as Oedipal; whereas the story as a whole apparently says something quite different. Death of a father is seen as a catastrophe threatening to the son's plans and ambitions. The Oedipal interpretation of the theme fails to differentiate the two groups; the other interpretation, when based on the outcome of the story, yields a difference significant at the 6 per cent level of confidence. The latter interpretation supports the hypothesis of goal-striving; the only conclusion to be drawn from an Oedipal interpretation would be the high incidence of Oedipal conflicts in this particular adolescent population—a conclusion scarcely supported by other evidence.
by five low achievers and by no high achievers.

The value of chi square for each of these themes is 3.657. Since there is one degree of freedom, this represents a level of confidence of 6 per cent for maintaining homogeneity of groups. Thus, successful versus unsuccessful adjustment themes differentiate high and low achievers, though only to a moderate degree.

A similar analysis of themes in which a mother dies yielded results of no statistical significance.

Interpretation. A tentative interpretation of the difference between groups is all that can be offered at this time. It would seem that in these stories the father's death represents a loss of external or economic security. Low achievers see the catastrophe as preventing the fulfillment of their desires. If they go ahead, they expect to fail. In their stories, should a son leave his widowed mother to follow his own vocation, the mother may go insane, commit suicide, languish; or the son himself may meet an equal calamity. High achievers are more ready with reasonable arguments to convince mother of their intentions or to make some adjustment in their plans to care for a mother's welfare. They seem to view the catastrophe as a challenge to be met, and their dispositions expressed in story fashion reveal a readiness to meet the challenge. They seem to feel that they can encounter misfortune realistically and
successfully. Rather than abandon their plans entirely, as the low achievers seem inclined to do, high achievers are willing to compromise, especially when duty or reason dictates such a course.

Low achievers, on the other hand, are ready to quit a goal in the face of opposition. With them it is a question of all-or-none. They scarcely consider compromise or an alternate plan. Consequently, they see only complete success or complete failure, a view which may make them easy prey for frustration.

**Self-reliance versus dependence.** Death themes were further analyzed in order to estimate the degree of self-reliance or dependence in the subjects. For the sake of objectivity, criteria were set up according to which all stories of each group were analyzed. If a subject met one of the criteria, he was classified as self-reliant or dependent respectively. Some subjects fell into both categories.

**Criteria of self-reliance.** After the death of a parent, a child

1. Assumes responsibilities and makes an adequate adjustment;
2. Turns the catastrophe to a useful end by striving to eliminate the evil that brought about the parent's death;
3. Follows a previously chosen career despite another's emotional needs;
4. Looks upon a parent's death as a blessing in disguise—not as
an escape from restrictions for himself but as freedom from pain, mental or physical, for another.

These criteria indicate a reasonable assumption of responsibility for one's own actions. Thus, revenge, stubbornness, hatred, or any other undesirable emotion is not interpreted as indicative of a conviction about one's self-reliance. On the other hand, the following criteria of dependence indicate an emotional reliance on another. This emotional dependence is such that it reduces the story character's chances for success.

**Criteria of dependence.** After the death of a parent, a child

1. Makes an outward adjustment but suffers emotionally because of another;
2. Relies on another in grief--there is no mention of any adjustment other than the mutual consolation shared with another--
3. Turns to another for assistance in solving problems;
4. Commits suicide or meets some other drastic end because of the loss;
5. Gives up own ambitions or goals because he cannot bear the suffering of another;
6. Waits for another to make a decision about his freedom to pursue his own ambitions.

A value of 7.293 for chi square was obtained when high achievers were compared with low achievers on the basis of
the criteria for self-reliance in thematic material dealing with death themes. This corresponds to a level of confidence of .01, indicating that self-reliance as expressed in thematic material is strongly associated with high academic achievement.

When the two groups are compared on the basis of criteria for emotional dependence, a still greater difference appears. The obtained value of 15.173 for chi square corresponds to a P of .0001. The only conclusion supported by the data is that the present criteria for emotional dependence in death themes is very strongly associated with low academic achievement.

Although a relatively small amount of the total story material is considered in the above analysis, it would seem that selection of death themes for special treatment is justifiable on the grounds that approximately 60 per cent of the subjects told stories of this kind.

**Interpretation.** In the rationale of the TAT which is accepted in the present investigation, the differences between groups on the basis of thematic material associated with reasonable self-reliance and emotional dependence suggest several personality differences between high and low achievers.

High achievers seem to feel that in case of catastrophe they can assume responsibility and rearrange their lives without becoming emotionally crippled. Thus, self-confidence
is manifest. Persons of this kind may enjoy a challenge since they see an opportunity to try their strength. But more important, it would seem, is the positive way in which high achievers meet a challenge and take action to overcome threats to their security. To do this they tend to focus attention upon the threatening situation itself and not upon themselves. This facet of their personality becomes clearer in subsequent analyses and interpretations.

Low achievers give a personality picture almost diametrically opposite to that of high achievers. Rather than face catastrophe as a challenge to be met, they tend to focus attention upon the emotional turmoil generated by the situation. Thus, they feel inadequate in difficulties and give way to feelings and emotions which further impede successful adjustment. Although low achievers may not openly admit feelings of inferiority, they reveal such feelings by their reactions to adverse circumstances. Emotional disturbance impedes constructive action. Thus, desire to put forth effort at a time when effort is especially needed is lacking. The low achiever's chief recourse, it appears, is to seek solace in the comfort of another. They have become passive, perhaps because they look more to themselves than to the task to be accomplished.

Rational versus emotional motivation. From the statistical analysis of emotional dependency, it seemed likely that
thematic material expressing such dependence might appear also in stories that do not deal with death. Stories were examined in which the emotions of another influence the actions of the story character, e.g., stories in which a parent or girl friend tries to control a boy's behavior through tears, whining, recall of past sacrifices or favors. These themes frequently occur at the parting of a boy for military service, for marriage, or for the pursuit of a vocation.

The stories were analyzed to find whether reason or emotion was the dominant influence in the character's decision. If a son, despite his mother's tears and pleas, follows his own reasonable course of action and succeeds, reason is considered dominant. If he accedes to his mother's emotional appeal or goes off only to fail in his purpose or to suffer misfortune, emotion is considered to be the dominating factor.

When a comparison of the groups is made for situations in which reason dominates, despite the emotional demonstration of a mother, the obtained value of chi square is 4.389. The difference between the groups, therefore, is significant at the 4 per cent level, in favor of high achievers. Stories in which emotion controls behavior are told more frequently by the low achievers. The chi square value for the difference between groups is 5.161, significant at the 2 per cent level of confidence. Thus, the data suggest that high achievement is associ-
ated with stories of independence from emotional domination, and low achievement is associated with stories of submission to emotional domination. Furthermore, this analysis seems to support the findings from the previous analysis of death themes.

Presence versus absence of reasonable dependence. The role of reason in the personalities of high and low achievers was further investigated by an analysis of those stories in which a character relies on another's judgment. In such stories, it is not the other person who dominates the situation but rather the reasons presented by that other person. Thus, for someone to agree to a reasonable request indicates his reasonableness. Reason rather than feeling constitutes the motive for action. Therefore, a category, reasonable dependence, was set up by selecting stories in which submission to another's will was brought about by reason rather than by emotion. For instance, someone dissuades from crime or violence, implying that crime and violence are unreasonable, or someone persuades a character to a positively desirable action such as the assumption of his responsibility or assent to necessary surgery. In these stories, the hero's choice is influenced by a rational goal, and he cooperates with another primarily because the other person is reasonable.

Stories portraying the hero as amenable to dissuasion from a morally reprehensible or socially unacceptable goal
significantly differentiate the groups. The value of 6.234 obtained for chi square corresponds to a probability of .01 for the difference between high and low achievers, suggesting strongly that high achievement is closely associated with stories of this kind. The difference becomes even more pronounced when to these stories of dissuasion from an unreasonable course of action are added stories of persuasion to a reasonable course of action, with or without moral implications (chi square = 11.396; \( P = .001 \)).

It may be noted that since the present analysis is based on stories in which women influence men to reasonable action, the present data also suggest a favorable attitude toward women on the part of high achieving boys in the school studied. They cast women in the role of leading men to moral or reasonable action; and the guidance of women is generally accepted.

**Interpretation.** Analysis of reactions to catastrophe has already been interpreted; but in the light of other elements found to differentiate the groups significantly, it would seem that the data of Table XVIII permit a more extensive interpretation of the personalities of high and low academic achievers.

Low achievers seem to feel themselves somewhat at the whim and mercy of "fate," not in a starkly fatalistic sense; but
they appear to take for granted that environmental influences control and direct the course of their lives in such a way that there is little they can do by way of self determination. Thus, perhaps, they hesitate to set an ambition before themselves for fear that they shall have to face failure eventually. At the same time, they look for security in dependence, perhaps in dependence upon a mother who represents for them love and affection. Rather than abandon that security, they tend to submit their wills and judgment to her wishes or emotional needs. This dependency of the low achiever is primarily on an emotional level. There is, as it were, an emotional communication, rather than a rational communication, between parent and child in the stories, possibly indicative of the low achiever's social relationships in general.

Further investigation through extended case histories might reveal actual parental control has been exercised on the emotional level throughout childhood. Whether or not this proves to be the "causal factor" involved in the personality development, it seems clear that low achievers tend to rely more on their emotions than on reason in the making of decisions. This does not mean that they are more attuned to the emotional elements in their environment than are high achievers, but they respond to the emotions of others with less deliberation. It might be expected that they likewise respond to their own
emotions more impetuously. In the sense that they tend to be
dominated by emotions rather than to control them in accord with
reason, low achievers may be said to be less emotionally mature
than high achievers.

Furthermore, absence of themes in which the hero
follows sound advice, suggestions, and arguments seems to indi-
cate that low achievers try to create the impression of complete
independence on a behavioral level. They seem to think that
self-reliance means independence not only from people but from
right reason as well, that it means doing what one wants to do
rather than what one ought to do. This attitude might be ex-
pected to find expression in bluffing, stubbornness, refusal to
cooperate. The impediment to academic achievement in such an
attitude is not difficult to see.

This inclination to work on an emotional level may
produce in low achievers a deficient sense of responsibility
both in relation to themselves and to others. Fear, and possibly
other negative motivation, may mean more to them than a positive
goal to be attained by striving. Thus, persistence suffers.
All this is suggested by TAT stories of emotional dependence in
which low achievers show a readiness to abandon their own plans
or an expectancy of evil consequences should they strike out for
themselves. Confirmation of this interpretation must await
further analysis and interpretation of other thematic material.
High achievers tend toward a different view of their own ability to control situations. Fully cognizant of the possibility that circumstances beyond their control may at times interfere with their plans, they nevertheless do not contemplate abandonment of the plans; rather, they look for ways of circumventing or overcoming obstacles. This they do by concentrating on the goal itself and making all else subservient to that goal. Dependent on reason, more than on emotion, they appear to be less self-centered than low achievers, more confident in their own ability to solve a problem. Fear of consequences plays a minor role in their decisions because their attention is focused more on the end to be attained than on the pleasure or pain to be expected from loss or possession of an object or person.

Since reason is more dominant than emotions in their TAT stories of dependent and independent situations, it might be surmised that high achievers are more ready to assume responsibility for themselves and for others. Their careful picking of a path through complex circumstances, their long range planning and adherence to adequate means directed toward a goal bespeak greater intellectual and emotional maturity than is indicated by the low achievers.

Intellectual and emotional maturity of high achievers is further evidenced in their reasonable emancipation from a mother's emotions as expressed in the TAT stories. The process
of psychological meaning, so often traumatic in the adolescent years, would seem to be more advanced in the group of high achievers. All this is suggested by those TAT stories in which high achievers, recognizing situations which might elicit responses of dependency, solve the problem successfully by the accomplishment of their own purposes—not unmindful, however, of another's rights and feelings, yet independent of those feelings for the good of all concerned. This interpretation, likewise, must await further corroboration and elaboration following analysis of additional thematic material.\(^3\)

High achievers appear to be more amenable than low achievers to arguments or persuasion when the object of conviction or persuasion is to accomplish some moral or socially acceptable end. They are more ready to accept the reasons of another, perhaps, because they recognize the desirability of

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3 The thematic material designated as *Reasonable dependence* in Table XVIII not only contributes to an understanding of the personality of high achievers but serves as well as an illustration of how the present method of analysis differs from the traditional ones. In Table XVIII, the stories classified as *Reasonable dependence* revolve about acceptance of arguments or reasonable pleas of another. In the traditional classifications of variables, this kind of theme would probably be listed as submission, perhaps with the implication of dependence, for such it is. Taken in its whole context, however, the type of dependence indicated by the thematic material acquires a richer meaning. This meaning would be lost in a cold atomization of the record into undifferentiated variables, without regard for the specific kind of dependence or the circumstances under which it is evoked.
the goal, the objectivity of the arguments or persuasion. Thus, they really conform to reason. They are dependent not on another person but on reason as presented by another. Therefore, under reasonable persuasion, the heroes in their stories give up crime careers, stop hostilities toward others, let go of unreasonable attitudes, and the like. Briefly, high achievers in the present study seem to reach a better balance between dependence and independence because reason more often determines the direction of many of their decisions.

All the evidence thus far interpreted supports one general conclusion: low achievers tend to function primarily on an emotional level; high achievers are more inclined to function on a reasoned level. However, despite the highly significant statistical results, caution must be exercised in generalizing beyond the restricted population of the study.

Rational Motivation

Early in the present investigation it was hypothesized that academic achievement is associated with rational motivation. Such motivation is on a conscious level. The person is moved to act by the goodness of an object or experience. This goodness is present in the object whether or not it is recognized by the person; but the person is not affected by objective goodness unless he knows it. Therefore, two factors are
necessary for a motive: the object or experience must be good in itself—useful, pleasurable, or suitable—and it must be known as good by the individual. That which is known as good, and consequently is desired, is called a value. An appreciated value which influences a person to act is a motive. 4

Values are relative since they derive their strength from the way the objective good is intellectually grasped by the individual. Therefore the strength of a motive depends more on the subjective meaning attached to a good than it does on the objective goodness itself. Moreover, a person can change his values and does so in the activity called deliberation. Therefore, in the last analysis, it is not the strength of the motive that determines behavior but rather the person himself who determines which motive shall have greatest weight. In the person acting reasonably, this final self determination will be made in accord with principles which are themselves generalized values to be used in making decisions.

Goal-directed striving. All human activity begins with a goal. A man must know where he is going before he can advance. Even the person who walks about aimlessly, without a

4 Modern American psychologists ordinarily stress a different concept of motivation. Relying on the biological sciences, they emphasize the role of "drives," feelings, and emotions when speaking of motivation. Much of the latter "motivation" is common to men and animals. Rational motivation is specifically human.
definite destination, has at least the vague goal of being some place other than his present location. He might be said to have a negative goal. He knows what he does not want; though he may not know what he wants.

The man with a definite goal in mind, however, may be expected to conform his actions to a pattern designed to accomplish that goal. He uses means calculated to reach an end in view. If he acts reasonably, wanting his ultimate objective, he will select and choose more immediate objectives along the way in order finally to reach his destination. It is this reasonable choice of lesser goals as means to a final objective that we call prudence, a virtue by which a man selects the proper means to a proper goal. The objective value, therefore, of any means will be in proportion to its effectiveness in the accomplishment of the desired end. When the subjective value estimated by the person agrees with the objective value in the thing itself, a man may be said to be facing reality. To do so, he must seek to conform his mind to the objective value of the extra-mental world and not seek to conform the extra-mental world to the subjective value with which he regards that world.

Possible differences between high and low achievers in the way they perceive their goals and strive toward them are revealed in the categories summarized in Table XIX.
### TABLE XIX
ANALYSIS OF GOAL-DIRECTED STRIVING IN THE TAT STORIES OF TWENTY HIGH AND TWENTY LOW ACADEMIC ACHIEVERS

<table>
<thead>
<tr>
<th>Thematic material</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectivity vs. subjectivity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objectively valued goals with adequate measures taken toward success</td>
<td>18</td>
<td>8</td>
<td>8.901</td>
<td>.003</td>
</tr>
<tr>
<td>Subjectively valued goals with emphasis on personal considerations</td>
<td>4</td>
<td>13</td>
<td>6.548</td>
<td>.01</td>
</tr>
<tr>
<td><strong>Self-denial vs. self-centeredness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision despite sacrifice</td>
<td>17</td>
<td>6</td>
<td>10.230</td>
<td>.002</td>
</tr>
<tr>
<td>Emotional decisions without suffering</td>
<td>7</td>
<td>14</td>
<td>3.331</td>
<td>.07</td>
</tr>
<tr>
<td><strong>Modification vs. rigid adherence to plan</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goals are modified in accordance with circumstances</td>
<td>13</td>
<td>4</td>
<td>6.548</td>
<td>.01</td>
</tr>
<tr>
<td>Rigid adherence to previous decision despite change in circumstances</td>
<td>4</td>
<td>12</td>
<td>5.104</td>
<td>.02</td>
</tr>
</tbody>
</table>

**Objectivity Versus Subjectivity**

Objectively valued goals are recognized in those TAT stories in which a character goes out to attain a purpose, to accomplish a task, to win a reward. The emphasis is on the goal and not on the person's satisfaction in reaching it. The person
may be said to be task-oriented. Adequate measures are means that are demanded by the objective situation. If a son stubbornly insists on going away to school because that is what he wants, regardless of circumstances or because he desires to prove to his parents that they are wrong in hindering his education, the story does not fit into this category. Likewise, if the emphasis in the story is on the emotional strain of separating oneself from home, rather than upon the positive pursuit of an ambition, the theme is not included in this category. A successful conclusion must be reached in the story through reasonable control of environment and through adoption of means adequate to successful accomplishment. Thoughtful planning, in keeping with the limitations of reality, must be explicitly mentioned or clearly implied.

As Table XIX shows, almost all the high achievers have stories of this type. Relatively few low achievers use this theme. The difference between the two groups is significant at the .003 level of confidence, with a value for chi square of 8.901.

Subjectively valued goals. This category includes all thematic material which portrays the story character's desire to make a choice solely because of personal considerations. Advised or ordered to some course of action, he mulls over his own reas-sons, stubbornly resists or procrastinates unreasonably, develops
arguments within himself for noncompliance, conforms to the will of another sullenly or not at all. He may resist pressure in a task because he has set his heart on something objectively less important, e.g., he slips away from his violin practice to play baseball. These stories depict the hero as self-oriented rather than task-oriented. There are times, of course, when escape is in keeping with reason. Such situations would not fall into this category since they have a positive and reasonable purpose, for instance, to flee from an imminent atom bomb attack for the sake of self-preservation or to withdraw from a tavern brawl out of a commendable regard for one's own reputation.

The term subjectively valued is used to indicate that attention is turned away from the objective value of the goal and is focused more on the psychological reaction to it, as though that reaction and not the intellectual appreciation of a value were the chief motive. Therefore, this category provides a measure of egocentric motivation. Here the storyteller values

5 Even motivation of this kind is rational, a fact frequently disregarded by modern psychologists. The emotions, feelings, attitudes, do not necessarily determine a person's decisions; though they might exert an influence on the final choice of the person. The individual who submits to their influence, contrary to reason, is one who has set so high a value on self gratification that he prefers to follow their inclinations rather than to oppose them at the sacrifice of comfort. This is analogous to saying that he prefers the pleasure principle dictated by the organism to the reality principle dictated by reason.
personal factors above all other considerations. This is indicated very clearly by the outcome of the story which is favorable to the hero despite his selfishness. If he is punished or fails in his purpose, the story is not counted in this category.

According to Table XIX, low achievers give this kind of themetic material more frequently than high achievers. The chi square value is 6.548 which indicates a significant difference between the two groups (\( P = .01 \)).

**Self-denial Versus Self-centeredness**

**Decision despite sacrifice.** Themes of this kind are characteristically those in which a man follows duty or some other reasoned motive with consequent loss or suffering to himself or to a loved one. This loss is not merely a temporary emotional strain. It includes such calamities as physical injury, death, loss of love. The primary goal may or may not be reached in these stories. The important aspect is the hero's willingness to deny himself or to make a sacrifice as a consequence of a reasonable decision. The hero struggles on despite hardships, making his farm a success because he does not want to leave the farm and accept an easier job in the city; or he sacrifices pleasure so that he can become a great musician through long and arduous hours of practice.

From Table XIX it may be seen that the majority of
high achievers give at least one story of this type; while few of the low achievers do. The difference between groups is highly significant (chi square = 10.23; P = .002).

Emotional decisions. In this category are included stories in which the story character acts contrary to reason, fails to think through a situation, makes an impulsive decision. Forced to play the violin, for instance, he "bounces it off the wall and runs out." Also included in this category are stories in which the narrator intrudes himself into the story to solve the hero's dilemma on a superficial level, e.g., "From the look in his eye, I would say that he goes back to his wife." In these stories, the hero abides by his decision without adverse circumstances. Should he change his mind after reflection, the story is not included in this classification because then the character presumably acts on reasoned principles: a husband argues with his wife, walks out, but returns after "thinking it over."

According to the present data, there is a slight tendency for thematic material of this kind to be associated with low achievement (chi square = 3.331; P = .07).

Modification Versus Rigid Adherence to a Plan

Modification of plan in accordance with circumstances. Thematic material selected for this category includes stories
in which the main character changes his ambition or life's goal because of death, financial failure, or other circumstances over which he has no control. As is evident from the nature of the theme, adaptability to circumstances and not vacillation of purpose is the criterion for inclusion in this category. Furthermore, modification of plans and not abandonment of plans is required.

Again, the data summarized in Table XIX show that more high achievers than low achievers give stories of this type. The difference between the two groups is significant at the .01 level of confidence (chi square = 6.548).

**Rigid adherence to a previous decision.** Despite circumstances which call for an adjustment of plans, the hero continues to strive for a previously selected goal. This type of behavior fails to take reality factors into account and suggests an inability or unwillingness to adapt oneself to environmental changes. Included in this category are stories of suicide after failure, insistence on revenge, refusal to repent or to heed advice, obsessive-compulsive urges, constant work without regard for friends or family, speeding without concern for warnings, premonitions, feverish activity. There is a close affinity between this type of story and that of purely subjective motivation. In both kinds of story the character does not or cannot weigh values objectively. The stories differ, however, in at
least one respect: in stories of purely subjective motivation the character is in a quandary about all action and seeks motivation from his personal feelings; in stories of rigid adherence to a single purpose, the character has already made a decision about one course of action and now refuses to change his course despite a proposal of an objectively superior goal. He insists, for instance, on playing ball to the exclusion of study. In this category the outcome of the character's singlemindedness is without adversity despite his unreasonable attitude.

A chi square value of 5.104 was obtained for the difference between the two groups. This difference is significant at the 2 per cent level of confidence, indicating that thematic material of this kind is associated with low academic achievement.

Since the type of thematic material analyzed in Table XIX indicates a difference between high and low achievers in their intellectual, volitional, and emotional relation to objective goals, it was thought desirable to investigate whether these statistical differences would persist if "impurities" were eliminated from the calculations, that is, if those subjects were eliminated who express clear objective goals in one story and strong subjectivity in another. Such an analysis, given in Table XX, may be looked upon as a measure of intensity.
TABLE XX

COMPARISON OF THE INCIDENCE OF HIGH AND LOW ACHIEVERS WHO ADHERED TO ONLY ONE KIND OF MOTIVATION IN TAT STORIES REPRESENTING GOAL-STRIVING

<table>
<thead>
<tr>
<th>Thematic material</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectively valued goals and adequate means, but no stories with subjectively valued goals</td>
<td>15</td>
<td>4</td>
<td>10.025</td>
<td>.002</td>
</tr>
<tr>
<td>Subjectively valued goals, but no stories of objective goals and adequate means</td>
<td>1</td>
<td>9</td>
<td>6.533</td>
<td>.01</td>
</tr>
<tr>
<td>Decisions with sacrifice, but no emotional decisions</td>
<td>11</td>
<td>2</td>
<td>7.293</td>
<td>.01</td>
</tr>
<tr>
<td>Emotional decisions, but no decisions with sacrifice</td>
<td>0</td>
<td>10</td>
<td>10.800</td>
<td>.001</td>
</tr>
<tr>
<td>Modification of plan, but no stories of rigid adherence to a goal</td>
<td>12</td>
<td>2</td>
<td>8.901</td>
<td>.003</td>
</tr>
<tr>
<td>Rigid adherence to a goal, but no stories of modification of plan</td>
<td>3</td>
<td>10</td>
<td>4.103</td>
<td>.04</td>
</tr>
</tbody>
</table>

A comparison of Tables XIX and XX reveals that the differences between groups tend to be heightened when "pure types" are isolated. This is particularly true in the case of emotional decisions. In Table XIX it may be seen that seven high achievers recounted stories in which the problem was solved
by an emotional decision. From Table XX, however, it appears that all these seven subjects also told stories in which decisions led to sacrifice. It may be reasonable to suggest that even these high achievers, though they occasionally give in to emotion, possess more mastery over their impulses and more readiness to follow an ideal at the cost of personal sacrifice than do the low achievers. It will be noted that all the differences in Table XX lie in the same direction as in Table XIX.

**Interpretation.** The foregoing analysis of TAT records relative to goal-striving reveals highly significant differences between high and low achievers. Some of the data serve to confirm earlier interpretations based on restricted areas of thematic material. With respect to the category of Goal-striving, the following personality delineations seem warranted by the present data.

High achievers appear to be more aware of the relation between ends and means than are low achievers. They see more clearly what they want and realize more fully the steps required for the attainment of their goal. Their recognition of objective values leads them to be decidedly task-oriented. One might expect the high achiever, once he has decided on a goal, to take the necessary steps toward his chosen destination and not to dissipate his energies with needless efforts to hasten the day of accomplishment.
High achievers are more ready to make sacrifices. They realize that they cannot have everything and so in their decisions are prepared to forfeit an alternative goal. Confronted with a choice between two values, they recognize the impossibility of having both and willingly forego one for the sake of possessing the other. Thus, they are free to make decisions and to avoid conflicts which, in a study situation, might hinder concentration in one who cannot separate himself sharply from the alternative occupation which he might be enjoying if he did not have to study.

High achievers, while they set high values on their goals, are flexible and can direct their energies toward success in another pursuit if and when circumstances demand an alteration of plan. This suggests a greater capacity for the avoidance of frustration on the part of high achievers. They are more apt to decide a matter on the basis of objective evidence and objective value, controlling their impetuosity until such time as they can evaluate the situation in terms of principles and ideals. This greater object-reference prior to decision enables them to reason more effectively about the adequacy of means, to deliberate more fully, and to choose more freely. In short, the high achiever lives more securely because he has learned to direct his life by reason.

Functioning on a more rational level, high achievers
enjoy greater assurance about the attainment of their goals. As a consequence, they enjoy increased freedom and elasticity in their decisions. If modifications of plan are required by circumstances, they are ready to make the modification, directed primarily by the end in view and not by personal feelings.

Basically, then, the success of the achievers in the present study would seem to be due, not to the presence or absence of feelings, emotions, attitudes, or other "structural elements" of personality, but to the way in which the achiever employs reason in his self determination. His emotions, therefore, become "driving forces" toward the desired goal, constructive rather than destructive of mental efficiency.

Low achievers, on the contrary, may see their goals clearly, but they fail to concentrate sufficiently on the necessary means at hand. They fix their attention on the subjective evaluation of the end in terms of personal satisfaction or gratification without due consideration for the objective value of the goal itself. They are concerned with immediate results and impatient about delay. Reluctant to sacrifice a possible goal, they are more prone to conflict and consequent impairment of mental efficiency. They want "to have their cake and eat it." As a result, they suffer greater loss of security than do high achievers because they fail both in personal satisfaction and in the attainment of objective values.
Evaluation of goals in terms of subjective gratification, without sufficient regard for objective values, leads them to an over-emphasis on the emotional value of a goal. Like children, low achievers give as a satisfactory reason for their desire the immature response, "Because I want to." Their impetuosity is likely to generate frustration. So, they exert more physical than mental energy; and the former is largely under the direction of emotional urges, uncontrolled or poorly controlled by reason.

Deficient in rational control, the low achiever plunges on toward a goal, concentrating mostly on the end to be achieved. Thus, he may overlook the proper means—a failure in prudence—and may meet frustration with more rigidity. Perhaps he is unable to modify his plans because he has not worked out a plan in detail. He has merely a goal. He has not stopped to deliberate upon the particular means to that goal. Confronted with changing circumstances, he cannot modify his designs; and this may lead to failure of his purpose.

In general, therefore, it might be said that the low achiever is more egocentric, less objective in his evaluations of purposes, more prone to conflict and frustration. He is inclined to work more on the sense level than on the intellectual level. His "driving force" is less controlled by reason than the "driving force" of the high achiever. If, in an academic
situation, the low achiever finds more sacrifice required of him than he is willing to make, there will be insufficient persistence and perseverance in his efforts.

In short, the low achiever is inclined to be more self-indulgent; the high achiever, more self-disciplined.

Daydreams

Stories in which the hero daydreams were analyzed to investigate in more detail the subject's attitude toward goals and motivation. Since daydreams of themselves need not be detrimental to productivity, they were also considered in relation to action. Various kinds of dreams were examined: dreams of achievement, of suffering, of love, of pleasure, and of fear. Table XXI summarizes the data on stories of daydreaming.

More low achievers than high achievers told stories of daydreams. The chi square value of the difference between the groups is 6.533, significant at the .01 level of confidence. The same chi square and level of confidence were obtained for stories of daydreams about a suffering hero, also in favor of low achievers. Thus, the present data suggest that greater frequency of TAT stories of daydreams, and stories of daydreams about suffering heroes, are associated with low achievement.

Daydreams of achievement were told by both groups, but the difference between high and low achievers is not sta-
TABLE XXI
COMPARISON OF TAT STORIES OF DAYDREAMS AND OF CHANGE SUCCESS NARRATED BY TWENTY HIGH AND TWENTY LOW ACHIEVERS

<table>
<thead>
<tr>
<th>Thematic Material</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daydreams of all kinds</td>
<td>11</td>
<td>19</td>
<td>6.533</td>
<td>.01</td>
</tr>
<tr>
<td>Daydreams of a suffering hero</td>
<td>1</td>
<td>9</td>
<td>6.533</td>
<td>.01</td>
</tr>
<tr>
<td>Daydreams of achievement</td>
<td>6</td>
<td>10</td>
<td>.938</td>
<td>.33</td>
</tr>
<tr>
<td>Daydreams of achievement followed by successful action</td>
<td>4</td>
<td>1</td>
<td>.914</td>
<td>.36</td>
</tr>
<tr>
<td>Daydreams of achievement not followed by successful action</td>
<td>2</td>
<td>9</td>
<td>4.389</td>
<td>.04</td>
</tr>
<tr>
<td>Stories in which success is won by chance, luck, a deus ex machina, or through unexpected aid from another</td>
<td>1</td>
<td>11</td>
<td>9.643</td>
<td>.002</td>
</tr>
</tbody>
</table>

Statistically significant in the present study (P = .33). However, when these stories of daydreams about achievement are analyzed for subsequent action, a difference between groups appears. More low achievers tell stories in which the hero rests content with the dream and makes no effort to employ adequate means for its accomplishment in reality. The obtained value for chi

6 The thematic material for this category consists
square is 4.389, corresponding to a confidence level of 4 percent. More high achievers than low achievers tell stories in which action and success follow the daydream, but the difference between groups is not significant \( (P = .36) \). Stories of daydreams about love, pleasure, and fear likewise yielded no results indicative of a tendency in either direction.

Somewhat similar to stories of daydreams about success are those stories in which obstacles are removed and success is won, not by reasonable effort, but by chance, a stroke of luck, a *deus ex machina*, or through unexpected aid from another, for instance, inheritance from a forgotten relative. These themes seem to tap a wishful element in the subject's personality, an element which may supplant the desire to succeed when one does not know the means to take in the attainment of a goal, or does not want to make the effort. It is as though the subject were saying, "I don't know how this situation can be met, but everything will turn out well in the end. There is no need to worry or to work. If the worse comes, somebody will help." Psychologically, this kind of attitude seems to indicate dependence and an undeveloped sense of responsibility. More than half the low
achievers, and only one of the high achievers told stories of this kind. Thus, the difference between the two groups is highly significant (chi square = 9.643, P = .002). This category should be compared with the category Objectively Valued Goals in Table XIX where adequate means are taken to reach the desired goal. The latter category is favored by high achievers.

Interpretation. From the foregoing analysis it may be suggested that low achievers are more inclined to engage in autistic thinking and to find satisfaction in daydreams. In line with what has been said about the motivation of low achievers, this tendency appears to be associated with their inclination toward immediate satisfaction and impulsive action coupled with their reluctance to make sacrifices. Daydreams are immediately satisfying, especially if they are dissociated from physical or mental effort. Low achievers may daydream to escape disciplined action and to produce the immediate satisfaction which is the primary goal of their desires. This substantiates the contention that they are less realistic in their ambitions and less inclined to exert effort toward an objective goal.

Daydreams about a suffering hero may be associated with feelings of self-pity as well as with guilt feelings. In an academic situation which calls for reaching out toward an objective goal, low achievers are inefficient and ineffectual. Their concern with self-gratification reduces their scholastic
success and leads to frustration of their desire for achievement. They adjust by fantasizing success, which cushions them against the harshness of real failure. Moreover, since low achievers shun the sacrifice entailed in effort, but do not want the pain involved in failure, their only recourse is to have both comfort and success by withdrawing from reality into fantasy where they can control events without paying the price of productive activity. If they recognize the necessity of this pain as an alternative to their rejection of responsibility, or as the price of inertia, they can mete out the pain in acceptable amounts in their intrapunitive daydreams without loss of real comfort.

Frustration

From the results so far obtained, one might expect decided differences in the way high and low achievers meet frustrating situations. The high achiever, with his reasoned approach to thwarting persons, circumstances, and objects, might be expected to master a situation with less emotional disturbance than the low achiever. To test this expectancy empirically, stories of frustration were more thoroughly analyzed.

Situations of frustration were identified in those stories in which a person, desirous of reaching some goal, is temporarily or permanently prevented from progressing. Of the high achievers' stories, 77 per cent centered on some frus-
trating situation; while 70 per cent of the low achievers' stor-
ies were of this kind. Obviously, in the TAT rationale accepted
in the present investigation, mention of a frustrating situation
is not necessarily considered as indicative of actual frustra-
tion in the subject. Rather it is the kind of thinking and the
decisions that flow out of that thinking in a particular situa-
tion that constitutes an avenue of approach to an understanding
of the individual under investigation. Therefore, it was decided

7 Various areas of frustration, e.g., independence,
security, and achievement were analyzed independently of the out-
come of the stories. Independence was considered to be frus-
trated in stories where a character is pressed to do something
against his will or restrained from doing something he desires.
Security was subdivided into mental and physical. If the char-
acter in the story was worried, suffered loss of memory, was
fearful, etc., his mental security was considered to be impaired.
If he was threatened with punishment, suffered loss of limb or
body organ, was the victim of another's aggression, etc., his
physical security was considered jeopardized. Frustration of
security in the home was categorized separately, e.g., members
of the family are at odds, someone is sick, has died, or divorce
breaks up the family unit. Frustration of achievement was cate-
gorized from stories in which someone or something impedes suc-
cess, e.g., peers call the hero to play and the latter fails an
examination, surgery is made doubly difficult because of the
quality of the instruments, inferiority prevents learning.

Since all the subjects produced stories of this kind,
differences were calculated on the basis of percentage of frus-
tration stories by the individual. No significant differences
were revealed. The probability for each area was .80 or higher.

Similarly barren were the results of an analysis of
various frustrating stimuli: parental pressure, home status,
financial loss, emotions or hostility of others, physical handi-
caps, feeling of guilt or inferiority.
to set up categories on the basis of thematic material indicative of general and specific adjustment reactions to frustrating stimuli. Five broad categories were used: submission, dominance, passive resistance, active resistance, doubtful. Each of the first four categories was further subdivided on the basis of satisfaction, expressed or implied, with the reaction as a means of removing the frustrating stimulus in the story. In these categories, as in the others of this investigation, the important factor is the outcome. The results of this analysis are presented in Table XXII.

**Dominance.** The character initiates some positive and reasonable action calculated to remove obstacles.

The subcategories are based on success in overcoming obstacles by the means chosen.

P: The hero meets an obstacle reasonably, but there is no mention of success or failure in the story.

P+: The hero meets an obstacle reasonably, with adequate motivation, and succeeds in overcoming the frustrating situation.

P-: The hero tries to remove the obstacle, but he fails or attains only mitigated success, e.g., he tries to rescue several men in a storm but all drown.

**Submission.** The character in the story accedes to another's pressure, restraint, persuasion, or to force of circumstances: financial loss, weather conditions, death. The hero may rely on another for the solution of a problem or may


**TABLE XXII**

A COMPARISON OF HIGH AND LOW ACHIEVERS ON THE BASIS OF REACTION TO FRUSTRATING SITUATIONS EXPRESSED IN TAT STORIES

<table>
<thead>
<tr>
<th>Thematic Material</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>4</td>
<td>.196</td>
<td>.66</td>
</tr>
<tr>
<td>D+</td>
<td>20</td>
<td>7</td>
<td>16.410</td>
<td>.0001</td>
</tr>
<tr>
<td>D-</td>
<td>9</td>
<td>6</td>
<td>.427</td>
<td>.71</td>
</tr>
<tr>
<td>Submission</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>4</td>
<td>8</td>
<td>1.071</td>
<td>.30</td>
</tr>
<tr>
<td>S+</td>
<td>14</td>
<td>17</td>
<td>.573</td>
<td>.45</td>
</tr>
<tr>
<td>S-</td>
<td>8</td>
<td>10</td>
<td>.104</td>
<td>.75</td>
</tr>
<tr>
<td>Active Resistance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AR</td>
<td>3</td>
<td>2</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>AR+</td>
<td>4</td>
<td>9</td>
<td>1.823</td>
<td>.18</td>
</tr>
<tr>
<td>AR-</td>
<td>7</td>
<td>8</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Passive Resistance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PR</td>
<td>3</td>
<td>4</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>PR+</td>
<td>5</td>
<td>6</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>PR-</td>
<td>8</td>
<td>2</td>
<td>3.333</td>
<td>.07</td>
</tr>
<tr>
<td>Doubtful</td>
<td>8</td>
<td>11</td>
<td>.150</td>
<td>.70</td>
</tr>
<tr>
<td>D+ and S+ total 50% of reactions in frustration stories</td>
<td>12</td>
<td>4</td>
<td>5.104</td>
<td>.02</td>
</tr>
</tbody>
</table>

accept unsolicited help.
The subcategories are in terms of success in overcoming the obstacle. The essential question to be answered is: "How well does the hero adjust to the frustrating stimulus through his submission?"

S: The hero is controlled by the frustrating stimulus and does nothing constructive about it; though it is clear that his attitude is one of submission.

S+: Submission is used as a means to one's own end. The hero submits to the demands or wishes of another in order to be free for his own goal; or he lets uncontrollable circumstances run their course and eventually profits.

S-: Submission is forced on the subject as a punishment, a harm, or a displeasure. He makes no effort to resist.

Active resistance. The hero attacks the frustrating stimulus directly but unreasonably or emotionally. These are usually stories of hostile or destructive aggression against obstacles.

The subcategories are:

AR: The hero meets an obstacle emotionally or unreasonably. His success is left in doubt.

AR+: Unreasonable action or emotional displays produce results; though the success may be somewhat mitigated.

AR-: The hero resists unreasonably or emotionally without success or with harm or loss to self.

Passive resistance. There is no direct attack on the obstacle, but the hero takes some action to free himself from the discomfort of the situation by leaving the scene, ignoring
the task imposed, resorting to daydreams for solace, and the like.

The subcategories are:

**PR:** The hero makes an effort to evade the obstacle, but there is no mention of his success, e.g., a boy is grouchy when his grandfather awakens him from a pleasant dream.

**PR:** The hero avoids the obstacle, and the matter clears up so that he can adjust on his own terms, e.g., when a mother refuses a permission, the son walks out of the house. The mother thinks the matter over and grants the permission on his return.

**PR:** The hero leaves the scene of frustration but returns to adjust on the terms of another, e.g., a small boy runs away from home but is glad to return when he finds he cannot succeed alone.

**Doubtful.** The doubt in these stories is not only about the outcome but more particularly about the reaction of the hero. Alternative reactions may be suggested or the narrator may philosophize about the character's predicament, saying what he ought to do or explaining why he finds himself unable to solve the problem.

If the general areas of dominance and submission are analyzed in relation to each other, some measure of maturity may be obtained. The more mature may be expected to think in terms of overcoming obstacles through their own efforts. This should be reflected in stories scored D+. The "plus" element in these stories presumably represents an expression of confidence in the
subject's ability to cope with obstacles. Submission, on the other hand, is not foreign to a healthy emancipation from dependence on others. At all stages in life, a certain amount of dependence prevails under certain circumstances, and the mature mind must recognize this dependence if there is to be satisfactory adjustment. Therefore, the TAT records of high and low achievers were examined to find out how many subjects in each group reacted in 50 per cent or more of their frustration stories with a combination of D+ and S+ reactions. Since twelve high achievers and four low achievers met the criterion of 50 per cent, the value of chi square is 5.104, significant of a difference between groups at the .02 level of confidence. However, since D+ occurs more frequently among high achievers, the combining of the two scores may give a somewhat spurious impression.

The results of Table XXII show that high and low achievers are differentiated with statistical significance only in the areas of Dominance and D+. The obtained chi square value of 4.902 for Dominance corresponds to a significance of difference between groups at the .03 level of confidence. Thus, it is suggested that stories in which the character initiates some positive and reasonable action calculated to remove obstacles are associated with high achievement. When this category is refined to include reasonable control over the frustrating stimulus, with adequate motivation and success in overcoming
obstacles, the difference between groups is represented by a chi square value of 16.41 which corresponds to the .0001 level of confidence. Hence, the D+ reaction to obstacles is very strongly associated with high achievement. There would also seem to be a slight tendency (chi square = 3.333, P = .07) for high achievers to tell stories in which the hero leaves the scene of frustration but returns to adjust on the terms of another (PR-).

Interpretation. Since the thematic material analyzed in Table XXII relative to Dominance is similar to that analyzed for goal-striving (Table XIX), the present analysis seems to confirm the fact that high achievers in the present study work confidently toward a goal, expect obstacles to stand in their way, and exert their energies toward a solution of their problems. From this it would seem that high achievers have a greater capacity than low achievers for preventing real frustration by using reasonable means to overcome obstacles.

The difference between groups for PR- suggests that high achievers do not expect to avoid frustrating situations by escape. This is in harmony with previous findings of the present investigation and serves to confirm the impression that high achievers tend to face their problems more realistically than low achievers.

The combination of D+ and S+ scores suggests greater maturity of judgment in the high achieving group. There are
times when a strategic retreat is in order or when well-considered opinions of another are worthy of regard. It is then that S+ reactions are in order. Recognition of this fact substantiates what has been said about the role of reason in the high achievers' control of behavior.

Specific Reactions to Frustration. The general reactions to frustration which have just been discussed may be loosely classified in the traditional categories of aggression and withdrawal. However, an effort has been made in the present classification to consider the factor of intelligent control in the reactions. Unless one adheres to strictly mechanistic principles, this intellectual factor means something more than a mechanical dynamism on an organic level. Therefore, in assigning names to the categories that follow, the author has no intention of accepting the dynamico-mechanistic interpretation of the functions usually ascribed to these terms. The various categories are titled mainly for the purpose of easy identification of thematic material. The phenomena represented by the thematic material, moreover, are similar to the phenomena described by those who use the terms solely in a mechanistic sense.

Confronted by a frustrating situation, there are two possible courses of action for a man to take. He may meet the situation directly or indirectly in an effort to control it and
thus continue on toward the goal which is being temporarily blocked; or he may seek to avoid the situation either by giving up his desire and his own designs or by trying to skirt the problem in some way. The first course is called defense reaction; the second, escape reaction. 8

Table XXIII summarizes the data of various adjustment reactions to frustration in the present study.

**Defense Reactions**

The following classifications of thematic material indicate specific methods used by high and low achievers in coping with anxieties generated by obstacles. In all thematic material associated with defense reactions the hero tries to meet the situation and overcome it in some fashion.

**Identification.** In order to solve a problem, there is sometimes need for additional strength drawn from union with

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8 These reactions are commonly called defense mechanisms or defense techniques. Both terms seem to labor under semantic difficulties since the former connotes a mechanical solution and the latter a carefully thought-out solution, or at least a consciously learned method of dealing with a situation. Hence, "defense reaction" appears to be a less misleading term since it says nothing about the way in which the adjustment is effected; yet it does not exclude the operation of reason in the solution of the problem. And reason, whether present or absent, must be taken into account in the study of all human adjustment since it is the highest function of the human person, designed for the control and direction of the whole man.
### TABLE XXIII
COMPARISON OF TWENTY HIGH AND TWENTY LOW ACHIEVERS IN VARIOUS ADJUSTMENT REACTIONS EXPRESSED IN T/T STORIES

<table>
<thead>
<tr>
<th>Thematic Material</th>
<th>High (N=20)</th>
<th>Low (N=20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with father or older man</td>
<td>15</td>
<td>14</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>resulting in success</td>
<td>13</td>
<td>6</td>
<td>3.609</td>
<td>.06</td>
</tr>
<tr>
<td>resulting in failure or doubt</td>
<td>13</td>
<td>3</td>
<td>8.438</td>
<td>.004</td>
</tr>
<tr>
<td>with mother, wife, older woman</td>
<td>2</td>
<td>3</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>resulting in success</td>
<td>4</td>
<td>7</td>
<td>.502</td>
<td>.48</td>
</tr>
<tr>
<td>resulting in failure or doubt</td>
<td>4</td>
<td>4</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>with peers (boy or girl friend)</td>
<td>1</td>
<td>5</td>
<td>1.764</td>
<td>.18</td>
</tr>
<tr>
<td>with authority (school, police, etc.)</td>
<td>2</td>
<td>6</td>
<td>1.406</td>
<td>.23</td>
</tr>
<tr>
<td>Compromise</td>
<td>7</td>
<td>4</td>
<td>.502</td>
<td>.48</td>
</tr>
<tr>
<td>Rationalization</td>
<td>10</td>
<td>10</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>with success or doubt</td>
<td>4</td>
<td>6</td>
<td>.133</td>
<td>.72</td>
</tr>
<tr>
<td>with failure</td>
<td>7</td>
<td>5</td>
<td>.119</td>
<td>.73</td>
</tr>
<tr>
<td>Projection</td>
<td>0</td>
<td>3</td>
<td>1.975</td>
<td>.16</td>
</tr>
<tr>
<td>Negativism with success</td>
<td>2</td>
<td>1</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Repression</td>
<td>12</td>
<td>15</td>
<td>.456</td>
<td>.50</td>
</tr>
<tr>
<td>Ignoring with success</td>
<td>0</td>
<td>4</td>
<td>2.500</td>
<td>.11</td>
</tr>
<tr>
<td>Regression</td>
<td>0</td>
<td>4</td>
<td>2.500</td>
<td>.11</td>
</tr>
<tr>
<td>Avoiding with success</td>
<td>1</td>
<td>3</td>
<td>.278</td>
<td>.60</td>
</tr>
<tr>
<td>Seclusiveness</td>
<td>3</td>
<td>4</td>
<td>.000</td>
<td>1.00</td>
</tr>
<tr>
<td>Fantasy</td>
<td>7</td>
<td>11</td>
<td>.909</td>
<td>.34</td>
</tr>
<tr>
<td>with success</td>
<td>4</td>
<td>10</td>
<td>2.747</td>
<td>.10</td>
</tr>
<tr>
<td>Projection, ignoring, or regression used to meet frustrations</td>
<td>0</td>
<td>8</td>
<td>7.656</td>
<td>.006</td>
</tr>
</tbody>
</table>
another. Stories of this kind represent the hero seeking or willingly accepting advice or direction from another. He may find that he and another have mutual needs or that another's help or protection is necessary.

This type of reaction to frustration is common with both groups in the present investigation, probably associated with adolescence; but it does not differentiate high and low achievers. When, however, identifications are analyzed more minutely, differences between the two groups appear. There seems to be a stronger tendency for high achievers to identify with a father figure (chi square = 3.609; $P = .06$). When this identification is considered relative to the success of an enterprise, there is evidence in the data that high achievers appear to depend on the help and advice of a father figure for success in combating obstacles. The obtained chi square value of 3.438 corresponds to a probability of .004. Low achievers show a slight inclination to identify more frequently with peers and with organized authority figures such as school and police officers.

**Compromise.** The hero, thwarted in his designs, is willing to accept partial success or an alternative goal, giving up his personal desires to become happy in another pursuit. This category includes stories of compensation. Should the hero, for example, die in battle, his mother is consoled by another or
by a "purple heart" reminding her that she is the mother of a hero. The difference between groups for this category is not statistically significant in the present investigation.

Rationalization. The hero adheres to his own ideas and opinions despite the rights or superior experience of another. He tries to justify his own course of action. He may seek revenge and take actual steps toward its accomplishment.

An analysis of this kind does not differentiate the high and low achievers in the present study even when the success or failure of the defense reaction is considered.

Projection. Having made a mistake, the hero tries to shift the blame onto another; for instance, a boy accidentally shoots his father and complains about the fact that his father had the gun in the house where he could get it. There is evidence that low achievers are slightly more inclined to resort to this kind of defense reaction (chi square = 1.975, P = .16), but the difference between groups is not statistically significant.

Escape Reactions

In these classifications are included those stories in which the hero seeks to avoid meeting the real issue at stake. All tendencies to withdraw into one's own thoughts rather than to express those thoughts in action are considered.

Negativism. The hero may see the right course of
action to follow but does nothing or opposes another unreasonably, refusing to do what he is told. In the present investigation, this category does not differentiate the two groups.

**Repression.** Stories are included in this category when the hero desires one course of action but submits to another person without being convinced about the desirability of another course of action. Other thematic material classified as repression consists of stories in which the hero fails to solve a problem but acts as though he had solved it, complies under pressure without accepting the reasons of the other for compliance, tries to hide his feelings, or feels hurt by the attitude of others without expressing himself. Also included are stories in which the hero lays plans for revenge but rests satisfied with entertaining such thoughts without action. This last criterion differs from rationalization in the fact that the revenge remains on a psychic level of thought or desire without rising to a behavioral level. While this type of thematic material is common in both groups in the present study, it does not differentiate high and low achievers.

**Ignoring.** The hero disregards the feelings of another, his own responsibilities, or the moral implications of his actions in the solution of a problem. This kind of thematic material failed to differentiate the groups in the present study (chi square = 2.50, P = .11).
Regression. The hero returns to an earlier stage of development to find a solution for frustrating situations. This return may be mental. For example, the story hero retraces childhood innocence in daydreams. Or the return to an earlier stage of development may be behavioral, e.g., he tries to discourage his parents from wanting a musician in the family by playing the violin discordantly and incessantly. The difference between groups for this category is represented by a chi square of 2.50 (\( F = .11 \)).

Avoiding. The hero does not face an issue or takes matters into his own hands heedlessly. He may run away to escape punishment or sorrow. Also included are stories in which time is permitted to solve the problem. Thematic material of this kind did not yield results of statistical significance in the present data.

Seclusiveness. The thematic material for this category is drawn from stories in which the hero withdraws from society to commune with Nature or his own thoughts after failure or a loss of some kind. Also included are stories in which all the members of a household go about their affairs without intercommunication or common interests. Results of this analysis were statistically insignificant in the present study.

Fantasy. The solution of the frustrating problem comes through the medium of a dream, idle musing, an accident,
Sometimes the narrator may suggest the solution more as a wish than as the logical outcome of previously narrated circumstances.\(^9\)

Both high and low achievers narrate stories in which recourse is had to fantasy in a frustrating situation, but the difference between groups is not significantly indicative of a tendency on the part of either group to surpass the other in this regard. There is, however, a slight, though statistically unreliable, tendency for low achievers to fantasy success in the face of frustrating stimuli (chi square = 2.747, \(P = .10\)).

**Interpretation.** It should be remarked that possibly one reason for less significance of differences in these analyses may be due to the fact that the categories were not so refined in terms of reasonableness as some of the previous categories. The present analyses attempt to discover frequencies of adjustment reactions more or less independent of story outcomes and rational motivation. With the exception of the area, identification, little more than tendencies are indicated in the data.

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9 It has been pointed out previously that low achievers surpass high achievers in daydreams. The present data differ from the previously analyzed thematic material only in the nature of the situation in which the fantasy occurs. The present analysis is made on stories in which daydreams, wishes, etc. are instrumental in the solution of a frustrating situation.
High achievers seem to manifest a greater readiness to identify themselves with a father figure when confronted with a frustrating situation. Moreover, it would seem that they expect such an identification to result in successful victory over the obstacle. However, thematic material of this kind seems to indicate more than an habitual reliance on a father figure in time of frustrating circumstances. It may be suggested that high achievers are more aware of their readiness to assume an adult male role in society. Thus, they can turn with more grace and greater ease to an adult for help. Perhaps high achievers feel more secure about their adult status.

Low achievers tend more to shift the blame for their mistakes to someone else, to disregard the feelings of another, or to resort to some childish subterfuge in order to extricate themselves from an unpleasant situation. Although projection, ignoring, and regression taken singly did not occur in enough stories of low achievers to constitute a statistically significant difference between groups, one or other of these adjustment reactions occurred in at least one story of eight low achievers. No high achiever narrated a story of this kind. Since the obtained value of chi square is 7.656, which corresponds to a level of confidence of .006, the data strongly suggest that thematic material of this kind is associated with low achievement.
The emotional element involved in reactions such as these seems to be associated with real frustration. Perhaps there is a veiled admission on the part of the low achievers that they are unable to cope adequately with some frustrating situations. It is found that parental pressures or restraints cause the frustration in all but two instances. The latter stories consist of reviewing one's childhood in an effort to recapture "the innocence of days gone by." Hence, it would seem that low achievers are less confident about their struggle for independence and possibly more frustrated than high achievers. Apparently, low achievers lose some academic efficiency because of destructive emotions associated with frustration and their inability to solve some of the problems arising out of their declaration of independence.

**Overcoming.** Another category was added to these reactions of defense and escape. Strictly speaking, it does not deal with frustration since the hero overcomes obstacles before the rise of debilitating emotions. However, since the situation in the story is such that frustration might easily result, it seems proper to include this thematic material in the analysis of frustration. Moreover, this category is an effort to investigate the role of reason in the control system of the subjects. At the same time, it measures to some extent the independence of the hero from the help of others. But, perhaps the
most important aspect of this category is the indication of the ability to prevent frustration by a proper handling of the thwarting situation.

Table XXIV represents a summary of the data analyzed for reasonable coping with frustrating situations. The various categories were set up according to the following criteria:

**TABLE XXIV**

**ANALYSIS OF TAT STORIES OF TWENTY HIGH AND TWENTY LOW ACHIEVERS FOR REASONABLE OVERCOMING OF FRUSTRATING SITUATIONS**

<table>
<thead>
<tr>
<th>Thematic material</th>
<th>High (N 20)</th>
<th>Low (N 20)</th>
<th>Chi square</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>13</td>
<td>7</td>
<td>2.500</td>
<td>.11</td>
</tr>
<tr>
<td>0-</td>
<td>8</td>
<td>2</td>
<td>3.333</td>
<td>.07</td>
</tr>
<tr>
<td>0+</td>
<td>9</td>
<td>1</td>
<td>6.533</td>
<td>.01</td>
</tr>
</tbody>
</table>

Q: Adequate and reasonable measures for adjusting to frustrating situations are taken. The hero acts without dependence upon another.

Q-: This is scored when the outcome of the story is not entirely favorable to the hero.

Q+: The hero cooperates with another to the mutual benefit of both. This cooperation is an indication of "teamwork" and does not imply dependence in the sense of subservience.

When the two groups are compared on the basis of 0,
the obtained chi square is 2.50 which corresponds to a probability of .11. However, when, those stories are considered in which efforts to overcome obstacles meet with failure or mitigated success, the difference between groups approaches statistical significance (chi square = 3.333, P = .07) in favor of high achievers. A still greater difference in favor of high achievers is yielded by O+ thematic material. The obtained chi square of 6.533 corresponds to a level of confidence of .01.

Interpretation. From the results of this analysis, it is clear that both high and low achievers in the present investigation tend to deal reasonably with frustrating situations; though there is some evidence for the superiority of high achievers in this matter. However, the statistical significance in favor of high achievers in the areas of O- and O+ seems to demand an interpretation in the light of previous findings in the present study.

Basically, O- scores represent a limitation of success realized by the hero in the story. This is open to several interpretations. A realistic view of success in any endeavor must recognize that a price commensurate with the value of a goal must be paid. Perhaps the high achiever realizes this fact more fully than the low achiever. Stories in which O- scores appear reveal the high achiever's inclination to be realistic in his expectation of limited good to be derived from his
efforts. This is in keeping with his readiness to make sacrifices discussed above. It is also in line with the present findings relative to daydreams and chance solutions.

Stories of failure, or mitigated success, may also represent the presence of anxiety about success. It is to be expected that one who sets a high value on a goal, who is mindful of competition, who does not dream of success without effort, who realizes that success depends in large part upon himself—all factors presumably characterizing the high achiever in this study—will be tempted to question his own ability at times and perhaps be somewhat troubled by fears and feelings of inferiority. Moreover, since he sets a high positive value on the objective good of successful accomplishment, he will likewise set a high negative value on its opposite, failure. Thus, he is likely to give more thought to failure than does the low achiever, much as the Saints give thought to Satan. Perhaps high achievers tend to exaggerate minor failings because they see in them a falling short of the mark. In this sense, then, stories of failure may be looked upon as a measure of level of aspiration possessed by high achievers.

Whatever may be the true meaning of the thematic material represented by stories of failure, it seems apparent that high achievers attack frustrating situations reasonably, despite possible feelings of inferiority, emotions of fear,
threat of sacrifice, danger of failure. They seem to be more realistic than their fellow low achievers in the face of frustrating situations.

Stories of cooperation suggest a willingness to combine one's resources with those of another for mutual benefit. This aspect of the high achiever's personality corroborates to some extent what was said above in the discussion of dominance and submission. The high achiever is more ready to lay aside his individual interests and to join forces with others because he is not motivated so strongly by selfish interests, as is the low achiever. The high achiever is willing to share a project and its fruits. For him, the important thing is that the project be successful. In an academic environment, this spirit of cooperation is an asset. It is associated with docility, making the student an apt recipient of knowledge. It may serve to reduce the tension of interpersonal competition, directing rivalry away from individuals and allowing the high achiever to work for more generalized goals, for instance the school's reputation for scholarship. Thus, the high achiever does not perceive the striving of another as a threat to his own recognition as an individual, to his own achievement, to his own acceptance and status, to his own security. Rather, he sees that he can enlist with others harmoniously and that the combined forces may overcome obstacles which he alone cannot surmount.
SUMMARY AND DISCUSSION

TAT stories of twenty high achievers and twenty low achievers, all male high school seniors, were analyzed clinically. Certain salient themes, presumably associated with several hypotheses bearing on academic achievement, were isolated and defined in terms of story units. This thematic material formed the basis for an analysis of difference between groups as measured by chi square. When the 5 per cent level of confidence was taken as a criterion of significance of difference between groups, high and low achievers were discriminated on the basis of the following thematic material.

Thematic Material Given Mainly by High Achievers

1. After the death of a parent, the son adjusts successfully, showing self-reliance ($P = .01$).

2. Though a mother tries to restrain her son by emotional demonstration, he succeeds independently without repercussions ($P = .04$).

3. The hero is dissuaded from crime, violence, or asocial behavior by a female character. Should he reject the advice, he suffers evil consequences ($P = .01$).

4. When stories in which a female character advises or persuades to some acceptable course of action are added to the thematic material mentioned under 3, the difference between groups increases ($P = .001$).

5. Story characters have clear, objective goals and take adequate
means for success \( (P = .003) \).

6 If the decision to strive toward a goal entails some sacrifice, the hero readily and willingly accepts the sacrifice as part of the price he must pay for achievement \( (P = .002) \).

7 When circumstances cannot be controlled, the characters in the stories modify their plans to fit the circumstances \( (P = .01) \).

8 When the stories were analyzed for "pure types" of Nos. 5, 6, and 7, the differences between groups increased (Table XX).

9 In a frustrating situation, the hero initiates some positive and reasonable action to remove an obstacle \( (P = .03) \).

10 The hero manages frustrating situations reasonably, with adequate motivation, and succeeds in overcoming the obstacles \( (P = .0001) \).

11 The hero shows D+ or S+ reactions in 50 per cent or more of the stories in which obstacles are encountered \( (P = .02) \).

12 In frustrating situations, the hero turns to a father figure in order to insure success in an enterprise \( (P = .004) \).

13 In removing obstacles, the hero cooperates with another to the mutual benefit of both \( (P = .01) \).

**Thematic Material Given Mainly by Low Achievers**

1 After the death of a parent, the son shows emotional dependence \( (P = .0001) \).

2 A mother tries to restrain her son by an emotional demonstration. The son either succumbs to her emotions or suffers because of his desire for emancipation \( (P = .02) \).

3 Motivation of the hero emphasizes subjective evaluation rather than the objective good of the goal \( (P = .01) \).

4 When "pure types" are sought by counting subjects who manifest subjective motivation without any stories of clear goals and adequate means to an end, the difference between groups increases \( (P = .01) \).
5 The hero is inclined to make emotional decisions (P = .07).
6 The hero avoids decisions which entail sacrifice (P = .001).
7 Despite change of circumstances, the hero struggles on in a headstrong pursuit of his previously determined goal (P = .02).
8 Stories of daydreams of all kinds (P = .01).
9 Stories of daydreams about a suffering hero (P = .01).
10 Stories of daydreams about achievement not followed by successful action (P = .04).
11 Stories in which success is accomplished through chance, luck, a deus ex machina, or through unexpected aid from another (P = .002).
12 As a reaction to frustration, the hero is likely to shift the blame for his own mistakes onto somebody else, to disregard the feelings of another, to resort to some childish device (P = .006).

Interpretations have been offered for the psychological meaning of this thematic material. These interpretations tend to support the three hypotheses proposed for investigations:

1 Academic success depends upon the clear perception of a rational goal.

By an analysis of goal-striving, it was found that high achievers evaluate their goals objectively and strive for attainment because of the value which they see in the thing itself. This outlook is associated with greater realism, shown in willingness to cooperate with others for a common end and readiness to accept an alternative plan when the original ambition proves to be beyond reach. For this group, obstacles and
catastrophes are challenges to be met. If they can reason their way through a problem, high achievers feel confident of success; yet they seem to recognize their own limitations and are willing to admit the possibility of failure, another indication of their realism.

2 Academic success also depends on strength of motivation. Therefore, it will be associated with a strong desire to achieve rational goals.

If strong motivation is indicated by willingness to sacrifice, then this hypothesis is confirmed by the present investigation. The data show that high achievers are willing to give up immediate gratification to obtain a more distant goal. It has also been suggested that high achievers tend to express misgivings about their own ability, recognizing perhaps that one cannot expect to have all one's desires fulfilled perfectly. Low achievers, on the contrary, do not seem to accept their own limitations so easily. They find it difficult to modify their plans. Functioning mainly on the subjective level, they resort to daydreams and wishes. Emotion rather than reason constitutes their chief driving force. Therefore, sacrifice is less acceptable. Moreover, their impetuosity hinders them from patiently stepping from one goal to another in slow progress to the final goal. And so they may be expected to have difficulty with the third hypothesis:

3 Academic success depends not only on the clear
perception of a rational goal and the desire to reach it; it is also necessary to perceive and select the appropriate means to the chosen goal.

This hypothesis is an expression of the virtue of prudence which governs the selection of means to an end. In the thematic material analyzed, the presence of this virtue would seem to follow as a corollary of the other two hypotheses. The man who controls himself reasonably, directs his actions according to a clearly perceived goal, willingly sacrifices incompatible self satisfactions, will also be inclined to choose carefully those stepping stones which lead to the desired success. Such a man, the present data show, is a high achiever.
CHAPTER VII

SUMMARY AND CONCLUSIONS

The primary purpose of this investigation has been to answer the question: "What is the difference between the personality of a high achieving boy in high school and the personality of a low achieving boy in high school?" Thus, interest in the problem has focused on an understanding of the personality factors involved in achievement more than on the predictive value of the instruments employed.

The secondary purpose of this study is the development of an original approach to research methodology with the TAT. This approach has been outlined in Chapter V and has been employed in the statistical analysis reported in Chapter VI.

Since intelligence is admittedly an important factor in academic achievement, rigid control was exercised over this variable in the hope of discovering independent, measurable elements in the personalities of high and low achievers. The forty male experimental subjects were above the mean of the class of 122 high school students who had completed seven semesters in the same school. Averaged standard scores derived from the Renmon Nelson, Form A, and the ACE were used to measure in-
Differentiation into two groups, twenty high achievers and twenty low achievers, was accomplished on the basis of actual success through six semesters of high school as measured by teachers' grades. Two standard deviations separate the highest achieving low achiever from the lowest achieving high achiever.

The Rorschach test and Thematic Apperception Test were administered individually to evaluate the personalities of the subjects in each group. The statistical analysis is summarized for the Rorschach at the end of Chapter IV. The results of the statistical analysis of the TAT may be seen at the end of Chapter VI.

Following is a summary of interpretations based on the differences noted in the two tests:

Several suggestions relative to an interpretation of personality structure in high and low achievers were offered in the summary at the end of Chapter IV. These may be briefly restated:

1. High achievers may be somewhat more critical than low achievers in their thinking. There is also evidence that they are aware of anxieties and insecurity within themselves; though they seem to be able to cope with these on the level of reason. They face reality more fully, are more self-assertive, probably enjoy an atmosphere of competition. In short, they are less
easy of mind about their environment, more sensitive to hostili-
ty, perhaps more aware of their own emotional lebility. However, they react with caution, feel their way tactfully. Thus, it might be expected that a high achiever will be less apt to show his actual feelings in public. He tends to be circumspect and critical, perhaps more cooperative if shown reasons for persist-
ent effort. Therefore, he may be expected to be more teachable in an academic situation.

2. Low achievers seem to be more easily impressed by external
environment and possibly more adaptable socially. They seem to possess more spontaneity in their relations with external things; but this spontaneity is controlled.

Traditionally, the TAT has been used to evaluate the "content of personality," by which is meant the specific fears, hostilities, anxieties, etc., with which the subject has to cope. In the present analysis and interpretation, emphasis has been laid on the role of reasonable self-determination. Search has been made for the rational motivational system of the subjects, the principles or "philosophy of life" whereby the subject controls his action tendencies and directs his behavior. Such an approach seems adequate to determine the individual's perception of himself, of his environment, of his relation to that environ-
ment, and of his ability to cope with situations of various kinds. It is this perception, influenced by past experiences
and previously generalized concepts, that characterizes the individual motivational pattern according to which a person determines his own decisions. Knowing this individualized motivational pattern, one can, within limits, predict behavior. Further research in this area is indicated by the results of the present investigation.

Some of the salient differences between high and low achievers revealed by the data of the present study include the following:

High achievers tend to be more task-oriented than low achievers. This means that they perceive the objective value of an extra-mental goal—object, situation, experience—and strive for its possession because the goal itself is worth the effort. Subjective appraisal, of course, enters into their evaluation; but that appraisal is based more on reason than on emotional reaction, more on interest in the object than on satisfaction or pleasure for self. It follows, then, that they will be more ready to pay a price in personal satisfaction or pleasure, that they will operate more consistently according to reality factors. This frame of reference in their thinking might be expected to reduce the likelihood that high achievers will fall prey to conflict or frustration. At the same time, concern for reality factors and willingness to make sacrifices is conducive to patience and prudence. High achievers realize that they cannot
have everything; so they are prepared to forfeit minor goals for the attainment of a primary purpose. Moreover, under the direction of reason, they select means fitted to the accomplishment of their end. In short, the high achiever lives more securely because he has learned to direct his life by reason rather than by feelings.

If some threat to his external or economic security should occur, the high achiever views it as a challenge to be met and overcome. Success may call for compromise or a change of plans, but he is ready to bow to reality and sacrifice his personal feelings and desires. Facing reality instills confidence in the high achiever. This confidence in himself enables him to concentrate on the frustrating situation with a view to overcome it through reasonable means. Ordinarily, he feels he has the situation well in hand; but, if reason indicates that he is not capable of success alone, he gladly joins forces with someone who he knows can help him. It is accomplishment, more than personal enjoyment of independence at all costs, that motivates the high achiever.

Low achievers tend to be more self-oriented. They, like the high achievers, may see their goals clearly; but they fix their attention on goal-evaluation in terms of personal gratification without due regard for the objective worth of the goal itself. Their appraisal of values is more emotional than
reasonable. Their chief interest is in self-satisfaction. Being reluctant to sacrifice anything, they are more prone to conflict. Reality factors are secondary in their thinking; so the likelihood of frustration is greater. Concerned with immediate results, they are impatient about delay. Hence, they exert more physical than mental energy; and the former is largely directed by emotional urges, uncontrolled or poorly controlled by reason. Concentrating mostly on what they want, they are in danger of overlooking the proper means. Thus, they fail in prudence. In an academic situation, the low achiever finds more sacrifice required of him than he is willing to make. Consequently, he will lack sufficient persistence and perseverance in his efforts toward scholastic achievement.

If some threat to his external or economic security should occur, the low achiever sees it only as preventing the fulfillment of his desires. Under such circumstances, he expects to fail. In the face of opposition, he abandons a plan. He must have all or nothing. He cannot accept compromise or an alternative plan because he views everything mainly in terms of himself. Impressed especially by the sense of loss in a catastrophe, he feels inadequate to the task of overcoming the frustrating situation and gives way to his feelings and emotions which further impede successful accomplishment. Thus, the desire to put forth effort at a time when effort is particularly
needed is lacking; and the low achiever seeks solace rather than strength for achievement from another.¹

¹ The findings of the Rorschach in the present investigation, while not so specific as those of the TAT, are in substantial agreement with the interpretation offered in the present chapter.

Fe (significant at the 2 per cent level of a difference between groups and in favor of high achievers) suggests caution and tent in dealing with outer environment. The present data open the question, "Is Fe associated with reasonableness of approach toward environment?" It would seem that the findings of the present investigation warrant further research for this hypothesis.

Extensor M (significant at the 5 per cent level) indicates that high achievers have more "drive" and possibly more initiative directed against frustrating situations. Basic research in Rorschach rationales may reveal that this "drive" is associated with clear perception of goals and perseverance that comes of adequate rational motivation.

Ambiequal Erlebnistyp (significant at the 6 per cent level) also favors high achievers and may form a pattern with Fe and extensor M associated with prudence and patience in dealing with problems since ambiequality suggests an approach characteristic of a person who is not swayed excessively in either direction, outwardly or inwardly, a person who can, as it were, stand off from himself and from his environment and weigh situations objectively. This would seem to be particularly true in the case of one who is capable of the effort suggested by extensor M and has, at the same time, the ability and inclination to discriminate and evaluate environment suggested by the intelligent person who produces Fe responses.

There is also less significant evidence in the data that low achievers seem to be more responsive to external environment—a fact possibly associated with "extraversion" of low achievers found in research using pencil-and-paper tests. However, from the data of the present TAT investigation, it would appear that the extroverting pattern of low achievers may be associated with emotional dependence. Therefore, it might be expected that their social relationships would tend to be
The low achiever feels that he is so controlled by environmental influences that there is little or nothing that he can do by way of self-determination. He looks to another for the solution of his problems; and rather than lose that support, he is willing to submit his will and judgment to the emotional needs of someone else. Communication with others is more emotional than rational. Further research is indicated to determine the effect of early training in the development of this pattern of emotional communication which appears to be associated with retarded emotional and intellectual maturity.

Possibly because of their more rational control, high achievers are more amenable to arguments and persuasion. Their conformity, however, is not to persons on emotional grounds so much as conformity to the reasons of the persons. Therefore, they may be more cooperative with reasonable superiors. They are ready to agree with a girl or mother figure who counsels to moral or reasonable action, an agreement rarely encountered in the stories of low achievers.\(^2\) He is more at ease than the low somewhat superficial and governed by egocentric aims; whereas the high achievers, while slower to form social relationships, may be expected to be more constant.

The various relationships between TAT and Rorschach data indicated in the present discussion suggest the possibility of using the TAT to determine more fully the rationale of the Rorschach patterns through further basic research.

\(^2\) The high achiever's greater ease in for the reason-
achiever in enlisting the help of a father figure, possibly because he has learned to accept more fully his own male role in society and feels more accepted in adult circles. All this, it would appear, is the result of facing reality in a reasonable fashion and therefore with self-confidence. In short, the high achiever apparently has reached a more advanced stage than the low achiever in emotional and intellectual maturity.

The low achiever may try to avoid reality. He engages in daydreams much more than the high achiever, and there is some indication that he may use fantasy to work out his conflicts. This is particularly suggested in daydreams of a suffering hero. Perhaps the main conflict is between some form of self-gratification and duty. Since the low achiever seeks to avoid self-sacrifice, but does not want the pain of failure associated with lack of self-discipline, he tends to turn to daydreams in which he can avoid actual effort and mete out imaginary punishment in acceptable measure without actual pain. To ward off the actual pain of academic failure or mitigated success, the low achiever resorts to daydreams of achievement without subsequent effort.

Ableness of feminine counsel suggests a confirmation that the development of emotional or rational communication may be a function of early training. Perhaps a reasonable mother who has exercised emotional control is largely responsible for the development of the kind of personality conducive to academic success. The present data certainly warrant further investigation in this matter.
toward a goal. High achievers apparently dream no less about achievement, but their dreams lead to action and thus become incorporated into their motivational pattern for goal-striving. Thus, even in their daydreams, high achievers do not lose sight of reality. They are willing to work for what they achieve; while low achievers at least entertain the wish that success may be possible without effort. This aspect of personality stands out clearly in low achievers' TAT stories where success is accomplished by luck, a deus ex machina, or some unexpected aid from another.

Briefly, therefore, the primary question of this investigation may be answered. The question is: "What is the difference between the personality of a high achieving boy in high school and the personality of a low achieving boy in high school?" The answer supported by the present findings is:

High achievers
1 Exercise self-discipline,
2 See goals clearly and direct their energies prudently,
3 Are willing to sacrifice immediate gratification for delayed goals,
4 Yield more readily to the reason of others,
5 Accept catastrophe as a challenge to be met,
6 Possess greater self-confidence though they acknowledge their real limitations,
7 Are guided by reason and less affected by emotions of others,
Show higher regard for reasons proposed by women,

Curb ambition to conform to reality,

Meet frustrating stimuli reasonably and successfully and therefore probably suffer less from real frustrations,

Apparently feel more secure in the adult male group,

Accept failure with more grace and freedom from emotional display,

Are more cooperative, docile, independent emotionally,

Have perhaps more worries which they openly face and try to handle reasonably,

Are inclined to deliberate before acting so that on a social level they may make friends slowly but keep them longer than the low achievers.

Low achievers

Are inclined to seek self-gratification,

May see goals clearly but want immediate results and cannot tolerate delay,

Stress the emotional value of goals more than the objective good of the goal itself,

Strive rather to rid themselves of internal stress than to possess the objective good,

Readily yield to the emotional needs of others,

Expect to fail when a catastrophe is encountered,

Feel emotionally dependent on the love of others,

Are unsure of their own ability,

Rigidly hold to a previous decision despite adverse circumstances which make the decision impossible to fulfill,

Act impulsively in the face of frustrating stimuli,
11 Seek to overcome frustration and conflict by fantasy.
12 Expect success with a minimum of work.
13 React childishly in frustrating situations, e.g., shift blame onto others, ignore the feelings of others, try subterfuges which worked at an earlier stage of development.
14 Seem to have more actual conflicts than high achievers.
15 In general, manifest less emotional and intellectual maturity than high achievers.

**DISCUSSION**

The findings of the present investigation are not universally applicable to all high and low achievers. The limited number of subjects tested is an unavoidable defect of the study. Moreover, certain "atypical cases" whose scholastic success or under-achievement may be due to factors not considered in this study might be found by further analysis of the data. Such a study is needed before the present findings can be employed usefully in the prognosis of individual academic success.

In this regard, it is important to bear in mind the type of school from which the subjects have been selected. A curriculum of humanistic studies pointed toward professional training demands, by its very nature, the kind of personality which can put off immediate satisfaction in practical results for the sake of a future goal. Further study in other kinds of curricula and with subjects of other intelligence levels is warranted by the results of the present research.
The secondary aim of this study was to introduce a new method of TAT research. Its newness lies principally in the expanded meaning attached to "thematic material" under the influence of Arnold's basic assumptions and in the way that material is selected for group comparisons. Since the selection of thematic material is based on what the subject says, and not upon an interpretation of what he says, objectivity seems more assured. However, in all frankness, it must be admitted that the results of the present study may be somewhat vitiated by absence of rigorous testing of the validity and reliability of the method used.

Relatively few reports on the reliability of TAT analyses appear in the literature. Harrison and Rotter (89) determined the reliability with which ratings of the "emotional stability" of army officer candidates could be made. In their study, two judges obtained a correlation of .73 when a three-point scale was used. This correlation rose to .77 when a five-point scale was used. Clark (194) obtained high tetrachoric correlations, except for analysis of "needs," when two judges classified content of TAT stories. Mayman and Kutner (126) had two judges rate ninety-one stories told by eleven subjects. They found 89 per cent agreement on the hero-identification and 81 per cent agreement on the type of press-situation. The correlation was .91 for rating of empathy and .83 for emotional
involvement. Such correlations would seem to depend almost as much on the training of the judges and the simplicity of the scoring system as on the function of the test itself. The analyses in the present study might be tested for reliability either by employing trained judges or by a repetition of analyses made by the investigator after a lapse of time.

The validity of the interpretations offered in the present study rely partly upon the reliability of the analyses, partly upon the clinical insight of the interpreter, and partly upon a comprehension of the basic hypotheses underlying the whole method of approach. Although no statistical verification of the latter appears in the literature, Arnold (36) reports that this method has produced excellent clinical results in Canada. The present writer's clinical experience has confirmed this. Further study, testing the validity of the present interpretations by independent judgments from other sources, is demanded by the fruitful results of the TAT in this investigation of high and low academic achievers.

Like all research methods, the present one is based on a conceptualization which seeks to embrace the whole subject matter. It is this effort of the human mind that leads the scientist into the domain of philosophy whether he likes it or not. He needs the truths expressed in the ultimates in order to interpret the facts which he discovers. Thus his interpreta-
tions will be stamped by his "frame of reference," his "conceptualization," his "theoretical framework," or whatever else he chooses to call his philosophy. In the final reckoning, the truth of his interpretations will be proportioned to the truth of his philosophy.

In modern psychology it is a widely accepted tenet that man is essentially kin to the rest of nature. Psychologists who take this position set the "ultimates" of men only on the basis of matter. Thus human behavior is viewed as ineluctably determined in all men by the organism modified by the impact of previous experiences, and personality is basically an organic development at the mercy of environmental forces.

In the philosophy behind the present research method, man's actions are not wholly at the mercy of environment. Man is self-activating and self-directive. The direction which his actions take is purposeful, according to known and self-evaluated goals, or according to goals which were formerly known and evaluated but now have become "unconscious." Therefore, relying on his knowledge and evaluation of goals, normal man determines his own behavior. He is influenced, it is true, but he is not determined by his material organism when he is healthy and acting with full consciousness. Thus man, fully understood, has the capacity to act and to direct his actions in accord with a reasoned plan which is not wholly imposed upon him by envi-
It is this capacity in man which has been investigated in the present study of the differences between high and low achievers. It is this capacity in the normal human being which effects the unique organization of human powers that is the core of personality. Since the relative degree of development of this capacity indicates the degree of intellectual and emotional maturity in man, the empirical data of the present study strongly suggest that high achievers are more intellectually and emotionally mature than low achievers in the sample tested. The outstanding characteristic of the high achievers is their ability to choose their behavior in accordance with reason and not, like the low achievers in this study, to follow the inclinations of their naturally determined appetites—which is the line of least resistance.
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APPROVAL SHEET

The dissertation submitted by Louis B. Snider, S.J., has been read and approved by five members of the Department of Psychology.

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the dissertation is now given final approval with reference to content, form, and mechanical accuracy.

The dissertation is therefore accepted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy.

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Signature of Adviser