



1960

A Thematic Apperception Test Study of Non-Intellective Factors Related to Academic Success on the College Level

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A THEMATIC APPERCEPTION TEST STUDY OF NON-INTELLECTIVE
FACTORS RELATED TO ACADEMIC SUCCESS
ON THE COLLEGE LEVEL

by

Joseph A. Garvin

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

June

1960

LIFE

Joseph A. Garvin was born in St. Louis, Missouri January 27, 1919. He attended St. Louis University, receiving the B.S. degree in 1947 and the M.A. in 1949. During 1947 and 1948, he was an instructor in Psychology at St. Louis University, and was employed as psychologist for the Missouri State Department of Special Education in 1949.

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He left the Court to take a position as Assistant Director of Research at McCann-Erickson Advertising, leaving there in the Fall of 1959 to resume full-time graduate work at Loyola University.

ACKNOWLEDGEMENTS

Many persons have most generously contributed their time and effort to make this research possible. Special thanks are due to Dr. Magda B. Arnold, whose constant encouragement and patient counsel on specific problems of scoring and presentation of the data have been indispensable to completion of the study.

We also gratefully acknowledge the kindness of Sister Mary Irene, B.V.M., of Mundelein College, who so generously provided subjects and testing facilities, as well as her own time and continued interest. Thanks are also due to all of the Mundelein and Loyola students who served as subjects for the study.

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CHAPTER I

INTRODUCTION: STATEMENT OF THE PROBLEM

The increasing heterogeneity of the college student population has led in recent years to a heightened concern over the characteristics of such students, especially those that may be summed under the term 'personality.' Often this concern is with academic motivation, a broad problem that has been explored from a number of different points of view; efforts have been made to relate such motivation to a large number of different variables.

There appears to be general agreement that differences in academic ability probably account for only a part of the variability in academic performance on the college level. Studies (13,45) of the correlation between measures of scholastic aptitude and academic achievement indicate that this relationship is of the order of .30 to .70. Thus, only about one-tenth to one-half of the variability in academic performance may be accounted for by variability in the intellectual factors measured by tests of scholastic aptitude.

While it is possible and even probable that correctly used tests of scholastic aptitude do not provide a broad enough coverage of intellectual factors, it is probably equally true that much of the variability in academic performance is influenced by factors other than those measured or measurable by tests of intellectual functioning. This raises the wider question of what variables other than intelligence enter into academic achievement.

A review of recent literature indicates that the majority of these variables may be regarded as aspects of personality, as opposed to a more or

less strictly defined 'intellectual' ability. The instruments used to assess personality variables are most often well-known and widely used devices, including projective techniques and questionnaires or inventories, although the basis for selection of a particular instrument or test battery often has not been made explicit.

As amply attested by a number of representative studies which have appeared in the literature, the problem of isolating correlates of academic success is clearly not a simple one. The difficulties have often been augmented by failure to limit the research approach to variables that can be defined and measured accurately, and by differences in theoretical assumptions. At the same time, an exploration of personality and motivational factors, if these can be satisfactorily defined and measured more or less directly, still appears to offer the most fruitful research approach. A number of studies in this general area will be discussed.

The present study is concerned primarily with achievement motivation of a college population. It is designed to tap the individual student's achievement-related attitudes, and to assess his principles of action and his effective motives. The projective instrument chosen for the research, as well as the method of analysis used, promise a freedom from psychometric assumptions, while still allowing a quantification of results.

Generally, it is hypothesized that a high achiever will exhibit certain clear-cut traits and attitudes, such as persistence, realistic adaptation, self-control, and independence; in short, that he recognizes and accepts his academic and moral responsibilities and has reasonably clear goals for which he is willing to strive. A number of additional characteristics of the high achiever

have also been isolated (in previous research with the same instrument and method) and have been incorporated into the technique of analysis and scoring used in this research.

Conversely, it is postulated that the low achiever will manifest a lack of these positive characteristics, and that in addition he will reveal a number of other traits and attitudes that are often found in persons who are not well adjusted generally.

Motivation, the essential concern of this study, is of course not a simple psychological entity; this is perhaps one reason why efforts to identify motivational aspects depend to a considerable degree on the emphasis which researchers have given to the definition of various personality variables, their interaction with the social structure, and upon the methods used to measure these.

From the point of view of this research, an assessment of personality will be most productive when it is concerned with complex processes, and when it attempts to describe the integrated personality at a higher level, at a point where the person evaluates human actions and their effects. What is wanted here is a valid and accurate measure of the way a person looks at his world and how he intends to act in it. Stated simply, we accept the notion that the clearest and most consistent view of a personality is discerned in what the world means to an individual, and how he typically reacts to it.

The problem of this study, then, is to use a method of assessing motivational characteristics which will be at once comprehensive, objective, relatively immune to conscious falsification, and verifiable against an objective criterion.

The instrument chosen for this purpose is a projective device, the Thematic Apperception Test (TAT); the stories produced will be scored according to Arnold's method of Sequence Analysis. The test itself, when scored according to this highly refined technique, has proved to be capable of tapping the student's drive, goals, and aspirations, as well as more purely cognitive factors. Properly used, the method allows the test to sample significant situations which a person may encounter, his manner of dealing with these, and the roles he habitually plays.

The motivational characteristics derived by this use of sequence analysis will allow development of a criterion of academic success in college, and will be used to predict the academic success of college seniors.

In this study, it is assumed that the TAT stories represent imaginative productions in which the student explores problems that concern him; the story import, a brief statement of the "moral" of the story, will reveal what actions he approves or disapproves, his solution or attempted solution to problems of work and achievement, success or failure, relationships with others, and his reaction to threat or danger. The sequence of story imports is used to infer the student's actual goals and the methods and interest he can mobilize to achieve them.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

General Studies of Academic Achievement

It is clear that differences in academic performance probably should be sought in an exploration of factors other than those measured or measurable by tests of intellectual functioning. We turn then to a review of some representative studies which were designed to explore the factors related to academic success.

First, we may note that efforts to isolate non-intellective components of college achievement have not been confined only to a direct assessment of personality traits. Thus, Weits, Clarke, and Jones (49) in a study in which scholastic aptitude was held constant, report that the motivating effects of having chosen a major field of study before entering college, influences the academic performance of college freshmen.

Similarly, Carter and McGinnis (12), in a study using point-hour ratios as indices of achievement, found that in addition to High School record and intelligence test results, such varied factors as number of books and periodicals reported as read, terms of acceptance of the college, return for the second semester, sex (in favor of females), units of High School mathematics, and definite vocational choice, differentiated their two groups of college freshmen at the one per cent level of significance.

Even seemingly more unlikely relationships have been uncovered; for example, Weits and Wilkinson (50) report that such non-intellective factors as

no siblings when entering college, the fact that one or both parents was deceased or divorced, graduation from a civilian private secondary school, or a private military academy, were positively correlated with academic success.

That poor academic achievement may not simply be a matter of absence of motivation is pointed out by Anderson (1), who feels that students who have not applied themselves to their studies do not lack motivation, but probably have "unconscious negative attitudes" that predispose them to failure. He suggests that the high incidence of failure or under-achievement among college students can be reduced by better understanding of the true nature of motivation.

Brown, Abeles, and Iscoe (10) make motivational differences somewhat more specific; these authors found marked differences in motivation between high and low scholarship students, and concluded that poor students are characterized by "activity delay," which in turn involves "a lack of decisiveness of action, a tendency to procrastinate, and perhaps an unwillingness to conform to academic requirements, routine, and regulation."

There are also a number of studies which attempt a more direct approach to the measurement of personality variables. One of the most comprehensive of these is the research conducted by Berger and Sutker (9). These authors administered the Rotter Incomplete Sentences Blank, the Yale Battery, and the A.C.E. examination to 199 male freshmen and 154 female freshmen. The academic performance of these students was followed for four years, and the entrance scores were reviewed in the light of each student's academic record. In general, the authors found that "students with high intellectual capacity and an adequate personality adjustment achieve higher academic performances." They also decided that the measuring devices used seemed to be of value in securing prompt

recognition of students "with high intellectual capacity and emotional maladjustment so that they can be given attention."

Not all studies of motivation have been confined to college populations; Roach and Wall (39) studied officer candidates at the Air Command and General Staff School and found that certain favorable personality characteristics were exhibited to a much greater degree by the over-achievers than by the under-achievers. As the groups were about equal in intellectual capacity as well as background knowledge, these authors concluded that "...personality differences, especially leadership, judgment, reliability, and personal responsibility account, in part, at least, for the greater success of the over-achievers."

RESEARCH WITH THE TAT

Description of the Instrument: The Thematic Apperception Test (TAT) consists of a series of pictures about which the subject is asked to develop stories. As originally published by Murray, the TAT is a set of thirty pictures, variously designed to be appropriate to the age and sex of the subject. Eleven of these were designed for both sexes and all ages. Selections of sets of pictures from the original series are usually made according to the particular purpose for which the technique is to be used; for this research, thirteen pictures (1, 2, 3BM, 4, 6BM, 7EM, 8BM, 9BM, 11, 13MF, 14, 16, 20) were used with all subjects.

Extent of TAT Research Henry (22) lists a bibliography on the TAT containing 575 titles, covering the period from Murray's initial publication of the test in 1935 to December, 1954. The Psychological Abstracts for 1955 and 1956 list an additional 122 titles dealing with this instrument, and there is no reason to believe that the pace of research with the technique has declined appreciably.

since that time.

Studies Attempting an Objective Scoring Method A comprehensive sampling of the variety of techniques that have been used for TAT analysis is presented by Shneidman et al (42). He asked 15 psychologists to evaluate a single clinical case, each person to make use of his own system. A variety of approaches emerged. The methods ranged from the highly intuitive clinical technique used by Holt (p. 101), based on psychoanalytic theory and Murray's need-press formulations, to an effort at a precise psychometric approach (Hartman, p. 83) which was originally designed for research. Of the techniques demonstrated in Shneidman's sample, that of Lasaga (27,38) probably bears the greatest similarity to the one used in the present study; he uses a story summary, considers the stories in sequence, and emphasizes that the TAT can reveal real life problems.

Murray's system of TAT analysis (35) was the first to be developed and uses an extensive system of needs and press. Twenty-eight needs (or drives) are classified according to the direction or immediate personal goals (motives) of the action, and "thirty or more press" to which are added "a few inner states or emotions." Murray proposed a point-scale rating of these variables; his unit of analysis is the "theme." His method has been adopted, with modifications, by Aron (5), Eron (17), and Hartman (21). Check lists have been used by Bellak (6), Fine (19), and Klebanoff (26). Eron also quantifies both the frequency and intensity of responses.

Though the need-press formulation is comparatively objective, Rotter (40) found it unacceptable, 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 were covered up...; 3. there is a tendency....to neglect content material with respect to attitudes, complexes, etc."

Watson (47) attempted to devise an objective scoring system based on a measure he termed "perceptual organization," which results in a personality description and a measure of the degree of psychopathology present. Dana (14) attempted to validate this approach; only five stories were elicited from each subject, so that the results have been questioned.

Dana used scoring criteria based on three aspects of test behavior "deemed sufficient for development of objective scoring systems"--the approach to the situation, normality of response, and rarity of response. It was found that the use of objective TAT scores "seems to have considerable diagnostic power." Dana cautions, however, that "to attain more than mere passive clinical recognition (objective TAT scoring) must yield descriptive personality data. Further research must concentrate upon this aspect of validity." He seems to expect that objective scoring will eventually produce descriptions that can be used as variables for personality study.

Behind all these efforts at working out an objective scoring system lies the conviction that there must be some agreement in TAT interpretation before the TAT can become a valid measuring instrument. In addition, the scoring method must allow a valid inference to the actually existing personality variables. While scorer reliability is high the more objective a scoring system, such objectivity is sometimes achieved at the price of valid and significant inferences to behavior.

Clinical Approaches to TAT Analysis

For this reason, clinicians have often insisted that projective tests must be interpreted intuitively, on the basis of some personality theory. This is usually the psychanalytic theory. In the majority of clinical approaches currently being used, the interpretation of a TAT record depends either explicitly or implicitly on the psychoanalytic concept of projection*, i.e., the tendency to see in all outside reality the values, attitudes, and convictions that the person has himself. In addition, such interpretation is based upon the conviction that the latent content as well as the manifest content of the stories must be taken into account, and that the storyteller usually identifies with one or another person in the stories. That such intuitive interpretations sometimes betray the idiosyncrasy of the interpreter rather than portraying the personality of the storyteller is mentioned by Wyatt and Veroff (52).

A more objective method is advocated by Sanford. He uses the analysis of needs and press through hero-identification as well as the method of estimating the strength of needs and press. His psychoanalytic orientation and minute method of story dissection is evident in the following statement:

"To note all the manifestations of need and press, a strict analytic attitude is necessary. The fantasy must be taken sentence by sentence, or even phrase by phrase, for the

* According to Snider (43) "probably a large majority of TAT workers have accepted the basic notion of projection. This is particularly true of those who have applied the TAT to research problems. The method is usually to set up a system of variables and to treat their occurrence in terms of story elements statistically." (p.121) See also Aron (5). For a discussion of some of the assumptions commonly underlying TAT interpretation, see Lindsey (29).

fusion of needs is common and the elements to be observed may be imbedded in complex behavioral patterns." (41,p.38)

Snider has expressed the view that Sanford's method seems to suffer from many of the handicaps of an atomistic approach to personality. After such an analysis, the data cannot be synthesized without recourse to psychoanalysis. He feels that as much of the wholeness of personality is lost through this method as was missed by the trait-measurement approach to personality testing. He says:

"Any approach to the TAT which emphasizes the importance of words, phrases, sentences, and themes tends to gravitate towards a nomothetic attitude in testing. Norms become necessary.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.."
(43, p.124)

Winch and More (51) tried to evaluate the TAT's contribution to a direct assessment of personality through interviews, by applying a complicated statistical analysis to the strict dichotomy of "needs and press." They found that "the TAT makes no statistically discernible contribution" (i.e., any more than was derived from the interview itself.)

With intuitive analyses, the agreement between interpreters is an additional problem. Harrison and Rotter (20) are among the few who investigated this aspect of TAT analysis. Using five TAT cards, they allowed 7½ minutes for their subjects to write brief stories. The stories were analysed by two judges and rated according to the storyteller's emotional suitability for Officer Candidate School. In 74% of the ratings, there was essential agreement. A correlation of .73 was obtained when a three-point scale was

used; this rose to .77 when a five-point scale was employed. The authors remark that "unfortunately there has been no adequate opportunity to validate the ratings (i.e., the psychologists' judgments) against any outside criteria." (p.98)

Another study designed to find a scoring system "which is objective enough to provide high observer agreement and sensitive enough to reflect changes in motivational states" is that of McClelland, Clark, Roby, and Atkinson (34). Unfortunately, the authors report only that the scoring method "followed in general the usual analysis of an overt behavioral sequence with adaptations from Murray," (p.254) but state that "it was objective enough to yield on rescoring a 91% agreement for individual categories and a rescoring reliability coefficient for the N-achievement score developed of .958" (p.254). This, however, seems to be an agreement between two scorings of one judge rather than an agreement between two judges.

Davenport (16) attempted to assess inter-interpretor reliability by using the independent judgments of six psychologists regarding interpretative statements. He found that these interpreters "tended to hedge" and that "in no case was an interpretative statement used with complete accord by all six judges." He ascribes this failure of agreement to the personality theories underlying each psychologist's interpretation.

The foregoing discussion of techniques of TAT analysis, and their shortcomings, should serve to point up the definite need for a system of TAT scoring which is objective enough to be used consistently by different researchers, and which also rests upon a sound theoretical foundation.

That a brief and objective scoring system is much to be desired is

indicated in Holt's pessimistic outlook; he feels that

"The greatest single obstacle to the wider use of the TAT is the lack of a scoring system comparable to Rorschach's in simplicity, the ease with which it may be learned and applied, and in the significance of the distinctions it makes. It seems unlikely that such a system will ever be worked out, due to differences in the kinds of data yielded by the two tests."
(23, pp.2-3)

There can be no doubt that the two instruments do yield different kinds of data, but, accepting MacFarlane's (31) dictum that "the first step in projective research should be an explicit statement of concepts used and an orientation with respect to theoretical biases," the following description is intended to show that treatment of TAT productions can be made relatively objective without the necessity of setting up long lists of themes and outcomes, or specific story content.

The TAT Sequence Analysis

Arnold (4) has developed a method designed to isolate the story import, the "moral" of the story, (rather than abstracting various story elements like "needs" and "press") and order these story imports in a consecutive sequence. This results in the TAT Sequence, a series of statements which indicate the storyteller's attitude, and his approval or disapproval of various actions, depending on the story outcome.

According to Arnold, a story is an imaginative production of the storyteller which is guided by his dispositions to action, i.e., by his emotions and strong convictions:

"In telling a story, the imagination is set in action along the lines dictated by

his emotional attitudes.* Hence the storyteller may explore various possible solutions of a particular problem in story after story on the TAT. The outcome of each story will indicate whether this solution is acceptable to him. If he has no acute problems, he will simply tell stories that express his dominant attitudes and convictions."

".....The story import will show how the storyteller thinks people usually act and how he feels they should act; what actions he thinks right and which wrong; what will lead to success, in his opinion, and what to failure; what can be done when danger threatens and what are the things to strive for. In short, the story imports give us a connected statement of the storyteller's own principles of action, his motivational pattern." (Paper given at APA Meeting, Cincinnati, Ohio, 1959)

The use of Sequence Analysis involves three major steps:*

1. Story Summary Each TAT story is summarized according to its significant meaning. The story is accepted at its face value; no meaning is 'projected' into it. The meaning is stated in a generalized form, as if it were a brief characterization of the subject's own life situation. However, it is not assumed that the subject is always speaking about himself in describing the hero's actions, but only that he is revealing his principles of action. He indicates by the outcome whether he thinks the hero's action is

* For Arnold, such attitudes are dispositions to action based on earlier appraisals that include both rational and sense judgments.

* This outline follows very closely the steps listed by McCandlish (32, p. 21-22) but has been modified to incorporate subsequent refinements in use of the method.

right or wrong, commendable or blameworthy. This is a different process from 'projection' (in the psychoanalytic sense) or 'hero identification'; even when the subject obviously identifies with the hero, it is his evaluation of the actions and attitudes of the hero which we try to state in the story summary, and which reveals the subject's own values.

2. Sequence The import of each story is written down in sequence. As this sequence unfolds, a pattern will generally emerge. A problem or alternative action that has a personal significance for the subject, frequently is explored or approached from a different point of view, in a subsequent story; possible solutions are evaluated.

3. Analysis Examination of the sequence of imports usually supplies such relevant information about the subject's attitudes and motives. In this step we see him working out his principles of action, that is, his problems and their possible solutions, and the methods he relies upon to deal with his particular life situation. These methods can be viewed as the subject's effective motivational characteristics.

Additionally, we may note that the TAT instructions call specifically for development of an outcome or solution to the problem raised in the story. A story outcome constitutes the subject's evaluation of the emotionally-determined issues posited in the story, so that, by approving or disapproving the issues and actions of the plot, he reveals his principles, attitudes, and values. Moreover, the extent to which a problem or attitude occurs in the stories is a valid index of the importance of the problem; the sequence of imports reveals the alternatives he explores in order to deal with it.

The story imports in sequence can then be scored as positive or negative

on the basis of scoring criteria that will be described later, in connection with the procedure for this project.

This method is neither a counting of "themes" in terms of needs and press, nor an intuitive interpretation of the stories on the basis of a particular personality theory. Rather, it is based upon an abstraction of the story import that is objective enough to yield high scorer agreement (McCandlish, Burkard, Petrauskas; see pp. 30-31).

TAT Studies of Motivation

Although prior to 1953, to the writer's best knowledge, there were no published studies which used this instrument with high and low academic achievers, the broad research potentialities of the TAT have been explored in two recent volumes, which may now be reviewed; some research concerned specifically with academic achievement can then be discussed.

In the first of these, McClelland et al (33), accepting the (Freudian) hypothesis that a good place to look for the effects of motivation is in fantasy, set for themselves the experimental task of attempting to arouse and control the intensity of a human motive and to measure its effect on imagination or fantasy. Their measure of achievement motivation was derived from procedures for producing ego-involvement and experimentally-induced experiences of success and failure. In their view, motives are distinguished primarily in terms of the types of expectations involved, and additionally in terms of the types of action which confirm those expectations in different degrees and thus generate positive or negative affect.

Taking the position that an individual's perceptual frame of reference enables him to perceive his performance in terms of standards of excellence,

these authors look for the affect shown in the TAT story in connection with this process of evaluation. Thus, they define the achievement motive in terms of "affect in connection with evaluated performance"; in their scoring of a TAT story, the goal of some individual in the story must be to attain "success in competition with a standard of excellence." This may be actually stated as a primary concern, as when one of the characters is engaged in some competitive activity (other than pure cases of aggression), although meeting self-imposed standards of good performance, or unique accomplishment, without direct competition with others, is also acceptable evidence for the presence of an achievement motive.

McClelland states that his scoring technique "can be learned with reasonable scorer reliability (over .90) in a week's time," and that it can be applied easily and quickly to each story.

This method of identifying and counting the frequency with which a certain type of imagery appears in the TAT is clearly derived from Murray's system; it is essentially a form of content analysis designed to reflect an experimental variable, and which tries to reduce judgment to a minimum. The authors recognize that their scoring system leaves many problems unsolved, and that their index of achievement does not correlate highly with other measures of achievement or with independent clinical judgments. Still, McClelland and his co-workers have extended their investigations and theoretical speculations far beyond the limits of their original experiments.

Although noting that their interest in the area has been secondary to other problems, these authors have reviewed several small-scale studies of the relation of scores on their measure of "need achievement" to college

achievement; in an effort to explain conflicting results they suggest that "the measure of motivation has a higher relation to future than to past grades."

(p. 239)

In attempting to confirm this hypothesis, Bendig (8), using a larger sample of students than those reported by McClelland, found that the projective n-achievement scale was not related to future achievement in an introductory psychology course. This finding indicated to him that McClelland's hypothesis was open to question, and led to his further exploration of the relationship of the n-achievement scale to both past and future college achievement.

In this later study (7) Bendig, employing a sample of 110 male psychology students, recorded each student's Quality Point Average (QPA) in all courses completed in the University of Pittsburgh during the preceding semesters. He also used the student's letter grade in the introductory psychology course. Instruments employed were a vocabulary test, the forced-choice need-achievement scale included in Edward's Personal Preference Schedule, and the Four-Picture Need-Achievement measure of McClelland.

Results were the opposite of the original McClelland hypothesis. The correlation between the McClelland scale score and the previous QPA was .22, significantly different from zero, while the scale scores were not significantly related to future achievement as represented by course grades.

Bendig concluded that "achievement imagery may be the result of the past reinforcement history of the students, and not an index of (their) current motivational level...."

He goes on to say that "positive academic reinforcement may act to strengthen the occurrence of achievement themes in the fantasy productions of

students and a quantitative measure of these themes may be less an index of the current level of need achievement than it is a measure of the frequency of academic success as represented by grades in college classes." Bendig seems to feel here that McClelland's scale can detect a student's general high achievement orientation, which would of course show itself in his overall academic accomplishment, but not necessarily in the grade for a particular course or subject.

In an extension of the motivational studies initiated by McClelland and his associates, Atkinson (2) has recently edited an imposing compilation of 46 separate theoretical and research papers; half of these appear in the volume for the first time. All of the investigations reported employ content analytic systems which yield TAT scores interpreted as indices of motive strength, but deal with a great variety of issues, ranging from a search for systematic principles relating motivation and performance, to speculations on the social origins of human motives.

Overall, this sizable body of research results has proved to be disappointing. The need-achievement score fails to correlate significantly with most independent measures of this variable, including, as the authors note, consciously-valued achievement, those responses determined by cognitive or perceptual reality factors, and most choice-type items. Although McClelland and Atkinson acknowledge a general disappointment with the method, there is little evidence that the pace of investigation by this group is tending to show any noticeable decline.

Turning now to studies concerned specifically with academic achievement, Applesweig, Moeller, and Burdick (3) in a study designed to determine the

effects of non-intellective variables upon academic achievement, administered a modified form of the TAT to seventy college sophomore women. Their hypothesis was that "motives directed toward other goals may lead to achievement oriented behavior and thus supplement need-achievement in the production of such behavior." Speculating that the peer group with which the student chooses to affiliate, if it supports high achievement as a value, may bring pressure on its members to conform to the group standard, these authors determined the level of achievement behavior of each subject's friendship group. They found that these two motivational variables, the need for achievement as shown in TAT score, and the mean friendship group achievement index, were significantly related to college success. They support the hypothesis that "academic achievement over and above ability is a function of more than one motivational variable, and more importantly, that variables that do not directly support academic achievement may nevertheless provide a basis for its prediction."

Johnson (24) was interested in the relationship between qualities possessed by teachers, and teacher effectiveness; his aim was to predict teacher success. His variables were a modified TAT, Rorschach, observations of each teacher in the classroom, and age of the subject. Using TAT-type pictures depicting "critical situations in areas where adjustment would be significant to the individual's teaching performance," he asked his thirteen volunteer subjects to "react to each situation as an educator.....in which you will find the most significant problem and solve it."

Each picture was scored on a five-point scale from two standpoints: the subject's ability to find and define the problem, and her ability to solve the

problem once it had been found. He reports that "the TAT appears to be a valuable tool for the prediction of significant aspects of teaching effectiveness"; its inclusion with age and Rorschach yielded a multiple R of .819.

However, Ohlsen and Schulz (36), working with student teachers, showed five selected TAT cards to regular methods classes that included the best and poorest fifteen percent of student teachers (identified by team judgments of supervisors of student teaching) but the single judge's blind analysis failed to clearly differentiate the two groups, nor were her predictions of future personality conflicts in teaching substantially correct. At the same time, there seemed to be differences in the content of the responses made by the two groups.

In another departure from usual methods of TAT analysis, Teahan (46) related high academic achievement to the student's optimism and greater concern for future goals. He hypothesized that "the setting up of future goals implies a temporal orientation that is geared to the future, since a person's goals imply expectations and anticipations of future successes." He thought that high academic achievers might be expected to show an essentially future oriented approach to life, characterized by a time perspective with broader scope than that of the less successful student.

Using thirty high achieving and thirty low achieving boys from the seventh and eighth grades, he presented three TAT cards to each subject, with instructions to "write a story about this picture." He then asked each boy to estimate the time involved in the action in each story, that is, in the action described. Each story was also rated by the examiner on a five-point scale according to the amount of optimism reflected in the outcome. Part of the

sample was re-rated by two other judges as a check on reliability.

Teahan found significant differences between the high and low achievers; the high achievers "demonstrated significantly more extensive future time perspective on all three stories given to the TAT cards.....and students high in future extension also appeared more optimistic." He felt that high academic achievers are predominantly 'anteverts' insofar as their recent thoughts and conversations are concerned. We would expect that somewhat the same quality of optimism and greater concern for the future might characterize the high achieving college students used in the present research, although the stories are not scored specifically for this factor.

One of the most extensive and costly research projects designed to evaluate personality characteristics and academic motivation is that of Kelly and Fiske (25). This study extended over a four year period and involved seventy-five subjects; it had as its main objective the determination of personality characteristics of successful clinical psychologists, and use of the data for predictive purposes.

These subjects were tested prior to entering college, and at various times during the ensuing four years. Over one thousand test scores were accumulated on each candidate. One of the instruments used was the TAT.

The TAT proved unsatisfactory for prediction, correlating .06 with academic performance and only .24 with their category of Diagnostic Competence. The study has been criticized on methodological grounds, as there is no mention of the frame of reference used for the TAT analysis; probably a variety of methods was used, as the authors state "no staff member analyzed more than one projective test for any one subject."

TAT Studies of Motivation Using Sequence Analysis

As we have seen, the TAT has been used variously in a number of studies which were concerned with motivation and achievement of different groups. However, TAT sequence analysis has been used only by Snider, Burkard, McCandlish, and Petrauskas, at Loyola University, for the delineation and prediction of various situations in which motivation is important. Each one of these may now be reviewed in turn.

Snider (143) used TAT sequence analysis to discriminate between high and low school achievement in a group of forty High School seniors. Twenty boys in the upper third of their class were matched on the basis of age, I.Q., and socio-economic status with an equal number of subjects in the lower third of the class. He found highly significant differences between the two groups, on the various categories derived from sequence analysis.

Snider used a preliminary Rorschach analysis of his cases to isolate certain personality factors characterizing high and low achievers, but this analysis yielded no significant differences between the two groups. In contrast, the TAT allowed a significant differentiation between high and low achievers. Snider used Arnold's original method, which consisted of four steps (story summary; situational analysis; analysis of attitudes; sequence analysis); the method used in the present research employs only sequence analysis. The categories derived by Snider are broad and allowed the same story to be scored in different, sometimes contradictory categories. His procedure has been criticised by Riggs as being "so vaguely specified that replication would be impossible."

Snider's categories were based on certain themes, e.g., successful or

unsuccessful adjustment to catastrophe, or subjectively versus objectively valued goals, etc.); the present study uses a scoring system in which each story import is scored as constructive (4 or 3) or non-constructive (2 or 1), according to the criteria listed in the Appendix (p.50). This allows the placing of any individual in the group.

The study by McCandlish (32) followed that of Snider and was designed specifically to work out a more rigorous system of scoring. His research produced a scoring system which allowed each story to be scored as plus or minus (constructive or not constructive) in the category in which it was placed. It was found that thirteen stories were sufficient for good discrimination. A student who told more stories scored plus than stories scored minus was assumed to be a high achiever; a student who had most of his stories scored minus was assumed to be a low achiever. This technique correctly predicted the achievement of thirty-nine out of forty of the matched subjects he used for his sample.

Burkard (11) was successful in predicting good and poor teachers by the same method. Her sample of teachers was sorted into "good" and "poor" on the basis of a carefully worked-out rating by pupils. Burkard's criterion for scoring teachers' stories plus or minus, developed from the TAT sequence analysis, was more rigorous than that used for good and poor students, and successfully discriminated the two groups of teachers in her sample.

When applied to a different sample, Burkard's criterion categorized fifty out of fifty teachers successfully as good or poor, when the middle range was excluded.

The technique has also been applied successfully by Petrauskas (37);

working in a Naval installation, and using a sample of thirty pairs matched on the basis of age, race, education, length of service, and intelligence (as derived from General Classification Test scores), he correctly predicted twenty-six out of twenty-nine Navy men as offenders or non-offenders.

CHAPTER III

DESIGN OF THE RESEARCH

Since one of the chief purposes of this validation study is to verify data obtained from TAT analysis, and to classify thematic material associated with goal-striving in its several aspects, as well as to extend the recently-evolved scoring system to a broad sample of a college population, subjects for the study were drawn from two different groups.

Procedure

One sample consisted of forty-five senior students from a private women's college in the Chicago area (Mundelein). The other was composed of forty-six Loyola University seniors, primarily male students selected at random.

The instrument used was Murray's TAT cards; thirteen of these were employed in a group method of administration (by use of positive transparencies and a slide projector) and each story was written by the subject. Burkard's study used this method of administration,* which has proven satisfactory for prediction.

* Lindsey and Heinemann (30) also found that the differences between individual and group administration are slight when other methods of interpretation are used.

The standard TAT instructions were used, but with special emphasis on development of a plot and outcome to each story, as these are essential for the method of analysis used.

For the Loyola sample, each student's Grade Point Average (GPA) for the first semester of the Junior year was recorded.

For the Mundelein seniors, a quotient obtained by dividing the number of semester hours accumulated during the three previous academic years, by the number of honor points earned during that time, was used. This gives a figure analogous to a Grade Point Average for each member of the sample.

The two samples were kept independent for all statistical calculations.

As the first step in the analysis of the data, the GPA was used to select three students from the highest third of each group, and three from the lowest third. This step was necessary in order to verify the scoring criteria derived from other TAT studies which used sequence analysis, and to set up criteria for high achieving and low achieving students in this population so that these norms could be applied to other cases in the sample. This small number of cases, when studied for identifying differences between high and low achievers, and drawing upon the criteria derived from pioneer studies using this method, proved to be sufficient to correctly score each case; it also provided a maximum number of cases for statistical analysis (the 39 women and 40 men students not used in this preliminary verification).

The corrected criterion (see scoring sheet in Appendix) was then used to score each of the remaining protocols, without knowing the Grade Point Average. The arithmetic sum of the scores assigned to each story was divided by the number of stories written, to give an average TAT score for each student.

A word on the method of scoring the stories is in order here. The four previous Loyola TAT studies, discussed in the review of the literature, made use of a simple plus or minus category for each story; the subject was assumed to be a high achiever if a majority of his stories was given a plus rating; a student who had most of his stories scored minus was assumed to be a low achiever. In the present study, positively-toned stories are scored either 3 or 4, depending on the type and quality of achievement motivation reflected in them, while negative stories are scored either 2 or 1. This refinement in scoring was reported by T. Quinn (38), and has proved superior in several ways to the older method.

Statistical Analysis

As the next step, the intercorrelations of GPA, TAT, and IQ were calculated (the student's total raw score on the ACE examination was used as the index of his ability). Next, the partial correlation between TAT score and GPA, with IQ held constant, was found. The hypothesis here was that a significant relationship between TAT scores and that component of the GPA that is not related to measured intellectual ability, would emerge.

The non-intellectual factor in GPA (\bar{D}) was taken as the predicted GPA minus the actual GPA, and the array of \bar{D} values was plotted against the TAT scores, and a coefficient of association was determined. A linear relationship between GPA and IQ was assumed; the linearity and homoscedasticity of the arrays in the relationship between the TAT scores and IQ, and between TAT score and GPA, were similarly assumed, in order to utilize a technique of partial correlation.

Since the main question of this study is to determine the nature and

strength of the relationship between the TAT scores and college success, equations were derived that can be used to predict a most probable GPA for each subject, on the basis of the regression of GPA on IQ.

There are several additional research advantages in this use of the TAT, and the special technique of analysis employed here. It has been determined that the accuracy of the imports, and of the actual numerical score assigned to each set of stories, are not materially affected by deliberate faking, so that scoring is unlikely to be influenced by a student's guardedness or a desire to create a favorable impression of himself.

According to earlier studies (McCandlish; Burkard) a final plus score, that is, in terms of our scoring, an average numerical rating of 2.01 or more for the set of thirteen stories, indicates good motivation, whatever the level of intelligence; however, in using the method to predict college achievement, the intelligence of each student must be taken into account, because a certain minimum level of intelligence is required for success in college work. But beyond this level, the student's motivation seems to determine how well he will do.

The TAT score will account for the degree of motivation. Hence we correlate TAT with the Grade Point Average (GPA) and compare the resulting coefficient with the correlation between ACE (intelligence) and the GPA. If our reasoning is correct, we should get a higher correlation between TAT and GPA, than between ACE and the GPA.

Finally, the study has been designed to allow prediction of the Grade Point Average, on the basis of the known ACE and TAT scores.

CHAPTER IV

RESULTS

As a first step in analysis of the data, it was necessary to select a method of determining the relationship between the index of achievement used (the GPA) and TAT score. For this purpose, and treating the samples of Mundelein and Loyola students independently, product-moment correlation coefficients were computed (using ungrouped data) between GPA and TAT scores, between GPA and ACE scores, and between TAT and ACE scores, by use of the general formula

$$r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \sqrt{N \sum Y^2 - (\sum Y)^2}} \quad (1)$$

The coefficients obtained in this first step will allow a comparison of the relationship existing between GPA and TAT scores, and between GPA and intelligence, as reflected in the ACE scores. What is expected here is a significantly higher relationship between TAT score and GPA (i.e., between motivation and achievement) than between the ACE and GPA (i.e., the student's measured intelligence and his actual academic achievement). However, as intelligence obviously also enters into academic success, we must next determine the exact relationship between TAT score and that component of the GPA which is not related to measured intellectual ability.

For this next step, we calculated a first-order partial correlation between GPA and TAT score, with IQ held constant, by use of the general formula

$$r_{12.3} = \frac{r_{12} - r_{13}r_{23}}{\sqrt{1-r_{13}^2} \sqrt{1-r_{23}^2}} \quad (2)$$

The results of these computations may now be summarized. For each group, the intercorrelations between the three measures, the means and standard deviations of each distribution of scores, and the coefficients of partial correlation, are shown in Table I.

Inspection of the Table verifies the hypothesis that the TAT is a highly effective device for isolating a significant component of achievement. The correlation coefficients of .85 and .83, for the Loyola and Mundelein samples, representing the relationship between GPA and TAT score, are noticeably higher than those which represent the relationship between intelligence and GPA. However, as expected, ACE score is also correlated with GPA, although to a lesser degree, a fact which suggests that it may profitably be combined with TAT score in any estimate of the GPA.

With intelligence partialled out, the ability of the TAT to detect the achievement motivation of these groups appears in clearer perspective. The coefficients ($r_{12.3}$) of .76 for the Loyola students, and .78 for the Mundelein group, are high enough to suggest that the TAT score is perhaps sufficiently valid to be used predictively with a college group.

However, before exploring this problem, it should be emphasized that these coefficients can and probably will vary from sample to sample, and from population to population. They are, of course, relative to the kind of population sampled and to the techniques of measurement used. In these groups, the variability in TAT scores is high; there is also a wide range in the

TABLE I

Means, Standard Deviations, and Coefficients of Correlation
of Grade Point Average, TAT Scores, and Scores on the
ACE Examination, in two Samples of
College Students

	LOYOLA	MUNDELEIN
M_1	2.564	1.908
$S.D._1$.438	.389
M_2	2.475	2.301
$S.D._2$.512	.516
M_3	124.56	121.886
$S.D._3$	18.287	19.966
r_{12}	.850*	.832
r_{13}	.626**	.498
r_{23}	.582	.470
$r_{12.3}$.766	.781
1 = GPA 2 = TAT 3 = ACE		

* N = 40

** N = 23; ACE scores were not available for some members of the Loyola group, but the range of scores was found to be large enough to warrant the assumption that a coefficient based upon the smaller number accurately represents the entire sample.

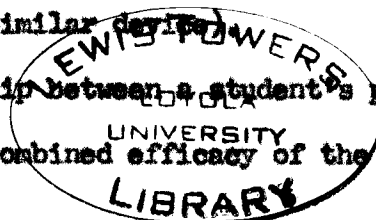
distribution of GPA's for both samples.* These factors probably inflate the size of the obtained correlations by an unknown amount. And there is also an unexpectedly wide range of intellectual ability represented by the members of both samples, a fact which again probably augments the relationship between GPA and ACE score. While both samples may be regarded as relatively homogeneous and highly selected, in the sense that they represent a college population which has successfully completed a major part of the academic and course requirements for graduation, another sample which showed more restriction in the range of ability, or less variability in TAT score, if tested by the same method, might be expected to produce somewhat lower coefficients.

It will be recalled that the stated aim of this research is to derive an equation that may be used to predict the probability of a student's successful completion of a college program. How may this problem of prediction be best approached?

We want a method that will take into account the known predictive potential of both the TAT and ACE score, that is, one that will allow use of the coefficients and other statistical indices already obtained, that will give a maximum correlation between predicted and obtained scores, and that will be simple to apply (i.e., by use of a graph or similar device).

Since we are interested in the relationship between a student's potential or most likely Grade Point Average, and the combined efficacy of the two

* The Grade Point Average in the Mundelein group varies between a high of 2.86 and a low of 0.99; for the Loyola students, the highest GPA is 3.65 and the lowest 1.62. For both groups, the higher figure represents nearly a straight "A" average; the lower figure represents a letter grade slightly below "C". The numbering systems are different in the two schools. Complete figures are listed in the Appendix.



(intercorrelated) indices known to be related to academic success, a multiple regression equation is appropriate here. Its main function will be to predict the most likely GPA for any combination of TAT and ACE scores which a student may obtain.

This equation has the general form

$$\text{GPA}' = b_{12.3} X_2 + b_{13.2} X_3 + C \quad (3)$$

where GPA' is the predicted Grade Point Average, $b_{12.3}$ and $b_{13.2}$ are partial regression coefficients, and C is a constant used to assure that the mean of the predicted GPA's will be equal to the mean of the obtained GPA's. The b's are derived from standard partial regression coefficients, called beta weights, by means of the general formula

$$b_{12.3} = \left(\frac{\sigma_1}{\sigma_2} \right) B_{12.3}$$

and

(4)

$$b_{13.2} = \left(\frac{\sigma_1}{\sigma_3} \right) B_{13.2}$$

This gives .6276 for $b_{12.3}$ and .0048 for $b_{13.2}$

The beta weights in turn are given by

$$B_{12.3} = \frac{r_{12} - r_{13} r_{23}}{1 - r_{23}^2}$$

and

(5)

$$B_{13.2} = \frac{r_{13} - r_{12} r_{23}}{1 - r_{23}^2}$$

These give values of .734 for $B_{12.3}$ and .199 for $B_{13.2}$.

The constants thus found were substituted into equation (3) giving, for the Loyola group

$$GPA' = .6276 TAT + .0048 ACE + .4153 \quad (6)$$

Using the same procedure with the Mundelein sample

$$GPA' = .5786 TAT + .0027 ACE + .25 \quad (7)$$

The weights computed above, for each group, are optimal weights, and guarantee the maximum correlation between predicted and obtained scores. The solution is designed to satisfy the principle of least squares, that is, the sum of the squares of differences between the obtained and predicted Grade Point averages will be a minimum.

Inspection of Table I reveals that the three indices, as expected, are all intercorrelated, so that what is wanted now is an index number which will show the amount of correlation between GPA and the two other variables taken together. As this index cannot be simply the sum of the separate correlations already computed, a coefficient of multiple correlation is called for. Since beta coefficients have already been calculated, they may be used now to obtain the multiple correlation between GPA and the two independent variables represented by the TAT and ACE scores, by means of the general formula

$$R_{1.23}^2 = B_{12.3} r_{12} + B_{13.2} r_{13}$$

For the two samples of Loyola and Mundelein students respectively, then $R_{1.23}^2$ becomes .7485 and .7070; the coefficients of multiple correlation are the square roots of these figures, as shown in the following Table:

TABLE II

Coefficients of Multiple Correlation Based Upon the
GPA, TAT Score and ACE Score, for two
Samples of College Seniors

	LOYOLA	MUNDELEIN
$R_{1.23}^2$.865	.841

We may now use the coefficient of multiple determination, $R_{1.23}^2$ in the preceding equation (8), to obtain the proportion of the variance in the Grade Point Average that is associated with the TAT and ACE scores, combined with the regression weights that have been calculated. For the Loyola students, R^2 is .7485 and for the Mundelein group, it is .7070. Translated into percentages, these figures become 74.85 and 70.70 respectively. These are very high proportions, for both groups, and in fact leave only a relatively small part of the variance unaccounted for.

This manipulation of the data may be carried one step further, in order to learn the relative importance of each variable in the regression equation, that is, to obtain a more definite idea of the contribution to the variance made specifically by each of the two predictive measures. This has been calculated from the formula for $R_{1.23}^2$ and is shown in Table III on page 37.

It remains now to indicate how far our predicted GPA's will deviate from those obtained from the present samples. This has been done by using the formula for a standard error of estimate from multiple predictions, which has the form

$$\sigma_{1.23} = \sigma_1 \sqrt{1 - R_{1.23}^2} \quad (9)$$

TABLE III

Percentage Contributions of TAT and ACE Factors to Predicted Grade Point Average for two groups of College Students

	LOYOLA	MUNDELEIN
TAT	62.4	63.9
ACE	12.4	6.8

For the Loyola group, this figure is .22, and for the Mundelein students, .21. About two-thirds of the obtained GPA's will lie within .22 and .21 points of the predicted GPA's, for the two samples respectively.

It remains now to note the application of the regression equations and weights that have been derived. To simplify their use, equations (6) and (7) have been expressed in graphic form.

For this purpose, equation (6), based upon the Loyola group was transposed to read

$$\frac{\text{GPA}' - .6276 \text{ TAT} - .4153}{.0048} = \text{ACE}$$

For the Mundelein group, equation (7) becomes

$$\frac{\text{GPA}' - .5786 \text{ TAT} - .25}{.0027} = \text{ACE}$$

Each line on the graph represents the locus of the predicted Grade Point Average at intervals of 0.5 units, for many different combinations of TAT and ACE scores; the lines were constructed by selecting a given value of GPA' (e.g., 1.5, 2.0, 2.5 etc.), substituting this and any two TAT values in the equation, then solving for ACE score. The location of two points was

calculated to obtain the slope of each line; a check was made by computing the locus of a third point.

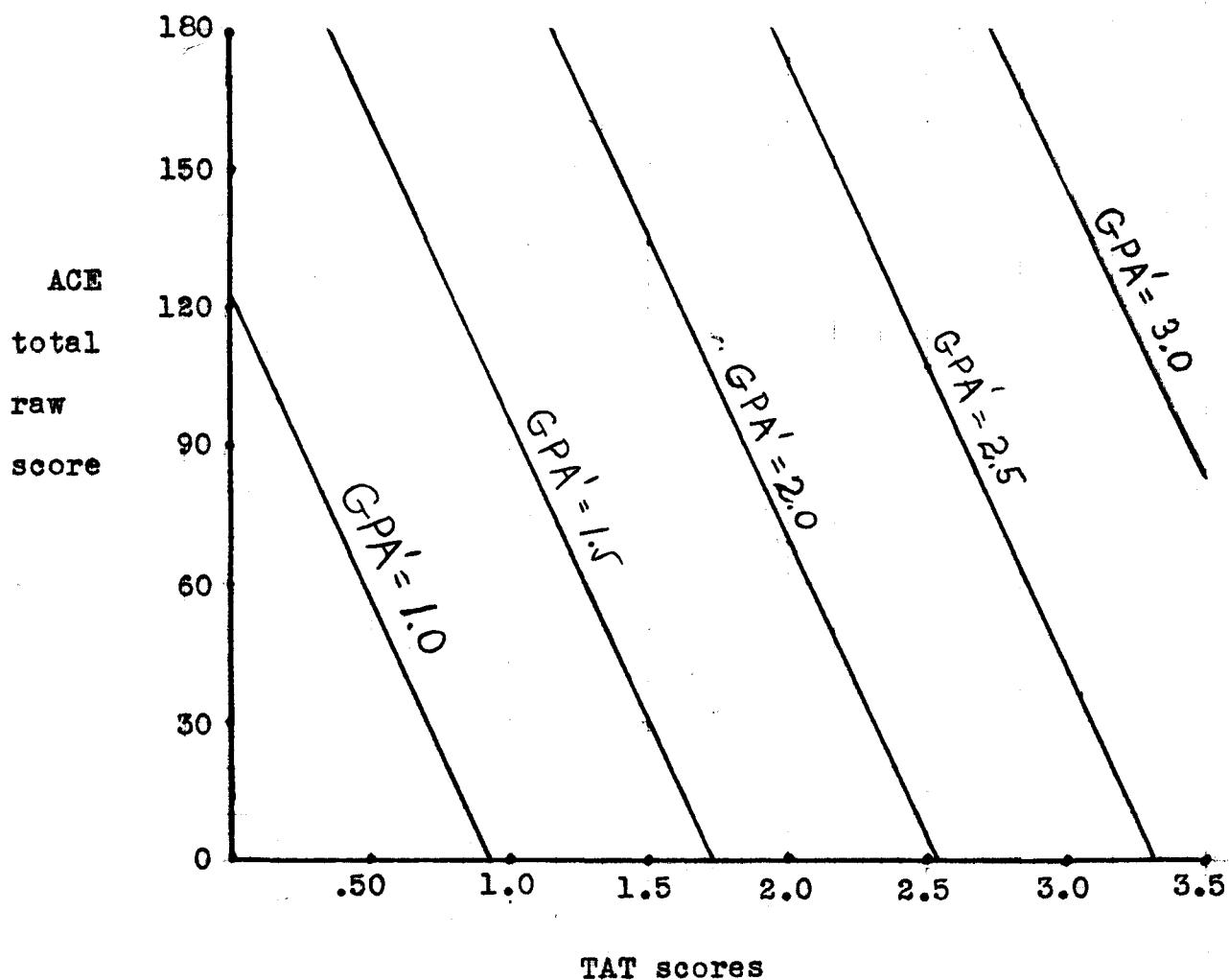
As an example in the use of these charts, a Loyola student who obtained a TAT score of 3.5, reflecting a high level of achievement motivation, and who had an ACE raw score of 82, would have a most likely Grade Point Average of 3.0. In this instance, his high motivation to achieve would, in our view, enable the student to maintain an academic average not usually expected on the basis of his ability alone.

On the other hand, a bright student, say with an ACE score of 140, would, if his achievement motivation was at a level represented by a TAT score of about 0.66, have a most probable Grade Point Average of only 1.5. While high intelligence and high achievement are usually associated, the notable exceptions, as in the extreme examples given above, are by no means uncommon in a college student population.

When the prediction is not exactly on one of the diagonal lines, it is necessary to interpolate, by inspection, between two lines. This proportion of the distance between two adjacent lines must be estimated by the perpendicular distance between them; this perpendicular runs in a diagonal direction.

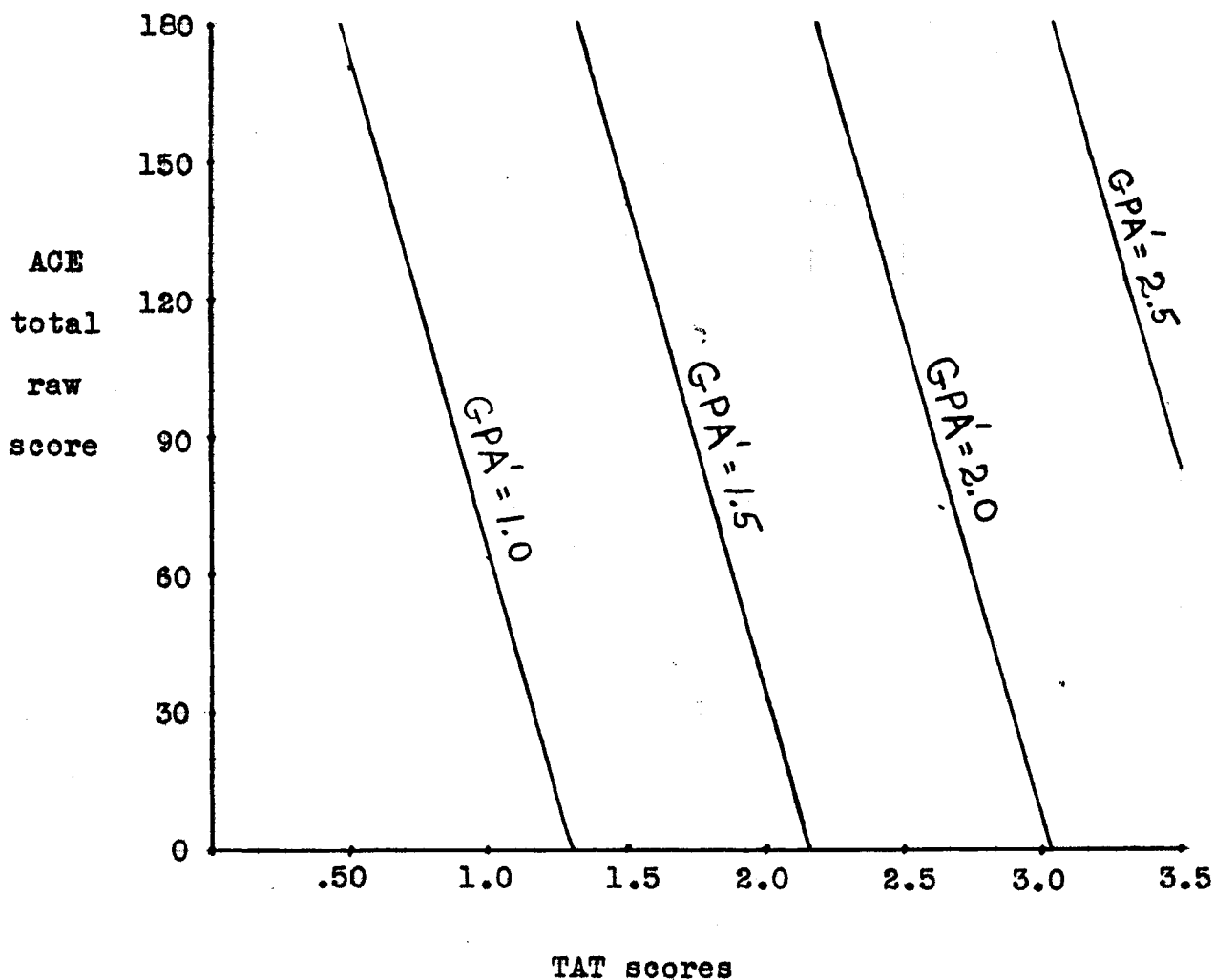
For Loyola students, a GPA of 4 represents a straight "A" average; one of 3, a "B" average. A letter grade of "C" receives a weight of 2, and a grade of "D", 1. In the Mundelein system, 3 points are assigned for an "A" grade, 2 for B's, and 1 for a grade of "C". Thus the two systems have different numerical means corresponding to each letter grade; this fact is reflected in the graphs.

LOYOLA STUDENTS



Constant values of predicted Grade Point
Average for different combinations of TAT
and ACE score, with appropriate weights.

MUNDELEIN STUDENTS



Constant values of predicted Grade Point Average for different combinations of TAT and ACE scores, with appropriate weights.

CHAPTER V

DISCUSSION

In this research, for the first time, an effort has been made to extend the technique of TAT sequence analysis to a broad sample of college students, and to predict the most probable Grade Point Average of every member of the sample. This constitutes a notable departure from all previous studies using the method, in which only the extremes of each group were studied. The present research also has served to further refine the scoring criteria, enabling their broader application; the simple plus or minus categorization of each story was replaced by a numerical system which yields an average TAT score for each college student subject. This refinement in scoring has permitted a greater sensitivity to the type and quality of achievement motivation appearing in the protocols of college students. The availability of a numerical TAT score has the dual advantage of permitting the application of more refined statistical procedures, and enabled equations to be derived, which, in graphic form, allow the ready prediction of a student's probable success or failure in academic work.

In using the TAT, and the graphs constructed from equations based on the TAT scores, we also take into account the fact that a certain minimum level of intelligence is required for success in college work. The significance of the present study lies in the fact that the TAT score has been shown to reflect accurately those motivational aspects of a college sample, which account for

different degrees of academic accomplishment, when the minimum intelligence for such achievement is known to be present.

In this research, the samples were composed only of senior students. We expected that the motivational pattern would be better crystallized by the time a student reached his final year of college work. However, it was also felt that grades earned in the first year of college might not be a good indicator of eventual college success or failure. Since these norms may be expected to be applied to other college groups, basing the criterion on high achieving seniors is a way of assuring that motivation required for finishing college was the basis for our judgment. These senior groups allowed some further refinement for the scoring criteria, since these were not originally derived from a college population. It was discovered, however, that relatively little modification of the basic categories was required.

Thus at this time there is available a set of scoring criteria which appear validly applicable to a number of different college groups. A definitive test of these norms, by applying them to a large sample of college freshmen, immediately suggests itself.

Ideally, research of this kind should be initiated by administering the TAT to all entering freshmen. By using the graphs accompanying this paper, predictions of each student's most likely Grade Point Average may be readily made. We recognize that these predictions may not tally too well with freshman grades; following each student through the senior year is therefore desirable. Only in this way, it appears, will the achievement through four years of college, of the group tested as freshmen, indicate the degree of confidence to be placed in the freshman prediction.

This research has produced convincing evidence that the TAT is an effective predictive instrument, and that it is capable of making a genuine contribution to the problems associated with selection and placement of college students.

Summary

This research has had as its primary purpose the application of a refined technique of assessing achievement motivation to a broad sample of college students, and the related aim of developing a method of predicting academic achievement on this level.

Two selected and relatively homogeneous samples of college students were employed; these were senior students, and as such were assumed to possess at least the minimal intelligence and the minimal motivation necessary for academic success, as attested by the fact that all had successfully completed the first three years of college work.

Thirteen TAT cards were used in a group method of administration; the standard instructions were used, but with special emphasis upon development of a plot and outcome to each story. Each student's Grade Point Average was selected as the most practical and objective index of his achievement, and ACE examination scores were used as the measure of his general aptitude for college work. Knowledge of aptitude was needed in order to rule out the effects of intellectual ability upon varying levels of achievement; holding these effects constant statistically allowed the TAT scores to be treated as precise indicators of the relationship between motivation and actual academic accomplishment.

Each TAT protocol was scored by means of the technique of sequence analysis; the method allowed a numerical index to be derived, which gave a

specific measure of each student's motivational characteristics.

The method proved to be highly successful with both student groups; as indicated by the high positive correlations between TAT score and the index of achievement, the TAT is a more precise and sensitive indicator of a student's actual academic accomplishments than is his intellectual ability when measured by the ACE examination.

The research allowed the derivation of a set of multiple regression equations; these were expressed in graphic form, to simplify their use in predicting a student's most probable Grade Point Average, for any combination of TAT and ACE score.

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APPENDIX

P.
n.

SCORING CRITERIA FOR TAT SEQUENCE ANALYSIS

Score 4: Outgoing, well-intentioned, prudent action.

Achievement because of supernatural or ethical motives, one's own effort, initiative, persistence, virtue, definite goal or definite means, good humor, accepting one's own limitations, realistic adaptation.

Failure because of lack of the above qualities, or because of impulsive or imprudent action.

Loss, harm, or danger are overcome by positive action.

Good relationships by outgoing action, by good will, good fellowship, acceptance of one's own limitations realistically, by resisting temptation, by avoiding or escaping bad companions.

Legitimate enjoyment (failure through excessive enjoyment or by making pleasure primary, or through lack of the good relationships listed above).

Punishment for ill-intentioned action

Revenge is rejected or renounced.

Score 3: The action is well-intentioned, prudent, but more passive.

Achievement by taking thought rather than action, seeking advice rather than doing one's own thinking; eternal reward in spite of present failure; by acting after help from others.

Failure due to lack of the above; failure or punishment because of carelessness; a disproportionate punishment or loss results from the action involved.

Loss, harm, or danger accepted with resignation and hope, (no depression) or because one is forced to accept the situation; fears are unfounded or are overcome.

Good relationships because others cooperate.

Legitimate enjoyment (less positive than above)

Suicide which is clearly self-punishment for ill-intentioned action.

Revenge is frustrated or punished.

Note: A 3 score is given for something actually done or achieved by taking thought, not just for resolving to take action.

Score 2: Depending on the outside for motive or success; motivated by negative emotion.

Achievement because of wanting to please others, by being helped or advised by others; waiting for another's approval or permission; because it is required or expected; because of wanting fame or recognition; in spite of vague goals or means; by wishing, by passive virtue (e.g., patience); by promising to do better; by prayer, fate, or chance.

Failure because others do not help, advise, or cooperate; because of unavoidable circumstances; by accident. Helpless self-blame without taking action to correct the situation.

Loss, harm, or danger averted by help of others; by fate.

Good relationships or success from negative motives: fear of punishment or a danger; fear of losing love or esteem.

Advice is sought, but no indication in the story that it is followed or even thought about. Or, a character in the story decides or resolves to do something constructive (but does not actually do it).

Score 1: Constructive action prevented by negative emotion; ACTION IS AVOIDED OR FRUSTRATED.

Achievement (avoids loss) through magic or unlikely means.

Failure and punishment from harmless action, supernatural motivation, or legitimate pleasure.

Active effort results in failure or giving up; is frustrated by others, by God or fate; is avoided because of laziness or difficulty; ends in despair if unsuccessful or harmful.

Loss, harm, or danger leads to impulsive or desperate action, or ends in despair or destruction.

Bad relationships lead to no real problems, or to harmless results, or perhaps even to success.

Ill-intentioned action is approved or goes scot free; escape from legitimate authority, or from problems and difficulties.

TAT PROTOCOL OF A REPRESENTATIVE HIGH ACHIEVER

1. This child is being made to practice the violin. He's thinking, "I hate the violin..why do I have to take violin lessons?" His mother will come in and tell him to practice. He will practice but grudgingly. He would much rather be out playing with other boys.
2. The girl in front of the picture is thinking, "I don't want to be subjected to the same hard life my brother has been." Her mother is watching the plowing of the field and praying for a good harvest. The girl resolves to leave home, the hardships of her life, and the unsympathetic attitude of her mother.
- 3BM Jane just flunked her final exam, her boyfriend didn't call, and her parents had a quarrel with her. She is thinking, "What a life...what a miserable life!" She cries for a while. But life goes on in the usual way the next day.
4. The man feels a deep hatred for someone or something. The woman, his wife, is trying to dissuade him from some violent course of action. She says, "John, don't do something you'll regret for the rest of your life." John, in an extreme emotional state, refuses counseling and does what he intends to do anyway. He probably attempts murder.
- 6BM The mother says, "Well son, if you want to disgrace us all by marrying that hussy, I guess I can't stop you." The boy feels badly but intends to marry Belle anyway. He is in conflict between the two courses of action he could take.
- 7BM The old man says, "Yes son, death is always hard to bear. I know how you feel. My grief was the same when I lost your mother." The young man stares blindly into space..too numb to realize the full impact of his wife's death. He picks up the pieces of his life and continues living, however.
- 8BM The boy accidentally shot his older brother. He is thinking, "I'm scared. What did I do? Gee, what if Danny dies?" "I didn't mean it...why does everyone blame me?" The boy runs to his room and cries, feeling more afraid of what will happen to him than how his brother will pull through.
- 9BM These are a group of vagrants lying near a railroad waiting for a train. The one in the foreground is thinking, "That 1:30 train should be here soon. I want to go to the coast. Heard life's easier out there." They all hitch a ride on the train heading for California.

11. An earthquake has occurred and the snake is crawling among the ruins in New Zealand. Many people have been killed and this snake is the only sign of life at the moment. He crawls in and out among the bodies and debris and then crawls away.
- 13MF The man just killed his mistress. He is in utter despair. Not only has he ruined his life but he's ruined the lives of his wife and family. He's thinking, "My God, what have I become. I'm a monster!" He decides to kill himself and does.
14. The boy just finished studying and is looking out of his dorm window. He is probably thinking of his test tomorrow, of his girl, and life in general. He thinks, "Gee, it's great to be finished studying for that test. I wonder if Marge has had as rough a week as I have." He goes to bed contented with himself and life in general.
16. A long modern building is pictured. It is the High School at which I will teach. It is the beginning of my career as a teacher. It is a whole new life---but it won't last long. I'll probably get married. But it will be good to stand on my own two feet.
20. The man is a gangster waiting for word from the boss on his next job. He is thinking, "Hope that guy hurries up---I want a drink." The contact comes and the gangster goes to the nearest bar.

SCORED SEQUENCE OF IMPORTS OF A REPRESENTATIVE HIGH ACHIEVER

- (3) 1. You grudgingly accept a task imposed by authority, although you prefer other more pleasurable activity.
- (2) 2. When faced with a life of hardship, and the unsympathetic attitude of others, you resolve to improve your lot in life.
- (3) 3. When troubles pile up, you feel that life is miserable, but soon life goes on as usual for you.
- (4) 4. When a man has a deep hatred for someone or something, he rejects another's counsel of moderation and proceeds with a violent course of action.
- (4) 5. And although you are in conflict because of the objections of a parent, you intend to proceed with the plan you have laid out for yourself.
- (4) 6. And when a loved one is taken by death, you pick up the pieces of your life and continue living.
- (2) 7. Yet when you accidentally injure a brother, you cry more in fear for your own safety than the welfare of the injured one.
- (3) 8. If you accept a life of vagrancy, you can be free from responsibility and go where you please.
- (4) 9. But even in a pleasant climate, there are natural disasters, and only the lowest forms in Nature survive; there is no reward in seeking safe pleasure.
- (3) 10. When a man realizes he has become a monster, he has to rid the world of himself.
- (4) 11. But when you have prepared yourself properly for a task, you are pleased with yourself and life in general.
- (4) 12. And then you think of a career for which you have prepared, and of standing on your own two feet, even if only for a while.
- (4) 13. Then when your job is done, you can relax and enjoy yourself.

AVERAGE TAT SCORE: 3.38

TAT PROTOCOL OF A REPRESENTATIVE LOW ACHIEVER

1. The boy's father bought him a violin---the boy broke it because he did not like to practice. He is now thinking of the punishment he will receive and is saddened because he became so angry. His father punished him but did not require his learning again.
2. The young girl is in love with the man. The other woman is his mother. She is causing some kind of conflict. The young couple solve their problem and live happily.
3. BM The woman has received news of the death of her husband. She is very sad and feels that life has become quite empty. It takes her quite a while to get over it.
4. The man has found out that someone has been making advances toward his girl. She is a chorus girl. He is determined to get this other fellow---she is trying to reason with him. He fights with the man and accidentally kills him.
6. BM The son wants to leave home and share an apartment with a few other fellows. He wants to be on his own for a while to prove that he is not tied to his mother's apron strings. He is now contemplating what to do. He stays home---he feels that it would break his parents' heart.
7. BM The young man is a lawyer working on a case. The older man is giving him information important to the case. It is almost too late. However, the case is saved and won.
8. BM The young boy's father is a doctor. The boy is dreaming of the heroic things he will do when he becomes a doctor some day. The boy fails medical school and never fulfills his dream.
9. BM The men are workers in Mexico. It is siesta hour. They lie in the field because it is a pleasant day. They return to their work.
11. This is a scene from a movie on prehistoric people. One monster is seen preying upon another. They have a fight in which one is killed.
13. MF The man has gone berserk and has strangled his wife. He is found wandering the streets, and is picked up for questioning.
14. The man is a young artist taking in the view around him. He is enjoying the beauty of Nature---which he will perhaps use for a painting.
16. The picture: a girl leaning against a window, looking out, thinking of her troubles. She is sad but knows things will be better---so she continues going about her work.

20. The man is a bum; he has no home. He is spending the night walking around. He is waiting for someone with a match. He sees no one 'till early morning.

SCORED SEQUENCE OF IMPORTS OF A REPRESENTATIVE LOW ACHIEVER

- (1) 1. You rebel at a task and destroy a beautiful thing, and although you are punished, your rebellion allows you to escape the task.
- (1) 2. When a parent causes conflict between two persons who love each other, the problem is solved somehow and they live happily.
- (2) 3 BM Death of a loved one causes sadness and a feeling of emptiness, and time is needed to get over this.
- (3) 4. If a man is determined to get revenge and doesn't listen to advice, he may do more harm than he intended.
- (2) 6 BM He may want to show that he isn't a mama's boy but in the end decides his independence would hurt his parents.
- (1) 7 BM When things get tough older friends will save the situation.
- (1) 8 BM Or though you dream of heroic deeds and of following in a parent's footsteps, you fail while preparing for this and your dream remains unfulfilled.
- (3) 9 BM You take advantage of a pleasant day to rest briefly from your labors, and then return to work.
- (1) 11. In life there are living beings preying upon one another.
- (1) 13 MF And a man may do terrible things without intending to.
- (2) 14. So one enjoys what there is to enjoy, and prolongs it if possible.
- (2) 16. And other times, one thinks on his troubles, but things will be better again, so one can go on.
- (1) 20. And when one is waiting for even a slight service or help from another, one has to wait a very long time.

AVERAGE TAT SCORE: 1.61

GRADE POINT AVERAGES, TAT SCORES, AND

ACE RAW SCORES: LOYOLA STUDENTS

<u>Student</u>	<u>GPA</u>	<u>TAT</u>	<u>ACE</u>
a	3.65	3.46	-
b	3.64	3.08	-
c	3.47	3.25	-
d	3.47	3.33	155
e	3.35	3.57	135
f	3.35	3.14	-
g	3.35	3.38	-
h	3.24	3.08	122
i	3.18	3.16	-
j	3.18	2.85	140
k	3.06	3.23	152
l	3.00	2.77	-
m	2.86	2.71	147
n	2.82	2.61	147
o	2.82	2.69	134
p	2.82	2.85	-
q	2.82	2.77	118
r	2.67	2.66	-
s	2.53	2.57	147
t	2.47	2.08	112
u	2.47	2.33	119
v	2.47	2.31	-
w	2.47	2.23	-
x	2.45	2.38	136
y	2.43	2.38	-
z	2.42	2.46	89
aa	2.36	2.17	-
bb	2.36	2.85	-
cc	2.36	1.38	115
dd	2.30	2.46	-
ee	2.24	1.92	90
ff	2.22	1.77	108
gg	2.20	2.31	99
hh	2.18	2.46	-
ii	2.18	2.16	123
jj	2.12	2.23	-
kk	2.12	1.92	122
ll	2.12	2.08	126
mm	2.12	1.54	-
nn	2.00	1.54	116
oo	2.00	2.43	113
pp	2.00	2.31	-
qq	2.00	1.92	-

GRADE POINT AVERAGES, TAT SCORES, AND

ACE RAW SCORES: LOYOLA STUDENTS

<u>Student</u>	<u>GPA</u>	<u>TAT</u>	<u>ACE</u>
rr	1.94	2.31	-
ss	1.75	1.69	-
tt	1.62	1.61	-

GRADE POINT AVERAGES, TAT SCORES, AND

ACE RAW SCORES, MUNDELEIN STUDENTS

<u>Student</u>	<u>GPA</u>	<u>TAT</u>	<u>ACE</u>
a	2.86	3.38	160
b	2.61	3.23	160
c	2.61	3.17	137
d	2.59	3.38	127
e	2.58	3.51	151
f	2.55	2.92	111
g	2.50	3.16	152
h	2.11	2.31	152
i	2.11	2.92	150
j	2.11	2.77	-
k	2.10	3.23	130
l	2.32	3.17	111
m	2.30	2.31	106
n	2.19	2.61	135
o	2.18	2.16	119
p	2.13	2.00	115
q	2.08	2.00	110
r	2.08	2.85	129
s	2.06	2.16	111
t	1.88	1.85	109
u	1.79	1.92	126
v	1.79	1.85	105
w	1.76	2.23	150
x	1.76	2.77	111
y	1.73	2.16	-
z	1.72	2.08	115
aa	1.67	2.00	125
bb	1.67	2.08	121
cc	1.63	1.77	81
dd	1.62	2.16	115
ee	1.58	2.31	129
ff	1.58	1.77	127
gg	1.57	1.92	-
hh	1.55	1.92	121
ii	1.51	2.08	106
jj	1.53	1.77	98
kk	1.52	2.16	-
ll	1.50	1.77	137
mm	1.13	1.75	128
nn	1.12	1.61	77
oo	1.35	2.00	90
pp	1.32	1.70	87

GRADE POINT AVERAGES, TAT SCORES, AND

ACE RAW SCORES, MUNDELEIN STUDENTS

<u>Student</u>	<u>GPA</u>	<u>TAT</u>	<u>ACE</u>
qq	1.22	1.85	108
rr	1.05	2.38	115
ss	0.99	1.16	80

APPROVAL SHEET

The dissertation submitted by Joseph A. Garvin 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.

May 20, 1960
Date

Magda B. Arnold.
Signature of Adviser