

ABSTRACT

CONSTRUCT VALIDATION OF THE MOTIVE FOR SUCCESS AS
INTERPRETED BY GSCI TEST SCORES AND AS EXPRESSED
IN BEHAVIOR AND ACHIEVEMENT WITHIN THE CLASSROOM

by Wayne H. Chubb

The study was an investigation of the construct (nomological) validity of the Motive for Success as, (a) represented within Atkinson's theory of achievement motivation, (b) interpreted by scores on the Generalized Situational Choice Inventory (GSCI) and, (c) expressed in behavior and achievement in the classroom situation.

Atkinson's statements concerning the empirical problem of motivation and Farquhar's definition of the role of motivation within the academic situation were combined to select behavioral criteria for the expression of motivation in the classroom--the initiating, directing and sustaining of achievement-related activity.

Students in ninth grade English classes were presented with both an achievement task (Theme Writing) and a non-achievement task (Joke Rating). Instructions emphasized the importance of the theme (grade counted toward final course grade) and the "spare-time" value of rating the jokes. A time limit of 20 minutes was set and all students were required to read and rate "some" of the jokes before starting

to write and, if they chose, to re-write (revise) a theme concerning "the importance of doing well in English class."

Support was found for the nomological validity of the Motive for Success through relationships (academic ability held constant by partial correlation) between GSCI scores and both the directing criterion (Expected Grade), $r = .214$ ($p < .01$), and the sustaining criterion (time spent on the achievement task), $r = .170$ ($p < .05$), of motivation for 252 males.

The relationship between academic ability (DAT-V scores) and the initiating criterion (time spent on the non-achievement task before starting the achievement task), $r = -.194$ ($p < .01$), suggested that providing an alternative activity for males allowed expression of tendencies to "avoid failure."

Support was also found for the nomological validity of the Motive for Success through confirmation of a predicted stronger relationship between GSCI test scores and teacher-assigned grades for a subgroup of males assumed to be performing school tasks of an "intermediate" level of difficulty, partial $r = .417$ ($p < .01$), than for subgroups of males performing easier, partial $r = .100$ ($p > .05$), or more difficult, partial $r = .151$ ($p > .05$), school tasks.

Findings with females indicated that achievement-related behaviors may differ for males and females and require future studies of motivation in the classroom to analyze results separately for males and females.

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A THESIS

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

DOCTOR OF PHILOSOPHY

Department of Counseling, Personnel Services,
and Educational Psychology

College of Education

1968

ACKNOWLEDGMENTS

Throughout the preparation of the study, the assistance and encouragement of the writer's major advisor, Dr. William W. Farquhar, was most helpful. In addition the members of the committee, Dr. Walter F. Johnson, Dr. Bill L. Kell and Dr. Norman Abeles were always available for consultation.

Appreciation is also extended to my colleagues at Wayne State University and particular gratitude is due Dr. Stanford Glazer, Director, Counseling and Testing Bureau, Wayne State University.

Finally, a sincere expression of gratitude is extended to my wife, Marie, and my daughter, Jo Ann, for their understanding and patience.

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CHAPTER I

INTRODUCTION TO THE PROBLEM

The problem of motivation within the academic situation has been studied by Farquhar.¹ His basic assumption was that theory and instrumentation developed without specific regard for the academic situation were inadequate to the task of prediction and explanation of academic achievement.

To provide some clarity to the direction of his enquiry, Farquhar defined academic motivation as "a combination of forces which initiate, direct and sustain behavior toward a scholarly goal."² Based on empirical evidence from previous studies and on theory from research on the achievement motive² Farquhar constructed a battery of objectively scorable instruments (M-Scales) to reflect motivational factors underlying school achievement. One sub-scale, the

¹William W. Farquhar, Motivation Factors Related to Academic Achievement, Cooperative Research Project 846 (East Lansing, Michigan: Michigan State University, Office of Research and Publication, 1963).

²Ibid., p. 3.

³D. McClelland and J. Atkinson, et al., The Achievement Motive (New York: Appleton-Century-Crofts, 1953).

Generalized Situational Choice Inventory (GSCI), in particular was directed towards the academic achievement motive construct.

Initial research with these instruments indicated scores on the M-Scales contribute to ability-based predictions of academic achievement. Factor analytic study of those sub-scales constructed on the basis of theory, produced factors interpretable as dimensions of the achievement motive construct. Subsequent studies have dealt with concurrent validity,³ "factor validity"⁴ and predictive validity⁵ of the M-Scales.

Two Problems of Motive Assessment

There are two areas of concern about the M-Scale validities as evidence that the instrument reflects the operation of an underlying motivation construct.

The first area of concern is discussed by McClelland⁶ and directly relates to the procedure used by Farquhar in

³David A. Payne, "The Concurrent and Predictive Validity of an Objective Measure of Academic Self-Concept," Educational and Psychological Measurement, 22 (1962), 773-780.

⁴Marion D. Thorpe, "The Factored Dimensions of an Objective Inventory of Academic Motivation Based on Eleventh Grade Male Over- and Under-achievers." (Unpublished doctoral dissertation, Michigan State University, 1961).

⁵Robert L. Green, "The Predictive Efficiency and Factored Dimensions of the Michigan State M-Scales for Eleventh Grade Negro Students, An Exploratory Study." (Unpublished doctoral dissertation, Michigan State University, 1962).

⁶John W. Atkinson (ed), Motives in Fantasy Action and Society (D. Van Nostrand Co., Inc., 1958).

the development of the M-Scales. McClelland describes the method of working with differences in motivation through the location of two groups of subjects that differ in some conspicuous way and treating them as representing different stages of aroused motivation. McClelland states that, as in the case of over- and under-achievers assumed to differ in levels of achievement motivation, "over-achievers may differ from under-achievers in other ways than in achievement motivation, and these differences may be picked up in the measure."⁷

That the M-Scales do reflect differences other than those attributable to motivation is evident through substantial correlation with scholastic ability and with group differences in demographic characteristics.⁸ Attempts to minimize the influence of scholastic ability on M-Scale scores through revision of the scales, has resulted in unacceptable levels of scale reliability.⁹

The second area of concern about the M-Scale validities as evidence that the instrument reflects the operation of an underlying motivation construct, relates to the

⁷Ibid., p. 14.

⁸Farquhar, op. cit.

⁹Virgil B. Sterling, "A Pilot Factor Analytic Study of Academic Motivation and Achievement Levels in Eleventh Grade Male Students." (Unpublished doctoral dissertation, Michigan State University, East Lansing, Michigan, 1962).

use of achievement criteria in both the construction stages and validation stages of research on that instrument.

The development of the M-Scales proceeded on the assumption that over-achievers and under-achievers could be used to define the extremes of a motivation continuum.¹⁰

Level of achievement was, therefore, a part of the original item selection technique. Subsequent findings of relationships between M-Scale scores and teacher-assigned grades contribute to the evidence for the predictive validity of the instrument but add little to the clarification of its construct validity base.

It appears that confusion may result if instruments purporting to measure scholastic ability and those attempting to measure motivation both use the same achievement criterion (teacher-assigned grades) for validation of these conceptually distinct constructs. Additional confusion appears likely when achievement criteria are used in both the construction stage of an instrument thought to reflect motivation, e.g., the M-Scales, and in the validation stage.

Therefore, an attempt is reported in the following section to select criteria of motivation, other than teacher-assigned grades, by attention to the statements of Atkinson

¹⁰Farquhar, op. cit.

concerning the empirical and theoretical problem for the study of motivation and to Farquhar's definition of the role of motivation in the academic situation.

The Problem of Motivation

The empirical problem of motivation as stated by Atkinson¹¹ is that of "accounting for the direction, vigor and persistence of behavior."¹² The problem for theory is the development of a "coherent conception of the contemporaneous determinants of direction, vigor and persistence of action."¹³

Atkinson draws on the work of Lewin¹⁴ to distinguish the problem of learning theory with its emphasis upon the frequency of past associations from the problem of motivation with its emphasis upon the "contemporaneous" determinants of behavior. Atkinson credits Tolman¹⁵ with the clarification of the characteristics of behavior to be

¹¹John W. Atkinson, An Introduction to Motivation (D. Van Nostrand and Co., Inc., 1964).

¹²Ibid., p. 274.

¹³Ibid.

¹⁴K. Lewin, The Conceptual Representation and the Measurement of Psychological Forces (Durham, North Carolina: Duke University Press).

¹⁵E. C. Tolman, Purposive Behavior in Animals and Men (New York: Century Co. By permission of the University of California Press, 1932).

explained by motivation theory--direction, vigor and persistence.

Farquhar has drawn on the above empirical and theoretical legacy for the construction of the GSCT. Farquhar's application of theory to the study of achievement in school was guided by the following definition of academic motivation: "a combination of forces which initiate, direct, and sustain behavior toward a scholarly goal."¹⁶

While research by Atkinson¹⁷ and his co-workers has been greatly involved with exploration of the relationships between theory, instruments and the direction, vigor and persistence of behavior (construct validity studies), little has been done by Farquhar and his co-workers to relate theory and instruments directly to the initiation, direction and sustaining of behavior in the academic situation.

This void is particularly surprising since one of the most persistent problems for Farquhar and his co-workers has been the difficulty in distinguishing intellectual and non-intellectual influences in their findings. Other researchers¹⁸ have shown such characteristics of behavior

¹⁶Farquhar, op. cit., p. 3.

¹⁷Atkinson, A Theory of Achievement Motivation, op. cit.

¹⁸Ibid.; Atkinson, An Introduction to Motivation, op. cit.

as goal setting and persistence to be less influenced by intellectual factors than such criteria as grade point average or achievement test performance. These findings suggest the potential usefulness of similar behavioral criteria in attempts to gain greater clarity concerning the constructs underlying the GSCI.

The laboratory studies by Atkinson¹⁹ and his co-workers have been attempts to gain such clarity for both their theoretical notions and the instruments thought to index the operation of various terms in their theory. However, the laboratory setting of many of these studies involving the use of simple response measures, "fictitious" instructions and "contrived" tasks has resulted in a lack of clarity in the application of their findings to "real-life" situations.

On the other hand, the efforts of Farquhar and his co-workers have been centered in "real-life" academic situations and concerned with "worth-while" accomplishments. While Farquhar's findings hold considerable utility when applied to the prediction of accomplishment in school, they suffer most in a lack of clarity for the basic constructs involved in his research.

¹⁹Atkinson, A Theory of Achievement Motivation,
op. cit.

It may be possible to gain greater clarity for the constructs involved in Farquhar's research through observation of certain classroom behavior relevant to the study of motivation. If academic motivation is thought to involve the operation of "forces which initiate, direct, and sustain behavior toward a scholarly goal"²⁰ then it may be possible, under appropriate conditions, to observe the influence of these "forces" in the behavior of students performing an academic task in the classroom situation.

The academic classroom is viewed as a competitive situation in which performance is evaluated and feelings of satisfaction contingent upon the performance of certain instrumental acts. Such a situation is described by Atkinson²¹ as appropriate for the expression of "a relatively stable disposition to strive for achievement."

Atkinson²² suggests that performance in such a situation is a function of certain personality dispositions (motives) and certain cues in the situation (expectancy and incentive values) i.e., $\text{Behavior} = f(\text{motive} \times \text{expectancy} \times \text{incentive})$.

One implication of these formulations is that situational characteristics (expectancies and incentives) are

²⁰Farquhar, op. cit., p. 3.

²¹Atkinson, An Introduction to Motivation, op. cit.

²²Ibid.

thought to interact with individual differences in stable personality characteristics (motives) to determine the expression of motivation in behavior.

However, there has not been adequate exploration of the influence of motives, interacting with situational characteristics, on the initiating, directing and sustaining of achievement-related behavior in the classroom situation.

Need for the Present Study

No study, using the GSCI, has been designed in which Atkinson's theory of achievement motivation is used to predict theory-relevant behavior within the classroom situation. Furthermore, no study, using the GSCI, has investigated the contentions of Atkinson's theory that individual differences in stable personality traits (motives) interact with situational characteristics to influence behavior.

Confirmation of the above relationships and interactive effects could aid in clarifying the constructual basis of the GSCI, provide support for Atkinsons's theory and contribute information concerning the relative predictive efficiency in the use of the GSCI.

The accepted approach for the study of the implications personality test scores may have for theory-relevant, extra-test, behavior is that of construct validation which is discussed in the next section.

Construct Validation

Statements in The Technical Recommendations for Psychological Tests and Diagnostic Techniques²³ imply that "construct validation" is appropriate when an investigator believes that his instrument reflects the operation of a particular construct. That is, he makes inferences concerning the hypothetical syndrome, trait, or personality dimension he believes reflected in the scores of his instrument. The testing of the inferences is the purpose of construct validation.

Theory is given the guiding role in formulating inferences about a construct and in specifying the properties of observables which can test the accuracy of these inferences. Cronbach and Meehl²⁴ use the term "nomological network" to describe an interlocking system of laws which can form the basis for inferences concerning the interpretation of a test. It is a necessary condition, in their view, that at least some of these laws relate to observables thereby allowing the collection of confirming or disconfirming evidence.

²³American Psychological Association, Committee on Psychological Tests. Technical Recommendations for Psychological Tests and Diagnostic Techniques. Washington, D.C.: APA, 1954.

²⁴Lee J. Cronbach and Paul E. Meehl, "Construct Validity in Psychological Tests," Psychological Bulletin, Vol. 52, No. 4, July, 1955, 281-302.

However, construct validation studies are undertaken precisely when no one observable property is accepted as an entirely adequate criterion to define the quality to be measured. Cronbach and Meehl stress that while some observables may be regarded as "criteria" the construct validity of the criteria themselves is regarded as under investigation.,

Since no one criterion is thought to be adequate to establish validity for a construct, Cronbach and Meehl suggest that:

numerous successful predictions dealing with phenotypically diverse "criteria" give greater weight to the claim of construct validity than do fewer predictions involving very similar behaviors.²⁵

While Cronbach and Meehl stress the importance of the number and diversity of successful predictions to deal with the problem of inadequate criteria, Sarason²⁶ has suggested an "analytic" strategy in which inferences regarding a trait and inferences regarding criteria are separately analyzed.

²⁵Ibid., p. 295.

²⁶I. G. Sarason, Contemporary Research in Personality (Princeton, New Jersey: D. Van Nostrand Co., Inc., 1962).

Sarason suggests that, in construct validation studies:

A two-stage inference is involved; first, there is an inference from the criterion requirement to the traits that are relevant to that performance (the "criterion analysis"); and secondly, an inference from the subject's observed behavior and test performance to his status on the trait dimensions (the assessment). Research on the validity of these inferences requires two separate studies; one of the validity of the analysis of the criterion requirements and the criterion indices, and one of the validity of the tests as predictors of the criterion.²⁷

For the present study, the statements of Cronbach and Meehl together with those of Sarason suggest that motivation in the classroom situation would be more adequately investigated by criteria of initiating, directing and sustaining behavior than by any one of these criteria and that a separate analysis of the criteria themselves could aid in clarifying the locus of potential problems associated with either the trait assessment or criterion analysis.

Construct (Trait) Validity of the M-Scales

Hofmann²⁸ has explored the construct validity of the M-Scales through multitrait-multimethod matrix analysis. He intercorrelated scores from several instruments thought

²⁷Ibid., p. 90.

²⁸Louis J. Hofmann, "An Application of the Multitrait-Multimethod Matrix to the Study of the N-Achievement Construct," (unpublished doctoral dissertation, Michigan State University, East Lansing, 1965).

to measure traits that were similar (achievement motive) and dissimilar (affiliation motive) by assessment techniques that were similar (objective) and dissimilar (projective).

Hofmann's results were interpreted in support of the convergent validity of the achievement motive scales with the projective methods of assessment less related to academic achievement and intelligence than were the objective methods.

The type of construct validity study reported by Hofmann is described by Campbell²⁹ as appropriate when "theory, if any, goes no farther than indicating a hypothetical syndrome, trait, or personality dimension."³⁰ Campbell labels this type of construct validity study as a "trait validity" study to distinguish it from a "nomological validity" study which he describes as:

. . . the very important and novel emphasis of Cronbach and Meehl on the possibility of validating tests by using the scores from a test as interpretations of a certain term in a formal theoretical network and, through this, to generate predictions which would be validating if confirmed when interpreted as still other operations and scores.³¹

²⁹D. T. Campbell, "Recommendations for APA Test Standards Regarding Construct, Trait or Discriminant Validity," American Psychologist, Vol. 15, No. 8, August 1960.

³⁰Ibid., p. 547.

³¹Ibid.

Hofmann's purpose was to find support for the achievement motive construct and for the Farquhar instrument (M-Scales) as an index to the operation of that construct. Hofmann followed Campbell's recommendation in using "a joint criteria of independence of method and relevance to the trait"³² in the selection of validating measures. That is, theory was considered sufficiently developed to distinguish instruments purportedly measuring the same traits from instruments measuring different traits.

Hofmann concluded that theory, underlying each of the several instruments used in his study, was not sufficiently developed to allow predictions concerning performance in the academic situation, i.e., a nomological validity study.

However, theory is at present sufficiently developed to allow a nomological validity study of at least one of the sub-scales used in Hofmann's study; the Generalized Situational Choice Inventory (GSCI).

Construct (Nomological) Validity of the
Generalized Situational Choice
Inventory (GSCI)

The GSCI, one of the sub-scales within the M-Scales battery, was constructed to conform specifically to the dimensions of an achievement-related motive, the Motive for Success (Ms), explicated by McClelland³³ and Atkinson.³⁴

³²Ibid., p. 548.

³³McClelland and Atkinson, op. cit.

³⁴Atkinson, op. cit.

Farquhar³⁵ extended, polarized and applied these dimensions to the academic situation.

Scores derived from the GSCI were thought to reflect individual differences in strength of the Motive for Success which is one of the terms occurring in Atkinson's³⁶ Motive x Expectancy x Incentive formulation of the determinants of achievement motivation.

The academic classroom was considered to be a competitive situation in which personality (motives) and characteristics of the situation (expectancies and incentives) interact to influence performance.

Therefore, it appeared possible to make inferences from Atkinson's theory, using scores from the GSCI as interpretations of the Motive for Success (Ms) term in that theory, and test these inferences on criteria of behavior, relevant to the study of motivation, within the classroom situation.

Atkinson's statements concerning the empirical problem of motivation and Farquhar's definition of motivation within the academic situation were considered sufficiently explicit for the selection of dimensions of behavior relevant to the expression of motivation in the classroom--initiating, directing and sustaining of achievement-related behavior.

³⁵Farquhar, op. cit.

³⁶Atkinson and Feather, op. cit.

Purpose of the Present Study

The major purpose of the present study was to seek evidence concerning the construct (nomological) validity of the Motive for Success, as (a) represented within Atkinson's theory of achievement motivation, (b) indexed by the Generalized Situational Choice Inventory (GSCI) test scores and (c) expressed in theory-selected behavior within the classroom situation.

A second purpose was to investigate both the theoretical and practical consequences of three theory-selected criteria of motivated behavior within the classroom for level of achievement in the academic situation.

A third purpose was to investigate both the theoretical and practical consequences of predictive efficiency for the Generalized Situational Choice Inventory (GSCI) with level of achievement in the academic situation.

Theory

Theory is drawn from the formulations of Atkinson³⁷ and McClelland³⁸ as extended and applied to the academic situation by Farquhar.³⁹ Atkinson and McClelland view

³⁷Atkinson, Motives in Fantasy Action and Society and An Introduction to Motivation, op. cit.; Atkinson and Feather, op. cit.

³⁸McClelland and Atkinson, op. cit.

³⁹Farquhar, op. cit.

motivation, as expressed in the direction, magnitude and persistence of behavior, to be a positive function of certain personality dispositions (motives) and certain characteristics of the situation (expectancy and incentive values). These authors have given particular attention to one personality disposition, the Motive for Success, and its expression in competitive situations.

Atkinson⁴⁰ defines the Motive for Success as a relatively stable (though latent) disposition to strive for feelings of satisfaction through achievement-related activities. The influence of individual differences in strength of the Motive for Success depends upon, (a) the presence of situational cues which determine the strength of an expectancy of satisfying that motive through some action instrumental to achievement and (b) the value of the specific goal or incentive offered in the situation.

Atkinson defines an achievement-related "expectancy" as a cognitive anticipation, aroused by cues in the competitive situation, that performance of some act will be followed by success. In the competitive situation, the strength of the expectancy for success is assumed to vary inversely with the difficulty of the task. That is, the more difficult the task, the lower the strength of the expectancy for its successful accomplishment.

⁴⁰ Atkinson, An Introduction to Motivation, op. cit.

Atkinson⁴¹ defines the achievement-related "incentive" value as the relative attractiveness of a specific goal that is offered in the competitive situation. The attractiveness of success, in the competitive situation, is assumed to be a positive function of the difficulty of the task. That is, the more difficult the task, the higher the incentive value for its successful accomplishment.

Atkinson has assumed that the strength of the expectancy for success can be indexed by the "subjective probability" of success. Thus a task for which an individual has a strong expectancy of success is one for which his subjective probability of success is high (an easy task). Conversely, a task for which the individual has a weak expectancy of success is one for which he holds a low subjective probability of success (a difficult task).

Atkinson has also assumed that, in the competitive situation, the attractiveness of success (incentive value) is dependent upon the probability of success (expectancy) such that the accomplishment of a difficult task (low probability of success) is more attractive (has higher incentive value) than the accomplishment of some trivial or easy task (high probability of success).

Thus, the more difficult the task, the lower the expectancy (probability) for success but the higher the

⁴¹Ibid.

attractiveness (incentive value) of its accomplishment. Conversely, the easier the task the higher the expectancy (probability) for success but the lower the attractiveness (incentive value) of its accomplishment.

The relationships between the terms of the theory are given in Table 1.1. In Table 1.1 it can be seen that, as the difficulty of a task decreases from "Very Difficult" to "Very Easy," the probability of success (P_s , in values ranging from 0 to 1.00) increases while the incentive value of success (I_s , in values ranging from 0 to 1.00) decreases. The product of P_s and I_s , as specified in theory, can be seen to have their highest values (.25) for the task of an "Intermediate" difficulty level.

It is, therefore, in the range of "Intermediate" task difficulty that individual differences in strength of the Motive for Success (M_s) are most strongly influenced by the product of expectancy and incentive values ($P_s \times I_s$) and the resultant expression of the Motive for Success (M_s) in behavior is also strongest.

Atkinson and Cartwright⁴² and Weiner⁴³ have recently given attention to Atkinson's 1957 theory of achievement

⁴²J. W. Atkinson and D. Cartwright, "Some Neglected Variables in Contemporary Conceptions of Decision and Performance," Psychological Reports, 14 (1964), 575-590.

⁴³Bernard Weiner, "The Effects of Unsatisfied Achievement Motivation on Persistence and Subsequent Performance," Journal of Personality, 33 (1965), 428-442.

TABLE 1.1--Motivation (Expressed in Behavior) as a Joint Function of the Motive for Success (Ms), Expectancy of Success (Ps) and Incentive Value of Success (Is) for Individuals in Whom Ms = 1 and Ms = 2.

TASK					Strength of Motivation when:	
	Ps	x	Is	x	Ms = 1,	or Ms = 2
A. Very Difficult	.10		.90		.09	.18
B. Intermediate	.50		.50		.25	.50
C. Very Easy	.90		.10		.09	.18

motivation⁴⁴ and have criticized the "stimulus bound" condition of that theory. Criticism by the above authors is based on the fact that Atkinson's 1957 model requires specification of certain situationally determined factors (expectancy and incentive values) which allow prediction of behavior only when these factors are objectively present. Therefore, that model is "stimulus bound" or restricted to prediction of behavior in situations in which certain stimulus conditions, specified in the theory, are available to influence behavior.

Atkinson and Cartwright argue that a theory of motivation must attempt to account for the change from one activity to another rather than for only the instigation of action (initiation) or for only the duration of activity (persistence) and view a "stimulus bound" model of achievement as inadequate for prediction or description of a change in activity.

Atkinson and Cartwright have expanded the 1957 model of achievement motivation to allow theory to account for a change in activity from one situation to another. They posit the operation of an "inertial tendency," a goal-directed tendency which, once aroused, persists until satisfied or dissipated.

⁴⁴J. W. Atkinson, "Motivational Determinants of Risk-Taking Behavior," Psychological Review, 64 (1957), 359-372.

The formulations of Atkinson and Cartwright imply that if the achievement motive is aroused by instructions or the performance of an achievement-oriented activity and then prevented from obtaining satisfaction, either by interruption or failure, some portion of the tendency persists to influence subsequent behavior.

Atkinson⁴⁵ has attempted to maintain a sharp distinction between the term "motive," conceived as a relatively stable personality trait, and "motivation," which is conceived as the activated state of a person to engage or not engage in a particular activity. Atkinson has recently suggested the use of the term "tendency" as a substitute for the more commonly used term "motivation" to aid in clarifying the distinction between stable traits and fluctuations in behavioral expressions which depend upon characteristics of the particular situation.

Atkinson has assumed that the consequences of the multiplicative relationship of the Motive for Success (M_s) with particular expectancy and incentive values will be reflected in the strength of a "tendency" (motivation) such that:

1. When the difficulty of a task is held constant, the tendency to achieve success is stronger when M_s is strong than when it is weak, but

⁴⁵Atkinson and Feather, op. cit.

2. the difference in strength of tendency to achieve success that is attributable to a difference in strength of the achievement motive (M_s) will be substantial only when the task is one of intermediate difficulty.⁴⁶

Atkinson's statements, 1. and 2. above, suggest that there should be a relationship between strength of the Motive for Success and strength of the tendency (motivation) to achieve success when differences in the difficulty of success are held constant, and the above relationship should be stronger when success is perceived to be within an intermediate range of difficulty than when perceived to be easier or more difficult.

Prediction of Behavior in the Classroom Situation

Atkinson's statements, 1. and 2. above, were thought to hold implications for prediction of relationships among three different types of variables--personality, motivation and achievement--within an academic situation in which students are presented with both a non-achievement task and an achievement task and motivation is reflected by criteria of the initiation, direction and sustaining of achievement-related behavior. Descriptions of the relationships among these three types of variables are presented below.

The statements by Atkinson, 1. and 2. above, were thought to hold implications for the prediction of relationships between strength of the Motive for Success and behavior

⁴⁶Atkinson and Feather, op. cit., p. 329.

within the academic situation when strength of the tendency (motivation) to achieve success was reflected by criteria of the initiation, direction and sustaining of achievement-related behavior.

Atkinson's statements, 1. and 2. above, were also thought to hold implications for the prediction of relationships between strength of the tendency (motivation) to achieve success, reflected by criteria of the initiation, direction and sustaining of achievement-related behavior, and level of achievement within the academic situation, if level of academic achievement is itself assumed to be a criterion of strength of the tendency (motivation) to achieve success within the academic situation.

The statements by Atkinson, 1. and 2. above, were furthermore thought to hold implications for the prediction of relationships between strength of the Motive for Success and level of achievement within the academic situation, if level of academic achievement is itself assumed to be a criterion of strength of the tendency (motivation) to achieve success within the academic situation.

Hypotheses, formulated on the basis of Atkinson's statements 1. and 2. above, were applied to prediction within three Stages of enquiry corresponding to the relationships among the three types of variables described above. The three Stages of enquiry, and the hypotheses derived from Atkinson's statements, are presented below.

Hypotheses for Stage I--Nomological Validity

Enquiry with this stage was thought to be most closely relevant to the construct (nomological) validity of the Motive for Success within the academic situation.

Hypotheses were formulated concerning the influence of strength of the Motive for Success on three criteria of strength of the tendency (motivation) to achieve success within the academic situation. Hypotheses were also formulated concerning the strength of the above influence as differentially affected by the perceived difficulty of success in school.

1. With differences in the perceived difficulty of success in school held constant, differences in strength of the Motive for Success should influence the initiation, directing, and sustaining of achievement-related behavior.
2. The influence of differences in strength of the Motive for Success on the initiation, direction and sustaining of achievement-related behavior should be stronger when success in school is perceived to be within an intermediate range of difficulty than when perceived to be easier or more difficult.

Hypotheses for Stage II--Criterion Validity

Enquiry within this stage was thought to at least allow for a separate analysis of the validity of three behavioral criteria of strength of the tendency (motivation) to achieve success within the academic situation.

Hypotheses were formulated concerning the influence of three criteria of strength of the tendency (motivation) to achieve success on level of achievement in the academic situation. Hypotheses were also formulated concerning the strength of the above influence as differentially affected by the perceived difficulty of success in school.

3. With differences in the perceived difficulty of success in school held constant, differences in the initiation, direction and sustaining of achievement-related behavior should influence the level of academic achievement.
4. The influence of differences in the initiation, direction and sustaining of achievement-related behavior on the level of academic achievement should be stronger when success in school is perceived to be within an intermediate range of difficulty than when perceived to be easier or more difficult.

Hypotheses for Stage III--Predictive and Nomological Validity

Enquiry within this stage was thought to allow for evidence concerning the relative predictive efficiency of an index of strength of the Motive for Success with indices of academic achievement, as well as allowing for evidence concerning the operation of this construct, as predicted by theory, within the academic situation.

Hypotheses were formulated concerning the influence of strength of the Motive for Success on level of achievement within the academic situation. Hypotheses were also formulated concerning the strength of the above influence as differentially affected by the perceived difficulty of success in school.

5. With differences in the perceived difficulty of success in school held constant, differences in strength of the Motive for Success should influence the level of academic achievement.
6. The influence of differences in strength of the Motive for Success on the level of academic achievement should be stronger when success in school is perceived to be within an intermediate range of difficulty than when perceived to be easier or more difficult.

Overview of the Study

In Chapter I, the need for behavioral criteria, relevant for a construct (nomological) validity study of the Generalized Situational Choice Inventory (GSCI) was met by the selection of classroom behaviors that conform to Atkinson's statements concerning the empirical problem of motivation and to Farquhar's definition of the role of motivation within the academic situation. Theory was obtained from the Motive x Expectancy x Incentive formulations of

Atkinson and hypotheses stated concerning relationships among the Motive for Success, initiating, directing and sustaining behavior and level of academic achievement.

In Chapter II, a selected review of the literature will be presented with particular attention to construct validity studies of the Motive for Success and to behavioral criteria of motivation similar to those used in the present study.

In Chapter III, the design of the study will be described with reference to the sample, method of data collection, statement of hypotheses and the statistical techniques used.

In Chapter IV, the results of the statistical analysis of the data will be presented along with statements of hypotheses accepted and rejected.

In Chapter V, the findings of the study will be discussed as related to theory, previous research and as limited by methodology.

In Chapter VI, the summary, conclusions and implications for future research will be presented.

CHAPTER II

REVIEW OF THE LITERATURE

Each of the studies reviewed in this chapter offers some empirical evidence, theoretical view or experimental design feature bearing on the relationship between achievement-related motives and behavior in competitive situations.

To provide some measure of clarity in presentation, the studies reviewed in this chapter are presented in separate sections according to the major criterion variables of the present study. That is, studies concerned with the expression of motivation through the initiation, direction and sustaining of activity are reviewed in the first sections. In later sections attention is given to those studies in which a third variable was allowed to differentially influence relationships between personality and behavior.

Achievement Related Motives and the Initiation of Behavior

Measures of speed or latency in approaching a consummatory situation, have been extensively researched by psychologists interested in the effects of variations in basic need states on the behavior of animals in a laboratory situation.

Reviews¹ of animal studies suggest that the effects of increasing need states are to increase speed of leaving a start box, speed of traversing a runway and speed of initiating consummatory activity.

Kimble² concludes, from his review of the effects of variation in basic need states on the behavior of animals, that "motivational variables seem to have more influence on speed than on measures of accuracy." He cites a study by Cotton³ in which the runway behavior of rats was studied under varying lengths of food deprivation. Cotton found the effects of high drive were to (a) increase running speed and (b) decrease competing responses (e.g., stopping to sniff, wash or explore).

Kimble interprets the findings of Cotton in support of the contention that one reason speed measures may more clearly reflect variation in motivational variables is because speed measures are particularly susceptible to disruption by the effects of competing responses.

Gregory A. Kimble, Conditioning and Learning (New York: Appleton-Century-Crofts, Inc., 1961; Francis W. Irwin, "Motivation and Performance," Annual Review of Psychology, Vol. 12 (Palo Alto: Annual Reviews, Inc., 1961).

²Kimble, op. cit.

³J. W. Cotton, "Running Time as a Function of Amount of Food Deprivation," Journal of Experimental Psychology, 46 (1953), 188-198.

While psychologists interested in the effects of motivational variables on the performance of human subjects have rarely studied speed of initiating performance, considerable attention has been given to the role of competing responses during the task performance of subjects thought to differ in the level of need or drive state.

Studies by Taylor⁴ and Mandler and Sarason⁵ working with response-defined measures or aversive drive states, suggest that in simple response situations high drive states result in faster performance but in complex situations competing responses may interfere most with the performance speed and accuracy of high drive subjects.

While the above studies indicate the possible effects of varying drive states on speed of activity during the performance of a particular task, little attention has been given by the above researchers to the possible effects of either drive state or strength of competing responses on the speed with which their subjects initiated task behavior.

The importance of the behavior of human subjects at the point of initiating "worth while" activities has, nonetheless, been discussed by several authors.

⁴Janet A. Taylor, "The Relationship of Anxiety to the Conditioned Eyelid Response," Journal of Experimental Psychology, 41 (1951), 81-92.

⁵G. Mandler and S. B. Sarason, "A Study of Anxiety and Learning," Journal of Abnormal and Social Psychology, 47 (1952), 166-173.

Tiebout⁶ concluded, from his study of under-achieving college girls, that they appear to experience particular difficulty at the point of beginning to study. Bruner,⁷ in discussing "learning blocks" in the academic situation suggests that a distinction needs to be made between those behaviors that "cope" with the problems of achievement and those that "defend" against entry into the learning situation.

Brown, Abeles and Iscoe⁸ conclude from their study of the motivational differences between high and low achieving college students, that the poor students seems to be characterized by "what we shall call here 'activity delay' that is, a lack of decisiveness of action, a tendency to procrastinate . . ."

The studies above, concerned with the behavior of students in the academic situation, suggest that motivational variables may influence behavior at the point of initiating achievement-related activity, that behavior at this point may have coping or defensive characteristics, and that tendencies to procrastinate may have an influence on later academic achievement.

⁶H. M. Tiebout, "The Misnamed Lazy Student," Educational Record, 24 (1943), 113-129.

⁷Jerome Bruner, Toward a Theory of Instruction, (Cambridge, Massachusetts: Harvard University Press, 1966).

⁸William F. Brown, Norman Abeles and Ira Iscoe, "Motivational Differences Between High and Low Scholarship College Students," The Journal of Educational Psychology, 45 (1954), 215-223.

Atkinson,⁹ in reviewing his own studies, and those of Feather,¹⁰ concerned with the effects of the interaction of personality and environmental factors on the persistence of activity during the performance of an achievement-related task, has noted the rather arbitrary distinction made between time measures labeled "persistence" and those called "latency."

With both "persistence" and "latency" measures a clock is used to measure a period of activity. If the interest of the psychologist happens to be in a particular task performance, he calls his measure "latency" if he stops his clock when the performance begins, but he calls his measure "persistence" if he stops his clock when the performance ceases.

Atkinson¹¹ has argued that psychologists must attend to both latency and persistence measures if motivational theory is to account for what he believes to be of crucial importance, that is, "change" in behavior.

⁹John W. Atkinson, An Introduction to Motivation, D. Van Nostrand and Co., Inc., 1964.

¹⁰Norman T. Feather, "The Relationship of Persistence at a Task to Expectation of Success and Achievement Related Motives," Journal of Abnormal and Social Psychology, 63 (1961), 552-561; "Persistence at a Difficult Task with Alternative Task of Intermediate Difficulty," Journal of Abnormal and Social Psychology, 66 (1963), 604-609.

¹¹Atkinson, op. cit.

If behavior "change" is viewed as crucial for motivational theory, then description or prediction restricted to performance of a single task will be inadequate and may require attention to the effects of the interaction of personality and environment on behavior preceding and following that of immediate concern to the researcher.

Atkinson describes a situation in which a college professor is working at his desk when a colleague invited him to the coffee room. Atkinson concludes that "the latency of R_2 (i.e., the length of time before the professor gets up to go to the coffee room if he does, in fact, get up to go at all) should be proportionate to the strength of the achievement motive (M_s) and inversely proportionate to the strength of affiliative motive (M_{Aff})."¹²

That is, the relative strength of the above two motives as well as situationally-determined expectancies and incentives for satisfying each motive must be taken into consideration to account for the point at which a "change" will take place in the professor's behavior.

Therefore, Atkinson stresses the importance of attention to alternative activity, from which and to which, a subject turns as well as knowledge concerning the strength of possible competing motives, for an accurate prediction of behavior. If the alternative activity is considered to be one appealing

¹²Ibid.

to different motives than the activity in question then measures of latency or speed of initiating the activity of interest may reflect motivational influences in addition to those reflected by measures of task persistence.

Achievement Related Motives and the
Direction of Behavior

Atkinson suggests that one of the important problems for a theory of motivation is to account for the selection or direction of one path of action among a set of possible alternatives. He suggests that the "problem of selection arises in experiments which allow the individual to choose a task among alternatives which differ in difficulty (level of aspiration)."¹³

However, when subjects are presented with only one task and asked to express a "hoped for" or "expected" level of achievement, their aspirant behavior can be characterized as involving a choice between higher or lower directions of future achievement. That is, a subject who states expectations toward higher levels of future achievement could be considered to have chosen a more difficult direction (lower probability of attainment) than a subject who states expectations toward a lower level of achievement on objectively the same task.

¹³Ibid.

One paradigm for investigation of level of aspiration involves a subsequent level of performance which an individual states he anticipates achieving following performance on a task (future goal minus past achievement). While such a procedure attempts to control for the effects of reality determinants and equate discrepant levels of past attainment, Hills¹⁴ and Siegel¹⁵ have demonstrated the complexity of such goal-discrepancy measures and cast doubt on the clarity of such techniques particularly as measured within the academic situation.

Because of the complexity and limitations of the goal-discrepancy measures of level of aspiration and because of their susceptibility to "wishful" or "unrealistic" influences, the following review will center on studies in which expectations were defined by direct statements concerned with future achievement and reality determinants dealt with, if at all, in ways other than as discrepancies from previous achievement.

Atkinson¹⁶ administered the TAT n-achievement test to approximately one-half (N = 38) of the students in his college class who volunteered to appear one-half hour before

¹⁴John R. Hills, "The Measurement of Levels of Aspiration," Journal of Social Psychology, 41 (1955), 221-229.

¹⁵Sidney Siegel, "Level of Aspiration and Decision Making," Psychological Review, 64 (1957), 253-262.

¹⁶D. McClelland and J. Atkinson, et al., The Achievement Motive (New York: Appleton-Century-Crofts, 1953).

the final exam. He asked them to indicate the score (possible total of 100 points) that "you expect to make on the exam." He also asked them to report the quarter of the class in which they scored at mid-term time and their overall grade average.

Atkinson assumed that the level of aspiration measure, "what grade do you expect," would be influenced by both reality factors, e.g., past level of achievement in class and in college, and by motivational factors, e.g., achievement needs. An attempt was made to eliminate the influence of reality determinants by partial correlation technique.

Atkinson found level of aspiration scores (expected grades) related to mid-term standing (specific past performance), $r = .41$ ($p > .05$), but not significantly related to overall grade average (general past performance), $r = .30$ ($p < .05$). The relationship between n-achievement test scores and expected grades was not significant, nor was this relationship significant when the influence of either past specific, or past general, performance was held constant by partial correlation technique.

Atkinson further sought to reduce the influence of reality determinants, on the relationship of n-achievement test scores with expected grades, by a technique other than partial correlation. He selected those students who appeared in discrepant thirds of the separate distributions of mid-term standings and general grade standing. He assumed that

this subgroup of students should be in some greater doubt or conflict concerning what to expect on the basis of past experience. Such an interpretation has typically been applied to the expectations of subjects faced with a task of "intermediate" difficulty defined as 50% probability of success.

For this subgroup (23 of 38 students) with discrepant past achievement, the correlation of n-achievement test scores with expected grades was $r = .45$ ($p < .05$), while this relationship was $r = -.23$ ($p > .05$) for the remaining 15 students.

Atkinson interprets the above findings in support of his contention that both reality determinants and motivational determinants influence level of aspiration measures. However, when reality determinants are minimized by the selection of subjects assumed to be most uncertain about future success, the influence of motivational determinants is more pronounced.

Pottharst¹⁷ reports findings similar to those above using high school boys and a novel task designed to reduce the influence of past experience on future expected levels of achievement. Pottharst found those high school boys with high TAT n-achievement test scores reported higher

¹⁷B. C. Pottharst, "The Achievement Motive and Level of Aspiration After Experimentally Induced Success and Failure," (unpublished Doctoral thesis, University of Michigan, Ann Arbor, 1955).

expected levels of achievement on a novel task than those boys with low TAT n-achievement test scores.

Atkinson, Bastian, Earl and Litwin¹⁸ also report an upward shift in level of expectation attributable to higher level of achievement needs. Atkinson, et al., asked 59 college males to state the number of persons they expected to excel before engaging in a shuffleboard contest. While there were no differences in the number of successful shots, those males with high n-achievement test scores (Test of Insight [TOI]) reported they expected to excel more persons than those with low n-achievement test scores ($\chi^2 = 6.17$, $df = 1$, $p < .02$).

While the studies reported above were designed to investigate the influence of achievement-related motives on level of expectation when the influence of previous experience was controlled or minimized, Izard¹⁹ investigated the relationships of Edwards Personal Preferences Schedule (EPPS) test scores with both expected future achievement and actual later achievement within an academic situation in which past experience was assumed to play a central role.

¹⁸John W. Atkinson, Jarvis R. Bastian, Robert W. Earl, and George H. Litwin, "The Achievement Motive, Goal Setting, and Probability Preferences," Journal of Abnormal and Social Psychology, 60 (1960), 27-36.

¹⁹Carroll E. Izard, "Personality Characteristics (EPPS), Level of Expectation, and Performance," Journal of Counseling Psychology, 26 (1962), 394.

Izard assumed that EPPS test scores would not relate to expected grades on a course exam, described as comparable to one recently taken and reviewed, but would relate to actual course achievement (number of items correct on all exams in the course).

Izard found no relationship between EPPS n-achievement scale scores and expected exam grade but found a significant correlation for 33 males between EPPS n-achievement scale scores and actual level of course achievement, $r = .40$ ($p < .05$). Izard also reports a subsequent study in which a significant correlation was obtained between EPPS n-achievement scores obtained on 180 males as freshman and their GPA's as seniors, $r = .28$ ($p < .01$).

While the findings in Izard's studies indicate something of the potential predictive efficiency for EPPS scores with achievement criteria in the academic situation, his procedure did not allow for evidence that EPPS n-achievement scale scores reflect the operation of a Motive for Success as this term appears in Atkinson's theory of achievement motivation. That is, there is no evidence in Izard's study to indicate the EPPS n-achievement scale scores relate to behaviors thought to be more clearly reflective of motivational influences than college grades (e.g., aspirations or expectations) or that such relationships are influenced by situational variables.

The above studies indicate somewhat less support for the predictive efficiency of the projective (TAT and TOI) measures of achievement-related motives than for the objective (EPPS) measures, but somewhat greater support for the construct validity of the projective measures.

However, even those studies demonstrating construct validity for the projective measures of achievement motives through relationships with the direction of expectations concerned with future achievement, and with stronger relationships in situations in which reality determinants were minimized, failed to investigate either the reliability of the indices of expectation or the influence of these variables on future achievement.

The findings of the studies reviewed above were thought to at least allow sufficient clarity for the selection of "Expected Grades" as a criterion for the direction of activity in the classroom situation. The direction of activity toward higher or lower academic achievement appears relevant to the construct validity of the Motive for Success and previous findings support the contentions of theory that relationships between the Motive for Success and expected future achievement should be stronger when reality determinants are controlled or minimized.

Persistence as a Personality Trait

Webster's Collegiate Dictionary²⁰ states that to persist is: "To go on resolutely in spite of opposition, importunity, or warning; to persevere." This quality of "sticking to a task once undertaken" has received extensive attention in the literature²¹ and has been the focus of a number of experimental studies.²²

Woodworth²³ centers attention on the importance of persistence in the academic situation and states: "In school work there is a good reason to believe that persistence, or sticking to a task, is one of the main factors that helps to supplement or compensate for ability" Research efforts concerned with the contribution of

²⁰Webster's Collegiate Dictionary (Springfield, Massachusetts: G. and C. Merriam Co., 1944).

²¹H. J. Eysenck, The Structure of Human Personality (London: Methuen, 1953); R. S. Woodworth, Psychology (New York: Henry Holt, 1940); M. Hartshorne, M. A. May and J. B. Maller, Studies in Service and Self-Control (New York: Macmillan Co., 1929).

²²G. R. Thornton, "The Use of Tests of Persistence in the Prediction of Scholastic Achievement," Journal of Educational Psychology, 32 (1941), 266-273; R. S. MacArthur, "An Experimental Investigation of Persistence in Secondary School Boys," Canadian Journal of Psychology 9 (1955), 42-54; T. H. Howells, "An Experimental Study of Persistence," Journal of Abnormal and Social Psychology, XXVIII (1933), 14-29.

²³Woodworth, op. cit.

persistence to academic achievement have been summarized by Thornton,²⁴ MacArthur²⁵ and Eysenck.²⁶

The general paradigm of research concerned with persistence is that in which a person is presented with an extremely difficult or impossible task and is unrestricted in either the time or number of attempts he can work on the task. Persistence is usually measured by the total time spent or the number of attempts made before the subject turns to an alternative activity.

A study by Howells²⁷ is indicative of the type of research concerned with the role of persistence in the prediction of academic achievement. Howells found the correlation between scores on a battery of persistence tests (such tests as "the length of time holding one foot in the air" and "time spent studying a page of printed materials to answer later test questions") and average past grades for one hundred college students to be $r = .44$. The relationship between intelligence test scores and grades for the same students was $r = .51$, while the multiple correlation of intelligence and persistence with grades was $r = .64$.

²⁴Thornton, op. cit.

²⁵MacArthur, op. cit.

²⁶Eysenck, op. cit.

²⁷Howells, op. cit.

While the procedure and purpose of the study by Howells was typical of many studies concerned with persistence as a personality trait, the coefficient obtained between persistence test scores and grade averages indicates a stronger relationship than is usually found.²⁸

Some of the conclusions reached by MacArthur²⁹ based on a comprehensive review of early studies of persistence are worth noting:

1. Correlations between persistence tests have usually been low but positive.
2. Persistence measures usually have very low positive relationships with intelligence and age, up to the young adult level.
3. Success at a specific task encourages persistent behavior at the task, but a mixture of success and failure at initial stages may further increase persistence.
4. Persistence in group situations may be affected by the performance of other members of the group.
5. Initial motivation influences performance on persistence tests.
6. Persistence is approximately normally distributed in unselected populations.
7. Persistence measures are usually related to school success, the relation being roughly in proportion as the measures resemble school situations.

²⁸MacArthur, op. cit.

²⁹Ibid.

Thornton³⁰ has also emphasized the importance of the similarity between persistence test situation and school situation for the prediction of school performance (MacArthur's final conclusion listed above). Thornton specifies two aspects of the similarity between persistence test situation and school situation: (1) similarity of tasks and (2) similarity of social relationships.

Thornton has argued that the means of increasing the relationship between persistence test scores and indices of academic achievement "is not by making the tests better measures of persistence but rather by planning the test situations to resemble more closely the tasks and social relationships found in the classroom."³¹ Thornton concludes that "the best test situation for determining a student's reactions to classroom tasks and classroom social relationships would be the classroom itself."³²

Feather³³ in a recent review of studies of persistence places the type of study reported by Howells, Thornton and MacArthur in a class of persistence studies concerned with persistence as a trait or uniformity in behavior. Studies in this class attempt to locate consistencies in the

³⁰Thornton, op. cit.

³¹Ibid., p. 270.

³²Ibid., p. 271.

³³Norman T. Feather, "The Study of Persistence," Psychological Bulletin, 59 (1962), 94-115.

behavior (persistence) of subjects across a variety of laboratory tasks and then seek to establish relationships between laboratory behavior and some measure of "worth while" accomplishment, e.g. school achievement. Consistency in behavior across tasks and situations is thought to indicate a relatively stable personality characteristic.

Feather criticized these "persistence as a personality trait" studies for their failure to account for the influence of task and situation variables on behavior. Thornton has discussed a similar point, above, in his recognition of the importance of the similarity between predictor and criterion situations. However, Feather's criticism goes beyond that concerned with a similarity that is constant for all subjects between these two situations by suggesting that individual differences in personality may interact with situational differences. Atkinson³⁴ has suggested that simultaneous consideration of both differences in personality and differences in situational influences would provide for a more adequate test of explanatory concepts and for increased precision in the prediction of behavior.

³⁴Atkinson, op. cit.

Feather has described Atkinson's³⁵ theory of achievement motivation as an approach which considers the interaction of stable personality dispositions (motives) and situationally-defined variables (expectations and incentive values) in the prediction of behavior. Persistence, for Feather and Atkinson becomes a behavioral phenomenon to be explained by a theory of motivation rather than as a trait holding explanatory import.

In the following sections, the literature is reviewed in which persistence is viewed as a behavioral phenomenon in the laboratory, classroom and, as defined by attrition, in the college situation.

Persistence as a Motivational Phenomenon
in the Laboratory

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Feather³⁶ has investigated the relationship of persistence on a laboratory task to both its apparent difficulty (situational variable) and the relative strength within the individual of the motives to achieve success and to avoid failure (personality variables).

Feather presented 89 male undergraduates with a series of "Perceptual Reasoning Tests" (unicursal puzzles) introduced as measures of "important skills and abilities." All

³⁵J. W. Atkinson, "Motivational Determinants of Risk-Taking Behavior," Psychological Review, 64 (1957), 359-372.

³⁶Feather, op. cit.

subjects experienced failure on the first puzzle (objectively insoluble) and were allowed to "try again" (persist) by selecting another card from a pile containing copies of the same geometric figure or "move on" (not persist) by selecting a card from a second pile of similar geometric figures which might be either "easier" or "more difficult."

Apparent difficulty of the initial task was manipulated by the use of "fictitious norms" designed to lead half of the subjects to expect the first task to be "easy" (70% chance of success) and half of the subjects to expect the first task to be "difficult" (5% chance of success). Subjects were classified as relatively strong in the Motive for Success or relatively strong in the Motive to Avoid Failure on the basis of discrepant appearance in the separate distributions of TAT n-achievement scores and TAQ (Test Anxiety Questionnaire--developed by Mandler and Sarason) scores (above the median on one test and below the median of the other).

Feather assumed total motivation to perform the initial task to be a consequence of the resultant summation of extrinsic motivation (non-achievement related motives, expectancies and incentives) and achievement motivation (achievement related motives, expectancies and incentives). Change in the resultant total motivation to perform the initial task was attributed to changes in achievement

related expectations (apparent task difficulty) as the subject worked unsuccessfully on the initial task.

Feather reasoned that when the individual strong in the Motive for Success is presented with an "easy" task, his expectations are high (above .50 probability) that he will attain success. Repeated failure at the task then tends to lower his expectations concerning success with a consequent increase in motivation (the result of the product of decreasing expectations and increasing incentive values) to continue performance (persist) on the initial task.

When the individual's expectations concerning success fall to within the "intermediate" range of apparent difficulty (50% chance of success) his motivation to continue (persist) is maximum (the product of Expectancy and Incentive values is highest) and individual differences in motive strength have their maximum influence on behavior (the product of Expectancy and Incentive values maximally enhances differences in motive strength).

Not until the individual's expectations concerning success decrease (due to repeated failure) below the "intermediate range of apparent difficulty," does motivation to continue work on the initial task begin to decrease and at some point become weaker than his motivation to work on the alternative task.

In contrast, if the individual strong in the Motive for Success is presented with a "difficult" task then his expectations concerning success are already at a low level (below the "intermediate" range of apparent difficulty) and failure experiences immediately begin to weaken the tendency to persist.

A similar line of reasoning was used concerning the behavior of individuals strong in the Motive to Avoid Failure, when the task was "easy" or "difficult" and assuming that the "intermediate" range of apparent difficulty of the task was the range of maximum motivation to avoid performance of the task.

Feather predicted that individuals strong in the Motive for Success would persist longer when the task was presented as "easy" rather than as "difficult" and would persist longer on the "easy" task than subjects strong in the Motive to Avoid Failure. Conversely, those subjects strong in the Motive to Avoid Failure were expected to persist longer when the task was presented as "difficult" rather than as "easy" and to persist longer on the "difficult" task than those subjects strong in the Motive for Success.

Feather failed to find significant differences in persistence for subjects differing in either motivation

(relative strength of the Motive for Success and Motive to Avoid Failure) or in expectations ("easy" or "difficult") of success, alone.

However, Feather did find a significant triple interaction effect for motivation x expectation x persistence ($X^2 = 7.89$, with 3 df, $p < .05$).

Feather interprets his findings in support of his contentions that persistence increases for subjects strong in the Motive for Success, but decreases for subjects strong in the Motive to Avoid Failure, as tasks vary from "difficult" to "easy."

However, Feather's failure to obtain significant relationships between achievement motivation, when the Motive for Success and the Motive to Avoid Failure constructs were interpreted as TAT n-achievement scores and TAQ scores respectively, and persistence as time spent on an achievement task, provides no support for Atkinson's theory nor for the techniques of motive assessment.

Feather³⁷ has given further attention to the influence of the apparent difficulty of a task on persistence and to the assumption that a task of an "intermediate" level of difficulty maximizes the expression of achievement related motives in behavior.

³⁷Feather, "Persistence at a Difficult Task. . .," op. cit.

Feather noted that in the experiment above the difficulty level of the alternative task was not specified. He assumed that differences in persistence on the initial task were accounted for by changes in apparent difficulty as subjects worked unsuccessfully on the initial task. However, changes in apparent difficulty were assumed, on the basis of theory, to influence motivation for the initial task relative to motivation for the alternative task.

Feather hypothesized that an individual relatively strong in the Motive for Success should terminate work on a difficult task (5% chance of success) sooner, when the alternative task is one of an "intermediate" level of difficulty (50% chance of success), than subjects relatively strong in the Motive to Avoid Failure.

Since the principle of change in motivation was based on changes in the apparent difficulty of the task, as in the study above, Feather also hypothesized that individual differences in apparent difficulty (subjective probability of success) should also influence persistence on the initial task.

Feather presented 60 male undergraduates with the perceptual reasoning task (unicursal puzzle) used in the above study. Fictitious norms were used to describe the initial task as difficult (5% chance of success) and the alternative task as one of an "intermediate" level of difficulty (50% chance of success).

After reporting the fictitious norms, estimates of the individual's own subjective estimate of his probability of success were obtained by having the subject check on a 20-point rating scale numbered from 0 to 100 in steps of five.

Subjects were classified as relatively strong in the Motive for Success if they scored above the median of TAT n-achievement scores and below the median of TAQ scores. Conversely, subjects were classified as relatively strong in the Motive to Avoid Failure if they scored above the median of TAQ scores and below the median of TAT n-achievement scores.

Feather failed to find support for the expected greater persistence of subjects relatively strong in the Motive to Avoid failure, than subjects relatively strong in the Motive for Success, when both groups were presented with a "difficult" task and an alternative task of an "intermediate" level of difficulty.

However, Feather found a significant relationship between individual differences in apparent difficulty (subjective estimates) and persistence on the initial task. Using all 60 subjects tested, Feather found a statistically significant tendency ($\chi^2 = 8.08$, $df = 1$, $p < .01$) for subjects with high initial probability estimates (above the median) to persist longer at the initial task than subjects with low initial probability estimates.

Further analysis considering the relative strength of the achievement-related motives indicated a positive relationship ($p < .005$, Fisher exact test, one-tailed) between initial estimates of probability of success and persistence on trial 1 for those subjects relatively strong in the Motive for Success. No such relationship was found among those subjects relatively strong in the Motive to Avoid Failure.

Feather's findings suggest that his attempts to manipulate the apparent difficulty level of the tasks by the use of "fictitious" norms were not uniformly effective for all subjects. Individual differences in subjective estimates of the difficulty of the task remained (as for the total group) related to persistence among those subjects relatively strong in the Motive for Success.

The two studies reported by Feather³⁸ involve measures of persistence (motivation) in a laboratory situation in which the subject experiences repeated failure on an achievement-oriented task with an alternative task available that is also achievement-oriented.

Weiner³⁹ presents a study which involves persistence (motivation) in a laboratory situation in which the

³⁸Feather, "The Relationship of Persistence. . .", op. cit. and "Persistence at a Difficult Task. . ." op. cit.

³⁹Bernard Weiner, "The Effects of Unsatisfied Achievement Motivation on Persistence and Subsequent Performance," Journal of Personality, 33 (1965), 428-442.

alternative to an initial achievement-oriented task is a task appealing to motives other than achievement-related motives. Such a situation is thought to hold special relevance for testing the implications of an "inertial tendency," i.e. a goal-directed tendency that persists until satisfied.

Atkinson and Cartwright⁴⁰ have proposed that in a situation in which a tendency to attain some particular goal (e.g. success) is aroused and thwarted, an "inertial tendency" persists, i.e. a general tendency toward that class of goal. The "inertial tendency" is thought to equally enhance performance of an initial and alternative task when both are achievement tasks (the situation explored by Feather). However, the "inertial tendency" should selectively influence persistence in achievement-oriented activity following failure (thwarting), rather than success, and this influence should be particularly apparent when the alternative is to engage in non-achievement oriented activity.

Weiner⁴¹ had 60 male college students engage in a non-achievement oriented activity (asked to state preferences for various advertisements) then interrupted them and

⁴⁰J. W. Atkinson and D. Cartwright, "Some Neglected Variables in Contemporary Conceptions of Decision and Performance," Psychological Reports, 14 (1964), 575-590.

⁴¹Weiner, op. cit.

presented an achievement-oriented activity (digit-symbol substitution). Half of the subjects were told that this "test of important skills and abilities" was difficult (30% chance of successful completion) and given cards containing too many substitutions to allow success on any trial (failure condition). Half of the subjects were told the task was easy (70% chance of successful completion) and were subsequently given cards containing enough substitutions to allow success on every trial (success condition). Subjects were allowed to return to the non-achievement task (advertisement preferences) at any time. Measures of performance level (actual time to complete a uniform number of substitutions on each trial) and persistence (number of trials before returning to the non-achievement task) were obtained. Relative strength of achievement-related motives was assessed by subtraction of "Z" scores obtained from the TAT and TAQ instruments.

Weiner's results failed to attain statistical significance except in those analyses involving so few, highly selected subjects, as to raise considerable question concerning the influences producing his findings. Weiner suggested that failure to find significant differences in the behavior (persistence) of groups differing in achievement-related motives, may have been due to expectations by members of both groups that the experimenter "was more interested in performance at the substitution task, and a

'good' S was one who continued at the activity in progress." In support of this argument, Weiner notes that 23 of the 60 subjects did not voluntarily quit the substitution task.

Strengths and Weaknesses of Laboratory
Studies of Persistence

The value of the studies by Feather and Weiner lies in the opportunity afforded by the laboratory situation to specify, control and manipulate theoretically important variables within that situation. Such explicit operations are generally thought to provide greater clarity for the relationships obtained.

The problem for the studies by Feather and Weiner concerns the generality of their findings for situations outside the laboratory. The manipulation of variables, e.g. the apparent difficulty of the task, assumed the experience of the subjects outside the laboratory is irrelevant to performance of the tasks within the laboratory, an assumption which restricts the findings of the above authors to relatively few competitive situations (those for which the subjects' previous experience is irrelevant). The results of Feather's study indicate his attempts to manipulate the apparent difficulty of the task were only partly successful and suggests that his subjects may have drawn on their previous experience outside the laboratory to make their own estimate of the difficulty of the task.

Persistence as a Motivational Phenomenon
in the Classroom

Atkinson and Litwin⁴² have investigated relationships between individual differences in achievement-related motives and both persistence and achievement in the classroom situation.

Atkinson and Litwin assumed that individuals relatively strong in the Motive for Success should remain longer in a situation that is potentially rewarding for them than individuals relatively weak in the Motive for Success. These authors further assumed a college course final examination to be an achievement situation offering potential satisfaction for the Motive for Success while activities immediately outside this situation would appeal to non-achievement related motives.

Atkinson and Litwin obtained TOI n-achievement scores for 44 male college students. Edward's PPS n-achievement scores and TAQ scores were also obtained. The achievement task consisted of a multiple-choice and short-answer final examination for a course in Psychology. Persistence scores (time spent in the examination room) were obtained as the students left the test situation presumably to engage in non-achievement related activities. Grades attained on the final examination were also available.

⁴²John W. Atkinson and G. H. Litwin, "Achievement Motive and Test Anxiety Conceived as Motive to Approach Success and Avoid Failure," Journal of Abnormal and Social Psychology, 60 (1960), 52-63.

Atkinson and Litwin found that those subjects above the median of TOI n-achievement scores spent a greater amount of time in the examination room than those subjects below the median ($U = 156.5$ $p < .03$). Furthermore, those subjects above the median of TOI n-achievement scores obtained higher grades than those subjects below the median ($U = 152.5$, $p < .02$). The relationship between the number of minutes spent working on the final examination and the grade obtained (two behavioral measures of motivation) was not significant ($r = .27$, $p < .10$).

Atkinson and Litwin found that when subjects were simultaneously classified on TOI n-achievement and TAQ scores the High TOI n-achievement-Low TAQ scoring group (assumed relatively strong in the Motive for Success) spent a longer time on the examination and obtained higher grades than the Low TAT-High TAQ scoring group (assumed relatively strong in the Motive to Avoid Failure). No significant relationships were found between EPPS n-achievement scores and time spent on the examination or examination grades.

Atkinson and Litwin conclude that the relationships between TOI n-achievement scores and persistence and grades on the examination, and between TAQ scores and these variables, contribute evidence for the construct validity of their theory of motivation and for the use of the TOI and the TAQ as interpretations of the Motive for Success and Motive to Avoid Failure, respectively.

The failure of Atkinson and Litwin to find significant relationships between the Motive for Success and either persistence or examination grades when EPPS n-achievement scores were used as an index of the Motive for Success, was taken by these authors as evidence that such "self-report" measures do not reflect the operation of their theoretical construct.

Smith⁴³ attempted to replicate the findings of Atkinson and Litwin⁴⁴ using intelligence test scores as an index to the apparent difficulty of an examination and predict relationships between achievement-related motives and persistence on the basis of the findings in Feather's study.⁴⁵

Smith⁴⁶ failed to find significant relationships between TOI n-achievement scores and Otis gamma intelligence test, examination grades or time spent on either a mid-term examination or a final examination for 146 undergraduate students.

However, Smith did find significant relationships between a measure of "resultant motive strength" (TOI "Z"

⁴³Charles P. Smith, "Relationships Between Achievement-Related Motives and Intelligence, Performance Level, and Persistence," Journal of Abnormal and Social Psychology, 68 (1964), 523-533.

⁴⁴Atkinson and Litwin, op. cit.

⁴⁵Feather, "The Relationship of Persistence . . ."
op. cit.

⁴⁶Smith, op. cit.

scores minus TAQ "Z" scores) and intelligence ($r = .18$, $p < .05$) and time spent on a mid-term exam ($r = -.18$, $p < .05$). These results imply that subjects with relatively stronger Motive for Success obtain higher intelligence test scores and leave the examination room earlier than subjects relatively strong in the Motive to Avoid Failure.

The findings by Smith concerning persistence were directly contrary to those of Atkinson and Litwin.⁴⁷ Smith suggested, however, that it might be possible to reconcile these discrepant findings through consideration of estimates of apparent difficulty, the situational variable shown by Feather to influence the relationship between personality (motives) and motivation (persistence).

Smith reasoned that:

. . . subjects with relatively high Motive for Success will persist longer at a task of intermediate difficulty than subjects with relatively high Motive to Avoid Failure (the result of the Atkinson-Litwin study) but will persist less long at a very easy task (the result of the present study).⁴⁸

While no measure of perceived difficulty was used in the study by Atkinson and Litwin or in the study by Smith, the former authors had suggested that differences in ability may have influenced their results.

⁴⁷Atkinson and Litwin, op. cit.

⁴⁸Smith, op. cit., p. 527.

Smith, therefore, assumed that differences in the apparent difficulty of an examination might be indexed by individual differences in intelligence test scores. That is, subjects high in intelligence might be expected to view the examination as "easy" while subjects low in intelligence might be expected to view the examination as "difficult."

Smith found a significantly greater (negative) relationship between resultant strength of the Motive for Success and persistence on the final exam among subjects with high Otis scores than among subjects with low Otis scores ($Z = 2.01$, $p < .05$, two-tailed test).

Smith interprets his findings in support of the notion that among subjects presented with an "easy" task (the high Otis score group) those subjects relatively strong in the Motive for Success tend to be less persistent than subjects relatively strong in the Motive to Avoid Failure. However, among subjects presented with a "difficult" task (the low Otis score group) those subjects strong in the Motive for Success tend to be more persistent than subjects relatively strong in the Motive to Avoid Failure.

While the results of the study by Smith appear to require explanation through a fortuitous manipulation of the terms of theory, there is evidence to suggest that perceived difficulty of a task influences the relationships between

achievement-related motives and persistence, or, at least, that a measure of intelligence acts as a "moderator variable" (i.e., a third variable that influences relationships between two other variables) in the prediction of persistence from indices of achievement-related motives.

The results of the study by Smith appear to warrant further study using both measures of ability and of perceived difficulty such that the assumed relationship between these measures can be tested as well as their implications for the prediction of behavior.

Strengths and Weaknesses of Studies of Persistence in the Classroom

The value of the studies by Atkinson and Litwin and by Smith lies in the selection by these authors of a competitive task and situation common in the experience of their subjects; a task for which the past experience of the subjects is relevant and a situation which allows the application of their findings to theory and the generalization of their findings to frequently occurring, important situations.

The limitations of the studies by Atkinson and Litwin and by Smith have been discussed by Atkinson⁴⁹ in which Atkinson argues that performance in most "real-life"

⁴⁹John W. Atkinson and W. R. Reitman, "Performance as a Function of Motive Strength and Expectancy of Goal Attainment," Journal of Abnormal and Social Psychology, 53 (1956), 361-366.

situations is "over-determined," i.e. performance is the consequence of many factors, such that relationships between measured variables are often slight or "washed-out" entirely.

It would appear that Atkinson and Litwin and Smith might have increased the precision in their studies by closer attention to the control of variables assumed to be so important in the studies by Feather⁵⁰ and Weiner.⁵¹ Neither Atkinson and Litwin nor Smith used a measure of the apparent difficulty of the task (exam) even though both authors assumed that such a variable would be expected to influence performance. Only Smith attempted some degree of control of the difficulty factor by the use of a measure of intellective ability. Furthermore, neither author attempted to specify, control or manipulate the alternative activity to which their subjects could turn, but only assumed that the alternative activity involved different motivations than performance in the examination room.

Studies of Attrition in the Academic Situation

Heilbrun⁵² has investigated the influence of personality on continuation (persistence) in college following the

⁵⁰Feather, "The Relationship of Persistence . . .," op. cit. and "Persistence at a Difficult Task . . .," op. cit.

⁵¹Weiner, op. cit.

⁵²Alfred B. Heilbrun, Jr., "Personality Factors in College Dropout," Journal of Applied Psychology, 49 (1965), 1-7.

freshman year. Heilbrun assumed that both ability and personality would influence attrition and that situational conditions at a large university might pose particular adjustment problems for students of high ability.

Heilbrun matched 304 male students and 306 female students who returned for the Sophomore year with a student of the same sex and academic ability test score who did not return. He compared mean scale scores on the Adjective Check List between students who did not drop out with those who did drop out within each of three levels of ability (bottom 43%, middle 32% and top 25%).

Heilbrun found significant mean scale score differences primarily among the high ability students of each sex. The personality variables found to influence attrition of high ability males included n-achievement which occurred along with n-order and n-endurance in a group of scales which Heilbrun had classified as "task relevant" behaviors indicating problems of "specific conformity to academic values." Heilbrun concluded that "personality makes an important systematic contribution to college attrition for high ability students only . . ."⁵³

Heilbrun emphasized that his results are based on findings in a large university setting and might not be replicated in a smaller college setting which might present

⁵³Ibid., p. 4.

different environmental demands. These results appear to support the contentions of Smith⁵⁴ and the theoretical notions of Atkinson⁵⁵ that personality and situational variables interact and that the relationships between personality (motives) and motivation (persistence) may be influenced by measures of ability.

Spielberger⁵⁶ has also investigated the relationship between personality and college attrition (persistence) covering a three year period. Spielberger assumed that: "college life is characterized by conditions and expectations which may heighten anxieties already present in students or may induce new anxieties."⁵⁷

Spielberger obtained ACE scores, MAS scores and an index of dropout rate due to academic failure for 267 male college students. Relationships between MAS scores and attrition over a period of three years were investigated within three levels of academic ability (lower 20%, middle 60% and upper 20%).

Spielberger found that, excluding those students in the lowest 20% of ability, 18% of the relatively able high anxiety students had dropped out of the university due to

⁵⁴Smith, op. cit.

⁵⁵Atkinson and Litwin, op. cit.

⁵⁶C. D. Spielberger, "The Effects of Manifest Anxiety on the Academic Achievement of College Students," Mental Hygiene, 46 (1962), 420-426.

⁵⁷Ibid., p. 421.

academic failure while only 4.5% of the low anxiety students had dropped out for this reason.

The above studies by Heilbrun⁵⁸ and Spielberger⁵⁹ reflect something of the current interest in exploring relationships between personality variables (motives or needs) and criterion measures (e.g. persistence) which hold greater relevance for the personality constructs involved than criteria of academic achievement (GPA) alone. Attention is also directed in these studies to importance of control of ability factors which may tend to alter or obscure the relationships of personality variables.

Similarities and Differences in the Study of Persistence

The studies of persistence as a motivational phenomenon reviewed above, represent attempts to explore relationships between individual differences in personality and behavior in competitive situations when attention is given to the characteristics of the situation in which personality is expressed and behavior observed.

The findings of the above studies in which persistence is treated as a dependent variable, are thought to hold implications for the validity of certain constructs

⁵⁸Heilbrun, op. cit.

⁵⁹Spielberger, op. cit.

occurring in Atkinson's⁶⁰ theory of achievement motivation. However, the results of these studies are varied and often appear contradictory.

Variation and apparent contradiction in findings may be taken as non-confirming evidence for theory, however it must be recognized that each of the above studies represents a particular instance of investigation involving a selected approach to the assessment of certain personality traits, restrictions in the selection of subjects and the selection of a particular situation in which behavior takes place. Each of these variables--tests, subjects and situations--may influence the findings of a particular study in ways not mentioned in theory and differences in these variables make comparison of results hazardous.

A brief comparison of the above studies follows in which similarities and differences in personality measurement, subjects and behavioral situations are discussed. The purpose of the following comparison is to draw attention to the variety of motivationally relevant influences operating in even these few studies. Recognition of the potential influence of these variables is thought to be a necessary precursor to attempts to distinguish apparent contradictions in findings, which tend to disconfirm theory, from differences in the conduct of studies which tend to restrict the generality of findings to disparate spheres of theory discourse.

⁶⁰ Atkinson, "Motivational Determinants. . .," op. cit.

The Measurement of Individual Differences
in Achievement Related Motives

The studies of persistence as a motivational phenomenon reviewed above, used scores derived from six different instruments to index the operation of personality variables thought to influence performance in competitive situations. The instruments used in the above studies were: the Thematic Apperception Test (TAT), the Test of Insight (TOI), the Test Anxiety Questionnaire (TAQ), the Manifest Anxiety Scale (MAS), Edward's Personal Preference Schedule (EPPS) and the Adjective Check List (ACL).

Two of these instruments (TAT and TOI) are projective methods of measurement while the remaining four instruments (TAQ, MAS, EPPS and ACL) represent objectively scorable self-report inventories. Four of these instruments (TAT, TOI, EPPS and ACL) provide scores assumed to reflect the strength of an approach motive (Motive for Success) which is thought to facilitate performance in competitive situations. Two of the instruments (MAS and TAQ) provide scores assumed to reflect the strength of an avoidant motive (Motive to Avoid Failure) which is thought to interfere with efficient performance in complex competitive situations. In addition, two indices, thought to reflect the resultant of conflict between the Motive for Success and the Motive to Avoid Failure, were derived by combining scores (from discrepant halves of separate scale score distributions or by subtraction of "Z" scale scores).

Statistically significant differences in performance attributable to differences in personality (motives) were found by Atkinson and Litwin⁶¹ using scores derived from one projective instrument (TOI); using scores derived from one self-report instrument (TAQ); and using scores derived from a combination of both instruments (scores above the median on the TOI and below the median of the TAQ, and the reverse); but failed to find significant differences using scores derived from a second self-report instrument (EPPS).

Smith⁶² failed to replicate the findings of Atkinson and Litwin using the same methods of measurement and instruments (TOI and TAQ) used by Atkinson and Litwin but using a different method of combining scores ("Z" score subtractions).

Feather⁶³ failed to replicate his own earlier findings⁶⁴ using identical methods of measurement (projective and self-report), instruments (TAT and TAQ) and score combination technique (scores above the median of the TAT and below the median of the TAQ, and the reverse).

Weiner⁶⁵ failed to find significant performance differences attributable to motive classification using scores

⁶¹Atkinson and Litwin, op. cit.

⁶²Smith, op. cit.

⁶³Feather, "Persistence at a Difficult Task. . .," op. cit.

⁶⁴Feather, "The Relationship of Persistence. . .," op. cit.

⁶⁵Weiner, op. cit.

derived from the methods and instruments (TAT and TAQ) used by Feather but using a different score combination technique ("Z" score subtractions). Both Weiner and Feather report their findings only for the combined score technique.

Although Atkinson and Litwin failed to find significant differences in persistence related to scores on one self-report instrument (EPPS) both Heilbrun⁶⁶ and Spielberger⁶⁷ obtained significant relationships between measures of college attrition and self-report inventory scores (ACL and MAS, respectively).

The few studies of persistence reviewed above, indicate something of the variety of methods, instruments and score combination techniques used for the assessment of achievement-related motives. The differences between studies in the measurement of personality and the variability of the findings preclude drawing conclusions concerning the superiority of one method, instrument or score combination technique.

However, the failure of various authors to replicate the findings of previous research combined with the relatively low relationships that have been obtained suggests caution in the interpretation of results as indicating the

⁶⁶Heilbrun, op. cit.

⁶⁷Spielberger, op. cit.

operation of theoretical constructs independent of the particular instance of measurement.

Subjects

Research by Atkinson⁶⁸ and his co-workers⁶⁹ has shown differences in the responses of male and female subjects on personality tests and differences in the relationships between the test responses of these two groups and behavior on a wide variety of performance criteria. These findings by Atkinson and his co-workers have resulted in the concentration of their efforts on research typically involving only male subjects.

Farquhar⁷⁰ and his co-workers anticipated sex differences in the assessment of personality by the construction of separate instruments for males and females and by separate analysis, by sex, of behavior on performance criteria.

All of the studies of persistence as a motivational phenomenon reviewed above, have used college students as subjects. All of the above studies but one, Smith,⁷¹ have used only college males or have analyzed the results for males and females separately.

⁶⁸John W. Atkinson (ed.), Motives in Fantasy Action and Society, D. Van Nostrand Co., Inc., 1958.

⁶⁹John W. Atkinson and Norman T. Feather (eds.), A Theory of Achievement Motivation (New York: Wiley and Sons, Inc., 1966).

⁷⁰Farquhar, op. cit.

⁷¹Smith, op. cit.

Smith failed to replicate the findings of Atkinson and Litwin⁷² concerning the relationships between personality (motives) and behavior (persistence) in the classroom situation. However, Smith included both college males and females in his analyses while Atkinson and Litwin used only data based on college males (though it appears likely females were present in the examination situation investigated by the latter study). The possible influence of differences in subjects included in the two studies complicates direct comparison and evaluation of their contradictory findings. The locus of differences could be in personality assessment, criterion behavior or differences in relationships between test and task measurements.

Differences attributable to sex were found by Heilbrun.⁷³ Heilbrun separately analyzed results for male and female college students and found twice as many of the Adjective Check List scale scores to significantly discriminate between male college students, than between female college students, who did and who did not drop out of college after the first year.

The findings of the above studies and the conclusions of various reviewers suggest caution in the comparison of studies using only male subjects with studies using combined

⁷²Atkinson and Litwin, op. cit.

⁷³Heilbrun, op. cit.

data from male and female subjects. There is further concern that results based on college subjects may not generalize directly to high school subjects or older employed adults.

The Situation

Atkinson's⁷⁴ theory of achievement motivation attaches importance to one situational characteristic (apparent difficulty of the task) which is thought to differentially influence the expression of stable personality traits (motives) in competitive activity (persistence).

Each of the studies reviewed above has given consideration to the "apparent difficulty" of the task. However, there are wide differences in the manner and extent each study has dealt with this aspect of the situation. In addition, there are differences in other aspects of the situations used in the above studies--group or individual performance, novelty of the task, availability of knowledge of results, and type of alternative activity--which may also influence performance in competitive situations and limit the generality of particular findings.

⁷⁴Atkinson, "Motivational Determinants. . .," op. cit.

Apparent Difficulty

Feather⁷⁵ and Weiner⁷⁶ manipulated the apparent difficulty of a task by the use of "fictitious norms" designed to present the task as "easy" or "difficult." While their manipulation of this variable allows clarity in the findings obtained by these specific operations, it prevents consideration of the influence of previous experience, or of consistency in relationships between past and present experience, on task performance.

In contrast, Atkinson and Litwin⁷⁷ and Smith⁷⁸ assumed that measures of ability might index initial expectations of the apparent difficulty of an examination. Such an index was assumed to be related to the previous experience of college students with "easy" or "difficult" examinations and allow consistency in the relationship between previous experience and present expectations. However, only Smith tested this assumption and attempted to relate his findings to theory.

⁷⁵Feather, "The Relationship of Persistence. . .," op. cit. and "Persistence at a Difficult Task . . .," op. cit.

⁷⁶Weiner, op. cit.

⁷⁷Atkinson and Litwin, op. cit.

⁷⁸Smith, op. cit.

Heilbrun⁷⁹ and Spielberger⁸⁰ found measures of ability to influence the relationships between personality and persistence but neither author attempted to provide a systematic rationale for the differential prediction of these relationships.

While each of the above studies appears to confirm the importance of consideration of objective or subjective measures of task difficulty, there appears to be little basis for the comparison of findings obtained through such disparate approaches to the control and manipulation of task difficulty.

Group and Individual Performance

Feather⁸¹ and Weiner⁸² explored persistence in a situation in which subjects worked individually in competition with "fictitious norms." In contrast, the subjects used by Atkinson and Litwin⁸³ and Smith⁸⁴ worked in groups while the subjects in the studies by Heilbrun⁸⁵ and

⁷⁹Heilbrun, op. cit.

⁸⁰Spielberger, op. cit.

⁸¹Feather, "The Relationship of Persistence. . .," op. cit. and "Persistence at a Difficult Task. . .," op. cit.

⁸²Weiner, op. cit.

⁸³Atkinson and Litwin, op. cit.

⁸⁴Smith, op. cit.

⁸⁵Heilbrun, op. cit.

Spielberger⁸⁶ can be assumed to have experienced a mixture of individual and group competitive situations.

MacArthur⁸⁷ has noted above that the performance of individuals in groups has been found to be influenced by other members of the group and suggests caution in comparing the results of performance from individual and group situations.

While comparison of results obtained from group and individual performance situations may be unwarranted it would appear that each situation occurs in the school environment and findings should be applicable to these respective situations. Experimental isolation of differences within group situations and differences within individual performance situations would appear to hold greater potential clarity than studies, e.g. those by Heilbrun and Spielberger, in which the effects of both situations are allowed to influence measures of outcome in unknown ways.

Novelty of the Task

The tasks used by Feather⁸⁸ (unicursal puzzles) and by Weiner⁸⁹ (digit-substitutions) were unusual ones in the previous experience of their subjects. While the use of

⁸⁶Spielberger, op. cit.

⁸⁷MacArthur, op. cit.

⁸⁸Feather, "The Relationship of Persistence. . .," op. cit. and "Persistence at a Difficult Task. . .," op. cit.

⁸⁹Weiner, op. cit.

such simple response tasks allows a considerable degree of control over extraneous influences on performance it also raises questions of the application or generality of findings. The very fact that these tasks are "new and different" may provide motivational influences which differentially affect the performance of individuals in ways not considered by theory and in ways which restrict the application of findings to relatively few "real-life" competitive situations.

In contrast, the tasks used by Atkinson and Litwin⁹⁰ and by Smith⁹¹ (college examinations) were common tasks in the previous experience of their subjects and tasks which are likely to occur repeatedly in the future. The use of commonly occurring tasks for the observation of differences in motivation allowed previous experience to influence performance in ways considered by theory and allows the application of findings to at least these frequently occurring "real-life" competitive situations.

The problem in the use of "real-life" competitive situations has been discussed by Atkinson.⁹² Atkinson suggests that performance in such situations is "over-determined," i.e. the consequence of the resultant influence

⁹⁰Atkinson and Litwin, op. cit.

⁹¹Smith, op. cit.

⁹²Atkinson and Reitman, op. cit.

of many factors, such that relationships between a relatively few measured variables are often slight or "washed out" entirely.

Knowledge of Results

Feather⁹³ and Weiner⁹⁴ provided subjects with immediate knowledge of either "success" or "failure" throughout initial task performance. Knowledge of competitive standing was therefore available to influence persistence. Furthermore, both Feather and Weiner contrived a situation in which subjects experienced either continuous success or continuous failure.

In contrast, subjects included in the studies by Atkinson and Litwin⁹⁵ and by Smith⁹⁶ did not have objective knowledge of results at the time they left the examination room and may be assumed to have varied in their subjective estimates of relative degrees of success and failure as they worked on the examination and at the point they ceased work.

The subjects used by Heilbrun⁹⁷ and Spielberger⁹⁸ can be assumed to have had knowledge of relative degrees of

⁹³Feather, "The Relationship of Persistence. . .," op. cit. and "Persistence at a Difficult Task. . .," op. cit.

⁹⁴Weiner, op. cit.

⁹⁵Atkinson and Litwin, op. cit.

⁹⁶Smith, op. cit.

⁹⁷Heilbrun, op. cit.

⁹⁸Spielberger, op. cit.

success or failure at the point they either continued or "dropped out" of college. However, the final event can also be assumed to have been influenced by an accumulation of instances in which they persisted or failed to persist in competitive situations without objective knowledge of results. The influence of knowledge of results on continuation or persistence is thus confounded in these latter two studies.

The Alternate Activity

The characteristics of an alternative activity and the relationship of that activity to an initial activity holds considerable importance for Atkinson's⁹⁹ theory of achievement motivation which attempts to account for "change" in behavior on the basis of conflict between various motives and their relevant expectancy and incentive values.

Feather¹⁰⁰ and Weiner¹⁰¹ specified and controlled the characteristics of an alternative activity for their subjects. Feather specified an alternative activity appealing to the same motives (achievement-related motives) as an initial task. In a second study, Feather also specified

⁹⁹Atkinson, "Motivational Determinants. . .," op. cit.

¹⁰⁰Feather, "The Relationship of Persistence. . .," op. cit. and "Persistence at a Difficult Task. . .," op. cit.

¹⁰¹Weiner, op. cit.

the difficulty of the alternative activity. Weiner provided an alternative activity (non-achievement related activity) which was different than the initial activity (achievement related).

Atkinson and Litwin¹⁰² and Smith¹⁰³ assumed that activity outside the examination room was non-achievement related while activity inside the examination room was assumed to be only achievement related. Neither Atkinson and Litwin nor Smith attempted to specify or control alternative activity for their subjects nor did they attempt to provide any check on their assumption that the activity inside the examination room appealed to different motivations than that immediately outside the room. Failure to adequately control for the influence of alternative activity necessitated a change in an experiment by Hartshorne and May¹⁰⁴ when these authors discovered that persistence on their task was being influenced by the motivation of those subjects they expected to be high persisters, to leave the laboratory situation to return to the performance of important school tasks (behavior they had hoped to predict).

¹⁰²Atkinson and Litwin, op. cit.

¹⁰³Smith, op. cit.

¹⁰⁴Hartshorne, May and Maller, op. cit.

Moderator Variables and the Prediction
of Achievement

Two events in the field of industrial psychology, discussed by Porter,¹⁰⁵ Dunnette,¹⁰⁶ Saunders,¹⁰⁷ and Ghiselli,¹⁰⁸ hold implications for the present study.

The first event has to do with the findings of Dunnette and Ghiselli that the performance of some individuals and groups are more predictable than others and that these differences in predictability can themselves be predicted. That is, knowledge of a third variable can enhance the validity of certain predictors for some individuals or groups.

Saunders¹⁰⁹ has given the name "moderator" to such an independent variable that influences the relationship between

¹⁰⁵Lyman W. Porter, "Personnel Management," Annual Review of Psychology, 17 (1966), 295-422.

¹⁰⁶Marvin D. Dunnette, "A Modified Model for Test Validation and Selection Research," Journal of Applied Psychology, 47 (1963), 317-323.

¹⁰⁷David R. Saunders, "Moderator Variables in Prediction," Educational and Psychological Measurement, 16 (1956), 209-222.

¹⁰⁸Edwin E. Ghiselli, "Moderating Effects and Differential Reliability and Validity," Journal of Applied Psychology, 47 (1963), 81-86.

¹⁰⁹Saunders, op. cit.

another independent variable and a dependent variable. Both Saunders and Berdie¹¹⁰ have suggested that moderators may operate by sorting a heterogeneous aggregation of individuals into homogeneous groups.

Thus the findings of Farquhar¹¹¹ and Atkinson¹¹² that separate consideration must be given to the prediction of the achievement-related behavior of males and females is an example of the conception of a third variable, sex, operating to influence the relationships between personality test scores and achievement.

The search for such moderator variables has largely proceeded on a trial and error basis. Empirical or logical methods have been used to specify rather obvious moderators, e.g. age, sex, or level of education. Theory has been little involved in attempts to specify in advance which moderator variables might be useful.

Atkinson's theory of achievement motivation appears to offer one theoretical approach to the selection of a potentially useful moderator. That is, Atkinson suggests that characteristics of the particular achievement situation

¹¹⁰Ralph F. Berdie, "Intra-Individual Variability and Predictability," Educational and Psychological Measurement, 21 (1961), 663-676.

¹¹¹Farquhar, op. cit.

¹¹²Atkinson, Motives in Fantasy. . ., op. cit.

may moderate the relationships between measures of relatively stable personality characteristics (motives) and behavior (motivation). Specifically, Atkinson has theorized that measures of the difficulty of a task should enhance the predictability of achievement-related behavior for individuals faced with a task of an intermediate level of difficulty (based on the theoretical relationship between expectancy and incentive values in competitive situations).

The second event in the field of industrial psychology closely associated with the selection of moderator variables is the problem of criterion selection. Wallace¹¹³ has suggested that industrial psychologists have been too concerned with proving the predictive utility of their techniques and have thus centered on a global criterion of organizational worth, e.g. success or satisfaction. These attempts have overlooked events intervening between gross predictor and global criterion.

Wallace's criticism of the industrial psychologists' concern with "the criterion" can be appropriately leveled at those psychologists using the "ubiquitous grade point average" to validate personality tests. It is unreasonably rare that personality test developers ask "what sorts of

¹¹³S. R. Wallace, "Criteria for What," (Presented at American Psychological Association Meeting, Los Angeles, 1964).

behavior should be most intimately related to the dimension of personality I am trying to measure" and then, having selected that behavior and evaluated its relationship to personality, go a step further to evaluate the influence of that behavior on some worthwhile outcome.

The work of Farquhar and Atkinson appears to offer guide lines for a theoretical exploration of variables which may intervene between gross predictor (personality) and global criterion (GPA) in the academic situation. Thus, the criteria most intimately related to a study of a Motive for Success has been suggested by the above authors to involve "the direction, vigor and persistence of behavior"¹¹⁴ or "the initiating, directing and sustaining of behavior."¹¹⁵

It would appear that the above authors imply that construct validity investigation for their instruments would center on exploring the relationships between test scores and evidence of the initiation, direction, vigor and persistence of behavior. Concern with indices of such behavior would relate to the practical problems of how adequately one has sampled and measured such behavior and the theoretical problems of the relationships between motivation and quality of achievement.

¹¹⁴Atkinson, An Introduction to Motivation, op. cit.

¹¹⁵Farquhar, op. cit.

The studies by Smith, Heilbrun and Spielberger, reviewed above, represent attempts to employ a third variable (ability) to moderate relationships between personality (motives) and criteria of motivation (persistence on an examination or attrition in college) that at least may hold greater relevance for a theory of motivation than the exclusive use of achievement criteria (GPA).

However, some authors have also investigated relationships between personality variables and level of achievement criteria and allowed measures of ability to moderate these relationships

Goodstein and Heilbrun¹¹⁶ have argued for the importance of using levels of ability as a control variable in studies of non-intellective factors in achievement. They suggest that the relationship between personality and some measure of academic achievement may not be the same for all levels of ability.

Goodstein and Heilbrun correlated scores on the EPPS with semester grade averages for 206 male and 151 female college sophomores. Initial analyses indicated approximately 20% of the EPPS scales correlated significantly with a brief measure of verbal ability. When the variance

¹¹⁶Leonard D. Goodstein and Alfred B. Heilbrun, Jr., "Prediction of College Achievement from the Edwards Personal Preference Schedule at Three Levels of Intellectual Ability," Journal of Applied Psychology, 46 (1962), 317-320.

attributed to ability was controlled by partial correlation technique, the only significant correlation between EPPS scales and GPA was for the n-Achievement scale.

However, when these authors further analyzed their data by level of ability (three equal-sized subgroups) with the influence of ability within levels controlled by partial correlation, they found over one-half of the scales on the EPPS significantly related to GPA and the majority of these were within the middle ability group of male students. Similar analyses for females did not appear to produce the differential influence of personality by ability level.

These authors interpret their findings in support of the notion that personality factors are related to academic achievement when the influence of academic ability is statistically removed, but that the nature of the relationships depends upon the general ability level of the group being studied.

Goodstein and Heilbrun further interpret their findings as suggesting that personality factors are more important in determining the success or failure of average ability males while intellectual factors are more important for both the relatively bright and relatively dull male college students. Among their findings was a significant relationship between the n-Achievement scale of the EPPS and GPA only within the middle ability group of males, $r = .29$ ($p < .05$).

While these authors did not attempt to relate their findings to a theory of motivation, it appears that the relationship between n-Achievement scores and GPA would be predictable by Atkinson's¹¹⁷ theory of motivation if it is assumed that school tasks are typically perceived by the average ability males as tasks within an "intermediate" range of apparent difficulty. Atkinson's theory would predict the strongest relationship between individual differences in achievement-related motives and behavior for tasks of an "intermediate" range of apparent difficulty. This prediction would assume that GPA with the influence of ability statistically removed, represents a measure of motivation.

Speilberger and Katzenmeyer¹¹⁸ have also investigated the relationship between personality and GPA within three levels of academic ability (lower 20%, middle 60% and upper 20%).

Spielberger and Katzenmeyer obtained ACE scores, MAS scores and GPA's over one semester for 640 male college students. They report that tests for linear and curvilinear regression indicated that GPA's were not related to MAS scores for either the high or low academic ability groups.

¹¹⁷Atkinson, "Motivational Determinants. . .," op. cit.

¹¹⁸C. D. Spielberger and W. C. Katzenmeyer, "Manifest Anxiety, Intelligence, and College Grades," Journal of Consulting Psychology, 23 (1959), 278.

However, the test for linear regression for the groups of an intermediate level of academic ability yielded an F of 13.06 ($df = 1,390$, $p < .001$).

Spielberger and Katzenmeyer concluded that academic achievement (GPA) varies inversely with anxiety for the students of an intermediate level of academic ability. They attribute failure by low ability students to their limited ability and the success of students of superior ability to the relative ease with which these students can obtain grades irrespective of anxiety level.

While Spielberger and Katzenmeyer did not attempt to relate their findings to a theory of motivation, it appears that these relations (as were those of Goodstein and Heilbrun) are predictable by Atkinson's theory of achievement motivation.

Summary

The review of the literature was centered on studies in which relationships between achievement-related motives and the initiating, directing and sustaining of achievement-related activity were interpretable by a theory of achievement motivation.

The importance of latency measures in animal laboratory studies of basic need states was linked to the potential importance of motivation as expressed by initiating achievement-related activity in humans. The arbitrary

nature of the distinction between persisting and initiating activity was cited and both related to a theory of motivation that attempts to describe and predict "change" in behavior.

Studies were also reviewed in which the direction of expectations toward higher or lower levels of achievement were viewed as influenced by both reality and motivational determinants with stronger influences ascribed to motivational determinants when reality determinants were controlled or minimized.

Findings from laboratory studies using persistence as a behavioral criterion of motivation emphasized the importance of attention to the "apparent difficulty" of success and specification of an alternative activity. While the laboratory studies were able to manipulate both the difficulty of the task and the nature of the alternative activity their findings were thought to hold little relevance for "real life" competitive situations.

Findings from studies of persistence as a behavioral criterion of motivation within the classroom situation emphasized the importance of motivational criteria other than level of academic achievement and demonstrated the influence of persistence on the level of achievement. While studies of persistence in the classroom situation gave attention to task difficulty and the nature of the



alternative activity in theory they failed to manipulate or control these variables in their research.

Consideration of studies of persistence in both the laboratory and in the classroom situation indicated variation in findings which could be attributable to differences in motive assessment techniques, subjects and the type of experimental situation including such variables as difficulty of the task, group vs. individual performance, novelty of the task, knowledge of results and the nature of the alternative activity.

Attention was also focused on a current interest in the field of Industrial Psychology concerned with the selection of variables which influence (moderate) relationships between two other variables and which may "mediate" relationships between gross predictors and global criteria.

Empirical studies of attrition and achievement in the academic situation were also reviewed with implications that findings from these studies could be predicted by Atkinson's theory of achievement motivation using academic ability test scores as one index of the difficulty of success to moderate relationships between personality and academic achievement.

CHAPTER III

DESIGN OF THE STUDY

This study was designed to investigate evidence for the construct validity of the Motive for Success, (a) as represented within Atkinson's theory of achievement motivation, (b) as interpreted by scores on the Generalized Situational Choice Inventory (GSCI) and, (c) as expressed through activity within the classroom situation.

The setting for the present study was a classroom situation in which students were presented with both a non-achievement task and an achievement task. Instructions were designed to emphasize the importance of the achievement task but all students were prevented from immediately starting the achievement task by the requirement that they first spend some time on the non-achievement task.

The design of this study was that of a correlational approach to construct validity through investigation of the influence of individual differences in strength of the Motive for Success (GSCI scores) on initiating, directing and sustaining achievement-related activities within the classroom situation.

However, a quasi-experimental approach was also incorporated through an investigation of the relative strengths of the above relationships among subgroups of students assumed to be performing achievement tasks of varying levels of difficulty (Stage I--Nomological Validity).

The correlational approach and the quasi-experimental approach also allowed investigation of the validity of criteria for initiating, directing and sustaining activity through relationships with indices of the level of academic achievement (Stage II--Criterion Validity).

Combining the correlational and quasi-experimental approaches also allowed investigation of the predictive validity and construct validity of the GSCI through relationships with indices of the level of academic achievement (Stage III--Predictive and Nomological Validity).

Sample

The theoretical population of individuals from which the sample was selected is 9th grade junior high school students. Only those schools of one large metropolitan school system which had previously administered the M-Scales were considered for inclusion in the sample. The first three schools to accept the invitation to participate in this study were selected.

The total 9th grade population of the three schools (855 subjects in 32 English classes) was used for this study. Subjects were discarded before statistical analyses on two bases: pilot study to develop experimental procedures (5 complete classes consisting of 118 subjects); and missing data from GSCI, Grade Reports, DAT-V scores, task measures and questionnaire items (227 subjects).

The final sample available for statistical analyses consisted of 510 subjects (252 boys and 259 girls) from 28 English classes in the three schools.

Test Instruments

Differential Aptitude Test-- Verbal Scale

The Differential Aptitude Test--Verbal Scale (DAT-V) is administered routinely, by schools participating in the present study, to all students in the second semester of the 8th grade. Raw scores for the DAT-V scale were obtained from the cumulative records maintained by the school.

Generalized Situational Choice Inventory

The Generalized Situational Choice Inventory (GSCI) is one of the four scales of the M-Scales developed by Farquhar.¹ The GSCI is a forced choice instrument

¹Wm. W. Farquhar, Motivation Factors Related to Academic Achievement, Cooperative Research Project 846 (East Lansing, Michigan: Michigan State University, Office of Research and Publication, 1963).

consisting of 53 items on the Male Form and 46 items on the Female Form. The GSCI was designed to elicit preferences between the polar dimensions of the achievement motive when cast in the form of school activities and situations.

The GSCI was administered to students in the 9th grade during February of 1967 (approximately two months before the present investigation) through Project MEMO.* Scores for the GSCI were computed from data supplied by Project MEMO.

Research Instruments

Three instruments were developed for use in this study.

Non-Achievement Task

A booklet (see Appendix A) containing 44 jokes printed one to a page, was constructed. These jokes were reproduced from "School Daze," a publication of Scholastic Magazines, recommended for elementary school reading ability level. A separate "Joke Rating Sheet" was

*Project MEMO is a cooperative venture of community colleges in the state of Michigan and Michigan State University to identify and assist high school students who may have difficulty continuing their education. The project is funded by the U. S. Office of Education, under section 408 of the Higher Education Act of 1965.

Appreciation is expressed to Gordon Sabine, Vice President, Michigan State University, and to David Shultz, Director Project MEMO.

constructed to allow the subjects to rate these jokes
"Like" or "Dislike."

Achievement Task

A packet of three duplicate pages (see Appendix B) containing printed instructions and 7 blank lines was provided for the use of each student in writing an assigned essay. The instructions directed each student to write an essay about a "make believe" student named Jim (a separate form for girls differed only in the use of the name Jane). The instructions stated that "Jim thinks it is important to try to do his best in English Class," and each student was directed to describe a believable past, present and future for Jim by answering the following questions:

1. What could have happened in the past to make Jim think it is important to try to do his best in English class?
2. While in English class, what does he do?
3. What could happen to Jim in the future because he thinks it is important to try to do his best in English class?

The essay was to be written in ink, answering all three questions within one paragraph of seven lines. Opportunity to revise or correct the essay was available through the use of more than one of the three duplicate pages. Instructions encouraged attention to clarity of expression, grammar and neatness of work and informed the students that their essays would be graded by their teacher and the grade contribute to their final grade in English.

Achievement Questionnaire

A six-item questionnaire (see Appendix C) was constructed for use in this study to elicit responses concerned with the level of past achievement in school, the perceived difficulty of success in the present English class and expectancies concerned with future achievement.

Only two of the six items were designed for analysis in the present study. The remaining four items were designed to assure that the student was immediately aware of his previous level of achievement and that he was attending to time as an objective factor in the performance of the non-achievement task and achievement task.

The first of the two items analyzed asked each student to estimate the "difficulty of doing well in this English class." An 18 point scale was provided with descriptive labels ranging from "Very Easy" at the left, to "Very Difficult" at the right. Responses to this item provided one basis for the formation of the three subgroups of students thought to vary in the difficulty of success in school.

The second of the two items analyzed asked each student to state "the grade you really expect to get on today's paragraph." Responses to this item were used for the "Expected Grade" criterion of the direction of achievement activity (described below).

Instructions

The instructions necessary to administer the achievement task and the non-achievement task and to collect data concerning the difficulty of success as well as latency, expectancy and persistence indices, are presented in Appendix D.

The instructions were designed to accomplish two purposes. The first was, of course, to inform the students of what was expected of them and how they might proceed in the complex situation confronting them.

The second purpose for the instructions was to emphasize the importance of the achievement task (graded by teacher and grade contributing to final course achievement) and the unimportance of the non-achievement task (representing only a predilection of the investigator).

Time Measurement Procedure

The following procedure was used to obtain behavioral measurements of the time spent on the non-achievement task (latency) and the time spent on the achievement task (persistence).

An artists' spiral sketch-pad (9 x 12 inches) supported by a metal music stand, was displayed in the front of the classroom. A large number (3½ inches high) cut from a calendar, was pasted on each page of the sketch-pad. Numbers ranged from 1 to 61 but their order of

appearance on consecutive pages was rearranged such that no two numbers appeared in their normal progression (this was done to avoid the possibility that a student might anticipate numbers or devise his own system for assigning numbers).

The experimenter began turning pages of this sketch-pad when the signal was given for the students to begin the non-achievement task. The E continuously turned these pages at the rate of one page every 20 seconds throughout the 20 minutes available for the achievement task. The duration of each 20 second period was determined by the use of an ordinary wrist watch with a sweep second hand.

The students were instructed to copy the number displayed (on the sketch-pad) into the space provided on the first line when they started to work on the first theme-page. When they stopped writing on the first page, they again copied the number appearing at that time into the space provided on the last line of the first theme-page. They were to continue in this manner if they used additional pages to revise or correct their themes. The students were cautioned that the numbers were in "code" and while they were not supposed to "make sense" to them they would not be given credit for the assignment unless the numbers were properly filled in (this threat was not carried out).

Pilot Study Modifications

An initial procedure had been devised using the same physical arrangement described above but requiring each student to read only one joke during each 20-second period. This procedure had the advantage of controlling for the effects of individual differences in reading speed on the number of jokes read (amount of reinforcement). However, the confusion which resulted from the complexity of the instructions used to accomplish this necessitated a change to the procedure described above with the consequent loss to analysis of the first 5 classes tested under the initial procedure.

Motivation Criteria

Latency (Initiating Behavior)

The difference between the number (decoded by order of appearance rather than numerical value) appearing at the start of the paragraph on the first page and zero, was taken to represent the amount of time (number of 20-second periods) spent on the jokes before starting the theme. Observation of the students' behavior indicated they wrote down a number as soon as they turned to the first theme-page. They also began to write immediately, suggesting the effects of the prior detailed explanation of the theme task provided the student with sufficient clarity to be able to proceed on the theme task as soon as he chose to do so.

Persistence (Sustaining Behavior)

The difference between the numbers (decoded) appearing at the start of the first paragraph and at the end of the last paragraph was taken to represent the time spent working on the Paragraph-Essay. In those cases involving the use of more than one theme-page, there was a frequent discrepancy between the number at the end of one paragraph and the number at the beginning of the next. It was assumed that the time represented by these discrepant numbers was spent in reformulating the next writing and was included in the persistence score.

Expected Grades (Directing Behavior)

Grade level expectations were obtained from responses to item #5 on the Achievement Questionnaire (see Appendix C). Item #5 stated . . . show the grade you really expect to get on today's paragraph. Responses to Item #5, in the form of letter grades, were converted to a 12-point scale (A = 12, A- = 11 . . . E = 1) for statistical analysis.

Indices of Academic Achievement Level

Level of Achievement on the Academic Task

The original copy of each student's "best paragraph" (selected by the student) was extracted from the test materials and returned to his teacher for grading. The teacher was allowed maximum latitude in the assignment of

letter grades other than to caution that grading was to reflect the use of skills commonly developed in English courses with reference to grammar, neatness and clarity of expression. It was assumed that such a letter grade would reflect some combination of achievement and motivation variables as viewed by the teacher. Theme Grade--grades assigned by each student's teacher were converted to a 12-point scale (A = 12, A- = 11 . . . E = 1) for analysis.

Level of Achievement in the
Academic Situation

Two indices of the level of achievement in the academic situation were obtained consisting of teacher-assigned course grades.

- A. Semester English Grade--consisted of the grade assigned for English Class approximately one month after the present investigation was conducted. Letter grades were converted to a 12-point scale (A = 12, A- = 11 . . . E = 1) for statistical analysis.
- B. Cumulative GPA--consisted of grades assigned for courses requiring homework (English, Foreign Language, Mathematics, Natural Science and Social Studies) covering a period of two years (in those cases in which grades were not available for the full two-year period, grades

covering a lesser time period were used). Letter grades were converted to a 12-point scale (A = 12, A- = 11 . . . E = 1) summed, and divided by the number of courses involved.

Two Indices of "Apparent Task Difficulty"

Academic ability test scores (DAT-V) and Difficulty Ratings (difficulty of "doing well in English Class"), rated on an eighteen-point scale containing six categories ranging from "Very Easy" to "Very Difficult" were both assumed to index the "apparent difficulty" of school achievement.

The coefficient of correlation obtained for DAT-V scores with Difficulty Ratings was found to be only $r = -.139$ ($p < .05$) for 252 males, and $r = -.288$ ($p < .01$) for 259 females. While both of the above coefficients are statistically significant, indicating that students of higher ability tend to rate "doing well" as less difficult than students of lower ability, the coefficients are both low, indicating relatively little common variance.

The Formation of Groups Assumed to Vary in Level of "Apparent Task Difficulty"

The distribution of DAT-V scores for males was arbitrarily tri-chotomized to form three equal sized groups varying in level of academic ability (High Ability, $N = 84$; Middle Ability, $N = 84$; Low Ability, $N = 84$) and the distribution of DAT-V scores for females was tri-chotomized to form three nearly equal sized groups varying in level of perceived

difficulty (East, N = 87; Intermediate, N = 86, Difficult, N = 86).

The separate distribution of Rated Difficulty for males was also tri-chotomized to form three equal sized groups varying in level of perceived difficulty (Low Difficulty, N = 84; Intermediate Difficulty, N = 84; High Difficulty, N = 84) and the distribution of Rated Difficulty for females was tri-chotomized to form three nearly equal sized groups varying in level of perceived difficulty (Low Difficulty, N = 87; Intermediate Difficulty, N = 86; High Difficulty, N = 86).

The middle one-third of subjects in each of the four distributions of scores was assumed to represent students most likely to view success in school as of an "intermediate" level of difficulty.

Reliability of the Generalized Situational Choice Inventory (GSCI)

Estimates of test reliability were computed by Kuder-Richardson formula #20 for the GSCI, separately for the total samples of males and females and separately within each of the six subgroups. The results of these computations are presented in Table 3.1 for both males and females.

It can be seen in Table 3.1 that reliability estimates based on the total separate samples of males and females are equal, $r = .82$. Within subgroups of males and females varying in level of academic ability (DAT-V scores) reliability estimates range from a high of $r = .87$ to a low of $r = .76$ for males and from a high of $r = .87$ to a low of $r = .75$ for females. Within subgroups of both males and females there

TABLE 3.1--Kuder-Richardson estimates (Formula #20) of reliability for male and female forms of the Generalized Situational Choice Inventory (GSCI) for the total samples of subjects and for each of the subgroups formed by trichotomizing the distributions of DAT-V scores and Difficulty Ratings of school success.

	Reliability Estimates			
	Males		Females	
	N	r	N	r
Total Sample	233	.82	247	.82
High Ability (DAT-V)	77	.87	85	.87
Middle Ability (DAT-V)	81	.80	81	.82
Low Ability (DAT-V)	75	.76	82	.75
Low Difficulty (Rated)	82	.80	83	.82
Intermediate Diff. (Rated)	77	.84	84	.82
High Difficulty (Rated)	74	.78	80	.81

appears to be a consistent trend toward slightly lower reliability with decreasing level of academic ability.

Within subgroups of males and females varying in the level of perceived difficulty of success in English (Rated Difficulty), reliability estimates range from a high of $r = .84$ to a low of $r = .78$ for males and a high of $r = .82$ to a low of $.81$ for females. It appears that while the subgroup reliability estimates remain fairly constant for females they appear to be highest for the "Intermediate Difficulty" subgroup of males, $r = .84$, and decrease for both the "Low Difficulty," $r = .80$, and "High Difficulty," $r = .78$, subgroups.

Reliability Estimates for Three Indices for Academic Achievement

Information was gathered concerning the reliabilities of the three indices of academic achievement used in this study--Theme Grade, Semester English Grade and Cumulative GPA. It was assumed that the reliabilities of these three indices would vary within the total samples of males and females and that each index might also vary between the subgroups of students formed by trichotomizing the separate distributions of DAT-V scores and Difficulty Ratings of School Success. Reliability estimates are displayed in Table 3.2.

Theme Grade

Evidence concerning the reliabilities of the Theme Grade index of academic achievement was obtained by correlating Theme Grade with the grade obtained at the completion of the semester of English during which the theme (achievement task) was written (Current Semester English Grade).

It can be seen in Table 3.2 that reliability estimates for the Theme Grade index of academic achievement were low for males, ranging from a high of $r = .491$ to a low of $r = .362$, and consistently lower than for females, ranging from a high of $r = .648$ to a low of $r = .501$.

Semester English Grade

Reliability estimates for the Semester English Grade index of academic achievement were obtained by correlating the grade obtained for the current semester of English with the grade obtained for the previous semester of English.

It can be seen in Table 3.2 that reliability estimates for the Semester English Grade index of academic achievement for males range from a high of $r = .659$ to a low of $r = .378$, and for females from a high of $r = .684$ to a low of $r = .298$.

Cumulative GPA

Evidence concerning the reliability of the Cumulative GPA index of the level of academic achievement (which included grades for courses over a period of two years)

TABLE 3.2--Reliability estimates for the "Theme Grade," "Semester English Grade" and "Cumulative GPA" indices of level of academic achievement obtained by correlating Theme Grade with Current Semester English Grade, Current Semester English Grade with previous semester English grade and current year grade averages with previous year grade averages within total samples of male and female students and within each of the subgroups formed by trichotomizing the separate distributions of DAT-V scores and Rated Difficulty of school success.

Total Samples and Subgroups	Reliability Estimates							
	Number of Subjects		Theme Grade With Current Semester English Grade		Current With Previous Semester English Grade		Current Year With Previous Year Grade Average	
	Males	Females	Males	Females	Males	Females	Males	Females
Total Samples	252	259	.491	.648	.584	.594	.748	.784
High Ability (DAT-V)	84	87	.474	.545	.659	.651	.773	.795
Middle Ability (DAT-V)	84	86	.462	.632	.447	.684	.639	.712
Low Ability (DAT-V)	84	86	.377	.614	.615	.298	.723	.699
Low Difficulty (Rated)	84	87	.468	.603	.613	.534	.737	.785
Intermediate Diff. (Rated)	84	86	.447	.501	.378	.425	.725	.728
High Difficulty (Rated)	84	86	.362	.521	.658	.580	.723	.748

was obtained by correlating grades obtained during 1965-1966 with grades obtained during 1966-1967.

It can be seen in Table 3.2 that reliability estimates for the Cumulative GPA index of the level of academic achievement for males range from a high of $r = .748$ to a low of $r = .639$, and for females, from a high of $r = .795$ to a low of $r = .699$.

Analysis

The descriptive statistics which formed the basic data for testing hypotheses derived from theory consisted of coefficients of simple correlation and partial correlation (DAT-V scores controlled) for GSCI scores with each of the three theory-selected criteria of motivation (Stage I--Nomological Validity), for each of the three theory-selected criteria of motivation with two indices of academic achievement (Stage II--Criterion Validity) and for GSCI scores with two indices of academic achievement (Stage III--Predictive and Nomological Validity).

Hypotheses concerning relationships for the total group of males and females were tested in each of the three Stages by means of one-tailed tests of the significance of the F statistic. Hypotheses concerning differential relationships among subgroups of subjects, formed on the basis of varying levels of DAT-V scores or Rated Difficulty, were tested by both one-tailed tests of the significance of the F statistic and by one-tailed tests of the significance of the

difference between Fisher's "z" (r to z transformation) statistic.

The use of Pearson coefficients of correlation, F tests of significance from zero and Fisher's r to z transformation for comparison of significance between coefficients, all require assumptions of a normal bivariate distribution.

Attempts were made to determine the extent to which the normal bivariate assumption might have been violated among all of the variables involved in the present study through: (a) inspection of plots of all bivariate distributions; (b) analysis of variance technique for evaluating the contribution of linear, quadratic and "other" variance to the obtained regressions; and (c) the computation of a non-parametric statistical test of association (phi-coefficient, with scores above the median assigned "1" and scores below the median assigned "0").

Inspection of the plots for all bivariate distributions indicated an occasional "atypical" grouping of scores outside a smooth elliptical shape, but there did not appear to be sufficient evidence to warrant the conclusion that other than rectilinear relationships were usually involved.

The analysis of variance technique indicated a preponderance of evidence to suggest that linear variance accounted for the significant amount of relationship with

only an occasional contribution by either quadratic or "other" variance.

The phi-coefficients consistently indicated only the expected effects of their decreased power through uniformly lower coefficients.

With the variety and number of variables involved in the present study, an arbitrary decision was made to keep the data in its raw score form rather than converting to a normalized form and to proceed with the parametric tests of association and significance even though in particular instance, with some variables, the assumptions underlying these tests may have been violated. The opportunity to hold academic ability constant by partial correlation was an added advantage of the Pearson coefficient.

It was thought that the relatively large sample size combined with the unknown effects of departure from the assumption of normality tended to favor the use of the more powerful parametric statistics.

Because of the exploratory nature of this study, the .05 level of significance was selected for rejection of all null hypotheses. The conclusions based on the analyses presented in Chapter IV assume graduated variables, restricted by the assumption of linearity with but slight, if any, skewness.

Research Hypotheses

Hypotheses were formulated on the basis of theory for each of three Stages of enquiry. Descriptions of the three Stages and the research hypotheses are presented below.

Stage I--Nomological Validity

Hypotheses were formulated concerning the influence of strength of the Motive for Success (GSCI scores) on the initiating, directing and sustaining criteria of strength of the tendency (motivation) to achieve in the academic situation. Hypotheses were also formulated concerning the above influence as differentially affected by the perceived difficulty of success in school.

With differences in academic ability (DAT-V scores) held constant:

1. There is an inverse relationship between strength of the Motive for Success (GSCI scores) and time spent on a non-achievement task before starting an achievement task,
2. There is a direct relationship between strength of the Motive for Success (GSCI scores) and expected level of academic achievement,
3. There is a direct relationship between strength of the Motive for Success (GSCI scores) and time spent on an achievement task,

4. The inverse relationship between strength of the Motive for Success (GSCI scores) and time spent on a non-achievement task before starting an achievement task will be stronger for subjects performing tasks of an "intermediate" level of difficulty than for subjects performing easier or more difficult tasks,
5. The direct relationship between strength of the Motive for Success (GSCI scores) and expected level of academic achievement will be stronger for subjects performing tasks of an "intermediate" level of difficulty than for subjects performing easier or more difficult tasks,
6. The direct relationship between strength of the Motive for Success (GSCI scores) and time spent on an achievement task will be stronger for subjects performing tasks of an "intermediate" level of difficulty than for subjects performing easier or more difficult tasks.

Stage II--Criterion Validity

Hypotheses were formulated concerning the influence of the initiating, directing and sustaining criteria of strength of the tendency (motivation) to achieve in the academic situation on the level of achievement in the academic situation. Hypotheses were also formulated concerning the above influences as differentially affected by

the perceived difficulty of success in school. With differences in academic ability (DAT-V scores) held constant:

7. There is an inverse relationship between time spent on a non-achievement task before starting an achievement task and level of academic achievement,
8. There is a direct relationship between expected level of academic achievement and obtained level of academic achievement,
9. There is a direct relationship between time spent on an achievement task and level of academic achievement,
10. The inverse relationship between time spent on a non-achievement task before starting an achievement task and level of academic achievement will be stronger for subjects performing tasks of an "intermediate" level of difficulty than for subjects performing easier or more difficult tasks,
11. The direct relationship between expected level of academic achievement and obtained level of academic achievement will be stronger for subjects performing tasks of an "intermediate" level of difficulty than for subjects performing easier or more difficult tasks,

12. The direct relationship between time spent on an achievement task and level of academic achievement will be stronger for subjects performing tasks of an "intermediate" level of difficulty than for subjects performing easier or more difficult tasks.

Stage III--Predictive and Nomological Validity

Hypotheses were formulated concerning the influence of strength of the Motive for Success (GSCI scores) on level of achievement in the academic situation. Hypotheses were also formulated concerning the above influence as differentially affected by the perceived difficulty of success in school.

With differences in academic ability (DAT-V scores) held constant:

13. There is a direct relationship between strength of the Motive for Success (GSCI scores) and level of achievement in the academic situation,
14. The direct relationship between strength of the Motive for Success (GSCI scores) and level of achievement in the academic situation will be stronger for subjects performing tasks of an "intermediate" level of difficulty than for subjects performing easier or more difficult tasks.

Summary

The sample for the present study consisted of five hundred ten students in 28 ninth-grade English classes within three junior high schools of one large metropolitan school system.

The Differential Aptitude Test--Verbal Scale (DAT-V), thought to reflect individual differences in academic ability, and the Generalized Situational Choice Inventory (GSCI), thought to reflect individual differences in strength of the Motive for Success within the academic situation, had been previously administered to all students in the sample.

Three instruments were designed specifically for this study. One instrument consisted of a Theme Writing Task which allowed students to write and revise a seven-line essay and which was thought to provide an achievement activity typical for students in their English classes. The second instrument consisted of a Joke Rating Task on which students were required to spend some time, rating jokes "Like" or "Dislike," before starting the achievement task. The Joke Rating Task was thought to provide a non-achievement activity holding little satisfaction for achievement needs in the classroom situation.

The third specially constructed instrument consisted of an Achievement Questionnaire which asked students to estimate "the difficulty of doing well in this English

class," which was used to provide one basis (DAT-V scores provided the second basis) for separating students into three levels of "apparent difficulty" of school success. The second Achievement Questionnaire item asked students to state "the grade you really expect to get on today's paragraph" which was used to reflect the direction of achievement activities, i.e., toward higher or lower levels of future achievement.

Three indices of level of academic achievement were also obtained--Theme Grade, which consisted of the teacher-assigned grade for the achievement task, Semester English Grade, which consisted of the final grade for the current semester of English, and Cumulative GPA, which consisted of grades in all courses requiring homework during a period of two years.

Criteria of the tendency (motivation) to achieve in the classroom situation consisted of: time spent on the non-achievement task before starting the achievement task (initiating), grades expected on the achievement task (directing), and time spent on the achievement task (sustaining).

Subgroups of males and females, thought to vary in level of "apparent difficulty" of success in school, were formed by separately trichotomizing the distributions of DAT-V scores and Rated Difficulty scores.

Reliability estimates (K-R Formula #20) for the male and female forms of the GSCI were found to be equal, $r = .82$, but to range within subgroups from a high of $r = .87$ to a low of $r = .76$ for males and from a high of $r = .87$ to a low of $r = .75$ for females.

Estimates of reliability for the indices of academic achievement were found to be generally higher for females, $r = .795$ to $r = .298$, than for males, $r = .748$ to $.362$, and generally higher for the Cumulative GPA, males $r = .748$ and females $r = .784$, then for the Theme Grade index, males $r = .491$ and females $r = .648$.

Statistics consisted of coefficients of correlation and partial correlation evaluated for significance from zero by the F-test and evaluated for significant differences between coefficients by use of Fisher's r to z transformation referred to a table of normal probability. The .05 level of significance was used for rejection of all null hypotheses.

Research hypotheses were formulated on the basis of theory within each of three Stages of investigation.

Hypotheses within Stage I--Nomological Validity, concerned relationships between strength of the Motive for Success (GSCI scores) and criteria of the tendency (motivation) to achieve in the classroom--length of time spent on the non-achievement task before starting the achievement task (initiating), expected level of academic achievement

(directing) and length of time spent on the achievement task (sustaining). The above relationships were also hypothesized to be stronger for subgroups of students performing school tasks of an "Intermediate" level of difficulty than for students performing easier or more difficult tasks.

Hypotheses within Stage II--Criterion Validity, concerned relationships between the criteria of strength of the tendency (motivation) to achieve in the classroom--initiating, directing and sustaining activities--and indices of academic achievement. The above relationships were hypothesized to be stronger for subgroups of students performing school tasks of an "Intermediate" level of difficulty than for students performing easier or more difficult tasks.

Hypotheses within Stage III--Predictive and Nomological Validity, concerned relationships between GSCI scores and indices of academic achievement. The above relationships were hypothesized to be stronger for subgroups of students performing school tasks of an "Intermediate" level of difficulty than for students performing easier or more difficult tasks.

CHAPTER IV

ANALYSIS OF RESULTS

The analysis of results proceeded in three stages. In Stage I, hypotheses were tested concerning relationships of personality test performance with three theory-selected criteria of motivation in the classroom situation. In Stage II, hypotheses were tested concerning relationships of three theory-selected criteria of motivation in the classroom with level of academic achievement. In Stage III, hypotheses were tested concerning the contribution of personality test scores to ability-based predictions of academic achievement.

Stage I--Nomological Validity

Analyses in Stage I were concerned with relationships of the Motive for Success (GSCI scores) with three theory-selected criteria of motivation in the academic situation: Initiating Behavior (Joke Rating Time); Directing Behavior (Expected Grades); and Sustaining Behavior (Theme Writing Time). Further analyses evaluated differential predictions for the above relationships when measures of a situational characteristic (apparent task difficulty) were allowed to influence the expression of

the Motive for Success in task performance. All analyses were performed separately for male and female subjects.

The Strength and Direction of Relationships Stated in Hypotheses 1, 2 and 3

Null Hypothesis 1: With Dat-V scores (V_6) held constant, there is no correlation for GSCI scores (V_1) with Joke Rating Time (V_2).

$$H_0: r_{12.6} = 0$$

Alternative Hypotheses 1: With Dat-V scores (V_6) held constant, there is a negative correlation for GSCI scores (V_1) with Joke Rating Time (V_2).

$$H_1: -r_{12.6} > 0$$

Null Hypothesis 2: With DAT-V scores (V_6) held constant, there is no correlation for GSCI scores (V_1) with Expected Grade (V_3).

$$H_0: r_{13.6} = 0$$

Alternate Hypothesis 2: With DAT-V scores (V_6) held constant, there is a positive correlation for GSCI scores (V_1) with Expected Grade (V_3).

$$H_2: r_{13.6} > 0$$

Null Hypothesis 3: With DAT-V scores (V_6) held constant, there is no correlation for GSCI scores (V_1) with Theme Writing Time (V_4).

$$H_0: r_{14.6} = 0$$

Alternate Hypothesis 3: With DAT-V scores (V_6) held constant, there is a positive correlation for GSCI scores (V_1) with Theme Writing Time (V_4).

$$H_3: r_{14.6} > 0$$

It was stated in the null form of statistical Hypotheses 1, 2 and 3 that relationships of GSCI scores with each of the three theory-selected criteria of motivation would not be significant. The direction of the above relationships was stated, in the alternate form, to be negative in the case of GSCI scores with Joke Rating Time (Hypothesis 1) and positive in the case of GSCI scores with both expected Grade (Hypothesis 2) and Theme Writing Time (Hypothesis 3).

The relationships stated in Hypotheses 1, 2 and 3 were evaluated by tests of significance (F test) for coefficients of partial (DAT-V scores controlled) correlation computed separately for males and females.

Relationships of GSCI scores with Three Theory-Selected Criteria of Motivation for Males.--The results of the computation of coefficients of partial (DAT-V scores controlled) correlation and tests of significance (F test, with 249 df for partial coefficients), using 252 junior high school males, are displayed in Table 4.1.

It can be seen by inspection of Table 4.1 that the partial coefficient of correlation for GSCI scores with Joke Rating Time (Hypothesis 1) was not significantly greater than zero.

TABLE 4.1--Simple and partial correlation (DAT-V scores controlled) of the Generalized Situational Choice Inventory Test scores with each of three theory-selected criteria of motivation for 252 junior high school males.

Subjects	Motive Strength and Ability Tests	Criteria of Motivation					
		Joke Rating Time		Expected Grade		Theme Writing Time	
		Simple	Partial	Simple	Partial	Simple	Partial
Total	GSCI	-.065	-.024	.215**	.214**	.167**	.170*
Males (N=252)	DAT-V	-.194**		.029		.003	

*p < .05

**p < .01

However, it can also be seen in Table 4.1 that the coefficient of partial correlation for GSCI scores with Expected Grade (Hypothesis 2), partial $r = .214$ ($p < .01$), and for GSCI scores with Theme Writing Time (Hypothesis 3), partial $r = .170$ ($p < .05$), were both low, but significant in the expected direction.

Support for the nomological validity of the Motive for Success, as indexed by GSCI scores, was therefore not found (Null Hypothesis 1 not rejected) with Joke Rating Time (initiating behavior), but support was found (Alternate Hypotheses 2 and 3 accepted) with Expected Grade (directing behavior) and with Theme Writing Time (sustaining behavior), using males.

Further inspection of Table 4.1 reveals that the relationships of academic ability (DAT-V scores) with Expected Grade (directing behavior) and with Theme Writing Time (sustaining behavior) are both nonsignificant while the relationship of academic ability (DAT-V scores) with Joke Rating Time (initiating behavior), $r = -.194$ ($p < .01$) is negative and significant.

Relationships of GSCI Scores with Three Theory-Selected Criteria of Motivation for Females.--The results of the computation of coefficients of partial (DAT-V scores controlled) correlation and tests of significance (F test, with 256 df for partial coefficients) using 259 junior high school females, are displayed in Table 4.2.

TABLE 4.2--Simple and partial coefficients of correlation (DAT-V scores controlled) of the Generalized Situational Choice Inventory with each of three theory-selected criteria of motivation for 259 junior high school females.

Subjects	Motive Strength and Ability Tests	Criteria of Motivation					
		Joke Rating Time		Expected Grade		Theme Writing Time	
		Simple	Partial	Simple	Partial	Simple	Partial
Total	GSCI	.047	.058	.283**	.265**	.041	.041
Females (N=259)	DAT-V	.082		.199**		.005	

* p < .05
** p < .01

It can be seen in Table 4.2 that relationships of GSCI scores with the three criteria of motivation are significant only with the Expected Grade (directing behavior) criterion, partial $r = .265$ ($p < .01$), as stated in Hypothesis 2.

Support for the nomological validity of the Motive for Success, as indexed by GSCI scores, was therefore not found (Null Hypotheses 1 and 3 not rejected) with Joke Rating Time (initiating behavior) and Theme Writing Time (sustaining behavior) but support was found (Alternate Hypothesis 2 accepted) with Expected Grade (directing behavior), using females.

Further inspection of Table 4.2 reveals that the relationship of academic ability (DAT-V scores) with the three criteria of motivation was significant only with the Expected Grade (directing behavior) criteria, $r = .199$ ($p < .01$), for females.

The Relative Strength and Direction
of Relationships Stated in
Hypotheses 4A, 5A and 6A

Null Hypothesis 4A: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with Joke Rating Time (V_2) within a "Middle Ability" (G_2) subgroup equals zero and is equal to corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_0: r_{12.6} G_2 = 0 \text{ and } = r_{12.6} G_1 \text{ and } r_{12.6} G_3$$

Alternate Hypothesis 4A: With DAT-V scores (V_6) held constant, the correlation for GSCI scores (V_1) with Joke Rating Time (V_2) within a "Middle Ability" (G_2) subgroup is negative and greater than corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_{4A}: -r_{12.6} G_2 > 0 \text{ and } > -r_{12.6} G_1 \text{ and } -r_{12.6} G_3$$

Null Hypothesis 5A: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with Expected Grade (V_3) within a "Middle Ability" (G_2) subgroup is zero and equal to corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_0: r_{13.6} G_2 = 0 \text{ and } = r_{13.6} G_1 \text{ and } r_{13.6} G_3$$

Alternate Hypothesis 5A: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with Expected Grade (V_3) within a "Middle Ability" (G_2) subgroup is positive and greater than corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_{5A}: r_{13.6} G_2 > 0 \text{ and } > r_{13.6} G_1 \text{ and } r_{13.6} G_3$$

Null Hypothesis 6A: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with Theme Writing Time (V_4) within a "Middle Ability" (G_2) subgroup is zero and equal to the corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_0: r_{14.6} G_2 = 0 \text{ and } = r_{14.6} G_1 \text{ and } r_{14.6} G_3$$

Alternate Hypothesis 6A: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with Theme Writing Time (V_4) within a "Middle Ability" (G_2) subgroup is positive and greater than corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_{6A}: r_{14.6 G_2} > 0 \text{ and } > r_{14.6 G_1} \text{ and } r_{14.6 G_3}$$

It was stated in the null form of statistical Hypotheses 4A, 5A and 6A that relationships, significantly greater than zero, do not exist for GSCI scores with the three criteria of motivation within the "Middle Ability" subgroup of students and that the above relationships will be equal to the corresponding relationships within "Low Difficulty" and "High Difficulty" subgroups of students.

It was stated in the alternate form of statistical Hypotheses 4A, 5A and 6A, that relationships significantly greater than zero do exist for GSCI scores with the three criteria of motivation within the "Middle Ability" subgroup of students (negative in the case of Joke Rating Time and positive in the case of Expected Grade and Theme Writing Time) and that the above relationships will be significantly greater than the corresponding relationships within the "High Ability" and "Low Ability" subgroups of students.

Relationships of GSCI Scores with Three Theory-Selected Criteria of Motivation for Subgroups of Males Varying in Level of DAT-V Scores.--Relationships stated in Hypotheses 4A, 5A and 6A were evaluated by coefficients of partial (DAT-V scores controlled) correlation computed within each of three subgroups of males varying in level of DAT-V scores, tested for significance (F test, with 81 df for partial coefficients), and tested for significant

differences between coefficients (Fisher's r to z transformation) obtained within the "Middle Ability" subgroup of males and (from) coefficients obtained within "High Ability" and "Low Ability" subgroups ($z_1 - z_2$ statistic evaluated with $df = 80$ for partial coefficients).

The results of the above computations and significance tests are displayed in Table 4.3.

It can be seen in Table 4.3 that, within the "Middle Ability" subgroup of males the only significant coefficient of partial correlation (DAT-V scores controlled) for GSCI scores with the three theory-selected criteria of motivation occurs with the Expected Grade (Hypothesis 5A) criterion, $r = .350$ ($p < .01$).

While the significant partial coefficient for GSCI scores with Expected Grade within the "Middle Ability" subgroup is significantly greater than the corresponding coefficient obtained within the "High Ability" subgroup ($z = 2.00$, $p < .05$) it is not significantly greater than the corresponding coefficient obtained within the "Low Ability" subgroup ($z = .051$, $p > .05$).

Therefore, Null Hypotheses 4A, 5A and 6A were not rejected using males.

Further inspection of Table 4.3 shows that significant relationships for GSCI scores with Theme Writing Time (sustaining behavior) were obtained only within

TABLE 4.3--Simple and partial coefficients of correlation (DAT-V scores controlled) of the Generalized Situational Choice Inventory Test scores with each of three theory-selected criteria of motivation at each of three levels of ability (DAT-V scores) for 252 junior high school males.

Subjects	Motive Strength and Ability Tests	Criteria of Motivation					
		Joke Rating Time		Expected Grade		Theme Writing Time	
		Simple	Partial	Simple	Partial	Simple	Partial
High Ability (N=84)	GSCI	-.108	-.101	.043	.051	.311**	.309**
	DAT-V	-.089		.082		.047	
Middle Ability (N=84)	GSCI	.066	.111	.351** ^a	.350** ^a	.205	.201
	DAT-V	-.282**		.035		.041	
Low Ability (N=84)	GSCI	-.078	-.071	.291**	.291**	-.016	-.015
	DAT-V	-.280**		.193		-.030	

^a_p < .05 r ≤ r High Ability ** p < .01

^b_p < .05 r ≤ r Low Ability

the "High Ability" subgroup of males, simple $r = .311$ ($p < .01$) and partial $r = .309$ ($p < .01$).

An additional finding, displayed in Table 4.3, was that DAT-V scores were significantly (negatively) related to Joke Rating Time (initiating behavior) within the "Middle Ability" subgroup, $r = -.282$ ($p < .01$), and within the "Low Ability" subgroup, $r = .208$ ($p < .01$) of males.

Relationships of GSCI Scores with Three Theory-Selected Criteria of Motivation for Subgroups of Females Varying in Level of DAT-V Scores.--Relationships stated in Hypotheses 4A, 5A and 6A were evaluated separately for females by coefficients of partial (DAT-V scores controlled) correlation computed within each of three subgroups of females varying in level of DAT-V scores, tested for significance (F test, with 83 df for partial coefficients), and tested for significant differences between coefficients (Fisher's r to z transformation) obtained within the "Middle Ability" subgroup of females and (from) coefficients obtained within the "High Ability" and "Low Ability" subgroups ($z_1 - z_2$ statistic evaluated with $df = 82$ for partial coefficients).

The results of the above computations and significance tests are displayed in Table 4.4.

TABLE 4.4--Simple and partial coefficients of correlation (DAT-V scores controlled) of the Generalized Situational Choice Inventory Test scores with each of three theory-selected criteria of motivation at each of three levels of ability (DAT-V scores) for 259 junior high school females.

Subjects	Motive Strength and Ability Tests	Criteria of Motivation					
		Joke Rating Time		Expected Grade		Theme Writing Time	
		Simple	Partial	Simple	Partial	Simple	Partial
High Ability (N=87)	GSCI	.095	.097	.418**	.419**	.181	.179
	DAT-V	-.037		.334**		.034	
Middle Ability (N=86)	GSCI	.110	.107	.275**	.263**	-.004	.010
	DAT-V	.027		.103		-.074	
Low Ability (N=86)	GSCI	-.085	-.080	.009	.082	-.079	-.065
	DAT-V	.043		-.144		.116	

^ap < .05, $r \leq r$ High Ability

*p < .05

^bp < .05, $r \leq r$ Low Ability

**p < .01

It can be seen in Table 4.4 that, within the "Middle Ability" subgroup of females, the only significant coefficient of partial correlation for GSCI scores with the three theory-selected criteria of motivation occurs with the Expected Grade criterion, partial $r = .263$ ($p < .01$).

However, the above partial coefficient obtained within the "Middle Ability" subgroup is numerically less than the corresponding coefficient obtained within the "High Ability" subgroup, partial $r = .419$ ($p < .01$).

Therefore, Null Hypotheses 4A, 5A and 6A were not rejected using females.

It can also be seen in Table 4.4 that significant correlations were obtained, within the "High Ability" subgroup of females, for GSCI scores with the Expected Grade criterion of motivation, simple $r = .418$ ($p < .01$), and partial $r = .419$ ($p < .01$), and for DAT-V scores with the Expected Grade criterion, simple $r = .334$ ($p < .01$).

The Relative Strength and Direction
of Relationships Stated in
Hypotheses 4B, 5B and 6B

Null Hypothesis 4B: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with Joke Rating Time (V_2) within an "Intermediate-Difficulty" (G_5) subgroup equals zero and is equal to corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_0: r_{12.6 G_5} = 0 \text{ and } = r_{12.6 G_4} \text{ and } r_{12.6 G_6}$$

Alternate Hypothesis 4B: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with Joke Rating Time (V_2) within an "Intermediate Difficulty" (G_5) subgroup is negative and is greater than corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_{4B}: -r_{12.6} G_5 > 0 \text{ and } > -r_{12.6} G_4 \text{ and } -r_{12.6} G_6$$

Null Hypothesis 5B: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with Expected Grade (V_3) within an "Intermediate Difficulty" (G_5) subgroup equals zero and is equal to corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_0: r_{13.6} G_5 = 0 \text{ and } = r_{13.6} G_4 \text{ and } r_{13.6} G_6$$

Alternate Hypothesis 5B: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with Expected Grade (V_3) within an "Intermediate Difficulty" (G_5) subgroup is positive and is greater than corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_{5B}: r_{13.6} G_5 > 0 \text{ and } > r_{13.6} G_4 \text{ and } r_{13.6} G_6$$

Null Hypothesis 6B: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with Theme Writing Time (V_4) within an "Intermediate Difficulty" (G_5) subgroup is equal to zero and is equal to corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_0: r_{14.6} G_5 = 0 \text{ and } = r_{14.6} G_4 \text{ and } r_{14.6} G_6$$

Alternate Hypothesis 6B: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with Theme Writing Time (V_4) within an "Intermediate Difficulty" (G_5) subgroup is positive and is greater than corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_{6B}: r_{14.6} G_5 > 0 \text{ and } > r_{14.6} G_4 \text{ and } r_{14.6} G_6$$

It was stated in the null form of statistical Hypotheses 4B, 5B and 6B, that relationships significantly greater than zero do not exist for GSCI scores with the three criteria of motivation within the "Intermediate Difficulty" subgroup of students and that the above relationships will be equal to the corresponding relationships within "Low Difficulty" and "High Difficulty" subgroups of students.

It was stated in the alternate form of statistical Hypotheses 4B, 5B and 6B that relationships significantly greater than zero do exist for GSCI scores with the three criteria of motivation within the "Intermediate Difficulty" subgroup of students (negative in the case of Joke Rating Time and positive in the case of Expected Grade and Theme Writing Time) and that the above relationships will be significantly greater than the corresponding relationships within the "Low Difficulty" and "High Difficulty" subgroups of students.

Relationships of GSCI Scores with Three Theory-Selected Criteria of Motivation for Subgroups of Males Varying in Level of the Rated Difficulty of Success in School.--Relationships stated in statistical Hypotheses 4B, 5B and 6B were evaluated, separately for males, by coefficients of partial correlation computed within each of three subgroups of males varying in the level of Rated Difficulty (difficulty of "Doing Well in English Class," rated on an eighteen-point scale containing six categories ranging from "Very Easy" to "Very Difficult"). Coefficients were tested for significance from zero (F test, with 81 df for partial coefficients), and tested for significant differences between coefficients obtained within the "Intermediate Difficulty" subgroup and coefficients obtained within "Low Difficulty" and "High Difficulty" subgroups ($z_1 - z_2$ statistic evaluated with df = 80 for partial coefficients).

It can be seen in Table 4.5 that none of the coefficients of partial correlation for GSCI scores with any of the three theory-selected criteria of motivation were significantly different from zero within the "Intermediate Difficulty" subgroup of males.

Therefore, Null Hypotheses 4B, 5B and 6B were not rejected using males.

However, it can be seen in Table 4.5, that within the group of males who rate school success as easiest ("Low Difficulty" subgroup), significant coefficients were

TABLE 4.5--Simple and partial correlation coefficients (DAT-V scores controlled) of the Generalized Situational Choice Inventory Test scores with each of three theory-selected criteria of motivation at each of three levels of the rated difficulty of school achievement for 252 junior high school males.

Subjects	Motive Strength and Ability Tests	Criteria of Motivation					
		Joke Rating Time		Expected Grade		Theme Writing Time	
		Simple	Partial	Simple	Partial	Simple	Partial
Low Dif- ficulty (N=84)	GSCI	.042	.044	.199	.199	.231*	.288**
	DAT-V	.026		-.011		.070	
Inter- mediate Difficulty (N=84)	GSCI	-.103	-.060	.153	.137	.111	.143
	DAT-V	-.188		.083		.107	
High Dif- ficulty (N=84)	GSCI	-.048	.037	.136	.166	.127	.127
	DAT-V	-.309**		-.090		.016	

$a_p < .05, r \leq r \text{ Low Difficulty}$ *p < .05

$b_p < .05, r \leq r \text{ High Difficulty}$ **p < .01

obtained for GSCI scores with Theme Writing Time, simple $r = .231$ ($p < .05$) and partial $r = .288$ ($p < .01$). The relationship of DAT-V scores with Theme Writing Time for this "Low Difficulty" subgroup was not significant.

It can also be seen in Table 4.5 that a significant (negative) relationship was found for DAT-V scores with Joke Rating Time, $r = -.309$ ($P < .01$), only within the subgroup of males who rate success in school as most difficult ("High Difficulty" subgroup).

Relationships of GSCI Scores with Three Theory-Selected Criteria of Motivation for Subgroups of Females Varying in Level of the Rated Difficulty of Success in School.--Research Hypotheses 4B, 5B and 6B were separately evaluated using females, by partial (DAT-V scores controlled) correlations computed within each of three subgroups of females varying in the level of Rated Difficulty. Coefficients were tested for significance from zero (F test, with 83 df for partial coefficients) and tested for significant differences between coefficients obtained within the "Intermediate Difficulty" subgroup and (from) coefficients obtained within "Low Difficulty" and "High Difficulty" subgroups (Fisher's r to z transformation with $z_1 - z_2$ statistic evaluated with $df = 82$ for partial coefficients). The results of the computations, described above, are presented in Table 4.6.

TABLE 4.6--Simple and partial correlation coefficients (DAT-V scores controlled) of the Generalized Situational Choice Inventory Test scores with each of three theory-selected criteria of motivation at each of three levels of the rated difficulty of school achievement for 259 junior high school females.

Subjects	Motive Strength and Ability Tests	Criteria of Motivation					
		Joke Rating Time		Expected Grade		Theme Writing Time	
		Simple	Partial	Simple	Partial	Simple	Partial
Low Dif- ficulty (N=87)	GSCI	.106	.145	.278**	.226*	.027	.021
	DAT-V	-.129		.259*		.026	
Intermedi- ate Diffi- culty (N=86)	GSCI	.160	.168	.196	.200	-.103	-.090
	DAT-V	.034		.007		.086	
High Dif- ficulty (N=86)	GSCI	-.108	-.101	.217*	.221*	.257*	.266*
	DAT-V	-.094		-.029		-.077	

^a $p < .05$, $r \leq r$ Low Difficulty

* $p < .05$

^b $p < .05$, $r \leq r$ High Difficulty

** $p < .01$

It can be seen in Table 4.6 that none of the coefficients of partial correlation for GSCI scores with the three theory-selected criteria of motivation were significant within the "Intermediate Difficulty" subgroup of females.

Therefore, Null Hypotheses 4B, 5B and 6B were not rejected using females.

However, it can be seen in Table 4.6 that significant relationships were found for GSCI scores with the Expected Grade criterion within the subgroups of females who rate success as easiest ("Low Difficulty"), simple $r = .278$ ($p < .01$) and partial $r = .226$ ($p < .01$), and within the subgroup who rate success as most difficult ("High Difficulty"), simple $r = .217$ ($p < .05$) and partial $r = .221$ ($p < .05$).

It can further be seen in Table 4.6 that a significant relationship for GSCI scores with Theme Writing Time was found only within the subgroup of females who rate success in school as most difficult ("High Difficulty"), simple $r = .257$ ($p < .05$) and partial $r = .266$ ($p < .05$).

Stage II--Criterion Validity

Analyses in Stage II were concerned with evaluating relationships of three theory-selected criteria of motivation: Initiating Behavior (Joke Rating Time); Directing Behavior (Grade Expectations); and Sustaining Behavior (Theme Writing Time) with level of academic achievement. Further analyses evaluated differential predictions for the above relationships when measures of a situational characteristic (apparent task difficulty) were allowed to influence the relationships of strength of motivation with level of academic achievement. All analyses were performed separately for male and female subjects.

The Strength and Direction of Relationships Stated in Hypotheses 7, 8 and 9

Null Hypothesis 7: With DAT-V scores (V_6) held constant, there is no correlation for Joke Rating Time (V_2) with teacher-assigned grades (V_5).

$$H_0: r_{25.6} = 0$$

Alternate Hypothesis 7: With DAT-V scores (V_6) held constant, there is negative correlation for Joke Rating Time (V_2) with teacher-assigned grades (V_5).

$$H_7: -r_{25.6} > 0$$

Null Hypothesis 8: With DAT-V scores (V_6) held constant, there is no correlation for Expected Grade (V_3) with teacher-assigned grades (V_5).

$$H_0: r_{35.6} = 0$$

Alternate Hypothesis 8: With DAT-V scores (V_6) held constant, there is a positive correlation for Expected Grade (V_3) with teacher-assigned grades (V_5).

$$H_8: r_{35.6} > 0$$

Null Hypothesis 9: With DAT-V scores (V_6) held constant, there is no correlation for Theme Writing Time (V_4) with teacher-assigned grades (V_5).

$$H_0: r_{45.6} = 0$$

Alternate Hypothesis 9: With DAT-V scores (V_6) held constant, there is a positive correlation for Theme Writing Time (V_4) with teacher-assigned grades (V_5).

$$H_9: r_{45.6} > 0$$

It was stated in the null form of statistical Hypotheses 7, 8 and 9 that relationships of the three theory-selected criteria of motivation with indices of academic achievement would not be significantly greater than zero. The direction of the above relationships was stated, in the alternate hypotheses, to be negative in the case of Joke Rating Time (Hypothesis 7) and positive in the case of both Expected Grade (Hypothesis 8) and Theme Writing Time (Hypothesis 9).

Two indices of the level of academic achievement were used to evaluate Hypotheses 7, 8 and 9. One index, "Theme Grade," consisted of the grade assigned by each student's teacher to the theme written for the present project. The

second index, "Semester English Grade," consisted of the grade assigned by each student's teacher at the completion of the current semester of English.

Relationships of Three Theory-Selected Criteria of Motivation with Two Indices of Academic Achievement for Males.--The relationships stated in Hypotheses 7, 8 and 9 were evaluated, using males, by tests of significance (F test, with 249 df for partial coefficients) for coefficients of partial (DAT-V scores controlled) correlation computed for the three theory-selected criteria of motivation with each of two indices of academic achievement.

The results of the computations and significance tests are displayed in Table 4.7.

Coefficients of partial correlation computed for each of the three theory-selected criteria of motivation with the "Theme Grade" index of academic achievement produced a significant partial correlation only for the Expected Grade criterion, partial $r = .271$ ($p < .01$).

Therefore, support was not found for the predicted relationship of Joke Rating Time with academic achievement (null Hypothesis 7 not rejected) nor for the predicted relationships of Theme Writing Time with academic achievement (null Hypothesis 9 not rejected) but support was found for the predicted relationship of Expected Grade with academic achievement (Alternate Hypothesis 8 accepted),

TABLE 4.7--Simple and partial correlation coefficients (DAT-V scores controlled) of three theory-selected criteria of motivation with two indices of academic achievement for 252 junior high school males.

Subjects	Criteria of Motivation and Ability Test	Indices of Academic Achievement			
		Theme Grade		Semester English Grade	
		Simple	Partial	Simple	Partial
Total Males (N=252)	Joke Rating Time	.071	-.026	-.171**	-.111
	Expected Grade	.270**	.271**	.292**	.301**
	Theme Writing Time	.041	.015	.152*	.161*
	DAT-V	.242**		.357**	

*p <.05
**p <.01

using the "Theme Grade" index of academic achievement for males.

With the influence of academic ability (DAT-V scores) removed by partial correlation technique, the relationships involving "Semester English Grade" with Expected Grade, $r = .301$ ($p < .01$) and Theme Writing Time, $r = .161$ ($p < .05$) both were significant while the relationship of "Semester English Grade" with Joke Rating Time, $r = -.111$ ($p > .05$), failed to show an acceptable level of significance.

Therefore, using "Semester English Grade" index of academic achievement for males, null Hypothesis 7 was not rejected with partial coefficients of correlation but alternate Hypotheses 8 and 9 were accepted.

However, coefficients of simple correlation computed for each of the three theory-selected criteria of motivation with the "Semester English Grade" index of academic achievement produced significant findings in all three cases: Joke Rating Time, $r = -.171$ ($p < .01$); Expected Grade, $r = .292$ ($p < .01$) and Theme Writing Time, $r = .152$ ($p < .05$).

Relationships of Three Theory-Selected Criteria of Motivation with Two Indices of Academic Achievement for Females.--The relationships stated in Hypotheses 7, 8 and 9 were evaluated, using females, by tests of significance (F test, with 256 df for partial coefficients), for coefficients of partial (DAT-V scores controlled) correlation computed for the three theory-selected criteria of motivation with each of two indices of academic achievement ("Theme Grade" and "Semester English Grade").

The results of the above computations and significance tests are displayed in Table 4.8.

It can be seen in Table 4.8 that coefficients of partial correlation computed for each of the three theory-selected criteria of motivation with the "Theme Grade" index of academic achievement produced significant results only for Expected Grades, partial $r = .230$ ($p < .01$).

Thus, null Hypotheses 7 and 9 are not rejected while only alternate Hypothesis 8 was accepted using the "Theme Grade" index of academic achievement for females.

It can also be seen in Table 4.8 that coefficients of partial correlation computed for each of the three theory-selected criteria of motivation with the "Semester English Grade" index of academic achievement produced significant results only for Expected Grades, partial $r = .354$ ($p < .01$).

TABLE 4.8--Simple and partial correlation coefficients (DAT-V scores controlled) of three theory-selected criteria of motivation with each of two indices of academic achievement for 259 junior high school females.

Subject	Criteria of Motivation and Ability Test	Indices of Academic Achievement			
		Theme Grade		Semester English Grade	
		Simple	Partial	Simple	Partial
Total Females (N=259)	Joke Rating Time	-.046	-.009	-.107	-.080
	Expected Grade	.291**	.230**	.399**	.354**
	Theme Writing Time	-.008	-.012	-.028	-.033
	DAT-V	.456**		.424**	

*p < .05

**p < .01

Thus, null Hypotheses 7 and 9 are not rejected while only alternate Hypothesis 8 is accepted using the "Semester English Grade" index of academic achievement for females.

The Relative Strength and Direction
of Relationships Stated in
Hypotheses 10A, 11A and 12A

Null Hypothesis 10A: With DAT-V scores (V_6) held constant, the correlation of Joke Rating Time (V_2) with teacher-assigned grades (V_5) within a "Middle Ability" (G_2) subgroup equals zero and is equal to corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_0: r_{25.6 \ G_2} = 0 \text{ and } = r_{25.6 \ G_1} \text{ and } r_{25.6 \ G_3}$$

Alternate Hypothesis 10A: With DAT-V scores (V_6) held constant, the correlation of Joke Rating Time (V_2) with teacher-assigned grades (V_5) within a "Middle Ability" (G_2) subgroup is negative and greater than corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_{10A}: -r_{25.6 \ G_2} > 0 \text{ and } > -r_{25.6 \ G_1} \text{ and } -r_{25.6 \ G_3}$$

Null Hypothesis 11A: With DAT-V scores (V_6) held constant, the correlation of Expected Grade (V_3) with teacher-assigned grades (V_5) within a "Middle Ability" (G_2) subgroup equals zero and is equal to corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_0: r_{35.6 \ G_2} = 0 \text{ and } = r_{35.6 \ G_1} \text{ and } r_{35.6 \ G_3}$$

Alternate Hypothesis 11A: With DAT-V scores (V_6) held constant, the correlation of Expected Grade (V_3) with teacher-assigned grades (V_5) within a "Middle Ability" (G_2) subgroup is positive and greater than corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_{11A}: r_{35.6 G_2} > 0 \text{ and } > r_{35.6 G_1} \text{ and } r_{35.6 G_3}$$

Null Hypothesis 12A: With DAT-V scores (V_6) held constant, the correlation of Theme Writing Time (V_4) with teacher-assigned grades (V_5) within a "Middle Ability" (G_2) subgroup equals zero and is equal to corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_0: r_{45.6 G_2} = 0 \text{ and } = r_{45.6 G_1} \text{ and } r_{45.6 G_3}$$

Alternate Hypothesis 12A: With DAT-V scores (V_6) held constant, the correlation of Theme Writing Time (V_4) with teacher-assigned grades (V_5) within a "Middle Ability" (G_2) subgroup is positive and greater than corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_{12A}: r_{45.6 G_2} > 0 \text{ and } > r_{45.6 G_1} \text{ and } r_{45.6 G_3}$$

It was stated in the null form of statistical Hypotheses 10A, 11A and 12A, that relationships significantly greater than zero do not exist for the three criteria of motivation with indices of academic achievement within the "Middle Ability" subgroup of students and that the above relationships are equal to the corresponding relationships within "High Ability" and "Low Ability" subgroups of students.

It was stated in the alternate form of statistical Hypotheses 10A, 11A and 12A, that relationships significantly greater than zero do exist for the three criteria of motivation with indices of academic achievement within the "Middle Ability" subgroup of students (negative in the case of Joke Rating Time and positive in the case of Expected Grade and Theme Writing Time) and that the above relationships will be significantly greater than the corresponding relationships within the "High Ability" and "Low Ability" subgroups of students.

Relationships of Three Theory-Selected Criteria of Motivation with Two Indices of Academic Achievement for Subgroups of Males Varying in Level of DAT-V Scores.--

Research Hypotheses 10A, 11A and 12A were evaluated by coefficients of partial correlation computed within each of three subgroups of males (formed by trichotomizing the distribution of DAT-V scores), tested for significance from zero (one-tailed F test, with 81 df for partial coefficients), and tested for significant differences between coefficients (Fisher's r to z transformation) obtained within the "High Ability" and "Low Ability" subgroups ($z_1 - z_2$ statistic evaluated with df = 80 for partial coefficients).

The results of the above computations and significance tests are displayed in Table 4.9.

TABLE 4.9--Simple and partial correlation coefficients (DAT-V scores controlled) of three theory-selected criteria of motivation with each of two indices of academic achievement within each of three levels of ability (DAT-V scores) for 252 junior high school males.

Subjects	Criteria of Motivation and Ability Test	Indices of Academic Achievement					
		Theme Grade		Semester English Grade		Partial	Partial
		Simple	Partial	Simple	Partial		
High Ability (N=84)	Joke Rating Time	.008	.004	-.185	-.176		
	Expected Grade	.411*	.409**	.285**	.298**		
	Theme Writing Time	.174	.177	.266**	.263*		
	DAT-V	-.043		.126			
Middle Ability (N=84)	Joke Rating Time	-.151	-.111	-.083	-.040		
	Expected Grade	.207	.205	.285**	.283**		
	Theme Writing Time	-.009	-.016	.157	.153		
	DAT-V	.164		.161			
Low Ability (N=84)	Joke Rating Time	.052	.110	-.126	-.093		
	Expected Grade	.168	.137	.316**	.299**		
	Theme Writing Time	-.100	-.096	.077	.082		
	DAT-V	.185		.133			

^a $p < .05$, $r \leq r$ High Ability

* $p < .05$

^b $p < .05$, $r \leq r$ Low Ability

** $p < .01$

It can be seen in Table 4.9 that, within the "Middle Ability" subgroup of males, the only significant correlations occur for the Expected Grade criterion of motivation with the Semester English Grade index of academic achievement, partial $r = .299$ ($p < .01$).

However, the above coefficient was not significantly greater than the corresponding coefficients obtained within the "High Ability" subgroup or within the "Low Ability" subgroup.

Therefore, null Hypotheses 10A, 11A and 12A were not rejected for males.

It can also be seen in Table 4.9 that the Expected Grade criterion correlated significantly with both the Theme Grade and Semester English Grade indices of academic achievement within the "High Ability" subgroup of males but only with the Semester English Grade index within the "Low Ability" subgroup of males.

Further inspection of Table 4.9 reveals that the only remaining significant correlation occurred for Theme Writing Time with Semester English Grade within the "High Ability" subgroup of males, simple $r = .266$ ($p < .01$) and partial $r = .263$ ($p < .05$).

Relationships of Three Theory-Selected Criteria of Motivation with Two Indices of Academic Achievement for Subgroups of Females Varying in Level of DAT-V Scores.--

Research Hypotheses 10A, 11A and 12A were evaluated, separately for females, by coefficients of correlation, computed within each of three subgroups of females (formed by trichotomizing the distribution of DAT-V scores), tested for significance from zero (one-tailed F test, with 83 df for partial coefficients) and tested for significant differences between coefficients (Fisher's r to z transformation) obtained within the "Middle Ability" subgroup of females and (from) coefficients obtained within the "High Ability" and "Low Ability" subgroups ($z_1 - z_2$ statistic evaluated with 82 df for partial coefficients).

The results of the above computations and significance tests are displayed in Table 4.10.

It can be seen in Table 4.10 that, within the "Middle Ability" subgroup of females, significant relationships between the three criteria of motivation and the two indices of academic achievement occurred only for the Expected Grade criterion with the Semester English Grade index, partial $r = .251$ ($p < .05$).

However, the above coefficient was not significantly greater than the corresponding coefficient obtained within the "High Ability" subgroup or "Low Ability" subgroup.

TABLE 4.10--Simple and partial correlation coefficients (DAT-V scores controlled) of three theory-selected criteria of motivation with each of two indices of academic achievement within each of three levels of ability (DAT-V scores) for 259 junior high school females.

Subjects	Criteria of Motivation and Ability Test	Indices of Academic Achievement					
		Theme Grade		Semester English Grade			
		Simple	Partial	Simple	Partial	Simple	Partial
High Ability (N=87)	Joke Rating Time	-.012	.004	-.090	-.082		
	Expected Grade	.375**	.270**	.615**	.549**		
	Theme Writing Time	-.014	-.032	.019	.003		
	DAT-V	.436**		.497**			
Middle Ability (N=86)	Joke Rating Time	-.041	-.060	-.174	-.193		
	Expected Grade	.187	.158	.270**	.251*		
	Theme Writing Time	-.046	-.013	-.057	-.035		
	DAT-V	.473**		.327**			
Low Ability (N=86)	Joke Rating Time	-.021	-.021	-.009	-.002		
	Expected Grade	.232*	.237*	.258*	.240*		
	Theme Writing Time	.032	.030	.045	-.027		
	DAT-V	.019		-.166			

^a $p < .05$, $r \leq r$ High Ability

* $p < .05$
** $p < .01$

^b $p < .05$, $r \leq r$ Low Ability

Therefore, null Hypotheses 10A, 11A and 12A were not rejected using females.

It can also be seen in Table 4.10, within both the "High Ability" and "Low Ability" subgroups of females, the Expected Grade criterion significantly correlated with both the Theme Grade and Semester English Grade indices of academic achievement.

The Relative Strength and Direction
of Relationships Stated in
Hypotheses 10B, 11B and 12B

Null Hypothesis 10B: With DAT-V scores (V_6) held constant, the correlation of Joke Rating Time (V_2) with teacher-assigned grades (V_5) within an "Intermediate Difficulty" (G_5) subgroup equals zero and is equal to corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_0: r_{25.6 \ G_5} = 0 \text{ and } = r_{25.6 \ G_4} \text{ and } r_{25.6 \ G_6}$$

Alternate Hypothesis 10B: With DAT-V scores (V_6) held constant, the correlation of Joke Rating Time (V_2) with teacher-assigned grades (V_5) within an "Intermediate Difficulty" (G_5) subgroup is negative and greater than corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_{10}B: -r_{25.6 \ G_5} > 0 \text{ and } > -r_{25.6 \ G_4} \text{ and } -r_{25.6 \ G_6}$$

Null Hypothesis 11B: With DAT-V scores (V_6) held constant, the correlation of Expected Grade (V_3) with teacher-assigned grades (V_5) within an "Intermediate Difficulty" (G_5) subgroup equals zero and is equal to corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_0: r_{35.6 \ G_5} = 0 \text{ and } = r_{35.6 \ G_4} \text{ and } r_{35.6 \ G_6}$$

Alternate Hypothesis 11B: With DAT-V scores (V_6) held constant, the correlation of Expected Grade (V_3) with teacher-assigned grades (V_5) within an "Intermediate Difficulty" (G_5) subgroup is positive and greater than corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_{11B}: r_{35.6} G_5 > 0 \text{ and } > r_{35.6} G_4 \text{ and } r_{35.6} G_6$$

Null Hypothesis 12B: With DAT-V scores (V_6) held constant, the correlation of Theme Writing Time (V_4) with teacher-assigned grades (V_5) within an "Intermediate Difficulty" (G_5) subgroup equals zero and is equal to corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_0: r_{45.6} G_5 = 0 \text{ and } = r_{45.6} G_4 \text{ and } r_{45.6} G_6$$

Alternate Hypothesis 12B: With DAT-V scores (V_6) held constant, the correlation of Theme Writing Time (V_4) with teacher-assigned grades (V_5) within an "Intermediate Difficulty" (G_5) subgroup is positive and greater than corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_{12B}: r_{45.6} G_5 > 0 \text{ and } > r_{45.6} G_4 \text{ and } r_{45.6} G_6$$

It was stated in the null form of statistical Hypotheses 10B, 11B and 12B, that relationships significantly greater than zero do not exist for the three criteria of motivation with indices of academic achievement within the "Intermediate Difficulty" subgroup of students and that the above relationships are equal to the corresponding relationships within "Low Difficulty" and "High Difficulty" subgroups of students.

It was stated in the alternate form of statistical Hypotheses 10B, 11B and 12B, that relationships significantly greater than zero do exist for the three criteria of motivation with indices of academic achievement within the "Intermediate Difficulty" subgroup of students (negative in the case of Joke Rating Time and positive in the case of Expected Grade and Theme Writing Time) and that the above relationships will be significantly greater than the corresponding relationships within the "Low Difficulty" and "High Difficulty" subgroups of students.

Relationships of Three Theory-Selected Criteria of Motivation with Two Indices of Academic Achievement for Subgroups of Males Varying in Level of Rated Difficulty of Success in School.--Statistical Hypotheses 10B, 11B and 12B were evaluated by coefficients of correlation computed within each of three subgroups of males (formed by trichotomizing the distribution of ratings of the difficulty of success in English Class), tested for significance from zero (one-tailed F test, with 81 df for partial coefficients), and tested for significant differences between coefficients (Fisher's r to z transformation) obtained within the "Intermediate Difficulty" subgroup of males and (from) coefficients obtained within the "Low Difficulty" and "High Difficulty" subgroups ($z_1 - z_2$ statistic evaluated with 80 df for partial coefficients).

The results of the above computations and significance tests are displayed in Table 4.11.

It can be seen in Table 4.11 that, within the "Intermediate Difficulty" subgroup of males, coefficients of partial correlation significantly greater than zero were obtained only for the Expected Grade criterion of motivation with Theme Grade, partial $r = .238$ ($p < .05$), and with Semester English Grade, partial $r = .235$ ($p < .05$).

However, neither of the significant partial correlation coefficients obtained within the "Intermediate Difficulty" subgroup were significantly greater than the corresponding coefficients obtained within either the "Low Difficulty" or "High Difficulty" subgroups of males.

Therefore, null hypotheses 10B, 11B and 12B were not rejected using males.

It can also be seen in Table 4.11 that significant positive relationships were obtained for the Expected Grade criterion with Theme Grade within the "Low Difficulty" subgroup of males, simple $r = .334$ ($p < .01$) and partial $r = .344$ ($p < .01$). A significant negative relationship was obtained for the Joke Rating Time criterion, with Semester English Grade, only within the "High Difficulty" subgroup of males, simple $r = -.290$ ($p < .01$) but this latter relationship was not significant with the influence of academic ability removed by partial correlation technique, partial $r = -.157$ ($p > .05$).

TABLE 4.11--Simple and partial correlation coefficients (DAT-V scores controlled) of three theory-selected criteria of motivation with each of two indices of academic achievement within each of three levels of rated difficulty of school success for 252 junior high school males.

Subjects	Criteria of Motivation and Ability Test	Indices of Academic Achievement			
		Theme Grade		Semester English Grade	
		Simple	Partial	Simple	Partial
Low Difficulty (N=84)	Joke Rating Time	.063	.070	.073	.083
	Expected Grade	.334**	.344**	.199	.210
	Theme Writing Time	-.043	.059	.156	.143
	DAT-V	.206		.261*	
Intermedi- ate Difficulty (N=84)	Joke Rating Time	-.107	.079	-.212 ^a	-.177
	Expected Grade	.248*	.238*	.248*	.235*
	Theme Writing Time	.013	.031	.198	.230*
	DAT-V	.160		.228*	
High Difficulty (N=84)	Joke Rating Time	-.095	-.006	-.290**	-.157
	Expected Grade	.038	.068	.148	.231*
	Theme Writing Time	.034	.031	.048	.047
	DAT-V	.288**		.531**	

^ap < .05, r ≤ r Low Difficulty

*p < .05
**p < .01

^bp < .01, r ≤ r High Difficulty

Relationships of Three Theory-Selected Criteria of Motivation with Two Indices of Academic Achievement for Subgroups of Females Varying in Level of Rated Difficulty of Success in School.--Research Hypotheses 10B, 11B and 12B were evaluated, separately for females, by coefficients of correlation computed within each of three subgroups of females (formed by trichotomizing the distribution of ratings of the difficulty of success in English Class), tested for significance from zero (one-tailed F test, with 83 df for partial coefficients), and tested for significant differences between coefficients (Fisher's r to z transformation) obtained with the "Intermediate Difficulty" subgroup of females and (from) coefficients obtained within "Low Difficulty" and "High Difficulty" subgroups ($z_1 - z_2$ statistic evaluated with 82 df for partial coefficients).

The results of the above computations and significance tests are displayed in Table 4.12.

It can be seen in Table 4.12 that, within the "Intermediate Difficulty" subgroup of females, significant coefficients were obtained only for the expected Grade criterion with both Theme Grade, partial $r = .326$ ($p < .01$), and with Semester English Grade, partial $r = .780$ ($p < .01$).

However, of the above significant coefficients, obtained within the "Intermediate Difficulty" subgroup of females, only the coefficient for the Expected Grade criterion with the Theme Grade index of academic achievement

TABLE 4.12--Simple and partial correlation coefficients (DAT-V scores controlled) of three theory-selected criteria of motivation with each of two indices of academic achievement within each of three levels of rated difficulty of school success for 259 junior high school females.

Subjects	Criteria of Motivation and Ability Test	Indices of Academic Achievement			
		Theme Grade		Semester English Grade	
		Simple	Partial	Simple	Partial
Low Difficulty (N=87)	Joke Rating Time	.014	.068	-.062	.001
	Expected Grade	.177	.088	.242*	.142
	Theme Writing Time	.009	-.001	.039	-.057
	DAT-V	.380**		.468**	
Intermedl- ate Difficulty (N=86)	Joke Rating Time	.043	.033	-.105	-.116
	Expected Grade	.306**	.326** ^b	.274**	.280**
	Theme Writing Time	.003	-.036	-.047	-.071
	DAT-V	.372**		.230*	
High Difficulty (N=86)	Joke Rating Time	-.144	.117	-.109	-.087
	Expected Grade	-.001	.011	.300**	.319**
	Theme Writing Time	.025	.059	.055	.078
	DAT-V	.385**		.259*	

^a_p < .05, $r \leq r$ Low Difficulty *_p < .05

^b_p < .05, $r \leq r$ High Difficulty **_p < .01

was significantly greater than the corresponding coefficient obtained within the "High Difficulty" subgroup, but it was not significantly greater than the corresponding coefficient obtained within the "Low Difficulty" subgroup of females.

Therefore, null Hypotheses 10B, 11B and 12B were not rejected using females.

Stage III--Predictive and Nomological Validity

Analyses in Stage III were concerned with relationships of the Motive for Success (GSCI scores) with academic achievement. Further analyses evaluated differential predictions concerning the relationship of the Motive for Success (GSCI scores) with academic achievement when measures of academic ability (DAT-V scores) and of Rated Difficulty of success in English were used to form groups of students thought to vary in the "apparent task difficulty" of success in the school situation.

The Strength and Direction of the Relationship Stated in Hypothesis 13

Null Hypothesis 13: With DAT-V scores (V_6) held constant, there is no correlation for GSCI scores (V_1) with teacher-assigned grades (V_5).

$$H_0: r_{15.6} = 0$$

Alternate Hypothesis 13: With DAT-V scores (V_6) held constant, there is a positive correlation for GSCI scores (V_1) with teacher-assigned grades (V_5).

$$H_{13}: r_{15.6} > 0$$

It was stated in the null form of statistical Hypothesis 13 that the relationship of GSCI scores with indices of academic achievement would not be significantly greater than zero.

It was stated in the alternate form of statistical Hypothesis 13 that the relationship of GSCI scores with indices of academic achievement would be significantly greater than zero.

Two indices of the level of academic achievement were used to evaluate Hypothesis 13. One index, "Semester English Grade," consisted of the grade assigned by each student's teacher at the completion of the present semester of English. The second index, "Cumulative GPA," consisted of the sum of grades obtained in courses requiring homework over a period of two years, divided by the number of such courses.

The Relationship of GSCI Scores with Two Indices of Academic Achievement for Males.--The relationship stated in Hypothesis 13 was evaluated, using males, by tests of significance (one-tailed F test, with 249 df for partial

coefficients) for correlations computed for GSCI scores with "Semester English Grade" and "Cumulative GPA."

The results of the computations and significance tests are displayed in Table 4.13.

It can be seen in Table 4.13 that the coefficient of partial correlation for GSCI scores with the Semester English Grade index of academic achievement is significant in the expected direction with the influence of DAT-V scores controlled by partial correlation technique, $r = .299$ ($p < .01$).

It can also be seen in Table 4.13 that the coefficient of partial correlation for GSCI scores with the Cumulative GPA index of academic achievement is significant in the expected direction with the influence of DAT-V scores controlled by partial correlation technique, $r = .301$ ($p < .01$).

Therefore, alternate Hypothesis 13 is accepted using both indices of academic achievement for males.

The Relationship of GSCI Scores with Two Indices of Academic Achievement for Females.--The relationship stated in Hypothesis 13 was evaluated, separately for females, by tests of significance (one-tailed F test, with 256 df for partial coefficients) for correlations computed for GSCI scores with "Semester English Grade" and "Cumulative GPA."

TABLE 4.13--Simple and partial correlation coefficients (DAT-V scores controlled) of the Generalized Situational Choice Inventory (GSCI) and the Differential Aptitude Test--Verbal Scale with each of two indices of academic achievement for 252 junior high school males.

Subjects	Motive Strength and Ability Tests	Indices of Academic Achievement			
		Semester English Grade		Cumulative GPA	
		Simple	Partial	Simple	Partial
Total	GSCI	.351**	.299**	.351**	.302**
Males (N=252)	DAT-V	.357*		.340**	

*p < .05

**p < .01

The results of the computations and significance tests are displayed in Table 4.14.

It can be seen in Table 4.14 that the coefficient of partial correlation for GSCI scores with the Semester English Grade index of academic achievement is significant in the expected direction with the influence of DAT-V scores controlled by partial correlation technique, $r = .285$ ($p < .01$).

It can also be seen in Table 4.14 that the coefficient of correlation for GSCI scores with the Cumulative GPA index of academic achievement is significant in the expected direction with the influence of DAT-V scores controlled by partial correlation technique, $r = .289$ ($p < .01$).

Therefore, alternate Hypothesis 13 is accepted using both indices of academic achievement for females.

The Relative Strength and Direction
of Relationships Stated in
Hypothesis 14A

Null Hypothesis 14A: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with teacher-assigned grades (V_5) within a "Middle Ability" (G_2) subgroup equals zero and is equal to corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_0: r_{15.6 \ G_2} = 0 \text{ and } = r_{15.6 \ G_1} \text{ and } r_{15.6 \ G_3}$$

TABLE 4.14--Simple and partial correlation coefficients (DAT-V scores controlled) of the Generalized Situational Choice Inventory (GSCI) and the Differential Aptitude Test--Verbal Scale with each of two indices of academic achievement for 259 junior high school females.

Subjects	Motive Strength and Ability Tests	Indices of Academic Achievement			
		Semester English Grade		Cumulative GPA	
		Simple	Partial	Simple	Partial
Total	GSCI	.310**	.285**	.311**	.289**
Females (N=259)	DAT-V	.424**		.453**	

*p < .05

**p < .01

Alternate Hypothesis 14A: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with teacher-assigned grades (V_5) within a "Middle Ability" (G_2) subgroup is positive and greater than corresponding correlations within both "High Ability" (G_1) and "Low Ability" (G_3) subgroups.

$$H_{14A}: r_{15.6 G_2} > 0 \text{ and } > r_{15.6 G_1} \text{ and } r_{15.6 G_3}$$

It was stated in the null form of statistical Hypothesis 14A that a relationship, significantly greater than zero, does not exist for GSCI scores with academic achievement within the "Middle Ability" subgroup of students and that the above relationship is equal to the corresponding relationships within "High Ability" and "Low Ability" subgroups of students.

It was stated in the alternate form of statistical Hypothesis 14A that a relationship, significantly greater than zero, does exist for GSCI scores with academic achievement within the "Middle Ability" subgroup of students and that the above relationship is equal to the corresponding relationships within "High Ability" and "Low Ability" subgroups of students.

Relationships of GSCI Scores with Two Indices of Academic Achievement for Subgroups of Males Varying in Level of DAT-V Scores.--The relationships stated in Hypothesis 14A were evaluated, for males, by coefficients of correlation computed within each of three subgroups of males (formed by trichotomizing the distribution of DAT-V scores), tested for significance from zero (one-tailed F test, with 81 df for partial coefficients), and tested for significant differences between coefficients (Fisher's r to z transformation) obtained within the "Middle Ability" subgroup of males and (from) coefficients obtained within the "High Ability" and "Low Ability" subgroups ($z_1 - z_2$ statistic evaluated with 80 df for partial coefficients).

The results of the above computations and significance tests are displayed in Table 4.15.

It can be seen in Table 4.15 that, within the "Middle Ability" subgroup of males, the partial correlation of GSCI scores with the two indices of academic achievement are not significantly greater than zero.

Therefore, null Hypothesis 14A was not rejected using either index of academic achievement for males.

It can also be seen in Table 4.15 that coefficients of correlation, significantly different from zero, were found for GSCI scores with both indices of academic achievement within both the "High Ability" and "Low Ability" subgroups of males.

TABLE 4.15--Simple and partial correlation coefficients (DAT-V scores controlled) of the Generalized Situational Choice Inventory (GSCI) and the Differential Aptitude Test--Verbal Scale with each of two indices of academic achievement within each of three levels of ability (DAT-V scores) for 254 junior high school males.

Subjects	Motive Strength and Ability Tests	Indices of Academic Achievement			
		Semester English Grade		Cumulative GPA	
		Simple	Partial	Simple	Partial
High Ability (N=84)	GSCI	.432**	.426**	.443**	.437**
	DAT-V	.126		.157	
Middle Ability (N=84)	GSCI	.188	.169	.166	.130
	DAT-V	.161		.300*	
Low Ability (N=84)	GSCI	.250*	.249*	.250*	.249*
	DAT-V	.133		.104	

^a $p < .05$, $r \leq r$ High Ability

* $p < .05$

^b $p < .05$, $r \leq r$ Low Ability

** $p < .01$

Relationships of GSCI Scores with Two Indices of Academic Achievement for Subgroups of Females Varying in Level of DAT-V Scores.--The relationships stated in Hypothesis 14A were evaluated, separately for females, by coefficients of correlation computed within each of three subgroups of females (formed by trichotomizing the distribution of DAT-V scores), tested for significance from zero (one-tailed F test, with 83 df for partial coefficients), and tested for significant differences between coefficients (Fisher's r to z transformation) obtained within the "Middle Ability" subgroup of females and (from) coefficients obtained within the "High Ability" and "Low Ability" subgroups ($z_1 - z_2$ statistic evaluated with 82 df for partial coefficients).

The results of the above computations and significance tests are displayed in Table 4.16.

It can be seen in Table 4.16 that, within the "Middle Ability" subgroup of females, partial correlations for GSCI scores with Semester English Grade, partial $r = .383$ ($p < .01$), and partial correlations for GSCI scores with Cumulative GPA, partial $r = .445$ ($p < .01$), are significantly greater than zero.

Furthermore, the coefficients of partial correlation, obtained within the "Middle Ability" subgroup of females, are significantly greater than the corresponding

TABLE 4.16--Simple and partial correlation coefficients (DAT-V scores controlled) of the Generalized Situational Choice Inventory (GSCI) and the Differential Aptitude Test--Verbal Scale with each of two indices of academic achievement within each of three levels of ability (DAT-V scores) for 259 junior high school females.

Subjects	Motive Strength and Ability Tests	Indices of Academic Achievement			
		Semester English Grade		Cumulative GPA	
		Simple	Partial	Simple	Partial
High Ability (N=87)	GSCI	.289**	.293**	.274**	.277*
	DAT-V	.497**		.502**	
Middle Ability (N=86)	GSCI	.414**	.383*** ^b	.472**	.445*** ^b
	DAT-V	.327**		.332**	
Low Ability (N=86)	GSCI	.128	.110	.072	.054
	DAT-V	-.166		-.157	

^a_p < .05, $r \leq r$ High Ability

*p < .05

^b_p < .05, $r \leq r$ Low Ability

**p < .01

coefficients obtained within the "Low Ability" subgroup (GSCI with Semester English Grade: $z = 1.86$, $p < .05$ and GSCI with Cumulative GPS; $z = 2.70$, $p < .01$)

However, the partial coefficients for GSCI scores with both indices of academic achievement, obtained within the "Middle Ability" subgroup, are not significantly greater than the corresponding coefficients obtained within the "High Ability" subgroup of females.

Therefore, null Hypothesis 14A was not rejected using either index of academic achievement for females.

The Strength and Direction of Relationships Stated in Hypothesis 14B

Null Hypothesis 14B: With DAT-V (V_6) held constant, the correlation of GSCI scores (V_1) with teacher-assigned grades (V_5) within an "Intermediate Difficulty" (G_5) subgroup equals zero and is equal to corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_0: r_{15.6 \ G_5} = 0 \text{ and } = r_{15.6 \ G_4} \text{ and } r_{15.6 \ G_6}$$

Alternate Hypothesis 14B: With DAT-V scores (V_6) held constant, the correlation of GSCI scores (V_1) with teacher-assigned grades (V_5) within an "Intermediate Difficulty" (G_5) subgroup is positive and greater than corresponding correlations within both "Low Difficulty" (G_4) and "High Difficulty" (G_6) subgroups.

$$H_{14B}: r_{15.6 \ G_5} > 0 \text{ and } > r_{15.6 \ G_4} \text{ and } r_{15.6 \ G_6}$$

It was stated in the null form of statistical Hypothesis 14B that a relationship, significantly greater than zero, does not exist for GSCI scores with academic achievement within the "Intermediate Difficulty" subgroup of students and that the above relationship is equal to the corresponding relationships within "Low Difficulty" and "High Difficulty" subgroups of students.

It was stated in the alternate form of statistical Hypothesis 14B, that a relationship, significantly greater than zero, does exist for GSCI scores with academic achievement within the "Intermediate Difficulty" subgroup of students and that the above relationship is significantly greater than the corresponding relationships within "Low Difficulty" and "High Difficulty" subgroups of students.

Relationships of GSCI Scores with Two Indices of Academic Achievement for Subgroups of Males Varying in Level of Rated Difficulty of Success in School.--The relationships stated in Hypothesis 14B were evaluated, for males, by coefficients of correlation computed within each of three subgroups of males (formed by trichotomizing the distribution of ratings of difficulty of success in English Class), tested for significance from zero (one-tailed F test, with 81 df for partial coefficients), and for significant differences between coefficients (Fisher's r to z transformation) obtained within the "Intermediate

Difficulty" subgroup of males and (from) coefficients obtained within the "Low Difficulty" and "High Difficulty" subgroups ($z_1 - z_2$ evaluated with 80 df for partial coefficients).

The results of the above computations and significance tests are displayed in Table 4.17.

It can be seen in Table 4.17 that, within the "Intermediate Difficulty" subgroup of males, coefficients for GSCI scores with Semester English Grade, partial $r = .417$ ($p < .01$), and for GSCI scores with Cumulative GPA, partial $r = .362$ ($p < .01$), are both significant in the expected direction.

It can also be seen in Table 4.17 that the coefficient of partial correlation for GSCI scores with Semester English Grade, within the "Intermediate Difficulty" subgroup of males, is significantly greater than the corresponding coefficients obtained within the "Low Difficulty" subgroup ($z = 2.19$, $p < .05$) and within the "High Difficulty" subgroup ($z = 1.36$, $p < .05$).

However, the partial correlation for GSCI scores with Cumulative GPA, obtained within the "Intermediate Difficulty" subgroup of males, was not significantly greater than the corresponding coefficients obtained within the "Low Difficulty" or "High Difficulty" subgroups.

TABLE 4.17--Simple and partial correlation coefficients (DAT-V scores controlled) of the Generalized Situational Choice Inventory (GSCI) and the Differential Aptitude Test--Verbal Scale (DAT-V) with each of two indices of academic achievement within each of three levels of the rated difficulty of school success for 254 junior high school males.

Subjects	Motive Strength and Ability Tests	Indices of Academic Achievement			
		Semester English Grade		Cumulative GPA	
		Simple	Partial	Simple	Partial
Low Difficulty (N=84)	GSCI	.108	.100	.192	.187
	DAT-V	.261*		.204	
Intermediate Difficulty (N=84)	GSCI	.450**	.417**ab	.403**	.362**
	DAT-V	.228*		.257*	
High Difficulty (N=84)	GSCI	.264*	.151	.294**	.194
	DAT-V	.531**		.499**	

^a $p < .05$, $r \leq r$ Low Difficulty

* $p < .05$

^b $p < .05$, $r \leq r$ High Difficulty

** $p < .01$

Therefore, alternate Hypothesis 14B was accepted using the Semester English Grade index of academic achievement for males, but Hypothesis 14B was not rejected using the Cumulative GPA index of academic achievement for males.

Relationships of GSCI Scores with Two Indices of Academic Achievement for Subgroups of Females Varying in Level of Rated Difficulty of Success in School.--The relationships stated in Hypothesis 14B were evaluated, separately for females, by coefficients of correlation computed within each of three subgroups of females (formed by trichotomizing the distribution of ratings of difficulty of success in English Class), tested for significance from zero (one-tailed F test, with 83 df for partial coefficients), and tested for significant differences between coefficients (Fisher's r to z transformation) obtained within the "Intermediate Difficulty" subgroup of females and (from) coefficients obtained within the "Low Difficulty" and "High Difficulty" subgroups ($z_1 - z_2$ evaluated with 82 df for partial coefficients).

The results of the above computations and significance tests are displayed in Table 4.18.

It can be seen in Table 4.18 that, within the "Intermediate Difficulty" subgroup of females, neither of the coefficients of partial correlation for GSCI scores with either index of academic achievement were significantly greater than zero.

TABLE 4.18--Simple and partial correlation coefficients (DAT-V scores controlled) of the Generalized Situational Choice Inventory (GSCI) and the Differential Aptitude Test--Verbal Scale (DAT-V) with each of two indices of academic achievement within each of three levels of the rated difficulty of school success for 259 junior high school females.

Subjects	Motive Strength and Ability Tests	Indices of Academic Achievement			
		Semester English Grade		Cumulative GPA	
		Simple	Partial	Simple	Partial
Low Difficulty (N=87)	GSCI	.354**	.274**	.296**	.184
	DAT-V	.468**		.591**	
Intermediate Difficulty (N=86)	GSCI	.030	.071	.134	.212
	DAT-V	.230*		.367**	
High Difficulty (N=86)	GSCI	.378**	.368**	.358**	.351**
	DAT-V	.259*		.393**	

$a_p < .05, r \leq r \text{ Low Difficulty}$

* $p < .05$

$b_p < .05, r \leq r \text{ High Difficulty}$

** $p < .01$

Therefore, null Hypothesis 14B was not rejected with either index of academic achievement for females.

It can also be seen in Table 4.18 that coefficients of correlation, significantly different from zero, were found for GSCI scores with both indices of academic achievement within both the "Low Difficulty" and "High Difficulty" subgroups of females.

Summary of the Analysis of Results

Results within Stage I Analyses

Support was not found for the predicted negative relationships of the Motive for Success (GSCI scores) with the Joke Rating Time criterion of motivation (initiating behavior), as stated in Hypothesis 1, using males or females. However, a significant negative relationship was found for academic ability (DAT-V scores) with the Joke Rating Time criterion of motivation (initiating behavior) using males.

Support was found for the predicted positive relationship of the Motive for Success (GSCI scores) with the Expected Grade criterion of motivation (directing behavior), as stated in Hypothesis 2, using both males and females separately.

Support was also found for the predicted positive relationship of the Motive for Success (GSCI scores) with the Theme Writing Time criterion of motivation (sustaining behavior), as stated in Hypothesis 3, but only using males.

Support was not found for the differential relationships of the Motive for Success (GSCI scores) with any of the three criteria of motivation, as stated in Hypotheses 4A, 5A and 6A or 4B, 5B and 6B, using indices of "apparent task difficulty" (DAT-V scores and Rated Difficulty scores) to influence (moderate) these relationships among subgroups of males and females.

Within analyses using subgroups of males varying in level of academic ability (DAT-V scores), a significant positive relationship was obtained for the Motive for Success (GSCI scores) with the Theme Writing Time criterion of motivation (sustaining behavior) only among males within the highest one-third of the distribution of DAT-V scores.

Among males within the lower two-thirds of the distribution of DAT-V scores, significant negative relationships were obtained for academic ability (DAT-V scores) with the Joke Rating Time criterion of motivation (initiating behavior).

Within analyses using subgroups of males varying in either academic ability (DAT-V scores) or perceived difficulty (Rated Difficulty), significant positive relationships for the Motive for Success (GSCI scores) with the Expected Grade criterion of motivation (directing behavior) were obtained only among males within the lower two-thirds of the distribution of DAT-V scores.

Within analyses using subgroups of females varying in level of academic ability (DAT-V scores), significant positive relationships were found for the Motive for Success (GSCI scores) with the Expected Grade criterion of motivation (directing behavior) only among females within the highest two-thirds of the distribution of DAT-V scores.

Among females within the highest one-third of the distribution of DAT-V scores, a significant positive relationship was found for academic ability (DAT-V scores) with the Expected Grade criterion of motivation (directing behavior).

Within analyses using subgroups of females varying in level of perceived difficulty (Rated Difficulty) of success in English, significant positive relationships were obtained for both the Motive for Success (GSCI scores) and academic ability (DAT-V scores) with only the Expected Grade criterion of motivation (directing behavior).

Among the one-third of females who rate success in English as "most" difficult ("High Difficulty" subgroup), significant positive relationships were obtained for the Motive for Success (GSCI scores) with both the Expected Grade criterion (directing behavior) and the Theme Writing Time criterion (sustaining behavior) of motivation.

Results within Stage II Analysis

Support was not found for the predicted negative relationship of the Joke Rating Time criterion of motivation (initiating behavior) with the level of academic achievement, as stated in Hypothesis 7. A significant relationship was found using a simple correlation but only using one of the two indices of academic achievement (Semester English Grade) and only with males. The above relationship was not significant with academic ability (DAT-V scores) held constant by partial correlation technique.

Support was found for the predicted positive relationship of the Expected Grade criterion of motivation (directing behavior) with the level of academic achievement, as stated in Hypothesis 8, using both indices of the level of academic achievement (Theme Grade and Semester English Grades), for both males and females.

Support was also found for the predicted positive relationship of the Theme Writing Time criterion of motivation (sustaining behavior) with the level of academic achievement, as stated in Hypothesis 9, using one of the two indices of academic achievement (Semester English Grade), but only for males.

No support was found for the predicted relationships of Joke Rating Time (initiating behavior) and Theme Writing Time (sustaining behavior) criteria of motivation

with either of the two indices of the level of academic achievement, as stated in Hypotheses 7 and 9 respectively, for females.

Support was not found for the differential relationships of the three criteria of motivation with either of the indices of the level of academic achievement, as stated in Hypotheses 10A, 11A and 12A or 10B, 11B and 12B, using indices of "apparent task difficulty" (DAT-V scores and Rated Difficulty scores) to influence (moderate) these relationships among subgroups of males and females.

Within analyses using subgroups of males varying in level of academic ability (DAT-V scores), significant positive relationships were obtained for the Expected Grade criterion of motivation (directing behavior) with at least one index of the level of academic achievement (Semester English Grade) within each of the three levels of academic ability (DAT-V scores) even with the influence of DAT-V scores held constant (within subgroups) by partial correlation technique.

Among males within the highest one-third of the distribution of DAT-V scores (High Ability), a significant positive relationship was obtained for the Theme Writing Time criterion of motivation (sustaining behavior) with one index of the level of academic achievement (Semester English Grade).

Within analyses using subgroups of males varying in level of perceived difficulty (Rated Difficulty) of success in English, a significant positive relationship was obtained for the Theme Writing Time criterion of motivation (sustaining behavior) with one index of the level of academic achievement (Semester English Grade) only among the one-third of males who rate success in English within a moderate (Intermediate) range of difficulty.

Among the one-third of males who rate success in English as least easy (Low Difficulty), a significant negative relationship was obtained for the Joke Rating Time criterion of motivation (initiating behavior) with one index of the level of academic achievement (Semester English Grade). However, the above relationship was not significant with the influence of academic ability (DAT-V scores) held constant by partial correlation technique.

Within analyses using subgroups of females varying in level of academic ability (DAT-V scores) or in level of the perceived difficulty of success in English (Rated Difficulty), significant relationships were obtained for the Expected Grade criterion of motivation (directing behavior) with at least one of the two indices of the level of academic achievement (Theme Grade or Semester English Grade) within each of the subgroups and, in most cases, even with the influence of academic ability (DAT-V scores) held constant by partial correlation technique.

Within analyses using subgroups of females varying in level of academic ability (DAT-V scores) or in level of the perceived difficulty of success in English (Rated Difficulty), significant relationships were not obtained for either the Joke Rating Time (initiating behavior) or Theme Writing Time (sustaining behavior) criteria of motivation with either of the two indices of the level of academic achievement within any of the subgroups.

Results within Stage III Analyses

Support was found for the predicted positive relationship of the Motive for Success (GSCI scores) with the level of academic achievement, as stated in Hypothesis 13, using both indices of the level of academic achievement (Semester English Grades and Cumulative GPA), with the influence of academic ability (DAT-V scores) held constant by partial correlation technique, for males and females separately.

Support was not found for the predicted differential relationships of the Motive for Success (GSCI scores) with the level of academic achievement, as stated in Hypothesis 14A, using either index of the level of academic achievement (Semester English Grades or Cumulative GPA), with the influence of academic ability (DAT-V scores) held constant (within subgroups) by partial correlation technique, using subgroups of either males or females varying in level of academic ability.

Support was found for the predicted differential relationships of the Motive for Success (GSCI scores) with the level of academic achievement, as stated in Hypothesis 14B, using one of the two indices of the level of academic achievement (Semester English Grade) with the influence of academic ability (DAT-V scores) held constant (within subgroups) by partial correlation technique, using subgroups of males varying in level of Rated Difficulty of Success in school.

Within analyses using subgroups of males varying in level of academic ability (DAT-V scores), significant positive relationships (with DAT-V scores held constant within subgroups) were obtained for the Motive for Success (GSCI scores) with both indices of the level of academic achievement (Semester English Grades and Cumulative GPA) only within the extreme subgroups (one-third highest, and one-third lowest in distribution of DAT-V scores) but not within the moderate (middle one-third in distribution of DAT-V scores) ability subgroup.

Within analyses using subgroups of males varying in level of perceived (Rated) difficulty of success in English, significant positive relationships (with DAT-V scores held constant within subgroups) were obtained for the Motive for Success (GSCI scores) with both indices of the level of academic achievement (Semester English Grades and Cumulative GPA) only within the moderate (middle one-third of

distribution of Rated Difficulty scores) difficulty group but not within the extreme subgroups (one-third highest, and one-third lowest in distribution of Rated Difficulty scores).

Within analyses using subgroups of females varying in level of academic ability (DAT-V scores), significant positive relationships (with DAT-V scores held constant within subgroups) were obtained for the Motive for Success (GSCI scores) with both indices of academic achievement (Semester English Grade and Cumulative GPA) within the two-thirds of females highest in ability (High Ability and Middle Ability subgroups) but not within the one-third of females lowest in ability (Low Ability subgroup).

Within analyses using subgroups of females varying in level of perceived (Rated) difficulty of success in English, significant positive relationships (with DAT-V scores held constant within subgroups) were obtained for the Motive for Success (GSCI scores) with both indices of academic achievement (Semester English Grade and Cumulative GPA) within the one-third of females who rate success as most difficult (High Difficulty subgroup) and within the one-third of females (Low Difficulty subgroup) who rate success as least difficult, using the Semester English Grade index, but significant relationships were not found using either index among the one-third of females who rate success as of moderate difficulty (Intermediate Difficulty subgroup).

CHAPTER V

DISCUSSION OF RESULTS

The discussion of results is presented below as it relates to the three main purposes of the study which were investigated within three Stages of analysis: Stage I--Nomological Validity, Stage II--Criterion Validity and Stage III--Predictive and Nomological Validity.

Stage I--Nomological Validity

The first purpose of this study was to obtain evidence relevant to the nomological (construct) validity of the Motive for Success, as the term (a) appears within Atkinson's theory of achievement motivation, (b) is interpreted by scores on the GSCI and, (c) is expressed in theory-selected behaviors within the classroom situation.

It was assumed that Atkinson's statements, concerning the influence of the Motive for Success on strength of the tendency (motivation) to achieve, and Farquhar's definition of the role of motivation in the academic situation, were sufficiently explicit to allow selection of, and prediction for, three criteria of motivated behavior in the classroom--the initiating, directing and sustaining of achievement-related activity. It was further assumed that evidence

based on all three criteria of motivation could be more confirming than evidence based on any one criterion.

Confirmation of directional hypotheses, concerning relationships between strength of the Motive for Success (GSCI scores) and the three behavioral criteria of strength of the tendency (motivation) to achieve in the classroom situation, was thought to provide one source of support for the nomological validity of the Motive for Success.

A second source of validating evidence was sought through evaluating hypothesized stronger relationships, between strength of the Motive for Success (GSCI scores) and the three behavioral criteria of strength of the tendency (motivation) to achieve, among students thought to be performing tasks of an "Intermediate" level of difficulty than among students performing easier or more difficult tasks.

Discussion of Relationships Between GSCI Scores and Three Criteria of Motivation for Males

Support for the nomological validity of the GSCI, as an interpretation of the strength of the Motive for Success, was not obtained using the Initiating criterion of strength of the tendency (motivation) to achieve in the classroom situation (Hypothesis 1).

However, support was found for the nomological validity of the GSCI, as an interpretation of strength of the

Motive for Success, through confirmation of predictions (Hypotheses 2 and 3) concerning relationships of GSCI scores with both the Directing, partial $r = .214$ ($p < .01$) and Sustaining, partial $r = .170$ ($p < .05$), criteria of strength of the tendency (motivation) to achieve in the classroom situation.

While the coefficients of correlation, for the successful prediction involving GSCI scores with both the Directing and Sustaining criteria of strength of the tendency (motivation) to achieve in the classroom, were low they were significant both with and without the influence of academic ability (DAT-V scores) held constant. Furthermore, significant relationships were not found for academic ability (DAT-V scores) with either the Directing or Sustaining criteria of motivation.

The above findings suggest that it was possible to use statements concerning the role of motivation in the classroom to select behavioral criteria relevant to a theory of motivation and confirm predictions, based on a theory of achievement motivation, concerning relationships between GSCI scores, as an index of strength of the Motive for Success, with two of the three criteria of strength of the tendency (motivation) to achieve in the classroom situation.

The finding that neither the Directing nor Sustaining criteria of motivation were significantly influenced by

academic ability (DAT-V scores) adds further clarity to the nomological validity interpretation of relationships between GSCI scores and these two behavioral criteria.

Discussion of Initiating Activity.--Failure to find significant relationships between GSCI scores and Initiating activity did not confirm the prediction that males with higher GSCI scores (assumed stronger in the Motive for Success) would more quickly cease performance of a non-achievement task and thus, more quickly undertake performance of an achievement task than males with lower GSCI scores (assumed weaker in the Motive for Success).

The above prediction was based on the theoretical speculations of Atkinson and Cartwright¹ concerning the operation of an "Inertial Tendency" which once aroused is thought to persist and influence subsequent performance. Postulation of the "Inertial Tendency" was necessary for prediction of behavior in a situation (non-achievement task) in which "expectancy" and "incentive" values, relevant to the Motive for Success, are not objectively present.

Prediction of behavior during performance of the non-achievement task was thus based on the assumption that "expectancy" and "incentive" values relevant to expression of the Motive for Success were established during the explanation of the achievement task and multiplicatively combined

¹J. W. Atkinson and D. Cartwright, "Some Neglected Variables in Contemporary Conceptions of Decision and Performance," Psychological Reports, 14 (1964), 575-590.

with strength of the Motive for Success to determine the strength of a tendency (motivation) to achieve which would be reflected in the length of subsequent time spent on the non-achievement task. Thus it was cues associated with the achievement task that were used for the prediction of behavior on the non-achievement task.

The present findings, however, suggest that when cues of the task being performed do not allow for satisfaction of the Motive for Success then performance on that task is unrelated to differences in strength of the Motive for Success. Such a finding is in accord with findings of other researchers which suggest that when "chance" rather than "skill" is involved in task performance² or when task performance appeals to motives other than the Motive for Success³ then relationships between strength of the Motive for Success and behavior are not found.

However, academic ability (DAT-V scores) was found, in this study, to be significantly correlated (negatively) with time spent in performance of the non-achievement task before starting to perform the achievement task. That is, males of lower ability tended to spend more time in performance of the non-achievement task before starting the achievement task than students of higher ability.

²Norman T. Feather, "Subjective Probability and Decision Under Uncertainty," Psychological Review, 66 (1959), 150-164.

³Elizabeth G. French, "Some Characteristics of Achievement Motivation," Journal of Experimental Psychology, 50 (1955), 232-236.

The above finding could be interpreted as suggesting that time spent in performance of the non-achievement task was reflecting the strength of an "Inertial Tendency" based on characteristics of the achievement task, but that the tendency (motivation) had an "avoidant" quality rather than the proposed "approach" quality.

Atkinson⁴ has proposed the operation of a tendency to avoid performance of an achievement task that is a consequence of the multiplicative relationship of a Motive to Avoid Failure, expectations concerned with the likelihood of failure and the negative incentive value of failure.

The operation of a tendency (motivation) to avoid failure had not been considered in this study since the concern was with the nomological validity of GSCI scores as an interpretation of the strength of the Motive for Success thought to influence the strength of a tendency (motivation) to approach success.

However, the finding of a negative relationship between DAT-V scores and time spent on the non-achievement task before starting performance of the achievement task is reminiscent of the negative relationship found by Smith⁵ between intelligence (Otis test scores) and time spent in both a mid-term and final examination room.

⁴J. W. Atkinson, "Motivational Determinants of Risk-Taking Behavior," Psychological Review, 64 (1957), 359-372.

⁵Charles P. Smith, "Relationships Between Achievement-Related Motives and Intelligence, Performance Level, and Persistence," Journal of Abnormal and Social Psychology, 68 (1964), 523-533.

Though Smith proposed other interpretations for his findings, it appears that one interpretation of his findings could be that, with the multiple-choice and short-answer examination task given his subjects, differences in total time spent in the examination room might be attributable to differences in time spent performing "extra-" achievement task activities.

While in the present study, it may be assumed, that the attractiveness of the alternative activity (Joke Rating) minimized the influence of unaccounted for, "extra-task," behavior on the total time spent in performance of the achievement task.

This interpretation of the present findings and those of Smith's suggest the importance of providing an alternative activity (non-achievement task) in an investigation that attempts to locate relationships between the Motive for Success and behavior and raises the possibility that behavior on a non-achievement task preceeding performance of an achievement task may be a consequence of avoidant tendencies.

Discussion of Directing Activity.--Significant relationships were found for strength of the Motive for Success (GSCI scores) with the Directing of achievement-related activities as reflected by expectations concerned with future achievement (Expected Grades).

That is, males with high GSCI scores (assumed strong in the Motive for Success) stated they expected to achieve higher grades (chose more difficult objectives) than males with low GSCI scores (assumed weak in the Motive for Success).

The choice of more difficult tasks or the choice of a higher level of achievement on the same task was thought to reflect one influence of strength of the Motive for Success on behavior in the classroom situation.

The interpretation of differences in expectations concerned with grades as reflecting a Directing influence of the Motive for Success assumes that there is a path or sequence of activities associated with one level of academic achievement that differs from the path or sequence of activities associated with another level of achievement. The statement of the level of expected achievement can then be interpreted as indicating that students are following one path rather than another.

Whether one accepts this interpretation of expectations concerned with future levels of achievement, the findings of this study were in accord with previous research involving relationships between strength of the Motive for Success and "Expected Grades."

Atkinson⁶ had proposed that significant relationships would be found between TAT n-achievement scores and grades expected on a college course final examination when differences in ability were held constant by partial correlation technique. One interpretation of the effect of the partial correlation technique, in this situation, is that it reflects the extent of the relationship, occurring as a discrepancy between expected achievement and predicted achievement, with motive scores.

While Atkinson failed to find significant relationships between TAT n-achievement scores and expected grades, the present study found significant relationships both with and without the effects of academic ability (DAT-V scores) controlled by partial correlation technique.

Discussion of Sustaining Activity.--Significant relationships were found for the strength of the Motive for Success (GSCI scores) with the Sustaining criteria of strength of the tendency (motivation) to achieve in the academic situation. That is, males with high GSCI scores (assumed strong in the Motive for Success) tended to spend more time in the performance of an achievement task than males low in GSCI scores (assumed weak in the Motive for Success).

⁶D. McClelland and J. Atkinson, et al., The Achievement Motive (New York: Appleton-Century-Crofts, 1953).

The above findings are in accord with the relationships hypothesized by Feather,⁷ Atkinson and Litwin⁸ and Smith.⁹ However, only Atkinson found significant relationships between scores on a projective measure of the Motive for Success and time spent on an achievement task (college course examination). Atkinson failed to find significant relationships with time spent on an examination using an objective (EPPS) technique for assessment of strength of the Motive for Success.

Discussion of Relationships Between
GSCI Scores and Three Criteria of
Motivation for Females

Support for the nomological validity of the Motive for Success and for Atkinson's theory of achievement motivation, using female subjects, was found only in the predicted relationship (Hypothesis 2) of GSCI scores with the Directing, partial $r = .265$ ($p < .01$), criteria of strength of the tendency (motivation) to achieve in the classroom situation.

⁷Norman T. Feather, "The Relationship of Persistence at a Task to Expectation of Success and Achievement Related Motives," Journal of Abnormal and Social Psychology, 63 (1961), 552-561.

⁸John W. Atkinson and G. H. Litwin, "Achievement Motive and Test Anxiety Conceived as Motive to Approach Success and Avoid Failure," Journal of Abnormal and Social Psychology, 60 (1960), 52-63.

⁹Smith, op. cit.

That is, females with higher GSCI scores (assumed strong in the Motive for Success) state they expect to achieve higher grades than females with lower GSCI scores (assumed weak in the Motive for Success).

However, the "Expected Grade" index of the influence of the Motive for Success on the Directing of achievement-related activities provides, (a) the least explicit derivation from theory (differences in expected level of achievement holds questionable status as a directional concept), (b) the least clear distinction from achievement criteria (both based on teacher-assigned grades) and, (c) the least clarity for nomological validity interpretations of GSCI scores with "Expected Grades" (DAT-V scores correlate equally well with this criterion).

The failure to find significant relationships between GSCI scores for females and their behavior during the performance of either the achievement task or the non-achievement task suggests that GSCI scores for females may not be reflecting the operation of the same construct as GSCI scores for males.

GSCI scores for females may be reflecting the operation of some personality construct, as indicated by the relationship between GSCI scores and "Expected Grade," but there is little evidence to suggest that the construct reflected by GSCI scores for females has the characteristics of the

Motive for Success which appears to be, at least, more adequately reflected by GSCI scores for males.

In any event, it appears reasonable to assume that combining females in the analyses for males would have served to diminish the strength of the relationships found with males alone in the present study and may have accounted for Smith's¹⁰ failure to find significant relationships between motive-test scores and persistence on his achievement task.

Discussion of Relationships of GSCI Scores
with Three Criteria of Motivation for Sub-
groups of Males or Females Varying in
Objective or Subjective Estimates of
the Difficulty of School Success

Two indices of the difficulty of success in school, an objective measure of academic ability (DAT-V scores) which assumed an inverse relationship between ability test scores and "perceived" difficulty of success, and a subjective measure of expressed difficulty (Rated Difficulty) which assumed a direct relationship between stated difficulty and "perceived" difficulty, were used to evaluate the predicted differentially stronger influence of the Motive for Success on the behavior of students performing tasks of an "Intermediate" level of difficulty than on the behavior of students performing easier or more difficult tasks.

¹⁰Ibid.

No support was found, using either males or females, with either objective or subjective estimates of the "perceived" difficulty of school success, for the predicted differentially stronger influence of the Motive for Success (GSCI) scores on the initiating, directing and sustaining criteria of motivation for students performing tasks of an "Intermediate" level of difficulty than for students performing easier or more difficult tasks.

The reasons for the failure to find differentially stronger relationships as predicted by theory could lie with, (a) the method of selecting subgroups, (b) the psychometric characteristics of the GSCI within different scale ranges, (c) the low validity of both the DAT-V scores and Rated Difficulty scores as indices of "perceived" difficulty or, (d) with theory. These possibilities are discussed below.

(a) The selection technique used for the formation of subgroups thought to vary in the "perceived" difficulty of school success consisted of trichotomizing the separate distributions of DAT-V scores and Rated Difficulty. This technique assured subgroups composed of equal thirds of the samples of males and females and was used to correspond with the technique used by Goodstein and Heilbrun¹¹ and to provide for the least "manipulation" of data.

¹¹Leonard D. Goodstein and Alfred B. Heilbrun, Jr., "Prediction of College Achievement from the Edwards Personal Preference Schedule at Three Levels of Intellectual Ability." Journal of Applied Psychology, 46 (1962), 317-320.

While alternative selection techniques might have produced the predicted stronger relationships within "middle" groups, it was thought that such findings would hold less relevance for theory.

(b) Because GSCI scores are correlated with both DAT-V scores and with Rated Difficulty scores, selection of subgroups on the basis of the latter two instruments automatically selects subjects within varying ranges of GSCI scale scores. The consequence of comparing relationships based on scores within varying ranges of GSCI scores is, of course, the confounding of potentially differing scale invalidities with invalidity attributable to theory.

However, it was anticipated on the basis of theory that students within differing levels of objective and subjective estimates of school success would differ in both motive strength and motivation as a consequence of past experience and relationships found would therefore, at least provide the closest correspondence with "real-life" competitive situations.

(c) The failure of DAT-V scores and Rated Difficulty scores to correlate highly with achievement indices or with each other suggests that neither may hold validity as indices of "perceived" difficulty of school success. The brevity of the DAT-V scale, dealing with only the Verbal factor of academic ability, may have contributed to its failure to function as predicted. While the relatively

crude index of Rated Difficulty may have been more effective if attention had been given to a definition of "success" or by comparing student perceptions of what constitutes success for them.

(d) While failure to find relationships as specified by theory might be attributable to the inadequacies of theory, it appears that sufficient possibilities exist in the inadequacies of the assessment techniques for the variables involved in this study to make such speculation hazardous.

However, relationships between GSCI scores and the three behavioral criteria of motivation were found to vary between subgroups of students, though not as predicted by theory. The findings hold implications for theory or at least for methodology of future investigations.

Significant relationships, between GSCI scores (assumed to reflect differences in strength of the Motive for Success) and time spent in the performance of the achievement task (assumed to reflect differences in strength of the tendency to achieve success), were found for males only among subgroups objectively or subjectively most likely to obtain success (High Ability and Low Rated Difficulty subgroups).

On the other hand, significant relationships, between DAT-V scores (assumed to reflect differences relative to a Motive to Avoid Failure) and time spent in performance on

a non-achievement task (assumed to reflect strength of a tendency to avoid failure), were found for males only among subgroups objectively or subjectively least likely to obtain success (Middle and Low Ability, and High Rated Difficulty, subgroups).

The above two findings imply that differences in the difficulty of school success influence the expression of achievement-related motives (approach and avoidant) in behavior and the effects of these different motives may be seen when alternative activities (non-achievement and achievement tasks) are provided and behavior separately analyzed.

Thus, the present findings incorporate both the positive relationship between the Motive for Success and time spent on an examination, found by Atkinson and Litwin,¹² and the negative relationship between ability and time spent on examinations, found by Smith.¹³ The discrepancy between the findings of Atkinson and Smith may be attributable to their failure to provide and measure alternative activities for males.

The analysis of relationships between GSCI scores and the three behavioral criteria of motivation, among subgroups of females, tended to produce significant findings only with

¹²Atkinson and Litwin, op. cit.

¹³Smith, op. cit.

the Directing (Expected Grade) criteria, thus, confirming the findings based on the total sample of females and supporting the importance of separate analyses for males and females.

However, an interesting relationship was found between GSCI scores and the Sustaining of activity during the performance of an achievement task among females who rate success in English class as most difficult (High Rated Difficulty subgroup).

That is, among the one-third of females who rate success as most difficult, those females with higher GSCI scores tended to spend longer on the achievement task than females with lower GSCI scores.

The above finding with females stands in marked contrast to the finding with males who rate success as most difficult, for among that subgroup, males with lower academic ability (DAT-V scores) tended to spend more time in performance of the non-achievement task than males with higher academic ability.

The above findings suggest a fundamental difference in the way males and females respond to a task of high difficulty. That is, females tend to devote increasing amounts of time to performance of a difficult achievement task possibly in attempts to gain satisfaction for needs to achieve, while males, faced with a difficult achievement

task, devote increasing amounts of time to performance of a non-achievement task possibly in attempts to avoid failure.

Stage II--Criterion Validity

The second main purpose of this study was to obtain evidence concerning the validity of the three behavioral criteria strength of the tendency (motivation) to achieve in the classroom situation.

It was possible to investigate both the theoretical and practical implications of indices of initiating, directing and sustaining achievement-related behavior, separately from the problems of assessment of strength of the Motive for Success, by assuming that level of academic achievement could be used as one criterion of strength of the tendency (motivation) to achieve in the academic situation.

Theory was used to derive directional hypotheses that the three behavioral criteria of strength of the tendency (motivation) to achieve should correlate (negatively in the case of delay in Initiating activity, and positively in the case of both Directing and Sustaining activity) with indices of level of academic achievement as would be expected of indices of the same construct (strength of the tendency to achieve).

Theory was further used to derive differential hypotheses that the three behavioral criteria of strength of the tendency to achieve should correlate stronger with indices of the level of academic achievement (also conceived as a criterion of strength of the tendency to achieve) among subgroups of students whose behavior was thought to be maximally influenced by the Motive for Success, i.e., for students performing tasks of an "Intermediate" level of difficulty, than for students performing easier or more difficult tasks.

Two distributions of teacher-assigned grades were used to evaluate relationships between the three behavioral criteria of motivation and academic achievement in English class.

One index consisted of the grade (Theme Grade) assigned by each student's teacher for the achievement task on which the initiating, directing and sustaining criteria of motivation were also obtained. The second index of academic achievement consisted of the grade assigned by each student's teacher for the semester of English (Semester English Grade) during which the achievement task was administered. Both grades were assigned after collection of the behavioral criteria of motivation.

The "Semester English Grade" index was used because it was thought to provide a more stable estimate of

achievement than was possible for the "Theme Grade" index (based on only one grade for one brief assignment).

Discussion of Relationships for the Three Behavioral Criteria of Motivation with Indices of Academic Achievement for Males

Support for the construct validity of the Initiating criteria of strength of the tendency (motivation) to achieve (Hypothesis 7) for males was obtained only with the coefficient of simple correlation for this criterion with one index (Semester English Grade) of academic achievement, simple $r = .171$ ($p < .01$), but this relationship was not significant with the influence of academic ability (DAT-V scores) held constant by partial correlation, partial $r = -.111$ ($p > .05$).

Support for the construct validity of the Directing criteria of strength of the tendency (motivation) to achieve (Hypothesis 8) for males was obtained with coefficients of partial correlation for this criterion with both the "Theme Grade," partial $r = .271$ ($p < .01$), and with the "Semester English Grade," partial $r = .301$ ($p < .01$), indices of academic achievement.

Support for the construct validity of the Sustaining criteria of strength of the tendency (motivation) to achieve (Hypothesis 9) for males was obtained with the coefficient of partial correlation for this criterion with only the "Semester English Grade," partial $r = .161$ ($p < .05$), index of academic achievement.

The significant relationships, found with the three behavioral criteria of strength of the tendency (motivation) to achieve, were thought to provide support for the power of Atkinson's theory of achievement motivation to select characteristics of behavior relevant to theory and to confirm predictions for these criteria with indices of academic achievement.

While the coefficients of correlation, for the behavioral criteria of motivation with academic achievement, were all low, they were of approximately the same magnitude as coefficients found for academic ability (DAT-V scores) with "Theme Grade," $r = .242$ ($p < .01$), and with "Semester English Grade," $r = .357$ ($p < .01$), indices of academic achievement in English class.

The failure of the measure of academic ability (DAT-V scores) to correlate highly with indices of academic achievement in English class for males is, in part, attributable to the relatively low reliability (stability) of the teacher-assigned grades as indices of a consistent level of academic achievement. However, the low reliability of these teacher-assigned grades may also reflect a variability in student classroom behavior which influences achievement in particular situations.

The significant relationships, found for the three behavioral criteria of motivation with indices of academic achievement, suggests that such criteria may have practical

implications as descriptions of events (motivational phenomena), within "real-life" competitive situations, intervening between gross predictor variables and global achievement criteria.

Discussion of Initiating Activity.--The relationships found between the Initiating criteria of strength of the tendency (motivation) to achieve and level of academic achievement indicates that those males who spend more time in performance of a non-achievement task, before starting to perform an achievement task, tend to obtain lower grades than males who spend less time in performance of a non-achievement task. However, this relationship was not significant with the influence of academic ability (DAT-V scores) held constant by partial correlation technique.

When an alternative (non-achievement) task is provided in a competitive situation, the behavior of males on the non-achievement task reflects tendencies to avoid performance of the achievement task and these avoidant tendencies have an influence (negative) on later achievement.

The failure to find a significant influence of avoidant tendencies on later achievement with academic ability (DAT-V scores) controlled can be explained as a consequence of the significant (negative) relationship found between DAT-V scores and behavior on the non-achievement

task (reported in Stage I analyses). Partialing DAT-V score out of the above relationship, therefore, amounts to controlling the unique characteristic of behavior expressed in behavior on the non-achievement task.

Recent research by Atkinson¹⁴ was concerned with the construct of "Avoidant Tendencies" through attempts to separately assess strength of a Motive to Avoid failure (indexed by TAQ scores) and predict the combined influence of approach and avoidant motives on achievement task behavior.

Findings in the present study indicate that both approach and avoidant tendencies may influence behavior in competitive situations but in addition to the need for the separate assessment of personality characteristics (motives) there is a need for separate evaluation of the effects in behavior. The provision of an alternative (non-achievement) activity appears to provide clarity in the expression of avoidant tendencies and allows opportunity for the separate assessment of the influence of personality on separate task behaviors.

Discussion of Directing Activity.--The relationships found between the Directing criteria of strength of the tendency (motivation) to achieve and indices of level of academic achievement indicate that males who expect to

¹⁴Atkinson and Litwin, op. cit.

obtain higher grades receive higher grades from their teacher than males who expect to obtain lower grades.

The above relationships confirm the findings of Atkinson¹⁵ using college students. However, Atkinson used grades on a previous examination and grades accumulated over previous semesters. The present study used grades assigned after the statements concerned with grade expectations were collected. The findings of the present study provide greater clarity for the potential influence of grade expectations on future achievement in the academic situation.

Combining the findings of both Atkinson and the present study suggests that statements concerned with expected grades are tied to both past achievement and future achievement and require rigorous analysis to identify those characteristics holding uniquely motivational implications. The finding that relationships between expected grades and future grades were significant with academic ability (DAT-V) controlled by partial correlation, was only a step in that direction.

Discussion of Sustaining Activity.--The relationships between the Sustaining criteria of strength of the tendency (motivation) to achieve and level of academic achievement indicate that males who spend more time in the performance

¹⁵John W. Atkinson (ed.), Motives in Fantasy Action and Society (D. Van Nostrand Co., Inc., 1958).

of an achievement task obtain higher grades from their teacher than males who spend less time in the performance of an achievement task.

The above findings were similar to those sought by Atkinson and Litwin¹⁶ and by Smith.¹⁷ However, both previous researchers failed to find significant relationships between time spent on an achievement task (college course examinations) and level of academic achievement.

The difference between the previous non-significant relationships and the present significant relations could be attributed to the fact that both Atkinson and Litwin and Smith used achievement tasks consisting of short-answer and multiple-choice examinations. Furthermore, they failed to provide an alternative (non-achievement) activity. The present study provided an achievement task consisting of a theme, with opportunity for correction and revision, and provided an alternative (non-achievement) task.

It is difficult to see just how the strength of tendencies to achieve might have been effectively expressed in the short-answer and multiple-choice tasks particularly if the college students were influenced by the oft heard dictum that "your first guess is probably your best guess."

¹⁶Atkinson and Litwin, op. cit.

¹⁷Smith, op. cit.

Discussion of Relationships for the Three
Behavioral Criteria of Motivation with
Indices of Academic Achievement
for Females

Support for the construct validity of the three criteria of strength of the tendency (motivation) to achieve with indices of academic achievement for females was found only in the relationships for the Directing criteria with "Theme Grade," partial $r = .230$ ($p < .01$), and with "Semester English Grade," partial $r = .354$ ($p < .01$), indices of academic achievement.

Females who expected to obtain higher grades were assigned higher grades by their teacher than females who expected to receive lower grades.

The coefficients of correlation for grades expected with grades obtained by females were significant with the influence of academic ability controlled. The finding that expected grades were themselves significantly correlated with academic ability (finding from Stage I analyses with females but not with males) suggests that females may have stated grade expectations, and teachers assigned grades for females, on a similar basis.

However, the failure to find significant relationships between the behavior of females, on either the achievement task or the non-achievement task, with teacher-assigned grades suggests that achievement-related behavior for females differs from that for males.

If achievement-related activities for females differ from those for males then it would appear that, in addition to problems of assessment of the Motive for Success in females (suggested above in Stage I Discussion) there may also be a problem of identifying the activities or dimensions of behavior that influence academic achievement for females.

The above discussion implies additional problems in dealing with motivational influences for females. The findings also point to a direction for solving the problem by suggesting that identification of achievement-related behaviors for females could serve as the basis for the development or refinement of motive assessment techniques.

Observation of the behavior of females in the classroom, preceding and following administration of the experimental tasks for this study, indicated that females were often engaged in washing blackboards and assisting the teacher with various tasks. These casual observations suggest that the achievement-related activities of females may have to be considered in the context of the total classroom situation rather than in the performance of specific assignments.

Discussion of Relationships for the Three Behavioral Criteria of Motivation with Indices of Academic Achievement for Subgroups of Males or Females Varying in Objective or Subjective Estimates of the Difficulty of School Success

No support was found, using either Objective (DAT-V scores) or Subjective (Rated Difficulty) estimates of the "perceived" difficulty of school success, for the predicted (Hypotheses 10A, 11A, 12A or 10B, 11B and 12B) stronger relationships of the behavioral criteria of strength of the tendency (motivation) to achieve with indices of academic achievement (also assumed to reflect strength of the tendency to achieve) among males or females assumed to be performing tasks of an "Intermediate" level of difficulty than for students performing easier or more difficult tasks.

A discussion of the possible reasons for the failure to find differentially stronger relations as predicted by theory was presented above (Stage I Discussion of Results).

Significant relationships between the behavioral criteria of motivation and level of academic achievement were located within some of the subgroups of students varying in either Objective or Subjective estimates of school success.

Only among males objectively (DAT-V scores) most likely to obtain success in school (High Ability subgroup) were significant relationships found for time spent in

performance of the achievement task (Sustaining activity) with level of academic achievement (Semester English Grade).

On the other hand, only among males subjectively (Rated Difficulty) least likely to obtain success in school (High Difficulty subgroup) was a significant relationship (negative) found for time spent on the non-achievement task with level of academic achievement (Semester English Grade).

Combining the above two findings suggests that academic achievement may have different behavioral correlates, or may be more clearly expressed, for males most and least likely to obtain success in school.

That is, males most likely to obtain success display differences in the time they spend performing an achievement task, a difference which may influence (positively) their later level of achievement, while males least likely to obtain success display differences in the time they spend performing a non-achievement task, a difference which may influence (negatively) their later level of achievement.

One interpretation of the above findings is that, by analyzing behavior on a non-achievement task separately from behavior on an achievement task, it is possible to see more clearly two characteristics of behavior which are often considered together. Males may spend similar amounts of time between receiving a school assignment and handing it in for grading, however some males may spend increasingly

greater lengths of time in actual performance of the assignment while other males may spend increasingly greater lengths of time in extra-assignment (avoidant) activities, depending upon the likelihood of success for the respective groups.

Providing both achievement and non-achievement tasks for groups of males who differ in the likelihood of school success allows (a) greater clarity in the expression of approach and avoidant tendencies, (b) opportunity to precisely index personality correlates of approach and avoidant tendencies and (c) increased accuracy in evaluating the separate and combined influences of approach and avoidant tendencies on academic achievement.

For subgroups of females, however, relationships were only found for Expected Grades with later academic achievement. These relationships were fairly uniform among all levels of objective and subjective estimates of school success.

Apparently females are fairly uniformly able to estimate their level of future achievement, but neither time spent on achievement nor on non-achievement tasks appears to influence later achievement even when attention is given to variation in the likelihood of school success.

Stage III--Predictive and Nomological Validity

The third main purpose of the study was to evaluate evidence for both the predictive validity and nomological (construct) validity of the Motive for Success as interpreted by scores on the GSCI and as expressed by achievement in the academic situation.

It was possible to investigate both the predictive validity and nomological validity of GSCI scores by assuming that indices of level of academic achievement could be used as one criterion of strength of the tendency (motivation) to achieve in the academic situation.

Theory was used to derive directional hypotheses that, with differences in academic ability (DAT-V scores) controlled, there should be a positive relationship between GSCI scores, as an index of strength of the Motive for Success, and indices of level of academic achievement, as a criterion of strength of the tendency (motivation) to achieve in the academic situation.

Theory was further used to derive differential hypotheses that, with differences in academic ability (DAT-V scores) controlled, there should be a stronger relationship for GSCI scores with academic achievement among subgroups of students performing school tasks of an "Intermediate" level of difficulty, than for students performing easier or more difficult tasks.

Level of academic achievement was, therefore, thought to hold implications both for theory as a criterion of strength of the tendency (motivation) to achieve and for practical usefulness of the GSCI since level of academic achievement constitutes a measure of "worth-while" accomplishment in the academic situation.

Finding significant relationships between GSCI scores and indices of academic achievement could thus confirm theory predictions and indicate the level of usefulness of GSCI scores for predicting worth-while accomplishment. Finding significantly stronger relationships as predicted by theory could further confirm that part of theory and identify subgroups of students for whom GSCI has maximal and minimal predictive validity.

Two distributions of teacher-assigned grades were used to evaluate relationships between GSCI scores and academic achievement.

One index consisted of the grade assigned by each student's teacher for the semester of English (Semester English Grade) during which the achievement task was administered. This index of academic achievement was used, as it was also used in Stage II analyses, because it was thought to provide a reasonably stable estimate of achievement in academic activities related to the experimental task (Theme Writing) and because "difficulty of doing well in this English class" constituted one of the bases for

the formation of subgroups of students thought to differ in the "perceived" difficulty of school success.

The second index of academic achievement (Cumulative GPA) consisted of grades accumulated over two years, for courses requiring homework, divided by the number of such courses for each student. The Cumulative GPA index of academic achievement was thought to be less relevant for the nomological validity of the Motive for Success because of the variability of situational factors involved which theory demands be controlled, but was considered to represent a more reliable estimate of academic achievement.

Discussion of Relationships for GSCI
Scores for Males, and GSCI Scores
for Females, with Indices of
Academic Achievement

For males, support for the nomological validity of the Motive for Success and evidence for the predictive validity of GSCI scores for males was obtained in the correlations (DAT-V scores held constant by partial correlation) of GSCI scores with "Semester English Grade," partial $r = .299$ ($p < .01$), and with "Cumulative GPA," partial $r = .302$ ($p < .01$), indices of academic achievement (assumed to reflect strength of the tendency to achieve in the academic situation).

For females, support was found for the nomological validity of the Motive for Success and evidence for the predictive validity of GSCI scores for Females in the

correlations (DAT-V scores held constant by partial correlation) of GSCI scores with "Semester English Grade," partial $r = .285$ ($p < .01$), and with "Cumulative GPA," partial $r = .289$ ($p < .01$), indices of academic achievement (assumed to reflect strength of the tendency to achieve in the academic situation).

Relationships of measures of academic ability (DAT-V scores) with indices of academic achievement were of approximately the same magnitude, $r = .357$ ($p < .01$) and $r = .340$ ($p < .01$) for males and for females, $r = .424$ ($p < .01$) and $r = .453$ ($p < .01$), and were of approximately the same magnitude as those reported above for GSCI scores with indices of academic achievement.

While the coefficients of correlation for both GSCI scores and DAT-V scores with the indices of academic achievement were low, the interpretation of the effects of partialing DAT-V scores out of the relationship between GSCI scores and academic achievement as that of correlating GSCI scores with the discrepancy between predicted and obtained levels of achievement,¹⁸ at least suggests the possibility that the predictive efficiency estimates for the two tests may be accumulative. That is, a more accurate estimate of academic achievement may be obtained from a combination of GSCI scores and DAT-V scores than either alone.

¹⁸Robert L. Thorndike, The Concepts of Over- and Underachievement (New York: Teachers College, Columbia University, Bureau of Publications, 1963).

While multiple correlation techniques necessary to test the above hypothesis were not applied to the present data, Farquhar¹⁹ has reported finding significant increases in predictive efficiency by adding GSCI scores for either males or females to DAT-V score predictions of grade averages.

Discussion of Relationships for GSCI
Scores with Indices of Academic
Achievement for Subgroups of
Males Varying in Objective
or Subjective Estimates of
the Difficulty of School
Success

Support for the nomological validity of the GSCI as an interpretation of strength of the Motive for Success for males was found through confirmation of the predicted stronger relationship (with DAT-V scores controlled) of GSCI scores with one index of academic achievement (Semester English Grade) using subjective estimates (Rated Difficulty of success in English class) to locate males thought to be performing tasks of an "Intermediate" level of difficulty, than for males performing easier or more difficult tasks.

Support was not found for the differentially stronger relationships (with DAT-V scores controlled) between GSCI scores and academic achievement using objective estimates (DAT-V scores) to locate males thought to be performing

¹⁹William W. Farquhar, Motivation Factors Related to Academic Achievement, Cooperative Research Project 846, (East Lansing, Michigan: Michigan State University, Office of Research and Publication, 1963).

tasks of an "Intermediate" level of difficulty, than for males performing easier or more difficult tasks.

While the above confirmation of the predicted differentially stronger influence of the Motive for Success on strength of the tendency to achieve (level of academic achievement) represents the only instance of confirmation of the differential predictions in this study, it appears that confirmation occurred in the one most easily rationalized location. That is, using GSCI scores as a reliable estimate of strength of the Motive for Success and "Semester English Grade" as a more stable estimate of strength of the tendency to achieve than either the behavioral criteria (though these may be more valid) or the "Theme Grade" but less influenced by variability in situational influences than "Cumulative GPA," contributes to the ability to confirm the differential predictions.

The use of subjective (Rated Difficulty of success in the present English class) estimates of task difficulty corresponds closely with Atkinson's statements that it is "perceived" difficulty of the task that is expected to influence the expression of motive strength in behavior (motivation). Because difficulty was rated specifically in regard to achievement in the current English class it appears the "Semester English Grade" would represent the most relevant criterion for strength of the tendency to achieve in that class.

The failure to confirm the differential predictions using academic ability (DAT-V scores) to form subgroups thought to vary in the "perceived" difficulty of school success represents a failure to confirm the findings of Goodstein and Heilbrun.²⁰ However, Goodstein and Heilbrun used EPPS n-achievement scores and noted only whether the relationship with semester grade averages was significant or not within subgroups of male college students varying in scores on a brief measure of verbal ability.

The more rigorous test, that relationships be significant and significantly greater than relationships within other subgroups, used in the present study, was chosen in light of Hakel's²¹ recent failure to confirm Goodstein and Heilbrun's findings even though the same instruments, procedures and samples were used in both studies.

The impetus for attempts to use academic ability test scores as indices of the "perceived" difficulty of school success has been the obvious efficiency that would accrue through the use of scores readily available in most academic situations to both confirm theory implications and locate subgroups of students for whom personality tests hold maximal or minimal levels of predictive accuracy.

²⁰Goodstein and Heilbrun, op. cit.

²¹Milton D. Hakel, "Prediction of College Achievement from the Edwards Personal Preference Schedule Using Intellectual Ability as a Moderator," Journal of Applied Psychology, 50 (1966), 336-340.

While confirmation of differentially stronger relationships between the Motive for Success and indices of strength of the tendency (motivation) to achieve was obtained with only one index of academic achievement and only using subjective estimates of the "perceived" difficulty of success in English class, significant relationships between GSCI score and academic achievement indices were located within some subgroups of males, formed on the basis of objective or subjective estimates, and not within other subgroups.

Within subgroups of males varying in level of academic ability (DAT-V scores), significant relationships (with DAT-V scores held constant within subgroups) were obtained for GSCI scores with both indices of academic achievement only within the extreme subgroups (High Ability and Low Ability subgroups) but not within the moderate (Middle Ability subgroup) ability subgroup.

On the other hand, within subgroups of males varying in level of "perceived" (Rated) difficulty of school success, significant relationships (with DAT-V scores held constant within subgroups) for GSCI scores with both indices of academic achievement were obtained only within the moderate (Intermediate Difficulty) difficulty subgroup but not within the extreme subgroups (Low Difficulty or High Difficulty subgroups).

The above findings suggest that GSCI scores can be effectively used (although the effectiveness is extremely low in all cases) for the prediction of academic achievement with some groups of males and not with others. Furthermore, it appears that relationships for groups formed on the basis of subjective estimates of difficulty correspond with predictions from theory and assuming that the subgroups of students represent students faced with tasks of differing levels of "perceived" difficulty. However, when subgroups of males were formed on the basis of varying levels of objective (academic ability) estimates of success in school, it is only those males most and least likely to obtain success for whom GSCI scores significantly correlate with level of academic achievement.

The above findings for subgroups of males formed on the basis of academic ability might be explained on the basis of previous research findings concerning the influence of success and failure on level of aspiration. Atkinson²² states that one effect of success is to raise the level of expected future achievement while failure tends to lower the level of expected future achievement.

If students of "High Ability" can be assumed to have been most likely to experience success in the past while students of "Low Ability" can be assumed to have been most

²²John W. Atkinson, An Introduction to Motivation (D. Van Nostrand and Co., Inc., 1964).

likely to experience failure in the past, then it is reasonable that the "perceived" level of difficulty may have been shifted for these respective groups such that each group may contain students who "perceive" success within an "Intermediate" level of difficulty. However, an alternative explanation for significant relationships between GSCI scores and teacher-assigned grades within the "High Ability" and "Low Ability" subgroups, but not within the "Middle Ability" subgroup, could lie outside theory and rest on the fact that development of the GSCI was based on the responses of "over-achievers" and "under-achievers" and to some extent on the basis of responses of "high-achievers" and "low-achievers."²³

Discussion of Relationships for GSCI
Scores with Indices of Academic
Achievement for Subgroups of
Females Varying in Objective
or Subjective Estimates of
the Difficulty of School
Success

Support was not found for the nomological validity of the GSCI as an interpretation of strength of the Motive for Success for females, through failure to confirm the predicted stronger relationship (with DAT-V scores controlled) for GSCI scores with indices of academic achievement, using either objective (DAT-V scores) or subjective (Rated Difficulty)

²³Farquhar, op. cit.

indices of success to locate females thought to be performing tasks of an "Intermediate" level of difficulty, than for females performing easier or more difficult tasks.

Failure to confirm the differentially stronger relationships, predicted by theory, with females was attributed to the problems of assessment of the Motive for Success for females (discussed in Stage I above) and the problem of locating achievement-related behaviors for females (discussed in Stage II above).

However, GSCI scores were found to correlate significantly with indices of academic achievement for females within some subgroups, formed on the basis of objective or subjective estimates of school success, and not within other subgroups.

Significant relationships between GSCI scores and indices of academic achievement (with DAT-V scores controlled within subgroups) were found within those subgroups of females objectively most likely to obtain success (High and Middle Ability subgroups) but not within the subgroup of females objectively least likely to obtain success (Low Ability subgroup).

Apparently, whatever is reflected by GSCI scores for females, requires that females possess at least a certain minimum level of academic ability before it contributes to prediction of academic achievement.

On the other hand, significant relationships between GSCI scores and indices of academic achievement (with DAT-V scores controlled within subgroups) were found within the extreme subgroups of females (High Difficulty and Low Difficulty subgroups) formed on the basis of subjective estimates of the difficulty of success in school, but not within the subgroup of females assumed to be faced with moderate level of difficulty (Intermediate Difficulty subgroup).

The above findings based on subgroups of females differing in level of the Rated Difficulty of school success might be explained as the result of the biasing effects of past success and failure on future expectations such that the extreme subgroups of females may have each contained females for whom the "perceived" difficulty of success was within an "Intermediate" range of difficulty. However, the preceding explanation was previously used to explain significant relationships between GSCI scores and academic achievement among the extreme subgroups of males varying in objective estimates (academic ability) of school success. For females, recourse was taken in this explanation for significant relationships among extreme subgroups differing in subjective estimates of school success.

It would appear that objective and subjective estimates of the difficulty of school success differently affect

relationships between GSCI scores and indices of academic achievement for and among males and females.

The failure to find female GSCI scores to predict as an index of strength of the Motive for Success or achievement-related behavior to influence level of academic achievement for females as expected of an index of strength of the tendency to achieve, offers little support for attempts to interpret relationships between GSCI scores and academic achievement on the basis of theory.

For females, the failure to find relationships as predicted may be attributable to, (a) problems of the assessment of strength of the Motive for Success, (b) problems of the selection and assessment of criteria of strength of the tendency (motivation) to achieve, (c) problems with indices of "perceived" difficulty of school success or, (d) homogeneity in the responses of females with respect to the above three variables.

CHAPTER VI

SUMMARY, CONCLUSIONS AND IMPLICATIONS

In this chapter, the problem, theory and instrumentation, sample and procedure, design and analysis, and findings for males and females are summarized. The conclusions of the study are presented. Finally, implications for future research are offered.

Summary

The summary is presented in six sections: the problem, the theory and instrumentation, the sample and procedure, the design and analysis, the findings for males and the findings for females.

The Problem

The problem of this study was to seek evidence concerning the construct (nomological) validity of the Motive for Success, (a) represented within Atkinson's theory of achievement motivation, (b) as interpreted by scores on the Generalized Situational Choice Inventory (GSCI), (c) as expressed in theory-selected behavioral criteria of motivation within the classroom and, (d) as differentially influenced (moderated) by the "apparent difficulty" of success in school.

Theory and Instrumentation

Atkinson's theory of achievement motivation conceives of behavior in competitive situations as the resultant interaction of personality characteristics (motives) and characteristics of the situation (expectancy and incentive values). A multiplicative relationship is postulated among the terms of theory (Motive x Expectancy x Incentive) such that the greater the strength of a personality disposition to achieve (Motive for Success) the stronger the influence on certain behavior in competitive situations. However, the situational characteristics (expectancy and Incentive values) are further thought to influence the "perceived" difficulty of a task such that differences in strength of the Motive for Success have a stronger influence in behavior on tasks of "Intermediate" difficulty than on easier or more difficult tasks.

Atkinson's statements concerning the influence of the Motive for Success on strength of the tendency (motivation) to achieve and Farquhar's definition of the role of motivation within the academic situation were considered sufficiently explicit to allow selection of three criteria of motivated behavior in the classroom--the initiating, directing and sustaining of achievement-related activities.

Relationships between strength of the Motive for Success, interpreted as scores on the Generalized Situational Choice Inventory (GSCI), and the three theory-selected

behavioral criteria of strength of the tendency (motivation) to achieve in the classroom, were hypothesized to be negative in the case of time spent on a non-achievement task (initiating) and positive in the case of both expected level of achievement (directing) and time spent on an achievement task (sustaining).

Hypotheses further specified stronger relationships between GSCI scores and each of the three theory-selected behavioral criteria of motivation for students assumed, on the basis of academic ability (DAT-V scores) or stated difficulty (Rated Difficulty), to be performing school tasks of an "Intermediate" level of difficulty, than for students assumed to be performing easier or more difficult tasks.

Sample and Procedure

The classroom situation was entered and a total of 511 students in 28 ninth grade English classes within 3 schools were presented with both a non-achievement task (Joke Rating) and an achievement task (Theme Writing). Instructions emphasized the importance of the theme (grade would count toward final course grade) and the "spare-time" value of rating the jokes.

A time limit of 20 minutes was set. All students were required to read and rate "some" of the jokes before starting to write and, if they chose, to re-write (revise)

a theme concerning "the importance of doing well in English class." The final copy of the theme was limited to a length of 7 lines.

The three theory-selected behavioral criteria of strength of the tendency (motivation) to achieve in the classroom consisted of: time spent on the non-achievement task (Joke Rating) before starting the achievement task (Theme Writing)-- Initiating activity, expected level of achievement on the achievement task--Directing activity and, time spent on the achievement task (Theme Writing) before returning to the non-achievement task (Joke Rating)-- Sustaining activity.

Design and Analysis

The design of this study was that of a correlational approach to construct validity through an investigation of relationships between GSCI scores and the three theory-selected criteria of motivation in the classroom. However, a quasi-experimental approach was also incorporated through the assumption that students varying in objective (DAT-V scores) or subjective (Rated Difficulty) estimates of school success perform school tasks of varying difficulty.

The correlational approach and the quasi-experimental approach were also used to investigate the validity of the three theory-selected behavioral criteria of motivation, as reflecting strength of the tendency to achieve, with indices

of academic achievement which were also assumed to reflect strength of the tendency to achieve.

Both the correlational approach and the quasi-experimental approach were further used to investigate the relative predictive validity and nomological (construct) validity of the GSCI with indices of academic achievement which were assumed to reflect strength of the tendency to achieve.

Hypotheses were evaluated, level of rejection (α) of the null hypotheses was set at the .05 level of confidence, within each of three Stages of analysis: Stage I--Nomological Validity, Stage II--Criterion Validity, and Stage III--Predictive and Nomological Validity.

Within all three stages of analysis, directional hypotheses were evaluated by the F-statistic ($F = t^2$) for coefficients of partial correlation (DAT-V scores held constant). Differential hypotheses were evaluated by coefficients of partial correlation (DAT-V scores held constant), converted by Fisher's r to z transformation, and the standard error of the difference between two "z" scores referred to a table of normal probability.

Findings for Males

1. The relationships between GSCI scores and the initiating criterion of strength of the tendency (motivation) to achieve in the classroom situation were not significant either with or without academic ability (DAT-V scores) controlled by partial correlation technique.
2. A significant (negative) coefficient of simple correlation was obtained for academic ability (DAT-V scores) with the initiating criterion, $r = -.194$ ($p < .01$), of strength of the tendency (motivation) to achieve in the classroom.
3. Significant coefficients of partial correlation (DAT-V scores controlled) were found for GSCI scores with the directing criterion, $r = .214$ ($p < .01$), and sustaining criterion, $r = .170$ ($p < .05$), of strength of the tendency (motivation) to achieve in the classroom.
4. Relationships between academic ability (DAT-V scores) and the directing and sustaining criteria of strength of the tendency (motivation) to achieve in the classroom were not significant.
5. A significant coefficient of simple correlation was obtained for the initiating criteria of strength of the tendency (motivation) to achieve in the classroom with one index of level of

academic achievement, $r = -.171$ ($p < .01$), but this relationship was not significant with the influence of academic ability (DAT-V scores) controlled by partial correlation technique.

6. Significant coefficients of partial correlation (DAT-V scores controlled) were obtained for the directing criterion of strength of the tendency (motivation) to achieve in the classroom with two indices of academic achievement, $r = .271$ ($p < .01$) and $r = .301$ ($p < .01$).
7. A significant coefficient of partial correlation (DAT-V scores controlled) was obtained for the sustaining criterion of strength of the tendency (motivation) to achieve in the classroom with one index of level of academic achievement, $r = .161$ ($p < .05$).
8. Significant coefficients of partial correlation (DAT-V scores controlled) were obtained for GSCI scores with two indices of academic achievement, $r = .299$ ($p < .01$) and $r = .302$ ($p < .01$).
9. A significant coefficient of partial correlation (DAT-V scores controlled) was obtained between GSCI scores and one index of academic achievement for males who rate success in school within an "Intermediate" range of difficulty, $r = .417$ ($p < .01$), which was also significantly greater

than coefficients of partial correlation (DAT-V scores controlled) between GSCI scores and one index of academic achievement for males who rate success in school as easier, $r = .100$ ($p > .05$) with $z_1 - z_2 = 2.39$ ($p < .01$), or more difficult, $r = .151$ ($p > .05$) with $z_1 - z_2 = 2.19$ ($p < .05$).

10. Significant coefficients of partial correlation (DAT-V scores controlled) between DAT-V scores and the initiating criterion, among subgroups of males, were obtained only for those males objectively or subjectively least likely to obtain success, Middle Ability subgroup $r = -.282$ ($p < .01$), Low Ability subgroup, $r = -.280$ ($p < .01$), and High Difficulty subgroups, $r = -.309$ ($p < .01$).
11. Significant coefficients of partial correlation (DAT-V scores controlled) for GSCI scores with the directing criterion, among subgroups of males, were found only for those males objectively (DAT-V scores) least likely to obtain success, Middle Ability subgroup, $r = .350$ ($p < .01$) and Low Ability subgroup, $r = .291$ ($p < .01$).
12. Significant coefficients of partial correlation (DAT-V scores controlled) between GSCI scores and the sustaining criterion, among subgroups of males, were obtained only for those males

- objectively or subjectively most likely to obtain success, High Ability subgroup, $r = .309$ ($p < .01$), and Low Rated Difficulty subgroup, $r = .288$ ($p < .01$).
13. A significant coefficient of simple correlation for the initiating criterion with one index of academic achievement, among subgroups of males, was obtained only for those males subjectively least likely to obtain success, High Rated Difficulty subgroup, $r = -.290$ ($p < .01$), but this relationship was not significant with DAT-V scores controlled by partial correlation.
14. Significant coefficients of partial correlation (DAT-V scores controlled) for the directing criterion with at least one of the two indices of academic achievement, were obtained among all subgroups of males varying in objective or subjective estimates of school success; High Ability, $r = .298$ ($p < .01$), Middle Ability, $r = .283$ ($p < .01$), Low Ability, $r = .299$ ($p < .01$), and Low Rated Difficulty, $r = .344$ ($p < .01$), Intermediate Rated Difficulty, $r = .235$ ($p < .05$), High Rated Difficulty, $r = .231$ ($p < .05$).

15. A significant coefficient of partial correlation (DAT-V scores controlled) for the sustaining criterion with one index of academic achievement, among subgroups of males, was obtained only for those males objectively most likely to obtain success, High Ability subgroup, $r = .263$ ($p < .05$).
16. Significant coefficients of partial correlation (DAT-V scores controlled) for GSCI scores with both indices of academic achievement, among subgroups of males varying in objective estimates (DAT-V scores) of school success, were obtained only within the extreme subgroups, High Ability subgroup, $r = .426$ ($p < .01$) and $r = .437$ ($p < .01$), and Low Ability subgroup, $r = .249$ ($p < .05$) and $r = .249$ ($p < .05$).
17. Significant coefficients of partial correlation (DAT-V scores controlled) for GSCI scores with both indices of academic achievement, among subgroups of males varying in subjective estimates (Rated Difficulty) of school success, were obtained only within the moderate subgroup, Intermediate Rated Difficulty subgroup, $r = .417$ ($p < .01$) and $r = .362$ ($p < .01$).

Findings for Females

18. The relationships between GSCI scores and the initiating criterion of strength of the tendency (motivation) to achieve within the classroom were not significant either with or without academic ability (DAT-V scores) controlled by partial correlation technique.
19. A significant coefficient of partial correlation (DAT-V scores controlled) was found for GSCI scores with the directing criterion of strength of the tendency (motivation) to achieve within the classroom, $r = .265$ ($p < .01$).
20. The relationships between GSCI scores and the sustaining criterion of strength of the tendency (motivation) to achieve within the classroom were not significant either with or without academic ability (DAT-V scores) controlled by partial correlation technique.
21. Of the three criteria of strength of the tendency (motivation) to achieve in the classroom, significant coefficients of partial correlation (DAT-V scores controlled) were obtained only for the directing criterion with indices of academic achievement, $r = .230$ ($p < .01$) and $r = .354$ ($p < .01$).

22. Significant coefficients of partial correlation (DAT-V scores controlled) were obtained for GSCI scores with indices of academic achievement, $r = .285$ ($p < .01$) and $r = .289$ ($p < .01$).
23. Coefficients of partial correlation (DAT-V scores controlled) that were significant and significantly greater where predicted by theory were not found between any of the variables among subgroups of females varying in objective or subjective estimates of school success.
24. Relationships between GSCI scores and the initiating criterion were not found to be significant within any of the subgroups of females varying in objective or subjective estimates of school success.
25. Significant coefficients of partial correlation (DAT-V scores controlled) for GSCI scores with the directing criterion were found only for females objectively most likely to obtain success, High Ability, $r = .419$ ($p < .01$) and Middle Ability, $r = .263$ ($p < .01$) and for females subjectively most and least likely to obtain success, Low Rated Difficulty, $r = .226$ ($p < .05$), and High Rated Difficulty, $r = .221$ ($p < .05$).

26. A significant coefficient of partial correlation (DAT-V scores controlled) for GSCI scores with the sustaining criterion, among subgroups of females varying in objective or subjective estimates of school success, was obtained only for those females subjectively least likely to obtain success, High Rated Difficulty, $r = .266$ ($p < .05$).
27. Significant coefficients of partial correlation (DAT-V scores controlled) for the three criteria of strength of the tendency (motivation) to achieve in the classroom with indices of level of academic achievement, among subgroups of females varying in objective or subjective estimates of school success, were found only with the directing criterion and these relationships were significant within all subgroups except for those females who subjectively rate success as least difficult.
28. Significant coefficients of partial correlation (DAT-V scores controlled) for GSCI scores with either index of academic achievement, among subgroups of females varying in level of objective estimates of school success, were found only for those females objectively most likely to obtain success, High Ability, $r = .277$ ($p < .01$) and Middle Ability, $r = .445$ ($p < .01$).

29. Significant coefficients of partial correlation (DAT-V scores controlled) for GSCI scores with either index of academic achievement, among subgroups of females varying in level of subjective estimates of school success, were found only for those females subjectively most and least likely to obtain success, Low Rated Difficulty, $r = .274$ ($p < .01$) and High Rated Difficulty, $r = .368$ ($p < .01$).

Conclusions

The following conclusions are based on the findings of the study.

1. Nomological validity was demonstrated for the GSCI as an interpretation of strength of the Motive for Success for males through relationships with the directing and sustaining criteria of strength of the tendency (motivation) to achieve within the classroom.
2. Clarity for the nomological validity interpretation of relationships between GSCI test scores and the directing and sustaining criteria was provided by the failure of academic ability to influence either of these criteria.
3. Nomological validity was demonstrated for the GSCI as an interpretation of strength of the Motive for Success for males through relationships with

indices of academic achievement as one criterion for strength of the tendency (motivation) to achieve in the classroom.

4. Nomological validity was demonstrated for the GSCI as an interpretation of strength of the Motive for Success for males, using subjective estimates of "perceived" difficulty of school success to differentially influence (moderate) relationships between GSCI test scores and indices of academic achievement as predicted by theory.
5. Nomological validity was weakly demonstrated for the GSCI as an interpretation of strength of the Motive for Success for females through relationships with only the directing criteria of strength of the tendency (motivation) to achieve in the classroom.
6. The behavior of males during performance of a non-achievement task (initiating activity) offered support for the operation of an "Inertial Tendency" which was aroused by expectations of failure on the achievement task and indexed (negatively) by academic ability test scores.
7. With both an achievement task and a non-achievement task available within the classroom, males tend to express differences in the strength of a tendency to achieve success during performance of an

achievement task and express differences in the strength of a tendency to avoid failure during performance of a non-achievement task.

8. For males differing in the level of objective or subjective estimates of success in school, differences in strength of the Motive for Success influence behavior (sustaining activity) on an achievement task only for those males most likely to obtain success in school.
9. For males differing in the level of objective or subjective estimates of success in school, differences in expectations of failure influence behavior (initiating activity) on a non-achievement task only for those males least likely to obtain success in school.
10. For males differing in the level of objective estimates of success in school, differences in strength of a tendency to achieve success, expressed in behavior (sustaining activity) on an achievement task, influence the academic achievement on only those males most likely to obtain success.
11. For males differing in the level of subjective estimates of success in school, differences in strength of a tendency to avoid failure, expressed in behavior (initiating activity) on a non-achievement task, influence (negatively) the

academic achievement of only those males least likely to obtain success.

12. Expectations concerned with the level of future achievement in school (directing activity) are a fairly uniform and consistent correlate of later academic achievement within nearly all levels of objective and subjective estimates of school success for both males and females.
13. For males differing in the level of objective estimates of school success, differences in strength of the Motive for Success influence the academic achievement of those males most and least likely to obtain success.
14. For males differing in the level of subjective estimates of school success, differences in strength of the Motive for Success influence the academic achievement of only those males moderately likely to obtain success.
15. For females differing in the level of objective estimates of school success, differences in strength of the Motive for Success influence the academic achievement of those females most and moderately likely to obtain success.

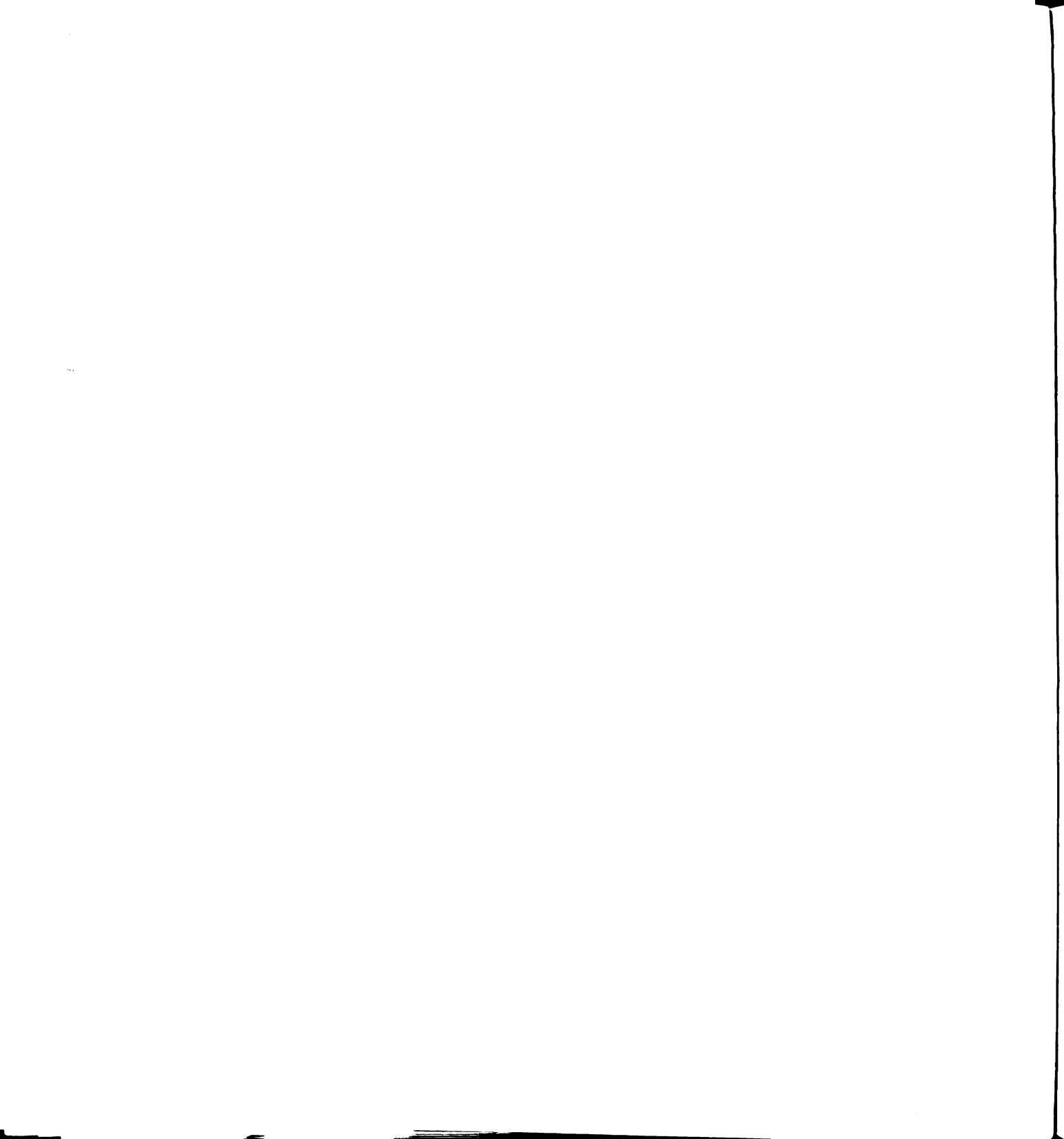
16. For females differing in the level of subjective estimates of school success, differences in strength of the Motive for Success influence the academic achievement of those females most and least likely to obtain success.
17. Differences in strength of the Motive for Success may influence different behaviors in the classroom for females than the initiating and sustaining of task behaviors found to be influenced by the Motive for Success for males.
18. There may be a basic difference in the way males and females respond to a task perceived to be "difficult," such that males spend increasing amounts of time on non-achievement activities possibly in an attempt to avoid failure, while females devote increasing amounts of time to performance of a "difficult" task possibly in an attempt to satisfy needs to achieve.
19. GSCI test scores appear to predict academic achievement equally well for males and females. Similarly the GSCI test scores are about as efficient as academic ability (DAT-V) test scores for both males and females in predicting academic achievement.

20. Significant relationships between GSCI scores and indices of academic achievement, with academic ability controlled by partial correlation technique, for both males and females, tends to support the findings of previous research that predictions based on both measures may provide greater accuracy than predictions based on either measure alone.

Implications

The following implications are based on the conclusions of the study.

1. Future research should be directed toward refinement of the techniques for quantifying initiating and sustaining dimensions of the behavior of males in the classroom.
2. Researchers, concerned with the construction or refinement of techniques for assessment of strength of the Motive for Success among males, may obtain increased clarity for the constructs indexed by their instruments through investigation of relationships with initiating and sustaining criteria of motivation.
3. Researchers, concerned with manipulating situational variables thought to hold motivational implications for males in the classroom, may be able to observe



the effects of these variables in initiating and sustaining achievement-related behavior.

4. The use of indices of one situational variable, i.e. of the "perceived" difficulty of school success, to influence relationships between personality and achievement in school, may allow increased efficiency in predicting academic achievement for some groups of males, decreased efficiency in predicting achievement for other groups, and provide a basis in theory to forecast the membership of each group.
5. Further attention should be given to the use of measures of academic ability, to moderate relationships between personality test scores and indices of academic ability, in an attempt to empirically select groups of males and females for whom personality test scores hold varying levels of predictive efficiency.
6. It may be necessary for future research, which attempts to evaluate the influence of achievement-related motives on behavior in the classroom, to specify or control alternative activities available to males.
7. Future research, which is based on a theory of achievement motivation that posits both approach and avoidant motives (personality characteristics)

and approach and avoidant tendencies (behavioral characteristics), may need to give attention to both the separate assessment of personality characteristics and the analysis of behavior on separate tasks.

8. Because there may be special problems in assessing strength of the Motive for Success among females and in observing the effects of that motive in the behavior of females, research concerned with the competitive behavior of students in the classroom should analyze results separately for males and females.
9. A crucial problem for investigations concerned with the motivation of females in the classroom is that of identifying achievement-related behaviors for females. Achievement-related behaviors for females may differ from those for males and may need to be considered within the total context of the classroom rather than be confined to performance measures on isolated tasks.

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APPENDICES

APPENDIX A

JOKES (SAMPLE)

TEACHER: "Arthur, why does a moth eat holes in rugs?"

ARTHUR: "Maybe it wants to see the floor show."

LIKE _____ DISLIKE _____

TEACHER: "If you had ten potatoes and had to divide them
equally among twelve people, how would you do it?"

MARGIE: "I'd mash them."

LIKE _____ DISLIKE _____

GYM TEACHER: "You, there, mark time."

HOMER: "With my feet, sir?"

GYM TEACHER: "Have you ever known anything to mark time
with its hands?"

HOMER: "Yes, sir, a clock."

LIKE _____ DISLIKE _____

SWIMMING INSTRUCTOR: "And another reason for practicing
your swimming is that swimming is
good for the figure."

VOICE FROM BACK OF

THE ROOM: "Did you ever see a duck?"

LIKE _____ DISLIKE _____

APPENDIX B

PARAGRAPH - ESSAY (Male)

You are to write a paragraph about a "make believe" student named Jim. Maybe he is like someone you know. Jim thinks it is important to try to do his best in English class. You are to describe a believable past, present, and future for Jim by answering the following questions in your paragraph:

1. What could have happened in the past to make Jim think it is important to try to do his best in English class?
2. While Jim is in English class, what does he do?
3. What could happen to Jim in the future because he thinks it is important to try to do his best in English class?

You are to write your paragraph on the 7 lines below. You are to start where it says "Start" and you are to finish anywhere on the seventh line. There are extra pages for your use if you make a mistake or if you want to revise your paragraph. Do all of your work on these pages. You are to answer all three questions in one paragraph of 7 lines.

Your teacher will grade your final paragraph, so use correct grammar, spelling and punctuation. State your ideas clearly. Be sure your paper is neat. Do all your writing in ink. Remember, your paragraph is not to be longer or shorter than 7 lines and you are to answer all three questions in that one paragraph.

When you start on this page, copy the number displayed in the front of the room.

Your Name (Write) _____
Last First

START - NUMBER () _____

_____.STOP - NUMBER ()

When you stop on this page, copy the number displayed in the front of the room.

APPENDIX C

ACHIEVEMENT QUESTIONNAIRE

Name (Print) _____
(Last) (First) (Middle)

Your answers to the following questions will not be seen by your teacher.

1. Circle the grade below which shows the final grade you received for your last semester of English.

A A- B+ B B- C+ C C- D+ D D- E

2. Circle the grade below which shows the final grade you really expect to get for this semester of English.

A A- B+ B B- C+ C C- D+ D D- E

3. Circle a number below to show how difficult it is for you to do well in your present English class.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
|-----|
Very Easy Easy Slightly Easy Slightly Difficult Difficult Very Difficult

4. Circle the grade below which shows the last grade you received for a writing assignment in this English class.

A A- B+ B B- C+ C C- D+ D D- E

5. Circle the grade below which shows the grade you really expect to get on today's paragraph.

A A- B+ B B- C+ C C- D+ D D- E

6. Circle the number below which shows how many minutes you expect it will take you to complete today's paragraph.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

APPENDIX D

INSTRUCTIONS

Each of you should have an envelope appropriately marked Male or Female. You are not to open these until I tell you to do so. Inside each envelope are several packets of large mimeographed pages, a small packet labeled Joke Book, and a ball point pen. When I tell you to do so, you are to take out one of the large packets of mimeographed pages, the Joke Book and the ball point pen. Do not look inside the Joke Book until I tell you to do so. Now, you may open the envelope and take out those three things and set the envelope aside. Remember, do not look in the Joke Book until I tell you to do so.

First, look through the large mimeographed packet. It should contain a first page asking for your name at the top. Next there should be 3 pages (all the same) headed Paragraph Essay Male or Female. The fifth sheet should be headed Joke Rating Sheet. Is there anyone who does not have at least these 5 pages? OK, turn back to the first page and I will explain something about what we are going to do today.

Today, you are to write a one paragraph essay for your teacher. Your teacher will grade your paragraph as part of your assignment for this class. I have some jokes for you

to read during your spare time before and after writing your paragraph. You are to indicate whether you like or dislike each joke you read so that I can learn something about your preferences for reading styles (the jokes) and writing styles (your paragraph). I am not interested in your sense of humor but these materials are constructed such that they can serve my purpose and may be enjoyable for you.

First, print your name on the top line of the first page of this large mimeographed packet, last name first.

Your answers to the following questions will not be seen by your teacher. Your paragraph will be cut out of these pages and only the paragraph given to your teacher.

1. Circle the grade below which shows the final grade you received for your last semester of English. (Final card marking 9 B or 8 A English).
2. Circle the grade below which shows the final grade you really expect to get for this semester of English. (Final card marking for this class).
3. Circle a number below to show how difficult it is for you to do well in your present English class.

Now, before we finish the rest of the questions on this page, turn to the second page so that I can explain your writing assignment.

I will read from the boys' form, the girls' form is different only in the use of the name Jane instead of Jim.

Maybe he is like someone you know. Jim thinks it is important to try to do his best in English class. You are to describe a believable past, present and future for Jim by answering the following questions;

1. What could have happened in the past to make Jim think it is important to try to do his best in English class?
2. While Jim is in English class, what does he do?
3. What could happen to Jim in the future because he thinks it is important to try to do his best in English class?

You are to write your paragraph on the 7 lines below. You are to start where it says Start and you are to finish anywhere on the seventh line. There are extra pages for your use if you make a mistake or if you want to revise your paragraph. Do all your work on these pages. You are to answer all three questions in one paragraph of 7 lines.

Your teacher will grade your final paragraph, so use correct grammar, spelling and punctuation. State your ideas clearly. Be sure your paper is neat. Do all your writing in ink. Remember, your paragraph is not to be longer or shorter than 7 lines, and you are to answer all three questions in that one paragraph.

Below these printed instructions is a place for your name and seven lines for your paragraph. At the beginning and end of these 7 lines there are spaces for numbers. Let me explain about these numbers. Throughout the time allowed

for the paragraph writing I will be turning these pages up here with numbers on them. These are code numbers and are not in any order. When you start to write your paragraph, you are to look up here and copy down whatever number I have showing, putting it in the brackets marked Number - Start. Then, again when you finish writing on this page, look up here and copy down the number you see and put that number in the brackets at the end of the seventh line. If you use more than one page (because you made a mistake or because you are trying to improve your paragraph) copy the number I have showing when you start and stop writing on each page. Put a circle around the spaces for these numbers now, to help remind you to look up for the number later. You will not receive credit for this assignment unless these numbers are properly filled in. There will be a full 20 minutes available for writing the paragraph. This will allow you to spend some of that time reading jokes both before and after writing your paragraph. Are there any questions about the writing assignment or the placing of numbers when you start and stop writing on a page.

Alright, now that you know your writing assignment, turn back to the first page and we will complete the questions there.

4. Circle the grade below which shows the last grade you received for a writing assignment in this English class.
(Your most recent grade for any writing assignment in this class.)

5. Circle the grade below which shows the grade you really expect to get on today's paragraph.
6. Circle the number below which shows how many minutes you expect to get on today's paragraph. (Try to be as accurate as possible.)

Now, turn to the last page of these large sheets, to the one headed Joke Rating Sheet. Do not look inside the Joke Book but copy the number which appears on the front of your Joke Book, on the proper line at the top of the rating sheet. Next, put your name on the Rating Sheet. (Print or write, your choice.)

The jokes I have brought are to be read in your spare time both before and after writing your paragraph. You are to start by reading some of the jokes, how many is up to you. You are to check Like or Dislike on the Rating Sheet for each joke you read. Do not make any marks in the Joke Book. When you decide you must start on your paragraph, draw a line under the last Like or Dislike rating you have checked on your Rating Sheet. (Do it like this.) Then turn your Joke Book over and do not read any more of the jokes until you are completely finished with your paragraph writing assignment. Then you may return to reading and rating the jokes.

You are to start, when I give you the signal, by reading and rating some of the jokes before you write.
Remember to copy down the numbers when you start and stop

writing on each page. Everyone look at the clock - I will collect the jokes and your paragraphs in 20 minutes. OK, start with joke number 1 in your Joke Book and check like or dislike on your rating sheet.

Time is up. Stop whatever you are doing. Check to see that your name is written above your paragraph. If you used more than one paragraph page, place an X above your name to indicate the one I should give to your teacher.

OK, carefully put the Joke Book and the pen back in the envelope. Do not put your large mimeographed packet in the envelope. Pass these mimeographed packets forward.

Thank you for your cooperation.

APPENDIX E

MEANS AND STANDARD DEVIATIONS OF THE VARIABLES FOR 252 JUNIOR HIGH SCHOOL MALES

Subjects	Variables*																	
	1	2	3	4	5	6	7	8	9	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total Males (N = 252)	36.0	7.3	14.8	6.9	8.4	3.2	14.6	7.4	7.7	2.1	18.4	9.3	6.1	3.1	5.2	2.8	5.2	2.2
High Ability (N = 84)	38.1	7.8	22.7	5.5	7.8	2.9	13.1	6.4	7.8	2.2	18.0	9.0	7.3	2.9	6.5	2.8	6.2	2.5
Middle Ability (N = 84)	35.8	6.9	13.3	1.6	8.3	3.6	15.2	7.8	7.4	2.0	19.1	9.6	5.7	3.0	4.6	2.5	4.7	1.8
Low Ability (N = 84)	34.5	6.8	8.4	2.1	9.0	3.0	15.5	7.5	7.7	2.1	18.0	9.3	5.3	2.8	4.3	2.4	4.6	2.0
Low Difficulty (N = 84)	38.5	6.4	15.9	6.5	4.9	1.6	13.7	6.2	8.4	2.0	19.3	10.3	7.2	2.9	6.7	2.6	6.1	2.2
Intermediate Diff. (N = 84)	35.4	7.8	14.6	7.1	8.4	1.0	15.0	7.9	7.7	1.9	17.8	8.7	6.0	3.0	4.9	2.5	4.9	2.1
High Difficulty (N = 84)	34.3	6.7	13.7	6.9	11.8	1.8	15.0	7.6	6.8	2.1	17.9	8.4	5.1	2.8	3.9	2.4	4.5	2.1

- *Variables:
- 1 = GSCI
 - 2 = DAT-V
 - 3 = Rated Difficulty
 - 4 = Joke Rating Time (Initiating)
 - 5 = Expected Grade (Directing)
 - 6 = Theme Writing Time (Sustaining)
 - 7 = Theme Grade
 - 8 = Present Semester English Grade
 - 9 = Cumulative GPA

APPENDIX F

MEANS AND STANDARD DEVIATIONS OF THE VARIABLES FOR 259 JUNIOR HIGH SCHOOL FEMALES

Subjects	Variables*																	
	1	SD	2	SD	3	SD	4	SD	5	SD	6	SD	7	SD	8	SD	9	SD
Total Females (N = 259)	31.5	6.7	15.5	7.6	6.6	3.3	12.4	5.4	8.3	2.1	17.5	9.1	7.7	2.8	7.4	3.0	6.8	2.4
High Ability (N = 87)	32.7	7.4	24.2	6.2	5.6	3.3	12.0	5.9	8.7	2.0	17.5	8.9	9.2	2.5	8.8	2.9	8.2	2.3
Middle Ability (N = 86)	30.7	6.7	13.9	2.0	7.2	3.2	11.7	5.0	8.1	2.0	17.2	9.1	7.1	2.6	6.8	2.9	6.5	2.2
Low Ability (N = 86)	31.0	5.6	8.4	1.9	7.0	3.4	13.4	5.1	8.0	2.2	17.8	9.5	6.8	2.8	6.5	2.8	5.6	2.2
Low Difficulty (N = 87)	33.3	6.2	18.8	9.2	3.2	1.2	12.0	5.7	9.2	1.9	17.0	8.9	9.6	2.3	9.5	2.5	8.1	2.3
Intermediate Diff. (N = 86)	31.3	7.2	14.1	6.7	6.3	1.2	12.1	5.3	8.2	1.8	17.4	9.3	6.9	2.6	6.7	2.5	6.3	2.1
Low Difficulty (N = 86)	29.9	6.2	13.5	5.4	10.5	2.0	13.0	5.0	7.5	2.0	18.1	9.3	6.6	2.5	5.9	2.8	6.0	2.3
*Variables:	1	GSCI	2	DAT-V	3	Rated Difficulty	4	Joke Rating Time (Initiating)	5	Expected Grade (Directing)	6	Theme Writing Time (Sustaining)	7	Theme Grade	8	Present Semester English Grade	9	Cumulative GPA

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