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THE RELATIONSHIPS BETWEEN STUDENT TEACHER EFFECTIVENESS AND STUDENT CHARACTERISTICS: A MODERATOR VARIABLE ANALYSIS

by
Erness Edwyna Bright Brody

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Doctoral Committee:

Professor Stanley E. Dimond, Chairman
Professor Marguerite V. Hood
Associate Professor Malcolm A. Lowther
Associate Professor Findlay C. Penix

ABSTRACT

THE RELATIONSHIPS BETWEEN STUDENT TEACHER EFFECTIVENESS AND STUDENT CHARACTERISTICS: A MODERATOR VARIABLE ANALYSIS

By
Erness Bright Brody

The purpose of this study was to investigate the relationships between characteristics of student teachers and their effectiveness with different kinds of secondary school students. The characteristics of the student teachers investigated were: (1) teacher attitudes, (2) intellectual ability, (3) creativity, (4) need for approval, and (5) test anxiety. The sample of secondary school students was divided on the basis of three characteristics: (1) college-bound or non-college bound, (2) social class and (3) creativity. Measures of student teacher effectiveness were obtained separately from each of the subsets of students. The effect of moderator variables on these relationships was investigated. The term, 'moderator variable,' refers to a variable which significantly affects the magnitude or direction of the relationship between two other variables. Need for approval and test anxiety were used as moderator variables. Thus, the relationships between characteristics of student teachers and ratings of their effectiveness were examined

separately for student teachers who were high or low in need for approval and high or low in test anxiety.

The subjects were forty-five male and female student teachers from New Jersey and 1,863 of their secondary school students.

The principal findings were these:

(1) Student teachers low in intellectual ability and low in need for approval were rated more favorably by non-college-bound students than by college-bound students. Student teachers low in intellectual ability and high in need for approval were rated more favorably by college-bound students than by non-college-bound students. (2) Student teachers high in verbal ability and high in anxiety were rated more favorably, in general, than student teachers low in verbal ability and high in anxiety. (3) Student teachers who were high on the Minnesota Teacher Attitude Inventory (MTAI) were rated more favorably by non-college-bound students than by college-bound students. Student teachers low on the MTAI were rated more favorably by college-bound students than by non-college-bound students. (4) Student teachers high in need for approval were rated more favorably by students high in creativity than by students low in creativity. Student teachers low in need for approval were rated more favorably by students low in creativity than by students high in creativity.

The principal conclusion was that there are predictive relationships relevant to teacher effectiveness that can be discovered by considering the effectiveness of different kinds of teachers with different kinds of students and the effect of moderator variables on these relationships.

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CHAPTER I

INTRODUCTION

The prediction of success in teaching is a problem of both practical and theoretical importance in education today. By and large, attempts to solve this problem have not been completely successful. Getzels and Jackson in concluding a comprehensive review of the literature on a single aspect of teacher effectiveness, the personality of the teacher, state:

> Despite the critical importance of the problem and a half century of prodigous research effort, very little is known for certain about the nature and measurement of teacher personality or about the relation between teacher personality and teacher effectiveness. The regrettable fact is that many of the studies so far have not produced significant results.[1]

This investigation is concerned with predicting teacher effectiveness from a knowledge of characteristics of the teacher. This is a problem of great difficulty since there is no universally accepted definition of teacher effectiveness. Also, it is not clear which of the many characteristics of the teacher are relevant for the prediction of teacher effectiveness. Each of these classes of

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[1] J. W. Getzels and P. W. Jackson, "The Teacher's Personality and Characteristics," in N. L. Gage (ed.), Handbook of Research on Teaching (Chicago: Rand McNally and Co., 1963), p. 574.

variables pose measurement problems in addition to problems of definitions.

Need for the Study

This investigation is concerned with two potential contributions to the prediction of teacher effectiveness. First, it involves adapting an innovation in methodology to the discovery of predictive relationships between characteristics of teachers and their effectiveness. Second, it attempts to discover by the use of this innovative methodology new predictive relationships.

Typical Methodology

While the research on teacher effectiveness has been extensive and methods used have varied greatly, the typical methodology used in studies dealing with the prediction of teacher effectiveness deals with a group of teachers who are given one or more tests purporting to measure aspects of their personality, attitude, behavior, or cognitive ability. Ratings are then obtained which are measures of teaching effectiveness of each of these teachers. In most cases, these are ratings of the teachers by principals, supervisors, or pupils. However, the results of achievement tests administered to students are also used and correlations between these measures are obtained.

Minnesota Teacher Attitude Inventory and Teacher Effectiveness

In order to present examples of this usual

methodology, some of the research using the Minnesota Teacher Attitude Inventory (MTAI) is reviewed here. These studies are relevant to the present investigation for several reasons. These are (a) the MTAI is used in the research to be reported in this study, (b) the MTAI is one of the most widely used measures in the research on prediction of teacher effectiveness, and (c) the research using the MTAI exemplifies the typical methodology as mentioned above.

Leeds[1] in constructing the original version of the MTAI scale began with a pool of 700 items. Items were selected from this pool in terms of their ability to differentiate between groups of teachers in the elementary and secondary schools who were judged by their principals to be superior or inferior in their ability to maintain an effective classroom atmosphere. One hundred sixty-four items were selected as being maximally effective in discriminating between these groups.

Leeds[2] then gave the MTAI to 100 teachers of grades four through six in Ohio and Pennsylvania and obtained correlations between scores on the MTAI and ratings of teacher effectiveness by principals, observers, and pupils. He reports a correlation of .59 between a composite rating

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[1]Carroll H. Leeds, "A Scale for Measuring Teacher-Pupil Attitudes and Teacher-Pupil Rapport," Psychological Monographs (1950), No. 2 (Whole No. 312).

[2]Ibid.

of effectiveness and the MTAI.

In another study Leeds[1] gave the MTAI to 100 teachers of grades four through six in South Carolina. The results were similar. The MTAI correlated .63 with a composite criterion and .31 with pupil ratings of effectiveness. Callis[2] conducted a similar study using a sample of seventy-seven Missouri teachers of grades four to ten. The results again indicated a significant positive correlation between the MTAI and ratings of teacher effectiveness. The MTAI correlated positively (r=.49) with pupil ratings of teacher effectiveness.

In addition to the above studies by individuals intimately involved in the development of the MTAI, there have been reports of significant postive correlations between the MTAI and measures of teacher effectiveness by investigators other than those who constructed the test. For example, Stein and Hardy[3] reported a number of significant correlations between the MTAI and measures of teacher effectiveness for both elementary and secondary school teachers. They reported a correlation of .56 between MTAI

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[1]Carroll H. Leeds, "A Second Validity Study of the Minesota Teacher Attitude Inventory," Elementary School Journal, 52 (1952), 396-405.

[2]Robert Callis, "The Efficiency of the Minnesota Teacher Attitude Inventory for Predicting Interpersonal Relations in the Classroom," Journal of Applied Psychology, 37 (1953), 82-85.

[3]Harry L. Stein and James A. Hardy, "A Validation Study of the MTAI in Manitoba," Journal of Educational Research, 50 (1957), 321-338.

scores and a composite index of teacher effectiveness of secondary school teachers in Manitoba and a corresponding corelation of .39 for elementary school teachers. Munro[1] reported a correlation of .29 between the MTAI and ratings of effectiveness of secondary teachers by their supervisors. These studies provide support for the MTAI as a measure of teacher effectiveness. However, there are a number of studies in which significant results have not been obtained.

Chappell and Callis[2] reported non-significant correlations between scores on the MTAI and ratings of teacher effectiveness for eighty-two instructors at the Naval Air Technical Training Center. Burkard[3] has reported a non-significant correlation between scores on the MTAI and student ratings of teachers in parochial schools. Haberman[4] has reported a non-significant relationship between scores on the MTAI and judgments of teacher effectiveness of teaching interns in an academically disadvantaged school.

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[1]Barry C. Munro, "The Minnesota Teacher Attitude Inventory as a Predictor of Teaching Success," Journal of Educational Research, 58 (1964), 138-139.

[2]T. L. Chappell and Robert Callis, "The Efficiency of the Minnesota Teacher Attitude Inventory for Predicting Interpersonal Relations in a Naval School," (Columbia: University of Missouri, 1954), Rep. No. 5, ONR 649 (00).

[3]Sister M. Innocentia Burkard, "Effectiveness of the Minnesota Teacher Attitude Inventory in a Parochial School Setting," Journal of Experimental Education, 33 (1965), 225-229.

[4]Martin Haberman, "The Teaching Behavior of Successful Interns," Journal of Teacher Education, 16 (1965), 215-220.

Sandgren and Schmidt[1] similarly reported an absence of a significant relationship between scores on the MTAI and ratings of student teachers by a supervising teacher. Oelke[2] also reported a non-significant correlation between scores on the MTAI and ratings of student teachers by their supervisors. Finally, Durflinger[3] has reported non-significant negative correlations between scores on the MTAI and ratings of success in student teaching.

These few studies using the MTAI illustrate the inconsistency of results which is characteristic of much of the literature on prediction of teacher effectiveness employing the methodology of comparing a characteristic or attitude of teachers with some judgments concerning their teaching effectiveness. The studies suggest that scores on the MTAI are not invariably positively related to the ratings of teacher effectiveness. It seems clear that there are other variables which influence the relationship. These studies involving the MTAI exemplify a characteristic of this type of teacher effectiveness study, namely, the inability of different researchers to attain consistently

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[1]D. L. Sandgren and L. G. Schmidt, "Does Practice Teaching Change Attitudes Towards Teaching?," Journal of Educational Research, 49 (1956), 673-680.

[2]Merritt C. Oelke, "A Study of Student Teachers' Attitudes Towards Children," Journal of Educational Psychology, 47 (1956), 193-196.

[3]Glenn W. Durflinger, "Personality Correlates of Success in Student Teaching," Educational and Psychological Measurement, 23 (1963), 383-390.

replicable findings.

Inadequacies of Methodology

The design of these studies involves a simple and direct methodology for the predition of teacher effectiveness viz., a simple one to one relationship. This investigation suggests that there are two respects in which this methodology may not be adequate. First, the methodology is based on an assumption that a teacher can be relatively effective or ineffective with all types of students. The methodology does not deal with the possibility that a particular type of teacher may be effective with one type of student and ineffective with another type of student. It is suggested here that certain types of teachers are more effective with some kinds of students than other kinds. This idea is not a novel one. McKeachie,[1] among others, has asserted this. Such a suggestion requires a different methodology. Instead of measures of effectiveness that represent the average effectiveness of a teacher with all students, it is necessary to obtain two or more measures of effectiveness which represent, respectively, the teacher's effectiveness with different types of students.

There are several studies which do not use the typical methodology described above and indicate the

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[1]W. J. McKeachie, "Motivation, Teaching Methods, and College Learning," in M. R. Jones (ed.), Nebraska Symposium on Motivation (Lincoln: University of Nebraska Press, 1961), pp. 111-146.

validity of the differential effectiveness assumption. For example, Della-Piana and Gage[1] studied the relationship between scores on the MTAI and pupil ratings of teachers. They classified the pupils into two groups: (1) pupils with relative strong cognitive values about teachers and (2) pupils with relatively strong affective values about teachers. They found that scores on the MTAI correlated positively with the ratings of pupils with relatively strong affective values. However, scores on the MTAI did not correlate significantly with the ratings of pupils with relatively strong cognitive values. Thus it appears that teachers who score high on the MTAI will tend to be more effective than teachers who score low on the MTAI only for those pupils who have strong affective values.

McKeachie[2] has investigated the relationship between characteristics of teachers and their differential effects on different types of students. He has reported that students who are high in need for affiliation receive better grades in classes taught by instructors who provide affiliation cues than they do in classes taught by instructors who do not provide affiliation cues. Conversely, students

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[1]G. M. Della Piana and N. L. Gage, "Pupils' Values and Validity of the Minnesota Teacher Attitude Inventory," Journal of Educational Psychology, 46 (1955), 167-178.

[2]See W. J. McKeachie, Yi-Guang Lin, John Milholland, and Robert Isaacson, "Student Affiliation Motives, Teacher Warmth, and Academic Achievement," Journal of Personality and Social Psychology, 4 (1966), 457-461. See also McKeachie, loc. cit.

low in need for affiliation show the reverse pattern of achievement.

Heil and Washburne[1] have reported a number of significant interactions between characteristics of teachers which affect pupil progress. For example, they report that "conforming" children make more progress when their teachers are characterized as "turbulent" (high in acceptance of expression and impulses) than when their teachers are characterized as "fearful" (helpless and dependent). Pupils characterized in other ways had different patterns of progress under different kinds of teachers.

Second, in addition to the variation in students, the methodology of the one-to-one studies of teacher effectiveness assume that a particular characteristic of a teacher will be significant for the purpose of predicting teacher effectiveness in isolation from the consideration of any other characteristic of that teacher. When a correlation is computed between scores representing measures of one characteristic of teachers, and measures of teacher effectiveness, the scores representing a single characteristic of the teachers are used as an adequate index of what is significant about these teachers for the purpose

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[1]Louis M. Heil and Carleton Washburne, "Characteristics of Teachers Related to Children's Progress," Journal of Teacher Education, 12 (1961), 401-406.

of predicting their effectiveness.[1] The impact of the objection being developed here can be illustrated in another context. Consider the task of a physician who is trying to make a diagnosis about a patient's health. The skillful physician will consider the meaning of a particular symptom of the patient in relation to other characteristics of the patient. He does not consider the one symptom in relation only to one characteristic of the patient.

In view of these variations among students and teachers, is there a method for overcoming the use of a single measure as an adequate surrogate for the personality as a whole? One solution is to use what Kogan and Wallach[2] have called moderator variables. The term, 'moderator variable,' is used in this investigation in a manner compatible with that of Kogan and Wallach. The moderator variable is one which significantly affects the magnitude or direction of the relationship between two other variables. This meaning is indicated by Kogan and Wallach in the following quotation:

> An evaluation of whether two variables are related or not for an unselected sample of persons may be too simple an approach. If the sample under study were

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[1]In those cases in which several tests are used, correlations are obtained separately for each test and a measure of teacher effectiveness. Hence, each test is used as a self-sufficient measure of a teacher. Further, any subsequent multivariate treatment of the set of correlations, such as factor analysis, does not overcome the initial isolated treatment of each correlation.

[2]Nathan Kogan and Michael A. Wallach, Risk-Taking (New York: Holt, Rinehart and Winston, 1964).

> divided in terms of some theoretically relevant characteristic, such as degree of emotional disturbance, it could be found that a particular kind of relationship might hold for one of these subsamples but not for the other. Emotional disturbance under such circumstances could be described as a characteristic which "moderated" another relationship--that is, which influenced the form of this other relationship.[1]

A hypothetical example of a moderator variable relevant to teacher effectiveness would be the following:

> Consider the possibility of teachers who are low in maladjustment. Conceivably, if these teachers are high in intelligence, they may be more effective in their teaching than those teachers who are low in intelligence. Again, consider the possibility of teachers who are high in maladjustment. Conceivably, of these teachers, those who are high in intelligence are less effective in teaching than the teachers who are low in intelligence. In such a case, malajustment would be a moderator variable for the relationship between intelligence and teaching effectiveness.[2]

No studies on teacher effectiveness have been located which use a moderator variable analysis. Few studies involving the assessment of personality use moderator variable analyses. A conspicious exception can be found in the work of Kogan and Wallach.[3] Table 1, which is an adaptation of one of the tables in Kogan and Wallach's book, Risk-Taking, is presented to show the impact and style of their research.

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[1]Kogan and Wallach, ibid., Preface, vii.

[2]The writer's hypothetical example.

[3]Kogan and Wallach, op. cit.

TABLE 1[1]

CORRELATIONS FOR MALES BETWEEN PREFERENCE FOR CHANCE STRATEGIES AND VERBAL ABILITY

		Marlowe-Crowne Scale (Need for Approval)	
		High	Low
Alpert-Haber Scale (Test Anxiety)	High	.33	-.39
	Low	.28	.45

Thus, in the upper left quadrant are those subjects (Ss) who are high on both measures, while in the lower right quadrant are those who are low in both measures. The correlations reported are between tendencies to adopt risky strategies in a betting game and scores on the Scholastic Aptitude Test of Verbal Ability. The table shows that for three of the four types of Ss, the adoption of risky strategies positively correlated with verbal ability. (Those who score high on both measures, .33; those who score low on both measures, .45; and those who score low in test anxiety and high in need for approval, .28). On the other hand, for the fourth type of Ss (those high in test anxiety and low in need for approval) the adoption of risky strategies is negatively correlated (-.39) with verbal ability. In this case we may say that scores on the Marlowe-Crowne scale and scores on the

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[1]Kogan and Wallach, loc. cit., p. 95.

Alpert-Haber scale together moderate the relationship between the adoption of risky strategies and verbal ability.

In order to take account of the possibility of moderator variables in the study of teacher effectiveness, it is necessary to (a) have two or more measures of characteristics of teachers and (b) to obtain separate measures of the relationship between some characteristic of a teacher and a measure of teacher effectiveness for teachers whose position with respect to some other variable (the potential moderator) is different.

In summary, the typical study relating teacher effectiveness and the characteristics of the teacher has employed a simple methodology. This methodology precludes the possibility of studying the differential effectiveness of teachers with different types of students, and it precludes the study of variables that act as moderators of relationships between teacher characteristics and teacher effectiveness.

Design of the Study

This investigation was designed to study the relationship between characteristics of student teachers and their effectiveness with different kinds of secondary school students. The characteristics of the student teachers investigated were: (1) teacher attitudes, (2) intellectual ability, (3) creativity, (4) need for approval, and (5) test anxiety. The sample of secondary school students was

divided on the basis of three characteristics: (1) college-bound or non-college-bound, (2) social class, and (3) creativity. Then measures of student teacher effectiveness were obtained separately from each of the subsets of students. In addition, the effect of possible moderator variables on these relationships was investigated.

Specifically, the questions to be investigated are these:

1. Are the relationships between characteristics of student teachers and characteristics of students subject to moderator variable effects?

2. What is the relationship between the intellectual ability of student teachers and ratings of those teachers by students who differ with respect to whether or not they plan to go to college? In particular, is it the case that student teachers who are high in intellectual ability are more effective with college-bound than with non-college-bound students?

3. What is the relationship between scores on the MTAI and student teacher effectiveness for students who differ with respect to social class and whether or not they plan to go to college?

4. What is the relationship between the creativity of student teachers and ratings of these teachers by students who differ in creativity? In particular, are creative student teachers more effective with creative

students than with non-creative students?

Measures to be used in this Investigation

Although this study is partially motivated by methodological concerns, an attempt was made to include variables that are of potential theoretical and/or empirical significance. The measures of characteristics of student teachers used in the present study were as follows:

1. Minnesota Teacher Attitude Inventory (MTAI).--The MTAI is a Likert-type scale designed to measure attitudes of a teacher which will predict how well he will get along with pupils in interpersonal relationships.

2. Intellectual Ability.--Two measures of intellectual ability were used. These were grade point averages (GPA) at the end of the Junior year in college and scores on the College Entrance Examination Board-Verbal Abilities Test CEEB-V).

3. Creativity.--Creativity was measured by Mednick's Remote Associates Test (RAT).[1] The RAT is a theoretically derived measure of creativity. It is based on an associative theory of the creative process which assumes that creativity involves the ability to arrive at a novel solution to a problem which meets specified criteria. The

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[1]See Sarnoff A. Mednick, "The Associative Basis of the Creative Process," Psychological Review, 69 (1962), 220-232. See also S. A. Mednick and Martha T. Mednick, "The Associative Basis of the Creative Process," (Ann Arbor: The University of Michigan, 1965), Research Report of Cooperative Research Project No. 1073, U. S. Office of Education.

test consists of a series of items each containing three stimulus words. The subject must supply a response which is an appropriate associate for each of the stimulus words. Thus, if the stimulus words are--rat, blue and cottage--a correct response would be CHEESE. Mednick and Mednick[1] reported a number of findings which indicate that there is a significant correlation between scores on the RAT and various measures of creativity.

Mednick[2] has reported a correlation of .70 between scores on the RAT and ratings of creativity of students in a School of Architecture by their instructor. Mednick and Mednick[3] report a correlation of .55 between scores on the RAT and ratings of creativity of psychology graduate students by their advisors. Finally, Mosteller[4] has reported a number of significant correlations between scores on the RAT and judgments of aesthetic qualities of childrens' paintings.

4. Marlowe-Crowne Measure of Social Desirability[5].--

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[1] Ibid.

[2] Mednick, loc. cit.

[3] Mednick and Mednick, loc. cit.

[4] P. Mosteller, "Qualities of Art Expressed in Children's Art," unpublished Doctoral dissertation, Wayne State University, 1962.

[5] For a presentation of studies involving this test and the theoretical background of the test see Douglas P. Crowne and David Marlowe, The Approval Motive (New York: John Wiley and Sons, Inc., 1964).

The Marlowe-Crowne was designed as a measure of Ss tendency to answer questions on paper and pencil tests of personality in a socially desirable way. High scores on this test are obtained by individuals who allegedly do not give truthful responses in order to give a socially desirable response. Thus, if asked, to respond True or False to the statement: "Before voting I thoroughly investigate the qualifications of all the candidates," the persons who responds "True" is presumably not being truthful. Individuals who score high on the test are assumed to be high in the need for approval. Further, they are alleged to have an inadequate self-image. Their attempts to gain the approval of others by presenting themselves in the most favorable way is viewed as psychological defensiveness. The measure is included in this investigation for two reasons. These are: (1) The need for approval seems relevant to the teaching process so that use of an appropriate instrument is desirable in this investigation. Do students, or certain kinds of students prefer teachers who attempt to seek their approval? (2) A plausible argument can be developed to indicate that the scores on the Marlowe-Crowne scale might serve as a moderator variable for the relationship between measures of teacher effectiveness and measures of teacher characteristics. For example, high scores on the MTAI might have quite different meaning for individuals who have high or low scores on the Marlowe-Crowne. Individuals who score

high on both measures might obtain high scores on the MTAI because they believe that answers expressing an attitude of warmth and interest in their pupils are socially desirable. In contrast, individuals who score low on the Marlowe-Crowne scale may obtain high scores on the MTAI out of conviction. In such a case the relationship between scores on the MTAI and measures of teacher effectiveness might be different for individuals whose scores are different on the Marlowe-Crowne scale.

5. Alpert-Haber Test of Test Anxiety.[1]--The Albert-Haber test consists of a series of items on which Ss are asked to Agree or Disagree with a series of questions which deal with the tendency to become anxious in testing situations and with the effect of this anxiety on performance. There is some evidence which indicates that Ss who score high on paper and pencil tests of test anxiety, such as the Alpert-Haber, tend to perform poorly on complex tasks. Atkinson[2] has argued that such individuals are high in fear of failure. The Alpert-Haber test was included in this study because anxiety may be of significance as a measure of teacher effectiveness. That is, anxiety might act as a moderator variable for the relationship between intellectual

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[1]See Richard Alpert and Ralph N. Haber, "Anxiety in Academic Achievement Situations," Journal of Abnormal and Social Psychology, 61 (1960), 207-215 for the original presentation of the test.

[2]John W. Atkinson, "Motivational Determinants of Risk-Taking Behavior," Psychological Review, 64 (1957), 359-372.

ability and creativity on the one hand and teacher effectiveness measures on the other hand.

The measures of the secondary school students' characteristics used in this study were as follows:

1. College-bound vs. non-college-bound.--This study was originally planned with the intent of obtaining the I.Q.'s of all students involved in the study. However, most of the high schools were reluctant to release this information. It was assumed that students planning to go to college would have more academic ability and a more cognitive attitude toward their teachers than pupils who were not planning to continue their education.

2. Social class.--The occupation of the head of the household is a common measure of social class position. This measure is sometimes combined with other variables, but may be used alone. A general review of social class measures can be found in Kahl's The American Class Structure.[1]

A social class differentiation was used in the present study on the assumption that social class differences would influence personality characteristics and attitudes toward school and learning. Consequently, different kinds of teachers might well be differentially effective with pupils who differed in social class.

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[1]Joseph Kahl, The American Class Structure (New York: Holt, Rinehart and Winston, 1957).

3. Creativity as measured by the RAT.--The same measure of creativity used with the student teachers, Mednick's RAT, was employed with the secondary school students. This differentiation was selected principally to study the relationship between creativity of student teachers and ratings of effectiveness by secondary school students differing in creativity.

Organization of the Dissertation

The plan of the dissertation is as follows:

Chapter I has provided an introduction. The problem was described and the general plan of the investigation was given. Chapter II presents a review of some of the literature relevant to teacher effectiveness. Chapter III presents methods and procedures used in this investigation. Chapter IV presents and discusses the results of the investigation. Chapter V summarizes and draws conclusions from the investigation.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter presents a review of some of the literature on teacher effectiveness principally covering the period from 1961-1966, excluding the research on the Minnesota Teacher Attitude Inventory (MTAI) which was discussed in Chapter I. In writing this review it was necessary to find some basis for organizing the various investigations to be discussed. The decision taken here was to discuss the various studies in terms of the following six rubrics: (1) Intellectual ability and teacher effectiveness; (2) Personality and teacher effectiveness; (3) Professional education and teacher effectiveness; (4) Teacher behavior and teacher effectiveness; (5) Multidimensional assessment and teacher effectiveness; and (6) Measurement of teacher effectiveness. A particular investigation may be discussed under one or more rubrics. The writer was unable to establish a set of rubrics that would permit each investigation to be discussed under one and only one rubric.

Intellectual Ability and Teacher Effectiveness

Most of the recent studies dealing with this topic have used Grade Point Average (GPA) of the teachers as a measure of intellectual ability. However, there are two

studies which have used standardized tests as measures of intellectual ability. Freehill[1] found non-significant relationships between ACE quantitative and language scores and ratings of teacher effectiveness by supervisors. Mathis and Park[2] have reported low positive, but non-significant correlations between ACE verbal scores and ratings of student teacher effectiveness made by secondary school supervising teachers. These two studies should be considered in conjunction with Morsh and Wilder's[3] review of studies dealing with intellectual ability and teacher effectiveness. In their review of some fifty-five studies on this topic they concluded that the results have been largely inconsistent. Fifteen studies reported negative correlations.

Some investigations have been interested in the relation between GPA and teacher effectiveness as measured by actual pupil gains on standardized tests. Hall[4]

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[1]Maurice F. Freehill, "The Prediction of Teacher Competence," Journal of Experimental Education, 31 (1963), 307-311.

[2]Claude Mathis and Young Horn Park, "Some Factors Relating to Success in Student Teaching," Journal of Educational Research, 58 (1965), 420-422.

[3]J. E. Morsh and Eleanor W. Wilder, "Identifying the Effective Instructor: A Review of Quantitative Studies, 1900-1952," USAF Personnel Training Research Center, Research Bulletin (1954), No. AFPT RC-TR 54-44.

[4]Harry O. Hall, "Professional Preparation and Teacher Effectiveness," Journal of Teacher Education, 15 (1964), 72-76.

Howard,[1] and Shin[2] have each reported non-significant relationships between these two measures.

Two studies have found non-significant relations between GPA and observer's ratings of teaching performance.[3]

A number of studies have dealt with the relation between GPA and supervisor's ratings. Freehill[4] has reported a significant positive correlation between these two variables. However, this finding has not been replicated in three other studies.[5]

The results on teacher effectiveness and intellectual ability indicate that there is little or no

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[1]James Lee Howard, "An Analysis of Change in Teacher and Pupil Behavior: A Study of the Fifth Grade Program in Teacher Education at the University of North Carolina 1963-64" (unpublished Doctoral dissertation, University of North Carolina, 1965).

[2]Chung Phing Shin, "A Study of the Cumulative Effect of Teacher Characteristics on the Achievement of Elementary School Pupils," Journal of Educational Research, 59 (1965), 33-34.

[3]See Martin Haberman, "The Teaching Behavior of Successful Interns," Journal of Teacher Education, 16 (1965), 215-220 and Albert Gene Leep, "Selected Pre-Service Predictors of First Year Teaching Performance of Elementary Teachers" (unpublished Doctoral dissertation, Ball State Teachers College, 1965).

[4]Freehill, loc. cit.

[5]See George Howard Grangaard, "Factors Predicting Success of Students in Elementary Teaching" (unpublished Doctoral dissertation, Ball State Teachers College, 1964); Lionel G. Metivier, "Selected Factors in Predicting Student Teaching Success in Grades Four, Five, and Six" (unpublished Doctoral dissertation, The University of Michigan, 1965); and Garfield W. Wilson, "A Study of Differences in Teacher Effectiveness Between STAR Teachers and a Random Selection of Teachers in Georgia" (unpublished Doctoral dissertation, The Florida State University, 1964).

consistent relation between intellectual or academic ability and measures of teacher effectiveness.

Personality and Teacher Effectiveness

Studies of personality and teacher effectiveness have used both standardized paper and pencil measures of personality and projective and/or non-standardized measures of personality. All of the recent studies using standardized tests have reported non-significant relations between scores on these tests and various measures of teacher effectiveness. Leep[1] and Grangaard[2] have reported non-significant results using the Minnesota Multiphasic Personality Inventory (MMPI). Metivier[3] has reported non-significant relations using the Guilford-Zimmerman Test of Introversion-Extroversion and Cattell's 16 P.F. which permits one to obtain sixteen scores, each allegedly representing an independent measure of personality.

Two investigators have developed novel measures of personality. Condit[4] reported non-significant relations between scores of teacher's drawings and measures of teacher

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[1]Leep, loc. cit.

[2]Grangaard, loc. cit.

[3]Metivier, loc. cit.

[4]Colin Davis Condit, "Relation Between Teacher's Drawings of a Teacher at Work and Performance Ratings by Pupils, Supervising Teachers, and College Supervisors " (unpublished Doctoral dissertation, Washington State Unversity, 1963).

effectiveness. Dixon and Morse[1] developed a paper and pencil test of empathy of teachers based on the responses of their pupils. They found a significant positive correlation between pupils' empathy ratings and their ratings of teacher effectiveness. Also, empathy scores were positively correlated with supervisor's ratings. These results can be considered in part as indicating the positive intercorrelation of several dimensions of teacher effectiveness. The measure of empathy involved here is not really a characteristic of a teacher which can be determined independently from his performance in the specific classroom situation. It would be of some interest to discover whether or not measures of empathy obtained outside the classroom situation could predict teacher effectiveness.

Perhaps the most important positive result in the teacher effectiveness literature has been reported by Burkard.[2] Burkard was able to discriminate between teachers rated as good or bad by their pupils on the basis of the characteristic thematic sequences contained in the Thematic Apperception Test (TAT) stories written by the teachers. Burkard reports several phi coefficients indicating the relation between "good" and "bad" teachers and

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[1]W. Robert Dixon and William C. Morse, "The Prediction of Teaching Performance; Empathic Potential," Journal of Teacher Education, 12 (1961), 329-332.

[2]Sister M. Innocentia Burkard, "Discernment of Teacher Characteristics by TAT Sequence Analysis," Journal of Educational Psychology, 53 (1962), 279-287.

individual thematic characteristics which are greater than .90. Effective teachers wrote stories which reiterated the need for instrumental activity to overcome failure. Non-effective teachers wrote stories which indicated an absence of striving for success by instrumental activities. Another thematic difference between effective and non-effective teachers concerned their attitudes toward loss. Effective teachers wrote stories in which there was an absence of self-pity and an ability to stoically accept loss. Non-effective teachers wrote stories in which there was a great deal of self-pity and an inability to overcome grief. Burkard's study used only Catholic parochial school teachers. As a result of this special population and also in view of the dramatic quality of the results there is a need to replicate these findings. If these results are supported in future investigations, Burkard will have discovered an important single predictor of teacher effectiveness.

Professional Education and Teacher Effectiveness

A number of investigators have been concerned with the relation between level of education and experience and measures of teacher effectiveness. Two studies have been concerned with the amount of education (B.A. vs. M.A., etc.) of elementary school teachers and the gains made by their pupils on standardized tests. Both studies reported

negative results.[1] Hudisberg[2] has reported a non-significant relation between student ratings of college teachers and a classification of teachers into those with and without the Ph.D. Finally, Morgan, et al.[3] have reported no relation between the number of years of experience a teacher has, and the principal's rating of the effectiveness of the teacher. These studies indicate that there is little or no relationship between the level of professional preparation and experience of teachers and measures of their effectiveness.

Teacher Behavior and Teacher Effectiveness

A number of investigators have attempted to obtain a sample of a teacher's behavior either in or outside of the classroom and use this as a basis for predicting teacher effectiveness. Two studies have used measures of problem-solving ability on the hypothesis that skill in solving problems should relate to the teacher's ability to present

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[1]Edward Nicholas Hook, "Teacher Factors Influencing Pupil Achievement in Elementary School English" (unpublished Doctoral dissertation, Colorado State College, 1965); and Elmo Moretz, "A Study of Teachers With and Without the Master's Degree" (unpublished Doctoral dissertation, University of Miami, 1963).

[2]George Everett Hudisberg, "The Relationship of Degrees Held by College Instructors and Teaching Effectiveness" (unpublished Doctoral dissertation, University of Arkansas, 1965).

[3]Robert R. Morgan, L. Rogers Liddle, Harold L. Heywood, Richard O. Hankey, and John Duvlick, "High School Teaching Effectiveness," Journal of Secondary Education, 40 (1965), 270-274.

material and to teach students to solve problems. Godgart[1] has found a non-significant relation between a teacher's ability to solve problems and measures of pupil gains. Turner,[2] on the other hand, has reported a positive relationship between problem solving skill and supervisor's ratings of effectiveness.

A number of other investigations have been concerned with the relationship between the classroom behavior of teachers and the classroom behavior of pupils. Reed[3] has reported a low, but significant positive correlation between an observer's judgment of teacher warmth and pupils interest in science. Similarly, Cogan[4] has reported that students of student teachers who are judged to manifest interest in their students tend to do more self-initiated work, whereas students of subject-centered as opposed to student-centered teachers tend to do little self-initiated

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[1]Martin D. Godgart, "The Arithmetic Problem-Solving Ability of Teachers as Related to Their Effectiveness in Teaching" (unpublished Doctoral dissertation, The University of Connecticut, 1964).

[2]Richard L. Turner, "Task Performance and Teaching Skills in the Intermediate Grades," Journal of Teacher Education, 14 (1963), 299-307.

[3]Horace B. Reed, "Teacher Variables of Warmth, Demand, and Utilization of Intrinsic Motivation Related to Pupils' Science Interest: A Study Illustrating Several Potentials of Analysis of Variance and Covariance," Journal of Experimental Education, 29 (1961), 205-229.

[4]Morris L. Cogan, "Research on the Behavior of Teachers: A New Phase," Journal of Teacher Education, 14 (1963), 238-243.

work. Ryans[1] has also reported a significant relation between a variable which sounds like teacher warmth, viz., friendly understanding classroom behavior, and a measure of productive pupil behavior which includes judgments of alertness, confidence, and self-control. Medley[2] has reported a series of non-significant correlations between a number of dimensions of observed teacher behavior and actual pupil gains. These four studies would tend to support Reed's[3] conclusion on the basis of his review of the literature on teacher warmth. Namely, there is a low positive correlation between teacher warmth and the development of interest in a subject and other attitudinal changes. However, Reed[4] has pointed out that teacher warmth may have rather little effect on cognitive and/or intellectual measures. The distinction between affective as opposed to cognitive dependent variables has also been made by McKeachie.[5] He has argued that small classes may produce

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[1]David G. Ryans, "Some Relationships Between Pupil Behavior and Certain Teacher Characteristics," Journal of Educational Psychology, 52 (1961), 82-90.

[2]Donald M. Medley, "Experiments with the OScAR Technique," Journal of Teacher Education, 14 (1963), 267-273.

[3]Horace B. Reed, "The Effects of Teacher Warmth," Journal of Teacher Education, 12 (1961), 330-334.

[4]Ibid.

[5]W. J. McKeachie, "Research on Teaching at the College and University Level," in N. L. Gage (ed.), Handbook of Research on Teaching (Chicago: Rand McNally and Co.), 1963, pp. 1118-1164.

greater interest in a subject matter and may result in greater attitude change than large classes. However, he asserts that size of class has little or no effect on scores on a common final examination.

Multidimensional Assessment and Teacher Effectiveness

In this section the results of three studies which share in common the use of a large number of measures of teacher characteristics will be discussed. Leep[1] used thirty-nine separate measures of teacher characteristics in an attempt to find predictable relations between these measures and measures of teacher effectiveness. Three of these measures were significant at the .05 level. Grangaard[2] used sixty-five different measures and found six significant at the .05 level. Finally, Durflinger[3] used thirty-nine different measures and found seven significant at the .01 level. These three studies point to one of the difficulties of evaluating teacher effectiveness studies where multiple measures of teacher characteristics are used. Simply by the operation of chance alone, one would expect some of a large number of measures to show significant relations. Consequently, the reported probability of Type I error (the probability of rejecting the null hypothesis when

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[1]Leep, loc. cit.

[2]Grangaard, loc. cit.

[3]Durflinger, loc. cit.

it is in fact true)[1] in these studies is undoubtedly more than the actual probability. This might in part account for the difficulty of replicating some of the reported findings.

Measurement of Teacher Effectiveness

Several studies have been concerned with problems involved in the measurement of teacher effectiveness. A number of studies have dealt with some of the variables which determine student ratings. Stewart and Malpass[2] found that college students expecting high grades in a course rated their instructor more favorably than students not expecting high grades. Rezler[3] has reported relationships between student ratings and their scores on a measure of motivation--the Edwards Personal Preference Scale. Hudson[4] has noted that students rate teachers close to their ideal more highly than teachers who are not close to their ideal with respect to their method and style of

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[1]For further information on Type I error see George A. Ferguson, Statistical Analysis in Psychology and Education, 2nd ed. (New York: McGraw-Hill, 1966), pp. 163-164.

[2]Clifford T. Stewart and Leslie F. Malpass, "Estimates of Achievement and Ratings of Instructors," Journal of Educational Research, 59 (1966), 347-350.

[3]Agnes Rezler, "The Influence of Needs Upon the Student's Perception of His Instructor," Journal of Educational Research, 58 (1965), 282-286.

[4]Keith C. Hudson, "Pupil Expectations of Teacher Behavior as a Possible Influence Upon Pupil Ratings of Teacher Effectiveness" (unpublished Doctoral dissertation, The Florida State University, 1964).

teaching. Similarly, Nelson[1] studied the relation between students' definitions of ideal teacher behavior and teachers' definition of ideal behavior. He found that teachers tend to be more cognitively oriented than their students who tend to stress affective values. These studies point to the important problem of criteria used for judgment. Judgments of teachers by students involve the student's definition of appropriate behavior. Judgments of teacher effectiveness involve implicit or explicit definitions of appropriate teacher behavior. Better understanding of these definitions should help in evaluating studies of teacher effectiveness.

The studies discussed above leave open the question of the validity of the judgments made by students of teachers or at least the relations between these judgments and others. Veldman and Peck[2] have reported the results of a factor analysis of student ratings. They report that there are five distinct factors, thus suggesting that these ratings measure several distinct dimensions. However, scores on three of these five factors were positively correlated with supervisor's ratings of teacher

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[1]Calvin Nelson, "Affective and Cognitive Attitudes of Junior High School Teachers and Pupils," Journal of Educational Research, 58 (1964), 81-83.

[2]Donald J. Veldman and Robert F. Peck, "Student Teacher Characteristics From the Pupils' Viewpoint, Journal of Educational Psychology, 54 (1963), 346-355.

effectiveness. Also, Hawkins and Stoops[1] have reported low positive correlations among eight measures of teacher effectiveness. These studies suggest that although there are undoubtedly many subtle factors influencing ratings and judgments of teachers' competence which are idiosyncratic to the values and criteria of the judge, there is a common agreement among judges and methods of judgments of teacher competence which transcends these idiosyncratic factors.

Summary

Despite the great number of studies reported there is little or no evidence that there is a consistent relation between characteristics of teachers and measures of their effectiveness. With the possible exception of Burkard's[2] TAT measures, there does not appear to be any single measure of teacher characteristics which can predict teacher effectiveness.

There are, however, some promising developments. These include the more careful specification of the dependent variable--teacher effectiveness--and the use of sophisticated observational techniques in the classroom. These new techniques of observation combined with the concern for non-cognitive effects of different kinds of

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[1]Edward E. Hawkins and Emery Stoops, "Objective and Subjective Identification of Outstanding Elementary Teachers," Journal of Educational Research, 59 (1966), 344-346.

[2]Burkard, loc. cit.

teaching or teachers, e.g., self-initiated work, should eventually lead to a more subtle understanding of teacher effectiveness. That is, our current measures of teacher characteristics may not be highly related to a single global measure of teacher effectiveness, but they may be related to subtle, more differentiated effects.

CHAPTER III

METHODS AND PROCEDURES

In this chapter the details of the methodology used in the present study are presented.

Subjects

The original design of this study involved using all male seniors enrolled the first semester, 1965-66, in the secondary school certification program in the following areas: English, mathematics, science, social studies, and foreign languages, at Rutgers - The State University, New Brunswick, New Jersey and Newark State College in Union, New Jersey. This would have yielded approximately seventy-five potential Ss. After arrangements had been completed to administer the appropriate tests, some members of the Newark State College administration objected to their students participating in the study. As a result, there were only twenty-four Rutgers' Ss in the study who were given the appropriate tests. Two of these Ss withdrew from the certification program before student teaching, and six Ss were dropped from this study when permission could not be obtained for these Ss to administer the pupil forms to their classes from the superintendents and principals of the schools in which they were student teaching.

In order to obtain more Ss for the study, arrangements were made with Douglass College of Rutgers - The State University, and Rutgers - Newark, to use all senior females enrolled the second semester, 1965-66, in the certification program in the same teaching areas as the males. There were sixty-two females in this group who were administered the appropriate tests. Forty-eight females attended Douglass College and fourteen attended Rutgers - Newark. Of these, only twenty-nine participated in the study. Five females were not able to administer the required materials (pupil forms) to their classes for personal reasons, that is, they did not want to take the time away from their student teaching even though the principals had given them permission. Twenty-eight females did not participate because permission could not be obtained from the superintendents and/or principals to administer the forms to their classes. The lower number of females participating may also be due to the fact that their student teaching is scheduled during the spring semester. Several principals indicated that their lack of cooperation was due to an overcrowded schedule in the spring semester. Table 2 presents the total number of males and females along with their various subject matter areas who participated in the study.

TABLE 2

SEX AND SUBJECT MATTER AREAS OF PARTICIPATING STUDENT TEACHERS

Subject Area	Males	Females	Total
English	4	8	12
Foreign Languages	0	13	13
Mathematics	1	2	3
Science	0	1	1
Social Studies	11	5	16
Total	16	29	45

Each student teacher was requested to obtain data from two of his classes. In a sense these high school students were also Ss in the study. There were 1,863 New Jersey high school students--a mean ($\bar{X}$) number of forty-one students per student teacher. The range of students per student teacher was from eighteen to seventy-three. The student teachers taught in communities in all parts of New Jersey. The high schools were located mainly in suburban or rural areas. None of the student teachers assigned to the New Brunswick or Newark school systems participated. Only one participating teacher was assigned to the Trenton system. Consequently, the sample of students involved in this study is not representative of students in American high schools.

Procedure

Student teachers were given the following tests

during regularly scheduled college class periods in the order listed: RAT, Alpert-Haber and Marlowe-Crowne, and MTAI. The entire testing procedure required approximately one hour and forty-five minutes. College Entrance Examination Board--Verbal scores (CEEB-V) and cumulative grade point average (GPA) were obtained from the Assistant Dean of the College of Arts and Sciences at Rutgers Unversity, the Education Department of Douglass College, and the Registrar's office at Rutgers - Newark.

Approximately one week before the beginning of student teaching, each student teacher was given two 10 x 13 stamped envelopes addressed to the investigator. Each envelope contained thirty-five student forms.[1] The student teachers were instructed[2] to use one class period during the last or next to the last week of their teaching to permit their students to fill out the forms. The students were to be chosen, preferably, from a college-bound and/or bright and a non-college bound and/or slow class.

Preliminary Data Reduction

In order to study the relationships between characteristics of student teachers and their effectiveness, the student teachers were assigned to a high or low position on each of the variables. This classification permits the investigation of moderator variable effects.

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[1]See Appendix A.

[2]See Appendix B.

High school students were also classified as high or low on measures of student characteristics in order to obtain measures of effectiveness for different kinds of students.

Each male student teacher was assigned to a high or low position on each of the following variables: RAT, MTAI, GPA, CEEB-V, Alpert-Haber, and Marlowe-Crowne. The mid-points on each variable were either the median or that value that would divide male and female Ss, considered separately, into two groups that were as equal in size as possible on each variable. Males whose scores were as follows: MTAI - eighteen or below; RAT - seventeen or below, CEEB-V - 540 or less; Alpert-Haber - thirty-five or below, and seventeen or below on the Marlowe-Crowne were assigned to low positions on each of these variables. All other males were assigned to high positions. Males whose GPA's were 2.3 or higher were assigned to a below average GPA group. All others were assigned to an above average GPA group. The Rutgers grading system is one in which a lower GPA indicates superior performance.

Females Ss who had MTAI scores of fifty-four or less, RAT scores of fourteen or less, CEEB-V scores of 520 or less, Alpert-Haber scores of forty or less and Marlowe-Crowne scores of nineteen or less were assigned to low positions on these variables. All other females were assigned to high positions on these variables. Females with GPA's of 2.1 or higher were assigned to a below

average GPA group. All other females were assigned to an above average GPA group. Table 3 presents the range of scores for male and female student teachers on each of the measures of teacher characteristics.[1]

Males and females were separately assigned to high and low positions on each variable because the normative data for both the MTAI[2] and Marlowe-Crowne[3] indicates consistent differences in the mean score for males and females. In order to treat all variables in a consistent manner, separate divisions were made for males and females.

High School Students in the Sample

Each high school student in the entire sample was assigned to a position on one of three variables. These were: college-bound vs. non-college-bound, high in social class vs. low in social class, and high in creativity vs. low in creativity. All of the high school students who stated that they planned to attend a four-year or a two-year college were assigned to a college-bound group. All of the students who indicated they did not plan to attend either a four-year or two-year college were assigned to a non-college-bound group. This division divided the population of students into approximately equal groups.

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[1]See Appendix C for raw scores of student teachers.

[2]Walter W. Cook, Carroll H. Leeds, and Robert Callis, The Minnesota Teacher Attitude Inventory (New York: Psychological Corporation, 1951).

[3]Crowne and Marlowe, loc. cit., 211-212.

TABLE 3

RANGE OF SCORES OF HIGH AND LOW GROUPS ON MEASURES OF STUDENT TEACHER CHARACTERISTICS

Teacher Characteristic	Dividing Point	Range High	Range Low
	Males		
MTAI	18	29 - 59	-2 - 18
RAT	17	18 - 24	1 - 17
CEEB-V	540	560 - 690	440 - 540
Alpert-Haber	35	39 - 63	18 - 35
Marlowe-Crowne	17	18 - 23	12 - 17
Grade Point Average*	2.30	1.88 - 2.29	2.33 - 2.67
	Females		
MTAI	54	56 - 80	-20 - 54
RAT	14	15 - 26	6 - 14
CEEB-V	520	530 - 680	410 - 520
Alpert-Haber	40	42 - 101	4 - 40
Marlowe-Crowne	19	19 - 33	11 - 19
Grade Point Average*	2.10	1.40 - 2.09	2.10 - 2.53

*Low indicates above average.
High indicates below average.

As stated in Chapter I, the head of the household is a common measure of social class.[1] In this investigation, high school students whose fathers--or mothers or guardian, if the student had no father--held either a professional, semi-professional or managerial position were assigned to a high social class group. Students whose fathers were clerical workers, skilled tradesmen, owners

[1]Kahl, loc. cit.

of small businesses, rural owners, semi-skilled clerical and non-clerical workers, slightly skilled, day laborers or unemployed were assigned to a low social class group.[1] This division divided the student sample into two equally sized groups. The high social class group contains primarily upper and upper middle class individuals. The low social class group contains lower middle and lower class individuals. Probably 70 per cent of the students classified as low in social class are more properly classified as lower middle class rather than lower class.

Students in the ninth and tenth grades whose scores on the RAT were eleven or less and students in the eleventh or twelfth grades whose scores on the RAT were twelve or less were assigned to a low creativity group. All other students were assigned to a high creativity group. Since there was the possibility that scores on the RAT would increase with grade level, separate median divisions were made for each grade level. This divided the sample of high school students into two approximately equal-sized groups.

Male and female high school students were initially separated by sex and median scores obtained separately for measures of creativity. However, in this examination the scores for males and females were the same and thus male and female students were assigned to high and low positions on the RAT on the basis of the same cut-off score.

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[1]See Appendix A.

A similar examination was made for social class and no differences were found.

Student Ratings of Teachers

Each high school student was asked to rate his student teacher on a five-point scale, where 1 was most favorable and 5 least favorable.[1] Four rating scores were then obtained for each student teacher. These were: (1) The mean rating given to the student teacher by all of his students who participated in the study. (2) The mean difference rating between college-bound and non-college-bound students. This rating was obtained by, first, obtaining the mean rating of that student teacher by students who were classified as college-bound. Second, the mean rating of that teacher by students who were classified as non-college-bound was obtained. Third, in order to obtain the difference score, the latter mean rating was subtracted from the former. A negative mean difference, that is, a value for the difference which is less than zero, indicates in this case, that the student teacher was rated more favorably by the college-bound students than by the non-college-bound students. (3) The mean difference rating between students high in social class and low in social class was obtained in the same way as for college-bound and non-college-bound with negative scores indicating that students high in social class rated the teacher more

[1]See Appendix A.

favorably than those in low social class. (4) The mean difference rating between students high in creativity and low in creativity was obtained in the same manner as mentioned above with negative scores indicating the student teacher was rated more favorably by those students high in creativity than those students low in creativity.

Subsequent Data Analyses

The six measures of teacher characteristics--MTAI, M-C, A-H, RAT, GPA, and CEEB-V--defined earlier were treated as independent variables in the statistical analyses reported in Chapter IV. The four measures of teacher effectiveness--mean rating, college-bound vs. non-college-bound, high in social class vs. low in social class, and high in creativity vs. low in creativity--were treated as dependent variables in the statistical analyses reported in Chapter IV.

In order to study moderator variable effects, pairs of independent variables were jointly considered in each of the analyses reported. That is, for the purpose of each of the statistical analyses the sample of student teachers was divided into four groups on the basis of their scores on each of two independent variables. Thus, subjects who scored high on each of two independent variables and Ss who scored low on each of two independent variables, Ss who scored high on one variable (A) and low on another variable (B), Ss who scored low on variable A and high on

variable B, were assigned to different groups.

Mean scores were then obtained for each of these groups on a particular dependent variable. Differences among these four means were statistically tested by use of a series of a 2 x 2 analyses of variance.

A discussion of this statistical procedure is presented in Chapter IV.

CHAPTER IV

RESULTS

This chapter presents the results of the study, including reports of the outcomes of the statistical tests used to evaluate the data. The chapter presents data which deal with the relationships between intellectual ability, Minnesota Teacher Attitude Inventory (MTAI), creativity as measured by the Remote Associates Test (RAT), and teacher effectiveness. The data which form the basis for the various tables to be presented in this chapter are given in Table 4. Table 4 contains the classification of each student teacher with respect to his position on each of the measures of teacher characteristics and also each student teacher's rating scores. Table 4 then, is a listing of subjects scores and classifications. The raw scores which form the basis for the 0 (high) and 1 (low) classifications can be found in Appendix C. For example, Subject 1, male, MTAI raw score + 45 = 0 (high); M-C raw score + 15 = 1 (low); A-H raw score + 48 = 0 (high); RAT score 6 = 1 (low); GPA 2.60 = 1 (low) and CEEB-V 440 = 1 (low). Similarly, in the last four columns the ratings by students of Subject 1 are presented. Subject 1 was rated higher by the non-college-bound students, by those low in social class, and by those low in creativity. His mean rating was 2.9.

TABLE 4

CLASSIFICATION OF STUDENT TEACHERS
AND THEIR RATING SCORES

Subject	Sex	MTAI	M-C	A-H	RAT	GPA	CEEB-V	Rating College-Bound vs. Non-College Bound	Rating High vs. Low Social Class	Rating High vs. Low RAT	Mean Rating
1	M	0	1	0	1	1	1	.5	.1	.2	2.9
2	M	1	1	0	1	1	1	.4	.2	.1	2.8
3	M	0	0	0	1	1	1	-.6	-1.4	-.7	3.1
4	M	1	1	0	0	0	0	-.1	.3	-.2	2.4
5	M	0	0	0	0	0	1	-.3	.5	-.2	2.7
6	M	0	0	1	1	0	1	.2	-.2	-.1	2.4
7	M	1	1	0	1	0	0	-.6	-.2	.2	2.7
8	M	1	0	1	0	1	0	.1	-.3	-.6	3.3
9	M	1	1	0	1	1	1	-.4	-.1	-.1	2.0
10	M	1	1	1	0	0	0	-.5	-.7	.2	2.0
11	M	1	1	0	0	1	1	.4	1.0	.4	2.8
12	M	0	0	1	0	0	0	-.1	-.1	.2	2.3
13	M	0	0	1	0	0	0	.0	-.3	.1	2.2
14	M	0	0	1	0	1	0	.3	.1	-.1	2.4
15	M	1	1	1	1	1	1	.2	.3	.0	2.1
16	M	1	0	0	0	1	1	-.2	-.6	-.3	3.0
17	F	0	0	0	0	0	0	-.1	.0	.1	2.5
18	F	1	1	0	0	0	1	.3	.2	.2	3.0
19	F	0	0	0	0	1	1	-.1	-.3	-.1	3.1
20	F	1	0	1	1	0	0	-.3	-.1	-.3	2.3
21	F	--	1	0	0	1	0	-.1	-.1	-.5	1.7
22	F	1	1	1	1	0	0	-.3	-.3	.1	2.7
23	F	0	--	--	0	0	0	-.2	-.2	-.5	2.7
24	F	0	0	0	1	0	1	-.1	-.3	-.9	2.4
25	F	1	0	1	0	0	1	-.1	.4	-.2	2.5
26	F	0	1	1	1	0	0	.2	.2	.3	3.4
27	F	0	1	1	0	1	0	.6	.2	-.7	2.6
28	F	1	1	0	1	1	1	.1	.4	-.9	2.7
29	F	1	0	1	0	1	0	.3	-.3	-.6	2.6
30	F	0	0	1	0	0	0	.5	.3	-.3	2.2
31	F	--	0	0	0	1	0	-.3	-.1	.0	2.0
32	F	1	0	0	0	1	1	-.7	.5	.2	1.9
33	F	0	1	0	0	1	1	.3	.2	.8	3.3
34	F	0	0	0	1	1	1	-.4	.1	-.3	2.1

TABLE 4--Continued

Subject	Sex	MTAI	M-C	A-H	RAT	GPA	CEEB-V	Rating College-Bound vs. Non-College Bound	Rating High vs. Low Social Class	Rating High vs. Low RAT	Mean Rating
35	F	1	1	0	1	0	1	-.7	-.7	.2	3.0
36	F	1	0	1	1	0	1	-.7	-.2	-.6	2.1
37	F	1	0	0	1	1	1	-.5	-.5	1.0	2.3
38	F	0	1	1	1	0	1	.2	.7	.9	2.1
39	F	0	--	--	0	0	0	-.5	-.7	-.4	1.8
40	F	1	0	1	1	1	0	-.2	.0	-.2	2.3
41	F	1	1	1	1	--	0	.5	.3	.3	2.8
42	F	1	1	0	0	--	1	.3	-.2	-.2	2.3
43	F	1	0	0	1	1	1	.2	.1	.0	2.2
44	F	0	1	1	1	1	0	.6	.3	.6	3.1
45	F	0	0	1	1	0	0	.6	1.0	-.2	2.4

0 = high or above average
1 = low or below average
-- = no data available

Intellectual Ability of Student Teachers and Their Effectiveness

This section presents data concerning the relationship between intellectual ability and student teacher effectiveness. Are student teachers high in intellectual ability, as measured by the College Entrance Examination Board-Verbal (CEEB-V), more effective than student teachers low on the CEEB-V? Table 5 presents the data relevant to this question, showing the mean effectiveness scores for student teachers who are high and low on CEEB-V. In this

table scores on the Marlowe-Crowne (M-C) are used as a potential moderator variable. Thus separate means are obtained for students who are high or low on the CEEB-V and high or low on the M-C. Table 5 was derived by first classifying all student teachers into four groups as follows: those high on both CEEB-V and the M-C; those low on both these measures; those high on the CEEB-V and low on the M-C; and those low on the CEEB-V and high on the M-C.

The means of the mean rating assigned to each student teacher were then obtained separately for all student teachers in a particular group. Thus, Subject 1, being low (1) on the CEEB-V (Table 4) and low (1) on the M-C is one of the eleven Ss in the lower right quadrant of Table 5. The other cases are distributed in a similar manner. Thus the value 2.41 appearing in Table 5 indicates that the mean of the mean rating for the eleven student teachers who were high on both the M-C and CEEB-V was 2.41. Since the students teachers who were high in CEEB-V and high on the M-C had the lowest mean ratings (2.41) they were, on the average, rated most favorably by their students.

The data presented in Table 5 and subsequent tables were subjected to an analysis of variance. This analysis is a 2 x 2 analysis of variance with nonorthogonal cell frequencies as are all analyses of variance to be reported. Adjusted mean squares were obtained using a

least squares solution.[1] The analyses were done by computer. The results of the analysis are also presented in Table 5.

TABLE 5

MEAN RATINGS OF STUDENT TEACHERS HIGH AND LOW ON THE CEEB-V (M-C MODERATOR)

		Marlowe-Crowne	
		High	Low
CEEB-V	High	2.41 N=11	2.60 N=12
	Low	2.48 N=9	2.64 N=11

F Ratios

d.f. = 1 and 39

CEEB-V	<1.00
M-C	1.72
CEEB-V X M-C	<1.00

The F ratios reported may be understood as follows: The higher the F ratio for a given number of degrees of freedom the greater the probability of a significant result. The value of F significant for 1 and 39 d.f. is 4.09 ($p < .05$). The F value required for significance to be

[1] For discussion of the rationale of this statistical analysis and other relevant sources see B. J. Winer, Statistical Principles in Experimental Design (New York: McGraw-Hill, 1962), pp. 224-227, 291-297.

presented in subsequent tables will vary slightly depending on the degrees of freedom. The F value may be obtained once the degrees of freedom are known. F tables are available in most statistics books.[1] Each F ratio reports the results of a test of an independent statistical (null) hypothesis. Thus, the first F ratio listed, CEEB-V (1.00), reports a test for the significance of the difference for the means of all Ss who are high on CEEB-V and all Ss who are low on CEEB-V. This ratio involves a comparison of a mean for the twenty-three high CEEB-V Ss summed over the two columns, and the twenty low CEEB-V Ss summed over the two columns. This F ratio is not significant since it is less than 4.09. This ratio indicates that there is no significant difference in mean rating scores between Ss high in CEEB-V and Ss low in CEEB-V.

The second F ratio listed, M-C 1.72, is also non-significant. This indicates that there is a non-significant difference between the mean rating scores of Ss high on the M-C and Ss low on the M-C.

It is somewhat more difficult to explain the third F ratio for CEEB-V X M-C. It is the F ratio of interaction and in this case is not significant.[2] It indicates that when considered jointly the M-C and CEEB-V do not interact

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[1] Ibid.

[2] For a discussion of the statistical concept of interaction see George A. Fergurson, Statistical Analysis in Psychology and Education, 2nd edition (New York: McGraw-Hill, 1966). See especially Chapter 19 and pp. 305-307.

to influence mean ratings. If the interaction were significant it would be appropriate to say that the M-C acted as a moderator variable between CEEB-V and ratings of teacher effectiveness. The remaining tables are interpreted in the same manner as Table 5.

Table 6 presents the relationships between CEEB-V scores and mean ratings of student teacher effectiveness with Alpert-Haber (A-H) scores considered as a moderator variable. The student teachers were divided into four groups on the basis of their classification as high or low on the CEEB-V and A-H. Then the mean rating was determined separately for each of these groups as in Table 5.

The non-significant F values (<1.00) for CEEB-V and A-H reported in Table 6 indicate that there is no significant difference between the ratings of Ss who are high on the CEEB-V and the ratings of Ss who are low on the CEEB-V. Similarly, there is no significant difference in ratings between Ss who are high on A-H and Ss who are low on A-H in mean ratings. Note also the unbalanced distribution of cell frequencies. Student teachers who are low on the A-H tend to be high on the CEEB-V. A negative relationship between a measure of anxiety and a measure of intellectual ability is a common finding.[1]

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[1]See John W. Atkinson, An Introduction to Motivation (Princeton: Van Nostrand, 1964), pp. 214-221.

TABLE 6

MEAN RATINGS OF STUDENT TEACHERS HIGH AND LOW ON CEEB-V (A-H MODERATOR)

Alpert-Haber

CEEB-V	High	Low
High	2.26 N=5	2.57 N=15
Low	2.64 N=18	2.24 N=5

F Ratios

d.f. = 1 and 39	
CEEB-V	< 1.00
A-H	< 1.00
CEEB-V X A-H	6.05*

*$p < .05$

An examination of Table 6 also indicates that scores on the A-H significantly moderate the relationship between CEEB-V scores and ratings of teacher effectiveness. The significant interaction effect for CEEB-V X A-H (F=6.05) reported is attributable to the fact that students rate teachers who are high on both the CEEB-V and the A-H and low on both variables as being more effective than student teachers who are high on one variable and low on the other.

Are student teachers who are high on the CEEB-V more effective with students who are college-bound vs. students who are non-college-bound? Tables 7 and 8 present the data reporting the relationships between CEEB-V scores and mean

difference ratings of students who are college-bound vs. those who are non-college-bound considering the M-C in Table 7 and the A-H in Table 8 as potential moderators. Tables 7 and 8 are comparable to Tables 5 and 6 in that the same independent variables (CEEB-V and M-C in Tables 5 and 7; CEEB-V and A-H in Tables 6 and 8) are used in both sets of tables. However, they differ with respect to the dependent variable used. Tables 5 and 6 use as a dependent variable the mean of the ratings assigned to a student teacher by all of his students. Tables 7 and 8 use as a dependent variable the mean of the ratings assigned to a student teacher by all of his students who were college-bound minus the mean of the ratings assigned to him by all of his students who were non-college-bound. Hence, the dependent variable is termed a mean difference rating. If the mean difference rating is negative the student teacher was rated more favorably by college-bound students and vice-versa.

The results reported in Table 7 indicate that CEEB-V scores, per se, have no significant influence on these mean difference scores. That is, the F value for CEEB-V (F=1.35) is non-significant. This indicates that Ss who are high on the CEEB-V are not significantly different with respect to the mean difference ratings for college-bound secondary school students vs. non-college-bound secondary school students than Ss who score low on

the CEEB-V. However, when considered in conjunction with M-C scores as a potential moderator there is a significant interaction effect (F=4.27). College-bound students, relative to non-college-bound students, dislike student teachers who are low on the CEEB-V and low on the M-C as is indicated by the mean of +.15. However, college-bound students like student teachers who are low on the CEEB-V and high on the M-C as indicated by the mean of -.27.

TABLE 7

MEAN DIFFERENCE RATINGS FOR COLLEGE-BOUND VS. NON-COLLEGE-BOUND STUDENTS FOR STUDENT TEACHERS HIGH AND LOW ON CEEB-V (M-C MODERATOR)

		Marlowe-Crowne	
		High	Low
CEEB-V	High	+.07 N=11	+.03 N=12
	Low	-.27 N=9	+.15 N=11

F Ratios

d.f. = 1 and 39

CEEB-V	1.35
M-C	3.50
CEEB-V X M-C	4.27*

*$p < .05$

TABLE 8

MEAN DIFFERENCE RATINGS FOR COLLEGE-BOUND VS. NON-COLLEGE-BOUND STUDENTS FOR STUDENT TEACHERS HIGH AND LOW ON CEEB-V (A-H MODERATOR)

CEEB-V	Alpert-Haber High	Alpert-Haber Low
High	-.24 N=5	+.15 N=15
Low	-.08 N=18	-.04 N=5

F Ratios

d.f. = 1 and 39

CEEB-V	1.25
A-H	2.47
CEEB-V X A-H	1.64

The results reported in Table 8 indicate that scores on the A-H do not significantly moderate the relationship between CEEB-V scores and these mean difference ratings since the F value for interaction is non-significant (F=1.64).

Tables 9-12 present data analogous to that presented in Tables 5-8 except in Tables 9-12 Grade Point Average (GPA) is used as a measure of intellectual ability rather than CEEB-V scores.

Table 9 indicates that there is no significant relationship between GPA and mean effectiveness ratings where M-C is considered as a moderator variable as indicated by the F value of < 1.00.

TABLE 9

MEAN RATINGS OF STUDENT TEACHERS HIGH AND LOW ON GPA (M-C MODERATOR)

Marlowe-Crowne

GPA	High	Low
High	2.36 N=11	2.52 N=12
Low	2.66 N=8	2.60 N=10

F Ratios

d.f. = 1 and 39

GPA	<1.00
M-C	1.74
GPA X M-C	<1.00

TABLE 10

MEAN RATINGS OF STUDENT TEACHERS ABOVE AVERAGE AND BELOW AVERAGE ON GPA (A-H MODERATOR)

Alpert-Haber

GPA	High	Low
Above Average	2.67 N=7	2.38 N=15
Below Average	2.53 N=12	2.63 N=7

F Ratios

d.f. = 1 and 37

GPA	<1.00
A-H	<1.00
GPA X A-H	1.89

Table 10 reports similar negative results between GPA and mean effectiveness ratings using A-H scores as a potential moderator. That is, the F values are non-significant.

Tables 11 and 12 report the relationship between GPA and mean difference ratings of student teachers by secondary school students who are college-bound vs. those who are non-college-bound considering M-C and A-H as potential moderators respectively. Table 11 indicates that GPA, per se, does not significantly relate to these mean difference rating scores (F=1.22). However, when considered in conjunction with the M-C there is a significant moderator effect as indexed by the significant F ratio (6.83) for interaction. The data indicate that college-bound students, relative to non-college-bound students, dislike student teachers who are below average in GPA and low on the M-C as is indicated by the mean +.26. However, college-bound students prefer student teachers who are above average in GPA as is indicated by the means -.04 and -.19 respectively. Student teachers who are below average in GPA but high on the M-C are also liked by this group. Note that this pattern of results is analogous to the pattern reported in Table 7 which indicates a similar interaction between CEEB-V and M-C.

TABLE 11

MEAN DIFFERENCE RATINGS FOR COLLEGE-BOUND VS. NON-COLLEGE-BOUND STUDENTS FOR STUDENT TEACHERS ABOVE AVERAGE AND BELOW AVERAGE ON GPA (M-C MODERATOR)

	Marlowe-Crowne	
	High	Low
Above Average GPA	-.04 N=11	-.19 N=12
Below Average GPA	-.17 N=8	+.26 N=10

F Ratios

d.f. = 1 and 37

GPA	1.22
M-C	2.20
GPA X M-C	6.83*

*p < .05

TABLE 12

MEAN DIFFERENCE RATINGS FOR COLLEGE-BOUND VS. NON-COLLEGE-BOUND STUDENTS FOR STUDENT TEACHERS ABOVE AVERAGE AND BELOW AVERAGE ON GPA (A-H MODERATOR)

	Alpert-Haber	
	High	Low
Above Average GPA	-.23 N=7	-.03 N-15
Below Average GPA	-.09 N=12	+.27 N=7

F Ratios

d.f. = 1 and 37

GPA	1.14
A-H	5.64*
GPA X A-H	< 1.00

*p < .05

Table 12 indicates that GPA, and GPA as moderated by A-H, have no significant effect on these difference ratings indicated by F values of 1.14 and <1.00. However, Table 12 indicates that A-H has a significant effect by itself indicated by the F value 5.64. The secondary school students who are college-bound, relative to those who are non-college-bound, rate student teachers who are high in anxiety as significantly more effective than those teachers who are low in anxiety as measured by the A-H. Note the mean values of -.23 and -.09 for Ss high on A-H vs. mean values of -.03 and +.27 for Ss low on A-H.

Interpretation of Intellectual Ability Results

The two measures of intellectual ability of the secondary school students used in this study, CEEB-V and GPA, when considered in isolation are not related to the mean effectiveness rating. Thus, there is no evidence in this investigation that the intellectual ability of the student teacher is related to the students' ratings of the teacher's effectiveness. Further, there is no evidence in the present investigation that the two measures of intellectual ability are related to differential effectiveness of student teachers for students who are college-bound vs. students who are not college-bound. However, when one considers the effects of moderator variables a number of significant results emerge.

The M-C (need for approval) acts as a moderator for

the relationship between CEEB-V and mean difference ratings of college-bound vs. non-college-bound students. It also acts as a moderator for the relationship between GPA and this measure of effectiveness. The results (see Tables 7 and 11) indicate that non-college-bound students rate student teachers who are low in intellectual ability more favorably than they are rated by college-bound students--provided that the student teacher is low on the M-C. This finding is in reasonable agreement with expectations. That is, student teachers low in intellectual ability should be expected to be relatively less effective with college-bound than with non-college-bound secondary school students. However, for student teachers who are high on the M-C the relationship is reversed. Student teachers who are high on the M-C and low in measures of intellectual ability are relatively more effective with college-bound than with non-college-bound students. This somewhat surprising reversal may indicate that student teachers who are high on the M-C are able to ingratiate themselves or obtain the approval of those students who would be expected to dislike them.

In addition to the two significant results with respect to moderator variables discussed above, there are two other additional results which are significant. First, there is a significant F ratio for A-H (test anxiety) for mean difference ratings between college-bound and non-college-bound Ss (see Table 12). The student teachers who are high in anxiety are rated more favorably by the

college-bound than by the non-college-bound secondary school students. Student teachers who are low in anxiety are rated more favorably by students who are non-college-bound than by students who are college-bound. However, the significance of this effect for the A-H must be treated cautiously, in as much as the F value for A-H against the same dependent variable reported in Table 8 is only 2.47 which is not significant. The discrepancy in F values reported here is attributable principally to the effect of missing data. The significant F value (5.64) for A-H for the dependent variable of mean difference ratings for college-bound vs. non-college-bound students is found in Table 12. An examination of Table 12 indicates that there are nineteen Ss high on the A-H and twenty-two Ss low on the A-H. The data reported in Table 8 indicate that the non-significant effect for A-H reported in Table 8 is obtained in a comparison of twenty-three Ss high on the A-H with twenty Ss low on the A-H. Thus, the analysis based on the data for forty-three of the forty-five Ss indicates that the A-H is not significant. The analysis of data of forty-one of the forty-five Ss indicates that the A-H is significant for this dependent variable. This fact suggests that the significant effect for the A-H reported in Table 12 may well be spurious. Consequently, no interpretation will be made of this finding.

The second remaining finding in the area of intellectual ability is the significant interaction effect between A-H and CEEB-V for mean ratings of effectiveness

reported in Table 6. This finding is interpreted here by making some rather speculative inferences. Note that the Ss who scored high on both the A-H and CEEB-V are rated as being more effective than the Ss who scored high on the A-H and low on the CEEB-V. This finding can be explained by noting that the Ss who are high on both of these variables are able to overcome their anxiety and function effectively in an examination situation. That is, most Ss who are high in anxiety are more likely to perform poorly in an examination situation. It is possible that an examination situation is analogous in some respect to student teaching. That is, both may be assumed to be stressful, competitive situations for individuals who are high in anxiety. It can also be assumed that Ss whose performance is debilitated by anxiety in an examination situation would also be likely to show poor performance in another stressful situation--student teaching.

States of high anxiety during teaching might in turn lead to intellectual confusion and an inability to deal clearly and competently with complex problems. This behavior might also interfere with the quality of interpersonal relations the teacher could attain. If this analysis is correct it would be of some interest to follow the performance of Ss high on the A-H and low in CEEB-V for

an extended period of time. Epstein[1] has reported a number of studies which indicate that individuals who are repeatedly faced with stressful situations (e.g. parachute jumping) develop an ability to inhibit their distress. Do teachers who have high anxiety which can potentially interfere with the quality of their performance also learn to inhibit their anxiety?

The difference in mean effectiveness ratings for student teachers high and low on CEEB-V who are low in anxiety is somewhat more difficult to interpret. The writer has no warranted explanation for this finding.

Minnesota Teacher Attitude Inventory and Teacher Effectiveness

In this section the relationships between the Minnesota Teacher Attitude Inventory (MTAI) and teacher effectiveness measures are presented. Tables 13 and 14 present the relationship between MTAI scores and mean ratings considering M-C and A-H as moderators respectively.

Tables 13 and 14 indicate that there is no significant relationship between MTAI scores and teacher effectiveness ratings when the MTAI is considered alone or in conjunction with either the M-C or A-H. That is, the F values for MTAI reported in Tables 13 and 14 are 1.73 and 1.01, respectively. The F values for the interactions are 1.46 and <1.00.

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[1] Seymour Epstein, "The Measurement of Drive and Conflict in Humans: Theory and Experiment," in M. R. Jones (ed.), Nebraska Symposium on Motivation (Lincoln: University of Nebraska Press, 1962), pp. 163-193.

TABLE 13

MEAN RATINGS OF STUDENT TEACHERS HIGH AND LOW ON MTAI (M-C MODERATOR)

MTAI	Marlowe-Crowne High	Marlowe-Crowne Low
High	2.48 N=12	2.90 N=6
Low	2.45 N=10	2.56 N=13

F Ratios

d.f. = 1 and 37	
MTAI	1.73
M-C	2.74
MTAI X M-C	1.46

TABLE 14

MEAN RATINGS OF STUDENT TEACHERS HIGH AND LOW ON MTAI (A-H MODERATOR)

MTAI	Alpert-Haber High	Alpert-Haber Low
High	2.76 N=8	2.51 N=10
Low	2.54 N=13	2.47 N=10

F Ratios

d.f. = 1 and 37	
MTAI	1.01
A-H	1.22
MTAI X A-H	<1.00

Tables 15 and 16 present the relationship between MTAI and differential ratings of effectiveness of college-bound vs. non-college-bound students with M-C and A-H respectively considered as moderators.

Table 15 indicates that there is a significant difference for the MTAI (F=6.60). Thus, student teachers who are high on the MTAI are rated lower by college-bound than by non-college-bound students especially if they are low on the M-C. Student teachers low on the MTAI are rated higher by college-bound than non-college-bound students.

Table 16 indicates that there is no relationship between MTAI and mean difference ratings for college-bound and non-college-bound students when the A-H is considered as a moderator variable. Considering the results of the F tests for MTAI in Tables 15 and 16 together it is possible to infer that MTAI scores have a significant relationship to differential effectiveness ratings for college-bound vs. non-college-bound students.

Tables 17 and 18 present the relationship between MTAI scores and mean difference ratings for students high and low in social class with the M-C and A-H respectively considered as moderator variables.

TABLE 15

MEAN DIFFERENCE RATINGS FOR COLLEGE-BOUND VS. NON-COLLEGE-BOUND STUDENTS FOR STUDENT TEACHERS HIGH AND LOW ON THE MTAI (M-C MODERATOR)

MTAI	Marlowe-Crowne High	Marlowe-Crowne Low
High	-.01 N=12	+.40 N=6
Low	-.21 N=10	-.03 N=13

F Ratios

d.f. = 1 and 37

MTAI	6.60*
M-C	3.29
MTAI X M-C	< 1.00

*$p < .05$

TABLE 16

MEAN DIFFERENCE RATINGS FOR COLLEGE-BOUND VS. NON-COLLEGE-BOUND STUDENTS FOR STUDENT TEACHERS HIGH AND LOW ON THE MTAI (A-H MODERATOR)

MTAI	Alpert-Haber High	Alpert-Haber Low
High	-.10 N=8	+.31 N=10
Low	-.12 N=13	-.10 N=10

F Ratios

d.f. = 1 and 37

MTAI	3.41
A-H	3.54
MTAI X A-H	2.91

TABLE 17

MEAN DIFFERENCE RATINGS FOR STUDENTS HIGH VS. LOW IN SOCIAL CLASS AND STUDENT TEACHERS HIGH AND LOW ON THE MTAI (M-C MODERATOR)

MTAI	Marlowe-Crowne High	Marlowe-Crowne Low
High	-.05 N=12	+.28 N=6
Low	-.10 N=10	+.04 N=13

F Ratios

d.f. = 1 and 37

MTAI	< 1.00
M-C	1.75
MTAI X M-C	< 1.00

TABLE 18

MEAN DIFFERENCE RATINGS FOR STUDENTS HIGH VS. LOW IN SOCIAL CLASS AND STUDENT TEACHERS HIGH AND LOW ON THE MTAI (A-H MODERATOR)

MTAI	Alpert-Haber High	Alpert-Haber Low
High	-.14 N=8	+.22 N=10
Low	+.03 N=13	-.09 N=10

F Ratios

d.f. = 1 and 37

MTAI	< 1.00
A-H	.25
MTAI X A-H	2.79

The tables indicate that there are no significant relationships between MTAI and this effectiveness measure as both F values are less than <1.00. These negative results are not affected by a consideration of moderator variables effects.

Interpretation of Minnesota Teacher Attitude Inventory (MTAI) Results

We now turn to an examination of the significant effect for MTAI reported in Table 15. This table indicates that non-college-bound students relative to college-bound students prefer student teachers who are high on the MTAI, particularly if they are low on the M-C or low on the A-H.

The M-C may serve to differentiate between those individuals who score high on the MTAI out of conviction and those who score high because they believe these responses are more socially desirable. Further, individuals who score high on the MTAI and, in addition, low in anxiety may be able to create the kind of atmosphere in the classroom which is compatible with their attitudes. In contrast anxiety may inhibit individuals who score high on the MTAI from creating a relaxed atmosphere in the classroom. In general, the significant effect for MTAI in this case is quite consistent with the previously cited results of Della Piana and Gage.[1] That is, we can assume that high school students who are college-bound are more cognitively oriented than affectively oriented whereas non-college-bound

[1]Della Piana and Gage, loc. cit.

students would be less concerned with cognitive intellectual values and more concerned with affective values. In so far as the individuals who score high on the MTAI are more effective with students holding the latter, rather than the former values, we should expect that such student teachers would be more effective with the non-college-bound students. This analysis, in turn, suggests the desirability of using the MTAI not as a selection device for teachers, but rather as a basis for differential assignment of teachers to schools and settings within a school.

Creativity and Student Teacher Effectiveness

This section reports results dealing with the relationship between the Remote Associates Test (RAT) scores and measures of teacher effectiveness. Tables 19 and 20 present the relationship between RAT scores and mean ratings considering M-C and A-H as moderators respectively.

Tables 19 and 20 indicate that there is no relationship between creativity as measured by the RAT and the mean of the ratings for a teacher by all of his students. The F value for the RAT is < 1.00. These negative results are not affected by a consideration of moderator variables. That is, the F values for RAT X M-C (1.67) and RAT X A-H (<1.00) are both non-significant.

TABLE 19

MEAN RATINGS OF STUDENT TEACHERS HIGH VS. LOW ON THE RAT (M-C MODERATOR)

RAT \ Marlowe-Crowne	High	Low
High	2.51 N=13	2.36 N=8
Low	2.51 N=10	2.69 N=12

F Ratios

d.f. = 1 and 39

RAT	< 1.00
M-C	1.78
RAT X M-C	1.67

TABLE 20

MEAN RATINGS OF STUDENT TEACHERS HIGH VS. LOW ON THE RAT (A-H MODERATOR)

RAT \ Alpert-Haber	High	Low
High	2.56 N=12	2.46 N=9
Low	2.56 N=11	2.52 N=11

F Ratios

d.f. = 1 and 39

RAT	< 1.00
A-H	< 1.00
RAT X A-H	< 1.00

Tables 21 and 22 present the relationship between student teacher RAT scores and mean difference ratings of teacher effectiveness by students high and low on the RAT.

The only significant result in Tables 21 and 22 is the F value 4.23 for the M-C in Table 21. Students high in creativity, relative to those who are low in creativity, tend to rate student teachers who are high on the M-C more favorably than they rate student teachers low on the M-C. The mean values in Table 21 for student teachers high on the M-C are -.14 and -.23 respectively. These values indicate more favorable ratings by students high on the RAT. The means for Ss low on the M-C are .00 and .16 respectively, indicating relatively less favorable ratings for these Ss by students high on the RAT.

Interpretation of Creativity Results

The only significant result obtained involving the RAT is reported in Table 21. Student teachers who scored high on the M-C are rated as being more effective by students who are high on the RAT than by students who are low on the RAT. A possible interpretation of this finding may be that creative students want to pursue their own interests. Teachers who are high on the M-C should be ingratiating and should, theoretically, attempt to gain the approval of their students by cooperating with them and by trying to behave in a way which meets their demands. If the creative student is both more demanding and more

TABLE 21

MEAN DIFFERENCE RATINGS FOR STUDENTS HIGH VS. LOW ON THE RAT FOR STUDENT TEACHERS HIGH AND LOW ON THE RAT (M-C MODERATOR)

RAT	Marlowe-Crowne High	Marlowe-Crowne Low
High	-.14 N=13	.00 N=8
Low	-.23 N=10	.16 N=12

F Ratios

d.f. = 1 and 39

RAT	< 1.00
M-C	4.23*
RAT X M-C	< 1.00

*$p < .05$

TABLE 22

MEAN DIFFERENCE RATINGS FOR STUDENTS HIGH VS. LOW ON THE RAT FOR STUDENT TEACHERS HIGH AND LOW ON THE RAT (A-H MODERATOR)

RAT	Alpert-Haber High	Alpert-Haber Low
High	+.02 N=12	-.22 N=9
Low	-.11 N=11	+.07 N=11

F Ratios

d.f. = 1 and 39

RAT	< 1.00
A-H	< 1.00
RAT X A-H	2.48

idiosyncratic and original in his demands he might well prefer a teacher who conforms to his demands.

It was expected that students who were creative would prefer teachers who were creative. However, the non-significant F (<1.00) for RAT in Table 22 does not indicate this.

CHAPTER V

SUMMARY AND CONCLUSIONS

This chapter summarizes the investigation and presents conclusions.

Summary of the Investigation

This investigation was concerned with the relationship between characteristics of student teachers and their effectiveness with different kinds of secondary school students. The investigation employed an innovative methodology, based on the concept of moderator variable analyses.

The secondary school students used in this investigation were divided into groups on the basis of the following characteristics: college-bound vs. non-college-bound, social class, and creativity. Measures of teacher effectiveness were considered separately for each of the different groups of secondary school students.

The characteristics of student teachers investigated were: (1) teacher attitudes as measured by the Minnesota Teacher Attitude Inventory (MTAI), (2) intellectual ability as measured by both grade-point average (GPA) and College Entrance Examination Board-Verbal (CEEB-V) scores, (3) creativity as measured by the Remote Associates Test (RAT). Also, the Marlowe-Crowne Measure of Social

Desirability (M-C) and the Alpert-Haber Test of Test Anxiety (A-H) were used as measures of possible moderator variables. For this purpose the relationship between measures of characteristics of teachers and their effectiveness was considered separately for student teachers who were above or below the median on one of the two potential moderator variables.

The questions investigated were these:

1. Are the relationships between characteristics of student teachers and characteristics of students subject to moderator variable effects?

2. What is the relationship between the intellectual ability of student teachers and ratings of those teachers by students who differ with respect to whether or not they plan to go to college? In particular, is it the case that student teachers who are high in intellectual ability are more effective with college-bound than with non-college-bound students?

3. What is the relationship between scores on the MTAI and student teacher effectiveness for students who differ with respect to social class and whether or not they plan to go to college?

4. What is the relationship between the creativity of student teachers and ratings of these teachers by students who differ in creativity? In particular, are creative student teachers more effective with creative students than with non-creative students?

Limitations of the Investigation

The limitations of the present investigation will be discussed before general conclusions are made.

The principal limitation stems from the relatively small number of student teachers involved. This limitation, in turn, prevented the discovery of more complex relationships. That is, this investigation dealt with relationships between single independent variables and a dependent variable considering the effects of a single moderator. It would have been possible, with a larger number of student teachers, to consider the relation between an independent variable and a dependent variable considering the effects of two or more variables as joint moderators. For example, Kogan and Wallach, in effect, used triple moderators, since they computed separate correlations between an independent and a dependent variable for individuals who differed with respect to sex, defensiveness, and anxiety. In this investigation, however, scores on the M-C (need for approval) and A-H (test anxiety) were considered separately, not jointly, and sex differences were not taken into account. Consequently, it is entirely possible that there are significant relationships between the variables studied here which would emerge if a joint moderator variable were used.

A second limitation of this investigation is one which it shares in common with most of the research on

teacher effectiveness. Namely, the discovery of predictive relationships needs to be replicated before great confidence can be placed in them. It is entirely possible that any of the results obtained here are valid for the sample of student teachers and students reported in this investigation, but are only of limited validity for other samples.

Finally, any interpretation of the significant results obtained here is subject to the difficulty that there are no measures of actual teacher behavior. Thus, interpretations of the reasons for various significant relationships of necessity involve inferences about teacher behavior in the classroom and the effects of this behavior on students. The relationships found here can be considered as having a heuristic function in that they suggest dimensions of teacher behavior which might correlate with various measures of teacher characteristics.

The limitations of this investigation suggest the need for future research to buttress any interpretation of results advanced here. In particular, the limitations suggest the need for a study involving more student teachers which would (a) examine joint moderator variable effects and (b) serve as a possible replication of the present findings. Also, there is a need for observational studies of teacher behavior which could serve to support some of the inferences about this variable.

Overall Significance of the Results

This section will attempt to discuss the results from a broader perspective which will consider the significance of the total set of findings reported here.

Tables 5 through 22 contain data reporting the results of the tests of thirty-five separate statistical (null) hypotheses. Of these thirty-five, fourteen statistical tests involved, as the dependent variable, a global measure of teacher effectiveness which was the mean rating of all the ratings of a student teacher by his secondary school students. Of these fourteen, six statistical tests dealt with the effect of a single independent variable on this dependent variable. None of these statistical tests were significant. These data correspond to the data usually used in teacher effectiveness research. That is, the relationship between a single independent variable and a global index of teacher effectiveness tend to be non-significant.

Eight statistical tests dealt with moderator effects in which the effect of two independent variables is considered against a global measure of teacher effectiveness. Of these eight tests, one is significant. The significant finding was: student teachers who were high on the CEEB-V and high on the A-H and student teachers low on the CEEB-V and low on the A-H were rated more favorably than those student teachers who were high on one of these variables

and low on the other.

In addition to these fourteen statistical tests, there were twenty-one tests of statistical hypotheses involving as a dependent variable a mean difference rating as a measure of teaching effectiveness. Eleven dealt with the relationship of a single independent variable to such a measure of teacher effectiveness. Two of these eleven were significant. The significant findings were: (1) Student teachers who were high on the MTAI were rated more favorably by non-college-bound students than by college-bound students. Student teachers low on the MTAI were rated more favorably by college-bound students than by non-college-bound students. (2) Student teachers who were high on the M-C were rated more favorably by students high in creativity than by students low in creativity. Student teachers who were low on the M-C were rated more favorably by students low in creativity than by students high in creativity.

Finally, there were ten statistical tests that dealt with the effect of two independent variables on such a dependent variable. Of these tests, two were significant. The significant findings were: (1) Student teachers who were high on the CEEB-V and either high or low on the M-C were rated slightly more favorably by non-college-bound students than by college-bound students. Similarly, student teachers who were low on the CEEB-V and low on the M-C were rated more favorably by non-college-bound students

than by college-bound students. Student teachers who were low on the CEEB-V and high on the M-C were rated more favorably by college-bound students than by non-college-bound students. (2) Student teachers above-average in GPA and either high or low on the M-C were rated more favorably by college-bound students than by non-college-bound students. Similarly, student teachers below average in GPA and high on the M-C were rated more favorably by college-bound students than by non-college-bound students. Student teachers below average in GPA and low on the M-C were rated more favorably by non-college-bound students than by college-bound students.

These results, when considered as a whole, give support for the methodological concerns which motivated this research. These data indicate that the meaningful relations which exist in this area cannot be discovered by the typical methods of research in use.

Conclusions

This dissertation was designed in part to answer four questions. The answers to these questions are as follows:

1. It appears that the relationship between characteristics of student teachers and characteristics of students are subject to moderator variable effects.

2. It is not generally the case that student teachers who are high in intellectual ability are more

effective with college-bound than with non-college-bound students. However, student teachers who are low in intellectual ability and low on the M-C are rated more favorably by non-college-bound than by college-bound students.

3. There is no significant relationship between student teachers' scores on the MTAI and ratings of their effectiveness by students who differ in social class. There is, however, a relationship between scores on the MTAI and college-bound vs. non-college-bound students. Student teachers who are high on the MTAI are rated more favorably by non-college-bound students than by college-bound students. Student teachers who are low on the MTAI are rated more favorably by college-bound than by non-college-bound students.

4. There is no significant relationship between student teachers' scores on the RAT and measures of their effectiveness.

In conclusion, the results of the present investigation suggest that there are important and potentially meaningful relations between characteristics of teachers and their effectiveness which could be discovered if the effectiveness of teachers with different kinds of students, moderator variables, and the more complex situation combining these were dealt with in future research in this area. Such findings should permit more adequate selection and placement of teachers as well as provide a clearer understanding of the teaching process.

APPENDIX A

QUESTIONNAIRE NO. 1

Name _____ Code No. _____ Grade _____ Sex _____

All of the information asked for on this sheet will be kept strictly confidential. It is needed for research purposes and you will only be identified by your code number in the research study. Please cooperate by answering all of the questions.

1. What are the occupations of your parents or guardians? (Be specific--garage mechanic, housewife, insurance salesman, elementary school principal, dentist, day laborer, maid, etc.)

   Father's occupation _____

   Mother's occupation _____

2. Do you plan to continue school after high school graduation? Check one.

   Yes____ No ____ Not sure ____

3. If you do plan to continue, what kind of school do you plan to attend? Check one.

   Four year college or university ____

   Two-year college (Junior college) ____

   Business school ____

   Beauty school ____

   Other (please state) _____

4. If you do not plan to continue school, what do you plan to do?

QUESTIONNAIRE NO. 2

Name _____ Code No. _____ Grade _____ Sex _____

Name of Student Teacher _____ Subject _____

All of the information asked for on this sheet will be kept strictly confidential. Your student teacher will not see your answers. When you have finished you will pass this and all your other material to the front of your row and it will be sealed in an envelope by one of your classmates.

Please answer these questions as honestly as you can.

1. Rate your student teacher as a teacher of this subject. Compare him to all other teachers you have had and have now in high school. Check one of the following:

   Excellent (One of the best teachers I've ever had) _____

   Above average (Better than most teachers I've had) _____

   Average (No better or no worse than most teachers I've had) _____

   Fair (Not as good as most teachers I've had) _____

   Poor (One of the worst teachers I've ever had) _____

2. What final grades have you made before in this subject?

   9th _____ 10th _____ 11th _____

3. What grade did you receive in this subject the last marking period? _____

4. How do you like this particular subject compared to other subjects you have studied? Check one of the following:

   I like this subject best of all _____

   I like this subject more than most others _____

   I neither like nor dislike this subject _____

I dislike this subject more than most others _____
I dislike this subject most of all _____

5. Comments:

APPENDIX B

INSTRUCTION SHEET FOR STUDENT TEACHERS

The materials to be given to your pupils should be handed out during your next to last week or last week of student teaching.

1. Pass out one set of material (4 pages) to each pupil in your class. You should have enough of these sets (75) to hand out one to each pupil in your "bright" class and one to each pupil in your "slow" class. Please return any excess.

2. After the materials have been passed out, please READ ALOUD the instructions in ALL CAPS to each of the classes completing the forms.

   THE MATERIAL YOU HAVE RECEIVED CONTAINS ONE SHORT TEST AND TWO QUESTIONNAIRES.

   PLEASE NOTICE ON THE OUTSIDE OF YOUR MATERIAL THERE IS A THREE-DIGIT NUMBER IN THE LEFT-HAND CORNER. THIS WILL BE YOUR CODE NUMBER. PLEASE PUT THAT NUMBER IN THE BLANK LABELED CODE NUMBER. YOU HAVE BEEN GIVEN THIS CODE NUMBER BECAUSE THE TEST AND THE QUESTIONNAIRES WILL BE USED FOR RESEARCH PURPOSES. YOU WILL NOT BE IDENTIFIED BY YOUR NAME - ONLY BY YOUR CODE NUMBER IN THE RESEARCH STUDY. ANY QUESTIONS? (pause) NOW, MAKE SURE THE FIRST PAGE YOU HAVE IS THE TWO PAGE TEST THAT LOOKS LIKE THIS - (show test of related words)

   DOES EVERYONE HAVE ONE? (pause)

PLEASE BEGIN BY FILLING IN YOUR NAME, CODE NUMBER, GRADE - TENTH, ELEVENTH, OR TWELFTH, SCHOOL, AND SO FORTH. ARE THERE ANY QUESTIONS? (pause)

WHEN YOU HAVE FINISHED, READ THE INSTRUCTIONS CAREFULLY AND DO NOT TURN THE PAGE UNTIL I SAY "BEGIN". IS THAT CLEAR? IF YOU FINISH BEFORE THE TIME IS UP, PLEASE TURN YOUR TEST OVER AND SIT QUIETLY UNTIL EVERYONE IS FINISHED AND I SAY "TIME IS UP".
(Now give students 5 minutes or so to read the directions)
- Check the time -

TURN THE PAGE AND "BEGIN"

At the end of thirty (30) minutes say - "TIME IS UP"
NOW WILL EVERYONE PLEASE FOLD THE TEST OVER SO YOU CAN SEE THE PAGE MARKED - QUESTIONNAIRE NUMBER ONE.

PLEASE READ THE PAGE CAREFULLY AND FILL IN THE BLANKS. (Wait about 5 - 7 min.)
HAS EVERYONE FINISHED? (wait until everyone is finished) TURN TO QUESTIONNAIRE NUMBER TWO.

NOW LISTEN CAREFULLY. (pause) AFTER YOU HAVE READ THIS LAST QUESTIONNAIRE AND FILLED IN THE BLANKS, PLEASE PASS YOUR SET OF MATERIALS TO THE FRONT OF YOUR ROW. THEN _____ (designate 1 student to collect all the papers) WILL COLLECT THEM IN THIS ENVELOPE (show envelope) AND SEAL IT.

ARE THERE ANY QUESTIONS? (pause) YOU MAY BEGIN ON THE LAST QUESTIONNAIRE.

(after all the papers have been turned in, say THANK YOU FOR BEING SO COOPERATIVE).

After the designated student has sealed the envelope and returned it to you, please place a large B in the bottom left hand corner of the envelope if the materials were from a "bright" class, and a large S if they were collected from a "slow" class. DO NOT FORGET TO DO THIS.

Please mail this as soon as possible.

Thank you very much for your time and cooperation.

APPENDIX C

RAW SCORES FOR CLASSIFICATION OF STUDENT TEACHERS

Subject	Sex	MTAI	Marlowe-Crowne	Alpert-Haber	RAT	GPA	CEEB-V
1	M	45	15	48	6	2.60	440
2	M	-2	12	63	10	2.37	440
3	M	38	18	39	16	2.35	540
4	M	4	17	39	21	1.97	630
5	M	48	23	39	18	1.88	520
6	M	59	19	30	1	2.13	540
7	M	18	16	41	17	1.93	590
8	M	15	20	25	24	2.67	560
9	M	4	14	48	15	2.33	480
10	M	18	13	34	18	2.13	690
11	M	7	12	40	19	2.55	540
12	M	29	22	34	20	2.29	580
13	M	39	20	35	24	2.27	570
14	M	36	22	25	20	2.46	600
15	M	8	14	18	10	2.60	520
16	M	-1	23	42	18	2.77	490
17	F	56	23	46	19	2.07	590
18	F	30	12	47	26	1.73	430
19	F	78	20	55	15	2.37	490
20	F	54	22	33	14	1.57	640
21	F	--	18	44	17	2.50	580
22	F	39	13	33	13	1.46	580
23	F	55	--	--	18	1.60	610
24	F	65	22	51	13	1.98	520
25	F	40	24	25	15	1.40	470
26	F	68	19	22	14	1.30	640
27	F	62	19	36	20	2.53	590
28	F	27	19	60	11	2.47	510
29	F	52	22	35	23	2.50	660
30	F	64	29	28	17	1.74	530
31	F	--	20	58	18	2.16	540

Subject	Sex	MTAI	Marlowe-Crowne	Alpert-Haber	RAT	GPA	CEEB-V
32	F	-8	33	101	17	2.27	460
33	F	73	14	69	20	2.22	480
34	F	73	22	47	11	2.27	490
35	F	-20	13	54	10	1.89	460
36	F	22	25	30	13	2.09	500
37	F	20	27	42	6	2.16	470
38	F	71	11	40	13	1.90	490
39	F	64	--	--	17	1.43	640
40	F	54	20	31	14	2.21	590
41	F	-30	13	28	14	----	683
42	F	36	18	43	15	----	442
43	F	37	20	56	12	2.53	406
44	F	71	16	31	13	2.27	598
45	F	80	30	26	14	2.00	570

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