

A STUDY OF THE RELATIONSHIP BETWEEN SELECTED INFLUENCES AND
CHANGES OF ATTITUDE TOWARD PUPILS THAT OCCUR DURING
AN EIGHTEEN-WEEK STUDENT-TEACHING EXPERIENCE

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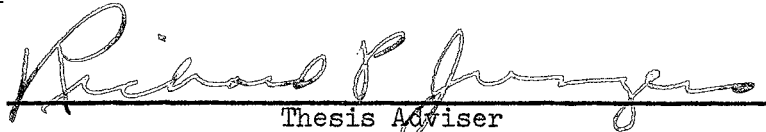
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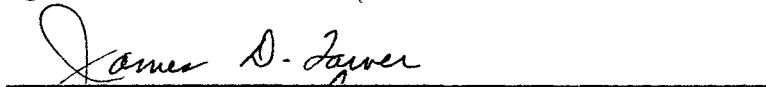
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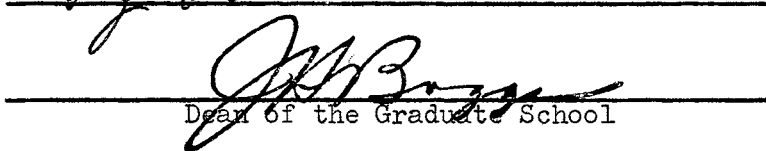

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CHAPTER I

INTRODUCTION

Student teaching, like the internship in other fields is felt to be the most important feature of the teacher-training program, but to what extent, and under what circumstances does this experience contribute to the transition from the role of student to the role of teacher? Such a transition entails drastic role reversals for the individuals involved, and presumably, much of the attitude change associated with role learning takes place during the student-teaching experience.

During the student-teaching experience the student acquires skills and techniques that will help him to become a skillful, and perhaps even a creative teacher. As he becomes less and less dependent upon the supervising teacher, in preparation for the time when he will have the full responsibility for classes and a classroom of his own, he has the opportunity to decide from experience whether or not teaching is what he really wants to do. Heretofore he has assumed the role of student, and his preconceived ideas relative to the role of teacher and teacher-pupil relationships in the classroom may be quite incongruent with those held by experienced teachers. As he makes the transition from the role of student to the role of teacher, does his attitude toward pupils and teaching in general change? If so, is there a general pattern of change that can be identified? While change of attitude toward pupils is not generally included

as a specific objective of student teaching, educators have, by implication, been inclined to emphasize the significance of basic attitudes for determining how an individual will react in a specific situation involving children.

Statement of the Problem

The study to be reported in this dissertation is primarily descriptive in nature since it had as one of its major aims the investigation of the direction and degree to which the attitudes of student teachers toward pupils and teaching in general change during an eighteen-week student-teaching experience. Since the Minnesota Teacher Attitude Inventory (9)¹ is the instrument used in this study to measure attitudes toward pupils, all references to attitudes or attitude changes will mean attitudes as measured by this instrument unless otherwise specified.

As a second major aim, this study sought to determine if there is a significant relationship between either the direction or degree of attitude change and a number of selected variables that may be influential in contributing to the nature and degree of attitude changes. More specifically, it deals with questions such as:

1. To what degree, and in what direction, either positive or negative, do the attitudes of student teachers toward pupils change during a eighteen-week student-teaching experience?
2. Is the degree and direction of attitude change the same during the first half of the student-teaching experience as during the last half?

¹Hereinafter, this instrument will be referred to as the MTAI.

3. Is the pattern of attitude change the same during the spring semester as during the fall semester?
4. Is there a significant relationship between either the degree or direction of attitude change and variables such as:
 - A. the grade level taught (primary, intermediate, junior high, or senior high);
 - B. the major area of teaching as defined on page 19;
 - C. the size of the school in which the student teaching is done (as measured by the number of regularly employed teachers);
 - D. sex of the student teachers;
 - E. attitudes of the cooperating teachers; and
 - F. the strength of the manifest needs associated with any of the fifteen personality traits measured by the Edwards Personal Preference Schedule (14)², and if so, which ones?
5. What disparities exist between the attitudes of the cooperating teachers and the student teachers before they begin their student-teaching experience and after they have completed the experience?

Need for the Study

The knowledge of what happens to the student relative to role learning or changes of attitude that occur during the student-teaching experience would greatly enhance decision-making on the part of the administrator charged with the responsibility for the student-teaching program. This information would enable him to place certain students in a school situation that would be more apt to result in positive or desirable changes of attitude than in negative or undesirable changes of attitude.

²Hereinafter, this instrument will be referred to as the EPPS.

Although it is not the purpose of this study to set up predictive criteria, it is anticipated that evidence will be discovered that will indicate that certain factors appear to be more related to positive or negative changes of attitude than are other factors. If such evidence is discovered, it could open the door to further and more refined research that may eventually lead to establishing criteria by which fairly accurate predictions can be made as to what will happen, relative to changes of attitude toward pupils, if a student teacher with given personality traits and attitudes were placed in a school situation with given characteristics.

Background of the Problem

Although public education has long been a part of the American way of life, recent developments and world events have re-emphasized the importance of public education and the correlate need for better trained teachers. International competition resulting from Russian successes with space satellites has helped to focus attention on the role of public education in the production of scientists, mathematicians, and technicians necessary to compete successfully with other nations, and has brought about rather severe criticisms of public school programs in science and mathematics. Not only has the adequacy of the secondary school programs in mathematics and science been critically analyzed and partially revised as a result of the space and nuclear race, but also the programs designed to prepare teachers have been subjected to increased scrutiny.

Since the quality of education received by children in the public schools depends largely on the competence of those who guide them, it is only natural that academicians and professional educators alike have questioned the adequacy of the teacher-training programs. What is a

qualified teacher? What training program will insure qualified teachers? Although there is no general agreement as to the overall training program necessary to insure qualified teachers, the importance of the student-teaching experience in the preparation of teachers has long been recognized. According to Williams (48, p.1) the need for practice teaching was recognized as far back as 1654, when Duke Earnest of Gotha wrote, "It is desirable that teachers at their own expense or with assistance remain in one central place and... through practice learn that... for which they will in the future be employed."

Since the beginning of the normal school movement in America, the practice suggested by Duke Earnest of Gotha has been included in, and considered an important part of the professional education of teachers. This part of the teacher-training program has been referred to by various names: student teaching, practice teaching, apprentice teaching, professional laboratory experience, and more recently, internship (18, p. 1).

The schools for such experiences, according to Harris (25, p. 5), have also been given different names in accordance with the purposes which they served.

In the United States, in the earliest days, these schools were named "model schools" since they merely served as models in which prospective teachers might observe actual teaching. Later these schools were called "practice schools," "demonstration schools," and "experimental schools." More recently, the term "laboratory school" has been used.

Even though student teaching was included in the normal school program from the very beginning of the normal school movement, prior to 1860, the experience was largely observations and what is now termed participation (18, p. 1). In 1860, Edward A. Sheldon, Secretary of the Board of Education and Superintendent of Schools at Oswego, New York, proposed that a city training school be established for the training of primary teachers of the

city. In the Oswego school, one-half of the time was given to the discussion of educational principles and their application to teaching the elementary branches, and the other half to teaching under criticism (18, p. 2). The success of the Model Primary School Teachers Department, as the Oswego school was called, and the rapid growth in the number of high schools, greatly influenced the programs of teacher training as they were established in other states.

During the early years of the development of the high school, the liberal arts colleges and the universities were able to provide enough teachers to meet the demand for secondary teachers. At that time, the normal schools considered their function to be that of training teachers for the elementary grades. As the number of high schools increased, the demand for secondary teachers increased, and the presidents of the normal schools were anxious to help meet the demand. "...in fact," according to Flowers (18, p. 7), "they quite freely stated that the normal schools should be expanded into teachers colleges that would serve the needs of the public-school service from kindergarten through high school."

In 1910, the high school enrollment was 984,699, but by 1930, it had increased to over 4,000,000. The rapid growth in high school enrollment caused the normal schools to increase their offerings from one to three years, with a tendency to the four-year program leading to the baccalaureate degree in education (18, p. 4).

As the normal schools expanded into four-year teachers colleges which trained secondary teachers as well as elementary teachers, it became necessary to enlarge the curriculum to include subject matter courses required in the training of secondary teachers.

Since the professional training of secondary teachers had historically been left entirely to the liberal arts colleges and universities, it was only natural that the new teachers colleges would encounter some difficulty in developing programs for training secondary teachers that would meet with the approval of the academicians of the institutions with whom they were competing.

In regard to deciding whether to follow the lead of the liberal arts colleges and universities, or to continue the methods and procedures used by the normal schools in training elementary teachers, Flowers (18, p. 4) has this to say:

For the most part, teachers colleges have been relatively free to work out their own plan. In some states, they have followed the lead of the universities and colleges in the type of training prescribed; in other states the traditions of the normal school have held over and influenced them tremendously in the work done; and, in still others, there has been a blending and modification of all these policies.

Nevertheless, the sudden expansion of the normal schools into four-year teachers colleges created a feeling of hostility on the part of the academicians of the liberal arts colleges and universities that has apparently carried over to the present controversy as to the adequacy of the teacher-training program. Bestor (3, p. 66), one of the more caustic critics of teacher-training programs, says:

Liberal education came into conflict with the narrow vocationalism of the pedagogues only when the normal schools began to imagine themselves as colleges, and only when men with pedagogical mentality began to erect miniature normal schools within the universities themselves. Then the shortcomings of a purely vocational approach to education became evident...

A century ago the nation was forced to tolerate shortcuts in the training of teachers. Now, however, it is in a position to require a really adequate period of preparation.

While Bestor is quite critical of the teachers colleges and departments of education in the universities, he does support practice teaching as a requirement for certification (3, p. 133).

Different certificates should deal with these different matters. One would testify to the individual's proficiency in teaching. There ought to be several ways of earning this certificate. An experienced teacher ought to be granted it simply upon presentation of satisfactory evidence of a successful teaching career of a specified length of time. For a candidate without previous experience, successful completion of a period of practice teaching would be the principal requirement. The institution that supervises practice teaching usually specifies certain pedagogical courses as prerequisites, hence the state has no need to lay down pedagogical course requirements of its own in granting certificates of teaching proficiency.

Although Bestor and others have been rather critical of the training programs offered by teachers colleges since they first expanded to include the training of secondary teachers as a function, the space and nuclear race has served to intensify their criticisms. Consequently, a number of changes have occurred, especially in regard to certification requirements and in the length of the student-teaching experience. State Boards of Education have gradually increased requirements until all states now require a degree for standard certification at the secondary level, and all but eight require a degree for a standard teaching certificate at the elementary level. In addition, all but six states require a specified number of hours of student teaching, or teaching experience in lieu of student teaching (17, p. 122-138).

Not only have the state certification agencies increased requirements for standard certification, but many teacher-training institutions have made changes in their programs in an effort to improve the quality of their teachers. One of the phases of teacher education in which changes have been rather noticeable is the student-teaching experience. The part-time program in which the student spent one or two hours per day in student teaching is gradually being replaced by some variation of the block-plan program which requires full-time student teaching for periods ranging from four to eighteen weeks.

On the assumption that a longer student-teaching experience will result in a better trained teacher, Northeastern State College at Tahlequah, Oklahoma, made a major change in their student-teaching program. Beginning with the Fall Semester of 1962-63, all education majors at Northeastern State College must enroll for a full semester of full-time student teaching in the public schools. Northeastern State College has the distinction of being the only college in Oklahoma, and one of few in the United States, to require a student-teaching experience of this length.

Although some research was sponsored by Northeastern State College as to the desirability of the extended student-teaching experience, it was primarily concerned with the evaluation of the longer student-teaching experience by administrators and cooperating teachers to whom student teachers were assigned. Administrators and cooperating teachers of the schools involved were almost unanimous in agreeing that the extended student-teaching experience is more desirable than the nine-week student-teaching experience.

While there is general agreement among administrators and cooperating teachers of the schools involved that the extended student-teaching experience will help to produce teachers who are more capable of assuming the responsibility for a classroom from the very beginning of the school year, there is no empirical evidence to support or refute this assumption.

Theoretically, the longer student-teaching experience provides a better opportunity for the intern teachers to learn the role of teacher, thus enabling them to make the transition from student to teacher with less anxiety due to role conflict. While it is not the purpose of this study to support or refute this theoretical assumption, it is anticipated that knowledge relative to changes of attitude associated with role learning

will be gained, thus opening the door to further and more refined research in this area.

Assumptions

There are several assumptions that are basic to this study. It must be assumed that:

1. Student teaching has some effect on the student teacher's attitude toward pupils and teaching in general and that changes of attitude toward pupils and teaching in general will occur during the student-teaching experience.
2. The attitudes of some students will change in the positive or desirable direction, while the attitudes of others will change in the negative direction.
3. Attitudes toward pupils and teaching in general can be measured, and the score made on the MTAI represents such a measure; consequently, significant changes in mean MTAI scores are indicative of changes of attitude.
4. Changes of attitude toward pupils and teaching in general that occur during the student-teaching experience are related to factors or variables associated with the experience, and a number of these variables can be identified and their relationship to changes of attitude can be established.
5. Although there can be no control over certain variables such as "test effect" resulting from administering the same instrument several times, the presence of such a variable, if indeed it does exist, can be determined through the procedure outlined in Chapter III.

Hypotheses

1. There will be no significant relationship between either the degree or direction of attitude changes of student teachers and:
 - A. the length of time spent in student teaching;
 - B. personality traits of the student teachers;
 - C. attitudes of the cooperating teachers;
 - D. grade level taught;
 - E. subject area taught;
 - F. sex;
 - G. the size of the school in which the student teaching is done;
and
 - H. the semester in which the student teaching is done.
2. There will be no significant change in the disparities that exist between the attitudes of the student teachers and the attitudes of their cooperating teachers before they begin their student teaching and the disparities that exist between the attitudes of the student teachers and the attitudes of the cooperating teachers after they have completed their student teaching experience.

Testing Instruments Used in the Study

Two testing instruments, the MTAI (9) and the EPPS (14) were used to provide the data for this study. MTAI raw scores were used as a measure for attitudes toward pupils and teaching in general, and the EPPS raw scores for each of the fifteen scales were used as a measure of the strength of the various manifest needs associated with each personality trait the instrument purports to measure.

The importance of the validity and reliability of any instrument used in research cannot be overemphasized since the validity of the research is dependent upon the validity of the instrument used. Although the validity of a research instrument is not always as high as desired, the absence of an instrument with a higher degree of validity and reliability makes it important that a description of the instrument, and the validity and reliability claimed for the instrument by its producer be given.

Even though a rather detailed report of the individual investigations leading to the construction and validation of the MTAI is given in Chapter II, a summary of the claims made for the instrument produced cooperatively as a result of these investigations is in order.

Cook, Leeds, and Callis (10, p. 3), authors of the MTAI, have this to say in regard to the use of the MTAI as a measure of attitudes:

Investigations carried on by the authors over the past ten years indicate that the attitudes of teachers toward pupils and school work can be measured with high reliability, and that they are significantly correlated with the teacher-pupil relations found in the teachers' classrooms. The Minnesota Teacher Attitude Inventory has emerged from these researches. It is designed to measure those attitudes of a teacher which predict how well he will get along with pupils in interpersonal relationships, and indirectly how well satisfied he will be with teaching as a vocation....

The MTAI consists of 150 attitude statements which according to the authors (10, p. 4), "...discriminate sharply between teachers who have and those who do not have good rapport with pupils...."

In the process of construction and validation of the MTAI, the authors used three criterion as a basis for establishing validity. At the same time, they also experimented with three different methods of scoring, and determined the reliability for each method. The results of their experimentation are reproduced as Descriptive Table I in Appendix A. For a more detailed discussion of the reliability of the MTAI, see Appendix B.

The EPPS is a forced-choice inventory consisting of 225 sets of paired statements. Fifteen sets of identically paired statements are repeated, thus providing a consistency variable. Scores on the consistency variable are based upon a comparison of the number of identical choices made by the subject in the two sets of the same fifteen items.

The statements in the EPPS have been scaled for degree of social desirability by the method of successive intervals, and have been so arranged that items are matched with other items that are somewhat equally located on the social desirability continuum. Theoretically, at least, this should minimize the tendency to answer in terms of social desirability in making a forced choice between two items.

A. L. Edwards (15, p. 21), author of the EPPS, has this to say concerning the validity of any instrument such as the EPPS.

The validity of a test or an inventory is frequently defined as "the extent to which the test or inventory actually measures what it purports to measure." If this definition were accepted at face value, the determination of the validity of an inventory would involve the correlation between scores on the inventory and some "pure criterion measure" of what the inventory purports to measure. Such pure criterion measures are, of course, generally not available. As a result, self-ratings or ratings by peers have frequently been substituted for the pure criterion measures.

....It is believed that studies such as the ones described above between self-ratings and scores on an inventory can do little more than establish agreement, or lack of it between the ratings of a particular subject and his scores on the inventory.... It is not clear, however, how even perfect agreement between self-ratings and inventory scores could be interpreted as bearing upon the nature of the variable being measured by the inventory....

Although there are no "pure criterion measures" of what the EPPS purports to measure, coefficients of correlation between the EPPS variables and the Taylor Manifest Anxiety Scale (44) and the Guilford-Martin Personnel Inventory (24) were obtained as a result of a study involving 106 students at the University of Washington. The results of this and other research relative to the validity and reliability of the EPPS are given in Descriptive

Tables II and III in Appendix A.

According to the EPPS Manual (15, p. 11) the manifest needs associated with each of the fifteen personality variables the instrument purports to measure are:

1. Achievement: To do one's best, to be successful, to accomplish tasks requiring skill and effort, to be a recognized authority....

2. Deference: To get suggestions from others, to find out what others think, to follow instructions and do what is expected, to praise others, to tell others that they have done a good job....

3. Order: To have written work neat and organized, to make plans before starting on a difficult task, to have things organized, to keep things neat and orderly....

4. Exhibition: To say witty and clever things, to tell amusing jokes and stories, to talk about personal adventures and experiences, to have others notice and comment upon one's appearance....

5. Autonomy: To be able to come and go as desired, to say what one thinks about things, to be independent of others in making decisions, to feel free to do what one wants....

6. Affiliation: To be loyal to friends, to participate in friendly groups, to do things for friends, to form new friendships....

7. Intrpection: To analyze one's motives and feelings, to observe others, to understand how others feel about problems, to place one's self in another's place....

8. Succorance: To have others provide help when in trouble, to seek encouragement from others, to have others be kindly, to have others be sympathetic and understanding about personal problems....

9. Dominance: To argue for one's point of view, to be a leader in groups to which one belongs, to be regarded by others as a leader....

10. Abasement: To feel guilty when one does something wrong, to accept blame when things do not go right, to feel that personal pain and misery suffered does more good than harm, to feel the need for punishment for wrong doing....

11. Nurturance: To help friends when they are in trouble, to assist others less fortunate, to treat others with kindness and sympathy, to forgive others, to do small favors for others....

12. Change: To do new and different things, to travel, to meet new people, to experience novelty and change in daily routine....

13. Endurance: To keep at a job until it is finished, to complete any job undertaken, to work hard at a task, to keep at a puzzle or problem until it is solved....

14. Heterosexuality: To go out with members of the opposite sex, to engage in social activities with the opposite sex, to be in love with someone of the opposite sex, to kiss those of the opposite sex....

15. Aggression: To attack contrary points of view, to tell others what one thinks about them, to criticize others publicly....

Design of Study

The basic design used in this study is what Garrett (21, p. 226) described as "The Single Group Method." In this method, the same test is given to the same group of students upon two or more occasions in order to determine, or estimate, the effect of some activity upon the second, or subsequent sets of scores.

The MTAI was given to each student teacher as a pretest before they began their student teaching, or early in the first week of student teaching. The same instrument was given again as a mid-term test after they had completed approximately half of their student teaching. During the final week of their student teaching, or immediately thereafter, the MTAI was given for the third time as a post-test.

In order to check for the presence of a possible test-effect resulting from taking the same instrument several times, a sub-design based on random assignment to three groups from comparable sub-groups was used. A detailed explanation of the procedure used in this part of the study is given in Chapter III.

Two statistical procedures were used in this study to determine whether two or more sets of MTAI scores were significantly different. When two sets of scores made by the same group of students were compared, a t ratio

was computed using the formula given by Garrett (21, p. 227-228).

$$t = \frac{\text{Mean}_D - 0}{SE_{M_D}} \cdot \text{When: } SD_D = \sqrt{\frac{d^2}{N-1}}, \text{ and } SE_{M_D} = \frac{SD_D}{\sqrt{N}}$$

Analysis of variance and the F test was used to determine the significance of differences between group means. In regard to the use of the F test, Garrett (21), on page 21, says:

F furnishes a comprehensive over-all test of the significance of the differences among means. A significant F does not tell us which means differ significantly, but that at least one is reliably different from some others. If F is not significant, there is no reason for further testing, as none of the mean differences will be significant.

Machine processing of the data through the use of the IBM 1410 Electronic Computer was provided by the statistical laboratory at Oklahoma State University.

Limitations

Certain limitations exist that may influence the conclusions of this study.

1. There is only one form of the MTAI; consequently the possibility of a test-effect must be considered. Although there can be no control for test-effect, a sub-design was used to determine whether or not differences between pretest and post-test MTAI scores may be partially attributed to test-effect.
2. There are certain limitations inherent in the major research instrument. The MTAI may be subject to faking (35, p. 663) although there are conflicting views on this point (10, p. 13); (42, p. 329).
3. Since the participation of the cooperating teachers is on a

voluntary basis, a reluctance on their part to participate could limit the testing of certain parts of the hypotheses.

4. The characteristics of the student-teacher population and their placement in the public schools may limit, or possibly eliminate the testing of certain parts of the hypotheses. For example, one would normally expect the number of elementary student teachers to be fairly equally distributed between the primary grades and the intermediate grades. If by chance, most of the elementary student teachers were placed in the primary grades, the possibility of establishing a relationship between changes of attitude and grade level taught would be limited, or possibly excluded. The same limitations exist in regard to other variables.
5. Since he is not a member of the faculty of the institution whose student-teacher population is being used in the study, the researcher has relatively little over-all control, and must, by necessity be dependent upon the college supervisors, the public school administrators, the cooperating teachers, and the student teachers for the collection of data. A lack of cooperation, or a lackadaisical attitude on the part of individual supervisors, administrators, cooperating teachers, or student teachers could influence the outcome of the study.

Definitions of Terms

MTAI

MTAI refers to the Minnesota Teacher Attitude Inventory.

EPPS

EPPS refers to the Edwards Personal Preference Schedule.

Change of attitude

Unless otherwise specified, all references to attitude, change of attitude, or changes of attitude will mean attitudes as measured by the MTAI.

Degree of attitude change

The degree of attitude change will mean the difference between the pretest MTAI scores and either the mid-term MTAI scores or the post-test MTAI scores, or the difference between mid-term MTAI scores and the post-test MTAI scores.

Direction of attitude change

Direction of attitude change refers to whether the mid-term or post-test MTAI score is greater or smaller than the pretest MTAI score.

Positive attitude change

The direction of attitude change will be considered to be in the positive, or desirable direction, when either the mid-term or post-test MTAI score is greater than the pretest MTAI score, or when the post-test MTAI score is greater than the mid-term MTAI score.

Negative attitude change

The direction of attitude change will be considered to be in a negative, or undesirable direction, when either the mid-term or post-test MTAI score is smaller than the pretest MTAI score, or when the post-test MTAI score is smaller than the mid-term MTAI score.

Significant difference

The .05 level of confidence will be considered significant when referring to differences between mean scores, or when referring to mean differences between sets of scores. Since the maximum reliability claimed for the MTAI is .93, no change will be considered to have occurred unless

an individual student teacher's MTAI score changes eight degrees or more between testings.

Subject area

Subject area refers to either academic or non-academic.

Academic subjects

Academic subjects will mean English, mathematics, science, social studies, foreign languages, speech and speech therapy.

Non-academic subjects

Non-academic subjects are music, art, physical education, business education, home economics, and industrial arts.

Primary grades

Primary grades refer to kindergarten, grades one, two, three, and four.

Intermediate grades

Intermediate grades are grades five, six, seven, and eight, providing grades seven and eight are not a part of a junior high school accredited by the State Department of Education.

Junior high school

Grades seven, eight, and nine are included in the junior high school, providing they are a part of an accredited junior high school. In a system that does not maintain an accredited junior high school, grades seven and eight will be included in the intermediate grades.

Senior high school

Senior high school refers to grades ten, eleven, and twelve. In a system that does not maintain an accredited junior high school, grade nine will be classified as senior high school.

Cooperating teacher

Cooperating teachers are teachers who are regularly assigned to teach

in a public school to whom student teachers are assigned.

The student-teaching experience

Unless otherwise specified, the student-teaching experience will refer to the entire period that a student teacher is in a public school and assigned to a cooperating teacher.

CHAPTER II

A REVIEW OF THE LITERATURE

Perhaps the most significant variable in any classroom is the personality of the teacher. Certainly the teacher's attitude toward children and teaching in general will play an important part in creating and maintaining a classroom climate that is conducive to learning and harmonious relationship.

As Symond (43, p. 83) has suggested:

....teaching is essentially an expression of personality. The teacher adapts himself to teaching in a manner that is harmonious with his expressions toward life situations in general. Methods and procedures learned during college preparation may influence teaching superficially, but they do not determine the nature of the relations of a teacher to his pupils or the teacher's basic attitude toward teaching.

A feeling on the part of educators that what a child learns in the classroom may be influenced as much, or perhaps even more, by the personality of his teacher as by what his teacher knows or does, has lead to a growing body of research into the personality and characteristics of the teacher.

In 1948, Barr (2) reviewed and categorized more than 150 studies relating to the teacher's personality and characteristics. In 1950, Domas and Tiedeman (13) compiled an annotated bibliography of 1,006 titles that fall within this category. Another bibliography of titles falling within the scope of the teacher's personality and characteristics was compiled by Morsh and Wilder (33) in 1954. Again, in 1960, Getzels and Jackson (22) compiled a list of more than 800 references that have been published since 1950. While there may have been some duplication of titles in the various

bibliographies mentioned, they do not contain all the studies that have been done in this field. Many unpublished works have not been reported.

Although the vast majority of studies contained in the various bibliographies relate to identifying or rating teacher competency, many studies relating to attitudes of teachers were also reported. For the purpose of this study, only research dealing with attitudes or attitude changes of teachers and student teachers, or studies relating to the MTAI will be reviewed.

According to Getzels and Jackson (22, p. 508), "By far the most popular instrument for the measurement of teacher attitudes is the Minnesota Teacher Attitude Inventory (MTAI). More than 50 research studies using this instrument are reported in the literature."

One of the most significant investigations relating to teacher-pupil attitudes and teacher-pupil rapport was completed by Leeds (29) in 1946, and resulted in the construction and validation of the major research instrument used in this study, the MTAI. The purpose of Leeds' (31, p. 149) study was:

....to explore the possibility of constructing a measuring instrument that would aid in the differentiation of teachers who have rapport with pupils from those who do not have such rapport. (By rapport is here meant a state of harmonious relationship characterized by mutual affection and sympathetic understanding.) It is postulated, of course, that ability to get along with pupils constitutes one of the many factors essential to teaching success. Although only one of many such factors, it is assumed further that it is one of the most important. This present study, then, attempts to make a contribution toward meeting the need for measures of the personality factors related to success in teaching.

The instrument constructed by Leeds was called the Teacher-Pupil Inventory. According to Leeds and Cook (31, p. 150):

The items of the inventory were in the form of opinion statements, the content of which related to the status of children in the eyes of adults, child nature and development, problems of behavior and discipline, educational philosophy and methodology, and the personality of the teacher. Items were constructed with children of elementary school age primarily in mind. It was believed that the Inventory eventually would prove more useful at this level.

Two forms of the original instrument were devised, each containing 378 items, differing essentially in the wording of the items. In this way there was provided an ample supply of content material for a later selection of the best-stated and most discriminating items. The subject was to respond to each item by encircling a number representing the degree of his acceptance as follows: (1) strongly agree, (2) agree, (3) undecided, (4) disagree, (5) strongly disagree. The following example illustrates a "strongly agree" reaction:

112. Immediate obedience is not
always desirable. ① 2 3 4 5

On the basis of the local school administrator's judgment, two groups of 100 teachers each were chosen to determine the discriminatory power of each item in the two forms of the inventory. One group consisted of teachers known to maintain very satisfactory relations with pupils, while the other groups was made up of teachers whose relations with pupils were very unsatisfactory. In order to determine the difference, if any, between the two groups, relative to their reactions to the items, form A was given to each of the 200 teachers chosen. A month or so later, form B was given to each teacher.

The response of each teacher to each of the 378 items contained in each form were carefully recorded and comparisons of the response patterns of each group of 100 teachers were made. From the 756 items contained in the two original forms, 164 items were chosen, primarily on the basis of their discriminatory power. The discriminatory power of the 164 items chosen by Leeds (29, p. 10) is given below:

79 (48 per cent) met the probability level of .05 ($X^2 = 9.488$)
112 (68 per cent) met the probability level of .10 ($X^2 = 7.779$)
134 (82 per cent) met the probability level of .20 ($X^2 = 5.989$)
146 (89 per cent) met the probability level of .30 ($X^2 = 4.878$)
157 (96 per cent) met the probability level of .50 ($X^2 = 3.357$).

A new form of the Inventory, consisting of the 164 items chosen from the two original forms was constructed. Although the validity of each of the 164 items chosen for this form of the inventory had already been

empirically established on the basis of each item's power to differentiate between the superior teacher and the inferior teacher, further validation studies were made.

The new form was given to 100 unselected teachers. The teachers were then rated by the principal, the writer (Leeds), and the pupils. Validity coefficients were determined by correlating scores made on the Inventory with scores made on each of the three rating devices. Intercorrelations of the scores made on each of the three rating devices were also determined.

Two different methods of scoring were developed, making use of the differentiation empirically established between the responses of the superior teacher and the inferior teachers. The results obtained by Leeds (29, p. 20) are shown in Descriptive Table IV in Appendix A.

Although the study made by Leeds demonstrated that teacher-pupil relations in the classroom were associated with the types of attitudes measured by the Inventory, no attempt was made to determine the effect of training and experience on these attitudes. Consequently, Callis (5), using the 164 items used by Leeds plus an additional 75 items taken from the original 756 items, sought to determine the stability of the attitudes being measured and the changes that occur during teacher training and early teaching experience. In this investigation, Callis used four groups of subjects, all from the College of Education of the University of Minnesota. Group 1, the Controls, consisted of 57 first-quarter juniors. This group was tested and retested at one-week or ten-day intervals. Group 2, the Juniors, was composed of 175 first-quarter juniors. They were tested at the beginning of the school year and again six months later. Group 3, the Seniors, consisted of 147 first-quarter seniors. They, too were tested at the beginning of the school year and again six months later. Group 4,

Beginning Teachers, was composed of 137 graduates of the College of Education who were beginning their first year of teaching. They were tested just before they graduated and again after they had been teaching for six months.

The mean Inventory scores of all groups, including the Controls, showed a significant change between the first and second testing. For the Controls, Juniors, and Seniors, the change was an increase from the first to the second testing. For the Beginning Teachers, the change was a decrease. When the change in the mean score of the Experimental groups was compared with that of the Controls, it was found that: (a) For the Juniors, the increase was significant at the .01 level; (b) For the Beginning Teachers, the decrease was significant at the .01 level; (c) For the Seniors, the increase was not significantly different from the increase for the Controls.

Callis (5) also divided the Juniors and Seniors into three major curricular groupings: (1) Early childhood education majors - nursery to elementary; (2) Academic field majors; (3) Special field majors - art, music, home economics, industrial arts, and physical education. He found the mean Inventory scores of all three groups to differ significantly at the beginning and the end of professional training, with the early childhood majors scoring the highest and the special fields majors scoring the lowest. From the results of this study, one might conclude that the first six months of professional training influenced attitude changes in the positive or desirable direction while the first six months of teaching experience resulted in a shift in the negative or undesirable direction.

In an effort to determine the susceptibility of the MTAI to faking, the authors set up three testing sequences, using three groups of first-quarter juniors in the College of Education, University of Minnesota as subjects. The three sequences were as follows (10, p. 13):

<u>Sequence</u>	<u>Instructions:</u> <u>First Testing</u>	<u>Instructions:</u> <u>Second Testing</u>	<u>Time</u> <u>Between Testings</u>
1.	Standard	Faking	4 to 6 weeks
2.	Faking	Standard	10 days
3.	Standard	Standard	7 to 10 days

The faking instructions were as follows (10, p. 13):

For the purpose of this task you are to place yourself in the following situation - you have applied for a teaching position you want very much to secure. It has all the qualities you hope to find in a teaching position. There are two other applicants for this job with approximately the same qualifications that you have. The superintendent has ask the three of you to answer the Inventory and you know the person who makes the highest score on the Inventory will get the job. Your sole aim is in answering this Inventory is to get as high a score as possible. You are to put 'your best foot forward.' You are to answer these items the way you think an excellent teacher would.

<u>Sequence</u>	<u>N</u>	<u>r</u>	<u>SD</u>		<u>Mean</u>	
(1) Standard	78	.53	21.26	F = 1.15*	141.43	t = 4.13**
Faking	78		22.84		151.13	
(2) Faking	44	.78	17.81	F = 1.10*	147.16	t = 0.99*
Standard	44		18.72		145.34	
(3) Standard	57	.84	16.76	F = 1.43**	135.77	t = 2.74**
Standard	57		20.06		139.96	

*Probability greater than .05

**Probability less than .01.

The authors conclude that (10, p. 13):

....a poor teacher "fakes" it in a different way from a good teacher.when two carefully defined criterion groups consistently respond to a given item in different ways one need not be concerned as to whether the responses are "honest" or not.

They further conclude (10, p. 13):

Sequence 2 is the more realistic situation in that the subject is asked to "fake good" the first time he takes the Inventory and before insight is gained. In this sequence the subject who had an average score was able to increase his score 1.8 points over the second administration according to standard directions. This evidence is the basis for the conclusion that the MTAI is only slightly susceptible to attempts to "fake good." This is, of course, evidence based on young students, perhaps only moderately test-wise. There seems to be no practicable way of really proving how much an experienced teacher applying for a real job can load responses in his own favor.

Although the authors of the MTAI claim that the instrument is only "slightly susceptible" to faking, Rabinowitz (35, p. 663) in an independent study asserts that college students "were able to alter their MTAI scores to a marked extent."

Using 76 experienced teachers as subjects, Coleman (7, p. 236) administered the MTAI first, using standard directions. Five to seven days later it was given again with the directions to answer "as you might in applying for a teaching position in a school system known for its permissive atmosphere and pupil-centered points of view." A mean gain of 12.42 points led him to conclude that: "Use of the MTAI as a major factor in hiring a teacher or accepting a student for teacher training would not seem warranted in light of this instrument's susceptibility to faking."

In a test-retest design, using three groups of 25 education students each, Stein and Hardy (42) used standard directions with the control group; directions to answer as a progressivist would with the second group; and to answer as a traditionalist would with the third group. The control group had a mean increase of 9.92 points. The progressivists increased their mean score by 68.84 points while the traditionalists showed a decrease of 41.68 points. In light of these findings, they concluded (42, p. 329): "This does not mean that the test is susceptible to faking, it means rather, that the test is adequate in revealing a biased or prejudiced attitude toward children from either extreme position."

In an effort to check further on the susceptibility of the MTAI to faking, Stein and Hardy (42) repeated the design used by Callis (6). In this experiment, only the control group increased significantly, thus they suggested (42, p. 331) that "Faking instructions only serve to confuse the subjects." Since the subjects tend to identify their own attitudes as

being desirable, they implied that the instrument is not subject to faking unless explicit directions as to what is desired are given.

Stein and Hardy's (42) conclusions that the MTAI "is adequate in revealing a biased or prejudiced attitude toward children from either extreme position," was confirmed by Budd and Blakely (4). The researchers asked two questions:

1. Is the scoring on the MTAI biased in favor of the extreme response position?
2. What is the relationship between scores on the MTAI and the tendency of subjects to choose either extreme or moderate response positions on the Inventory?

They concluded that persons taking the moderate position on the items of the Inventory would necessarily tend to receive lower scores. This implies that the instrument tends to identify those who take either extreme position.

Although the vast majority of studies using the MTAI were designed primarily to test the validity or reliability of the instrument, a number of interesting, and perhaps significant, findings have been reported.

Sandgren and Schmidt (39) reported a significant increase in attitude scores on the MTAI after the student-teaching experience, although they failed to establish a significant relationship between changes of attitude and critic teachers' ratings.

Cook, Kearney, Roccio, and Thompson (8) reported a significant relationship between the amount of training and MTAI scores, using experienced teachers as subjects.

Kearney and Roccio (27) found a significant relationship between MTAI scores and the type of institution in which the teacher had been trained.

Oelke (34, p. 82) in a study of changes in student teachers' attitudes during the initial teaching experience, found that score changes of the

teaching groups as measured by the MTAI showed some relationship to, "(a) amount of previous informal teaching experience; (b) degree of control by the critic teacher; (c) perception difficulty; and, (d) instruction in Educational Psychology." The change, however, was not significant, and the means were not consistent with those of the authors of the MTAI. Oelke's findings in regard to differences between sexes were consistent with those of the authors.

Day (11, p. 84-88) failed to establish the validity of the MTAI for predicting probable success in teaching and concluded, "The instrument has almost no value for predictive purposes." He did, however, report a number of interesting findings, some of which were quite consistent with those of the authors of the MTAI and other researchers. As an example, Day reported:

Judging by the means of all samples tested, there is a gradual shift in the direction of more desirable attitudes, as measured by the MTAI during that portion of the program of teacher training that precedes the internship at Florida State University.... This evidence of a common developmental pattern, insofar as attitudes toward pupils and school work is concerned, appear to be consistent with the findings of the authors.

Age seems not to have much bearing on MTAI scores. On the other hand, sex and teaching field appear to have a definite relationship. As regards the sex factor, there is a consistent trend for the males to score lower than the females....

A difference, significant at the .01 level, between post-internship scores of Fall Semester students and Spring Semester students was also reported, with the Spring Semester students scoring lower on all tests. Day was unable to account for this difference other than implying that it may be due to a population bias.

Day also confirmed the findings of Callis (5) and Oelke (34) in regard to a shift in the negative or undesirable direction after teaching for six months or more. There was no significant change in MTAI scores for the graduates of Florida State University who did not enter teaching.

Although attitude studies relating to the MTAI are deemed more pertinent to this investigation, there have been a number of other studies reported in which other instruments were used. However, few were concerned specifically with changes of attitude that occur during the student-teaching experience.

Using a 50-item questionnaire dealing with teacher-pupil relationships, Lindgren and Patton (32) found that (a) high school teachers have less favorable attitudes toward children than do teachers in the lower grades and (b) male teachers' attitudes are less favorable toward children than are those of female teachers.

Wandt (46) undertook to construct scales to measure the attitudes of teachers toward administrators, supervisors, pupils, parents, non-teaching employees, democratic classroom procedures, and democratic administrative procedures. Significant differences were found between the attitudes of elementary and secondary teachers toward administrators, non-administrative groups, and pupils.

In a later study, Wandt (47) found a relationship between teaching behavior as measured by principals' judgments, and teachers' attitudes toward pupils and administrators.

CHAPTER III

PROCEDURE USED IN THE INVESTIGATION

In June, 1963, the writer contacted Dr. Harrell E. Garrison, President of Northeastern State College, Tahlequah, Oklahoma, and briefly outlined the proposed plan for this investigation. Permission to use the entire student-teacher population of Northeastern State College for both semesters of the 1963-64 school year was granted. At the same time, the Chairman of the Division of Education and Psychology, the Director of Student Teaching, and the six supervisors were also contacted and their cooperation and support was promised.

Several factors associated with the student-teaching program made it impossible for the supervisors to do all the testing. First, the students who do their student teaching during the fall semester do not report to Northeastern State College prior to the beginning of school. Instead, they report directly to the school to which they have been assigned at the same time the regular teachers report for preservice training. Second, due to special agricultural interests in certain counties, some schools began as early as August 19, while others did not begin until September 3. At this time, the supervisors are on vacation. A third factor, an unforeseen restriction of travel time allocated to the supervisors for the spring semester, made it impossible for them to visit all schools at the time scheduled for the mid-term test and again for the post-test. Consequently, it became necessary to employ a different procedure for the spring semester.

During the early part of August, 1963, the writer visited each of the cooperating schools and made arrangements with either the superintendent or the principal to administer the MTAI and the EPPS to each student teacher, and to have them fill out a Student Data Sheet. These tests were to be given during the week of preservice training or as early in the first week of student teaching as possible. Subsequent tests were administered by the supervisors.

Sub-Design to Check for Possible Test-Effect

In order to check for the presence of a possible test-effect, a sub-design based on random assignment to three groups from comparable sub-groups was used (21, p. 206-207). A 2 x 3 card was made for each student teacher and included the following information: Name of student teacher, sex, grade level taught, subject area taught if secondary, the number of teachers in the school in which the student teaching was done, and the cumulative college gradepoint average at the time of admission to student teaching.

The cards were first sorted into two stacks on the basis of sex. Each stack was then sorted on the basis of grade level taught. Student teachers teaching at the junior high or senior high levels were then sorted according to subject area. Each sub-group was then divided on the basis of the number of teachers in the school. Since there were no male student teachers at the primary level, the final division gave twenty-three stacks of cards, or twenty-three sub-groups. Each stack of cards was then shuffled, and randomly dealt to one of three piles. Thus, each of the three piles contained approximately an equal number of student teachers at each grade level, in each subject area (either academic or non-academic), in schools of comparable size, and of each sex. Table I shows a comparison of the three groups in terms of these factors.

TABLE I

A COMPARISON OF THE THREE GROUPS USED IN THE SUB-DESIGN
TO TEST FOR A POSSIBLE TEST-EFFECT

Sex	School Size*	Grade Level	Subject Area	Groups		
				1	2	3
M	Large	Primary		0	0	0
M	Large	Intermediate		2	1	1
F	Large	Primary		8	8	8
F	Large	Intermediate		3	2	2
M	Small	Primary		0	0	0
M	Small	Intermediate		2	2	2
F	Small	Primary		5	5	6
F	Small	Intermediate		3	4	3
		Total Elementary		23	22	23
		Total Used in Final Analysis		17	17	16
M	Large	Junior High	Academic	2	2	2
M	Large	Junior High	Non-Academic	0	1	0
F	Large	Junior High	Academic	0	0	1
F	Large	Junior High	Non-Academic	0	0	0
M	Small	Junior High	Academic	2	2	1
M	Small	Junior High	Non-Academic	0	0	0
F	Small	Junior High	Academic	1	0	0
F	Small	Junior High	Non-Academic	0	1	1
		Total Junior High		4	6	6
		Total Used in Final Analysis		4	6	5
M	Large	Senior High	Academic	5	6	6
M	Large	Senior High	Non-Academic	5	4	5
F	Large	Senior High	Academic	1	2	2
F	Large	Senior High	Non-Academic	5	5	4
M	Small	Senior High	Academic	8	7	8
M	Small	Senior High	Non-Academic	5	5	4
F	Small	Senior High	Academic	3	3	2
F	Small	Senior High	Non-Academic	3	2	2
		Total Senior High		32	32	32
		Total Used in Final Analysis		20	25	28
		Total Males		27	28	28
		Total Males Used		21	22	24
		Total Females		32	32	32
		Total Females Used		24	23	24
		Original Group Totals		59	60	60
		Final Group Totals		45	45	48

*Above the median number of teachers was classified as large, below the median number of teachers was classified as small (for this test only).

After the student teachers were randomly assigned to Group 1 (pile 1, etc.), Group 2, or Group 3, randomness in terms of gradepoint averages was checked. A simple analysis of variance was used in order to check for a significant difference between groups. The resulting F-ratio of .00102 indicates the three groups were drawn from the same population, which could be interpreted to mean they were comparable in terms of gradepoint averages.

Group 3 was randomly chosen as the control group in the test for the presence of a test-effect. Groups 1, 2, and 3 were given the MTAI as a pretest. Groups 1 and 2 were given the MTAI again as a mid-term test after they had completed approximately half of their student-teaching experience. The MTAI was given as a post-test to all three groups during the final week of their student teaching experience. This made Groups 1 and 2 take the MTAI three times during the semester while Group 3 took the MTAI only twice. Since all three groups were comparable in terms of sex, size of school, grade levels taught, subject areas taught, and gradepoint averages, and all underwent a student-teaching experience of the same duration, the F-ratio between pretest MTAI scores should not differ significantly from the F-ratio between post-test MTAI scores. Since Groups 1 and 2 were given the MTAI three times during the semester while Group 3 was given the MTAI only twice, any significant change in the F-ratio and/or t-ratio from pretest MTAI scores to post-test MTAI scores might be partially attributed to test-effect rather than the general impact of the student-teaching experience.

As was previously mentioned, due to an unforeseen change of policy regarding the amount of travel time allocated to the supervisors, it was not possible for them to administer the MTAI to the spring semester student teachers at the mid-term or during the final week of their student teaching. Consequently, the procedure for collecting data for the spring semester was

different from the procedure used during the fall semester. The student teachers were contacted and given the MTAI and the EPPS one or two weeks before they left the campus to begin their student teaching. These instruments were self-administered and returned to the researcher by mail. Subsequent tests were also self-administered and returned to the researcher by mail.

Data were obtained from both semesters' cooperating teachers by mailing them a copy of the MTAI. A form letter explaining why they were being asked to complete the instrument and a self-addressed envelope with postage affixed was sent with each MTAI.

The EPPS and the MTAI answer sheets were hand-scored, and the scores carefully recorded on the Student Data Sheets. When all test results had been recorded on the Student Data Sheets, the data were coded and transferred to an IBM Data Sheet from which IBM cards were punched and verified. An IBM card was made for each student teacher that contained all the data related to that student. Statistical comparisons were made by an IBM 1410 Electronic Computer.

CHAPTER IV

THE STUDENT-TEACHER POPULATION

The total enrollment of 184 in student teaching the fall semester and 317 the spring semester can best be described through the use of tables. Table II shows the distribution of the total enrollment in student teaching by subject fields and semesters.

TABLE II
DISTRIBUTION OF STUDENT TEACHER ENROLLMENT BY SUBJECT FIELDS

Subject Field	Fall Semester Enrollment	Per Cent of Total	Spring Semester Enrollment	Per Cent of Total
Art	3	1.63	11	3.47
Business Education	10	5.43	34	10.73
English	11	5.98	23	7.26
Foreign Language	1	.54	7	2.21
Home Economics	15	8.15	10	3.15
Industrial Arts	7	3.81	14	4.42
Mathematics	11	5.98	21	6.62
Music	1	.54	8	2.52
Physical Education	17	9.24	19	5.99
Science	13	7.06	14	4.42
Social Studies	20	10.87	36	11.36
Speech and Speech Therapy	7	3.87	13	4.10
Elementary Education	<u>68</u>	<u>36.96</u>	<u>107</u>	<u>33.75</u>
Total	184	100.00	317	100.00

Previous studies have indicated there is a relationship between MTAI scores and sex, subject area taught, and grade level taught (8), (11), (26), (34), (45). Before any differences between fall and spring semesters can be interpreted, the population for each semester must be analyzed and

compared in terms of factors known to be related to MTAI scores, and the ratios of these interrelated variables to each other established.

One hundred, seventy-eight of the 184 who enrolled in student teaching the fall semester completed the full semester, while 314 of the 317 enrolled in student teaching the spring semester finished the term. The distribution by semester, sex, subject area, and size of the schools of all senior high school student teachers who completed a full semester of student teaching is given in Descriptive Table V in Appendix A.

Descriptive Table VI in Appendix A gives the distribution of junior high school student teachers who completed a full semester of student teaching; by semester, sex, subject area, and size of school.

The distribution by semester, sex, grade level, and size of school of those who completed their student teaching in the elementary schools is shown in Descriptive Table VII in Appendix A.

Even though the per cent of the total enrollment in student teaching represented by the various subject fields changed from the fall to the spring semester, the ratio of those who enrolled to teach non-academic subjects at the secondary level to those who enrolled to teach academic subjects did not change significantly. The number of elementary student teachers who taught non-academic subjects was too small to justify separate treatment. Therefore, Descriptive Table VIII in Appendix A gives the ratio by semester of the number of student teachers who taught non-academic to those who taught academic subjects at the secondary levels only.

The ratio of student teachers in the non-academic areas to student teachers in the academic areas changed only slightly from the fall semester to the spring semester. The change in the ratio of female student teachers to male student teachers who completed the student-teaching experience at

the secondary level, as indicated in Descriptive Table IX in Appendix A, was also small.

While changes in the ratios relating to sex and subject area taught at the secondary level were not great between semesters, when the secondary level is divided into junior and senior high levels, differences within and between the two levels become more obvious. Descriptive Table X in Appendix A compares the ratios of student teachers in academic areas at the junior high and the senior high level of both semesters.

Differences between semesters were not as great at the senior high school level as they were at the junior high school level. Not only was this true of the ratios relating to subject area taught, but as Descriptive Table XI in Appendix A indicates, it was also true of the sex variable.

Differences between semesters which relate to sex and grade level taught were more pronounced at the elementary level than they were at the secondary level. Descriptive Table XII in Appendix A gives the ratios by semesters of those who taught at the primary level to those who taught at the intermediate level. The ratios of male to female student teachers at the primary and intermediate levels are given in Descriptive Table XIII in Appendix A.

From the 178 student teachers who completed the fall semester, 138 sets of usable data were obtained. One hundred, sixty-nine sets of usable data were obtained from the 314 student teachers who completed the spring semester. Table III gives a comparison by semesters, sex, subject area, and levels of the student teachers used in the final analysis, with the total student-teacher population.

TABLE III

A COMPARISON OF THE STUDENT TEACHERS USED IN THE FINAL ANALYSIS
WITH THE TOTAL STUDENT-TEACHER POPULATION: BY SEMESTER,
SEX, SUBJECT AREA, AND GRADE LEVEL TAUGHT

Sex	Grade Level Taught	Subject Area Taught	Semester					
			Fall			Spring		
			Total N	Total Used	Per Cent Used	Total N	Total Used	Per Cent Used
M	Primary	Academic ^a	0	0		4	4	100.0
M	Intermediate	Academic	11	8	72.7	22	11	50.0
F	Primary	Academic	40	31	77.5	64	46	71.9
F	Intermediate	Academic	17	11	64.7	17	10	58.8
Total All Elementary Males			11	8	72.7	26	15	57.7
Total All Elementary Females			57	42	73.7	81	56	69.9
M	Junior High	Academic ^b	10	10	100	20	10	50.0
M	Junior High	Non-Academic ^b	1	1	100	8	4	50.0
F	Junior High	Academic	2	2	100	9	5	55.5
F	Junior High	Non-Academic	2	2	100	8	7	87.5
Total All Junior High Males			11	11	100	28	14	50.0
Total All Junior High Females			4	4	100	17	12	70.7
M	Senior High	Academic	40	31	77.5	59	26	44.1
M	Senior High	Non-Academic	21	18	85.7	47	17	36.2
F	Senior High	Academic	13	11	84.6	28	15	53.5
F	Senior High	Non-Academic	21	13	61.9	28	14	50.0
Total All Senior High Males			61	49	80.3	106	43	40.6
Total All Senior High Females			34	24	70.5	56	29	51.8
Total All Males			83	68	81.9	160	72	45.0
Total All Females			95	70	73.6	154	97	62.9

^aThe number of elementary student teachers teaching non-academic subjects was too small to justify separate treatment.

^bSince the number of junior high student teachers in certain classifications was so small, data from junior high student teachers were combined with that of senior high student teachers and classified as secondary level in the final analysis.

CHAPTER V

FINDINGS

Answers were sought to the following questions: (1) To what degree, and in what direction, either positive or negative, do the attitudes of student teachers toward pupils change during an eighteen-week student-teaching experience? (2) Is the degree and direction of attitude change the same during the first half of the student-teaching experience as during the last half? (3) Is there a significant relationship between either the degree or direction of attitude change and variables such as: (a) the grade level taught; (b) the major area of teaching; (c) the size of the school in which the student teaching is done; (d) the sex of the student teacher; (e) the attitudes of the cooperating teachers; and (f) the strength of the manifest needs associated with any of the fifteen personality traits measured by the EPPS, and if so, which ones? (4) What disparities exist between the attitude scores of the cooperating teachers and the attitude scores of the student teachers before they begin their student teaching, and are these disparities the same after they have completed their student teaching? (5) Is the pattern of attitude change the same for the spring semester as the pattern of attitude change during the fall semester?

It was hypothesized that: (1) There will be no significant relationship between either the degree or direction of attitude changes of student teachers toward pupils and: (a) the length of time spent in student teaching; (b) grade level taught; (c) subject area taught; (d) sex of the student

teacher; (e) the size of the school in which the student teaching is done; (f) the attitudes of the cooperating teachers; or (g) personality traits of the student teachers. (2) There will be no significant change in the disparities that exist between the attitudes of the student teachers and the attitudes of their cooperating teachers before they begin their student teaching and after they have completed their student teaching.

In seeking answers to the questions and to test the hypotheses set forth, an investigation was conducted using student teachers from Northeastern State College at Tahlequah, Oklahoma, as subjects. These student teachers were assigned to schools in forty different systems, located in twenty counties of Northeastern Oklahoma.

Although the testing schedule for the spring semester was the same as that of the fall semester, the MTAI and the EPPS were self-administered the spring semester whereas they were administered by principals, cooperating teachers, and college supervisors the fall semester. Since a different testing procedure was used each semester, each semester's data are treated separately.

MTAI scores were obtained from the cooperating teachers of each semester by mailing them a copy of the instrument and a form letter explaining why they were being asked to complete the inventory. A self-addressed envelope with postage affixed was included with each MTAI that was mailed.

Test-Effect

The possibility of a test effect resulting from taking the same form of the MTAI several times was considered. In order to check for the presence of such an effect, a sub-design based on random assignment of student teachers to one of three different groups from comparable sub-groups was used.

The grouping procedure described in Chapter III provided three groups which, at the time of the original assignment, were comparable in terms of the factors considered.

One group was randomly chosen as the control group, and was designated as Group 3. Student teachers in Group 3 were given the MTAI only twice; only as a pretest, and again during the final week of student teaching as a post-test. Student teachers in each of the other two groups took the MTAI three times during an eighteen-week student-teaching experience.

The rationale for the sub-design was based on the assumption that if each of the three groups were truly representative of a random sample, there would be no significant difference between their mean pretest MTAI scores. Since the groups were comparable in terms of factors known to be related to MTAI scores, and each underwent a student-teaching experience of the same duration, it was further assumed there would be no significant difference between the groups on the mean post-test MTAI scores, unless some factor was present in one or more groups to influence their MTAI scores. Since Groups 1 and 2 took the MTAI three times, while Group 3 took the MTAI only twice, it was also assumed that if Group 3 differed significantly from Groups 1 and 2 on the post-test MTAI scores, at least part of this difference might be attributed to test-effect.

Using the analysis of variance technique, each set of MTAI scores was analyzed to determine if one or more groups differed significantly on either the pretest, mid-term test, or post-test scores. A comparison of the mean MTAI scores for each group and the results of these analyses are given in Table IV.

The F-ratio of .39 for the pretest MTAI scores and .50 for the post-test MTAI scores indicate there are no true differences between the means

TABLE IV

A COMPARISON OF THE MEAN MTAI SCORES OF STUDENT TEACHERS WHO TOOK THE MTAI THREE TIMES WITH THE MEAN MTAI SCORES OF STUDENT TEACHERS WHO TOOK THE MTAI ONLY TWICE

Group	N	Mean MTAI Score		
		Pretest	Mid-term	Post-test
Group 1	45	+14.82	+23.58	+22.53
Group 2	45	+19.44	+26.64	+20.87
Group 3	48	+14.40	-----	+16.54

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES AMONG GROUPS

Source of Variation	df	Mean Square	F-ratio
Pretest MTAI Among Groups 1, 2, and 3	2	375.65	
Pretest MTAI Within the Groups	135	927.02	.39
Mid-term MTAI Between Groups 1 and 2	1	211.60	
Mid-term MTAI Within the Groups	88	745.54	.28
Post-test MTAI Among Groups 1, 2, and 3	2	447.23	
Post-test MTAI Within the Groups	135	896.92	.50

of the three groups on either the pretest or the post-test. The F-ratio of .28 for Groups 1 and 2 on the mid-term MTAI further indicates that Groups 1 and 2 did not differ significantly at mid-term. It is assumed then, there is no apparent test effect, and that any significant changes between pretest MTAI scores and subsequent MTAI scores are the results of factors other than test effect alone.

Differences Between Pretest MTAI Scores and Subsequent MTAI Scores

When the total student-teacher population used was divided into twelve sub-groups, and each sub-group separated according to sex, the numbers in some sub-groups became too small to justify separate treatment. Consequently, the MTAI scores of student teachers teaching at the junior high school level were combined with those teaching at the senior high school level and were treated as the secondary level. Since there were only four elementary student teachers each semester who could be classified as teaching non-academic subjects, they were combined with other elementary student teachers and all were classified as teaching academic subjects. The final analyses used in this study were based on these combinations of sub-groups.

In order to determine whether significant changes of attitudes occurred, and the over-all patterns of attitude change, the mean differences between pretest-mid-term test, mid-term test-post-test, and pretest-post-test MTAI scores for each sub-group were analyzed by semesters. The significance of mean differences between each set of scores was determined by applying the t test. The results of these analyses and the significance of mean differences by sub-groups for the fall semester are given in Table V, while the results for the spring semester are given in Table VI.

TABLE V
COMPARISON OF THE MEAN MTAI SCORES OF STUDENT TEACHERS BY SUB-GROUPS
AND THE SIGNIFICANCE OF MEAN DIFFERENCES
FALL SEMESTER

Sub-Group	Sex	Mean MTAI Scores			Mean Difference	df	t
		Pretest	Mid-term	Post-test			
ELEMENTARY							
Primary	F	+23.52	+30.19	-----	+ 6.67	20	1.51
Primary	F	-----	+30.19	+34.19	+ 4.00	20	1.13
Primary ₁	F	+23.52	-----	+34.19	+10.67	20	3.22**
Primary	F	+26.84	-----	+36.42	+ 9.58	30	3.50**
Intermediate	M	-12.25	+ 3.50	-----	+15.75	3	4.73*
Intermediate	M	-----	+ 3.50	+ 1.25	- 2.25	3	1.10
Intermediate	M	-12.25	-----	+ 1.25	+13.50	3	4.08*
Intermediate	M	+10.00	-----	+16.25	+ 6.25	7	2.73*
Intermediate	F	+32.22	+43.56	-----	+11.34	8	1.25
Intermediate	F	-----	+43.56	+40.67	- 2.89	8	.55
Intermediate	F	+32.22	-----	+40.67	+ 8.45	8	.88
Intermediate	F	+29.18	-----	+35.91	+ 6.73	10	.85
Elementary	M & F	+21.62	+30.59	-----	+ 8.97	33	2.49*
Elementary	M & F	-----	+30.59	+32.03	+ 1.44	33	.47
Elementary	M & F	+21.62	-----	+32.03	+10.41	33	2.97**
Elementary	M & F	+24.66	-----	+33.08	+ 8.42	49	3.26**
SECONDARY							
Academic	M	+13.26	+22.52	-----	+ 9.26	26	3.13**
Academic	M	-----	+22.52	+15.78	- 6.74	26	1.98
Academic	M	+13.26	-----	+15.78	+ 2.52	26	.63
Academic	M	+11.80	-----	+13.15	+ 1.35	39	.45

¹The final analysis of mean differences between pretest-post-test MTAI scores for each sub-group includes Groups 1, 2, and 3 of the original grouping for test-effect, whereas the first three analyses includes only those in Groups 1 and 2.

TABLE V (Continued)

Subject Area	Sex	Mean MTAI Scores			Mean Difference	df	t
		Pretest	Mid-term	Post-test			
Academic	F	+34.71	+29.00	-----	- 5.71	6	.87
Academic	F	-----	+29.00	+32.86	+ 3.86	6	.64
Academic	F	+34.71	-----	+32.86	- 1.85	6	.25
Academic	F	+20.79	-----	+18.29	- 2.50	13	.58
Academic	M & F	+17.68	+23.85	-----	+ 6.17	33	2.15*
Academic	M & F	-----	+23.85	+19.29	- 4.56	33	1.52
Academic	M & F	+17.68	-----	+19.29	+ 1.61	33	.46
Academic	M & F	+14.13	-----	+14.44	+ .35	53	.14
Non-Academic	M	+ .58	+ 7.67	-----	+ 8.25	11	1.33
Non-Academic	M	-----	+ 7.67	+ 4.33	- 3.34	11	.85
Non-Academic	M	+ .58	-----	+ 4.33	+ 3.75	11	.61
Non-Academic	M	+ 1.95	-----	+ 4.89	+ 2.94	18	.66
Non-Academic	F	+19.90	+31.70	-----	+11.80	9	1.94
Non-Academic	F	-----	+31.70	+15.60	-16.10	9	5.49**
Non-Academic	F	+19.90	-----	+15.60	- 4.30	9	.55
Non-Academic	F	+13.33	-----	+14.53	+ 1.20	14	.19
Non-Academic	M & F	+ 9.36	+18.59	-----	+ 9.23	21	2.15*
Non-Academic	M & F	-----	+18.59	+ 9.45	- 9.14	21	3.25**
Non-Academic	M & F	+ 9.36	-----	+ 9.45	+ .09	21	.02
Non-Academic	M & F	+ 6.97	-----	+ 9.15	+ 2.18	33	.60

*Significant at the .05 level of confidence

**Significant at the .01 level of confidence

Changes of Attitude at the Elementary Level, Fall Semester

An examination of the mean differences between sets of MTAI scores of student teachers teaching at the elementary level, as given in Table V indicates that significant changes of attitude as measured by the MTAI did occur at the elementary level during the fall semester.

Female Student Teachers Teaching at the Primary Level. Female student teachers who taught at the primary level showed a mean change of 6.67 degrees in the positive direction between their pretest MTAI scores and their mid-term MTAI scores, and 4.00 degrees in the positive direction between their mid-term MTAI scores and their post-test MTAI scores. Although neither mean difference was significant when considered separately, when both were combined to represent the total mean change between their pretest MTAI scores and their post-test MTAI scores, the difference was significant at the .01 level. These mean differences were computed from the MTAI scores of student teachers in Groups 1 and 2 of the original grouping for test-effect. When the MTAI scores of Group 3 of the original grouping were combined with the MTAI scores of Groups 1 and 2 in order to provide a larger number, the mean difference of 9.58 degrees in the positive direction between the pretest and the post-test MTAI scores was also significant at the .01 level.

Female Student Teachers Teaching at the Intermediate Level. Although the mean difference 11.34 degrees in the positive direction between the pretest and mid-term MTAI scores of female student teachers teaching at the intermediate level was greater than the mean difference for the primary teachers, the standard error of the mean difference was also greater. Consequently, no significant changes of attitude as measured by the MTAI occurred for this sub-group during the fall semester.

Male Student Teachers Teaching at the Intermediate Level. The mean difference of 15.75 degrees in the positive direction between the pretest MTAI scores and the mid-term MTAI scores of male student teachers teaching at the intermediate level was significant at the .05 level. A mean difference of 2.25 degrees in the negative direction between the mid-term MTAI scores and the post-test MTAI scores was not significant. When the scores of Groups 1 and 2 only were considered, the over-all mean difference of 13.50 degrees in the positive direction between the pretest MTAI scores and the post-test MTAI scores was significant at the .05 level. When the scores of Group 3 were combined with those of Groups 1 and 2, the overall mean difference between the pretest MTAI scores and the post-test MTAI scores was only 6.25 degrees in the positive direction, but still significant at the .05 level.

All Elementary Student Teachers Combined. The combined MTAI scores of all elementary student teachers yielded a mean difference of 8.97 degrees in the positive direction between the pretest MTAI scores and the mid-term MTAI scores. This change was significant at the .05 level although the mean change of 1.44 degrees in the positive direction between the mid-term MTAI scores and the post-test MTAI scores was not significant. When only the combined scores of Groups 1 and 2 were considered, the mean difference between the pretest MTAI scores and the post-test MTAI scores was 10.41 degrees in the positive direction. When the MTAI scores of Group 3 were combined with those of Groups 1 and 2, the mean difference between the pretest and the post-test MTAI scores was only 8.42 degrees in the positive direction although both differences were significant at the .01 level.

Changes of Attitude at the Secondary Level, Fall Semester

Although some changes in the mean MTAI scores occurred at the secondary level during the fall semester, the mean differences between the pretest MTAI scores and the post-test MTAI scores as given in Table V were not significant for either of the sub-groups.

Male Student Teachers Teaching Academic Subjects at the Secondary Level.

A mean difference of 9.26 degrees in the positive direction between the pretest MTAI scores and the mid-term MTAI scores of male student teachers teaching academic subjects at the secondary level was significant at the .01 level. The mean difference of 6.74 degrees in the negative direction between the mid-term MTAI scores and the post-test MTAI scores was not significant, although this change in the negative direction reduced the over-all mean difference between the pretest MTAI scores and the post-test MTAI scores to 2.52 degrees in the positive direction. This mean difference was not significant. When the MTAI scores of Group 3 were combined with those of Groups 1 and 2, the mean difference between the pretest and the post-test MTAI scores of only 1.35 degrees in the positive direction was not significant.

Female Student Teachers Teaching Academic Subjects at the Secondary Level.

As Table V indicates, there were no significant mean differences between any two sets of MTAI scores for this sub-group.

Male and Female Student Teachers Teaching Academic Subjects at the Secondary Level.

When the MTAI scores of male and female student teachers teaching academic subjects at the secondary level were combined, a mean difference of 6.17 degrees in the positive direction between their pretest and mid-term scores was the only difference significant at the .05 level.

Male Student Teachers Teaching Non-Academic Subjects at the Secondary Level. There were no significant mean differences between any two sets of MTAI scores for male student teachers teaching non-academic subjects at the secondary level.

Female Student Teachers Teaching Non-Academic Subjects at the Secondary Level. A mean difference of 11.80 degrees in the positive direction between the pretest and the mid-term MTAI scores made by female student teachers teaching non-academic subjects at the secondary level was not significant. A change of 16.10 degrees in the negative direction between the mid-term and the post-test MTAI scores made by this group was significant at the .01 level. The over-all mean difference between the pretest and the post-test MTAI scores, when considering only those of Groups 1 and 2, was 4.30 degrees in the negative direction, while the over-all difference was 1.20 degrees in the positive direction when the scores of Group 3 were included. Neither of the two differences was significant.

Male and Female Student Teachers Teaching Non-Academic Subjects at the Secondary Level. When the MTAI scores of male and female student teachers teaching non-academic subjects at the secondary level were combined, a mean difference of 9.23 degrees in the positive direction between the pretest and the mid-term MTAI scores was noted. As Table V indicates, this difference was significant at the .05 level. A mean difference of 9.14 degrees in the negative direction between the mid-term MTAI scores and the post-test MTAI scores was significant at the .01 level, thus the over-all mean difference of .09 degrees in the positive direction between the pretest and the post-test MTAI scores was not significant. When the scores of Group 3 were added, the over-all mean difference between the pretest and the post-test MTAI scores was 2.18 degrees in the positive direction.

Changes of Attitude at the Elementary Level, Spring Semester

Pretest and mid-term test scores were received from 169 spring semester students although post-test scores were received from only 123 student teachers. Since a larger sample tends to be a more normal distribution, the larger sample will be used in reporting differences between pretest and mid-term MTAI scores, although Table VI gives differences for the small sample as well.

TABLE VI

COMPARISON OF THE MEAN MTAI SCORES OF STUDENT TEACHERS BY SUB-GROUPS AND THE SIGNIFICANCE OF MEAN DIFFERENCES
SPRING SEMESTER

Sub-Group	Sex	Mean MTAI Scores			Mean Difference	df	t
		Pretest	Mid-term	Post-test			
Primary	F	+36.14	+25.68	-----	-10.46	36	3.30**
Primary	F	-----	+25.68	+27.62	+ 1.94	36	.67
Primary	F	+36.14	-----	+27.62	- 8.52	36	2.76**
Primary	F	+36.09	+25.02	-----	-11.07	45	3.69**
Intermediate	M	+16.80	- 4.20	-----	-21.00	4	1.28
Intermediate	M	-----	- 4.20	+ 2.80	+ 7.00	4	.66
Intermediate	M	+16.80	-----	+ 2.80	-14.00	4	.56
Intermediate	M	+25.73	+ .27	-----	-25.46	10	2.61*
Intermediate	F	+45.14	+21.14	-----	-24.00	6	2.27
Intermediate	F	-----	+21.14	+28.43	+ 7.29	6	1.22
Intermediate	F	+45.14	-----	+28.43	-16.71	6	2.45*
Intermediate	F	+41.20	+25.80	-----	-15.40	9	1.68
Combined Ele.	M & F	+35.61	+20.63	-----	-14.98	50	4.49**
Elementary	M & F	-----	+20.63	+25.02	+ 4.39	50	1.69
Elementary	M & F	+35.61	-----	+25.02	-10.59	50	3.12**
Elementary	M & F	+33.83	+18.92	-----	-14.91	70	5.12**

*Significant at the .05 level of confidence

**Significant at the .01 level of confidence

TABLE VI (Continued)

Subject Area	Sex	Mean MTAI Score			Mean Difference	df	t
		Pretest	Mid-term	Post-test			
Academic	M	+12.04	+ 1.93	-----	-10.11	27	2.03
Academic	M	-----	+ 1.93	+ .82	- 1.11	27	.23
Academic	M	+12.04	-----	+ .82	-11.22	27	2.14*
Academic	M	+12.67	+ 3.31	-----	- 9.36	35	2.06*
Academic	F	+34.14	+16.86	-----	-17.28	13	2.20*
Academic	F	-----	+16.86	+14.93	- 1.93	13	.37
Academic	F	+34.14	-----	+14.93	-19.21	13	2.62*
Academic	F	+37.40	+18.90	-----	-18.50	19	2.84*
Academic	M & F	+19.40	+ 6.90	-----	-12.50	41	2.98**
Academic	M & F	-----	+ 6.90	+ 5.52	- 1.38	41	.37
Academic	M & F	+19.40	-----	+ 5.52	-13.88	41	3.27**
Academic	M & F	+21.50	+ 8.88	-----	-12.62	55	3.40**
Non-Academic	M	+ 2.53	- 6.87	-----	- 9.40	14	2.41*
Non-Academic	M	-----	- 6.67	+ .07	+ 6.74	14	1.48
Non-Academic	M	+ 2.53	-----	+ .07	- 2.46	14	.43
Non-Academic	M	+ 3.05	- 7.43	-----	-10.48	20	2.28*
Non-Academic	F	+11.87	- 5.13	-----	-17.00	14	3.07**
Non-Academic	F	-----	- 5.13	- 2.27	+ 2.86	14	.71
Non-Academic	F	+11.87	-----	- 2.27	-14.14	14	2.37*
Non-Academic	F	+11.95	- 7.19	-----	-19.14	20	2.73*
Non-Academic	M & F	+ 7.20	- 6.00	-----	-13.20	29	3.89**
Non-Academic	M & F	-----	- 6.00	- 1.10	+ 4.90	29	1.63
Non-Academic	M & F	+ 7.20	-----	- 1.10	- 8.30	29	1.97
Non-Academic	M & F	+ 7.50	- 7.31	-----	-14.81	41	3.53**

*Significant at the .05 level of confidence

**Significant at the .01 level of confidence

Female Student Teachers Teaching at the Primary Level. Female student teachers who taught at the primary level during the spring semester had a mean difference of 11.07 degrees in the negative direction between their pretest and mid-term MTAI scores. This change was significant at the .01 level. A mean difference of 1.94 degrees in the positive direction between their mid-term and post-test MTAI scores was not significant. An over-all mean difference of 8.52 degrees in the negative direction between pretest and post-test MTAI scores was significant at the .01 level.

Female Student Teachers Teaching at the Intermediate Level. The mean difference of 15.40 degrees in the negative direction between the pretest and the mid-term MTAI scores of female student teachers teaching at the intermediate level during the spring semester was not significant. Neither was the mean difference of 7.29 degrees in the positive direction between mid-term and post-test MTAI scores. Although the mean difference of 16.71 degrees in the negative direction between pretest and post-test MTAI scores for the smaller sample was significant at the .05 level, the smaller pre-test score for the larger sample suggests that this difference may have occurred by chance.

Male Student Teachers Teaching at the Intermediate Level. A mean difference of 25.46 degrees in the negative direction between the pretest and the mid-term MTAI scores as given in Table VI was significant at the .05 level. The change between the mid-term and the post-test MTAI scores was a mean difference of 7.00 degrees in the positive direction, but was not significant. The mean difference of 14.00 degrees in the negative direction between the pretest and post-test MTAI scores was not significant.

All Spring Semester Elementary Student Teachers Combined. When the MTAI scores of all student teachers teaching at the elementary level were

combined, the mean difference of 14.91 degrees in the negative direction between the pretest and the mid-term MTAI scores was significant at the .01 level. The mean difference of 4.39 degrees in the positive direction between the mid-term and the post-test MTAI scores was not significant. An over-all mean difference of 10.59 degrees in the negative direction between the pretest and the post-test MTAI scores was also significant at the .01 level.

Changes of Attitude at the Secondary Level, Spring Semester

Male Student Teachers Teaching Academic Subjects at the Secondary Level.

A mean difference of 9.36 degrees in the negative direction between the pretest and the mid-term MTAI scores of male student teachers teaching academic subjects during the spring semester was significant at the .05 level. A mean difference between the mid-term and the post-test MTAI scores of 1.11 degrees in the negative direction was not significant. Over-all, the mean difference of 11.22 degrees in the negative direction between the pretest and the post-test MTAI scores of this group was significant at the .05 level.

Female Student Teachers Teaching Academic Subjects at the Secondary

Level. A mean difference of 18.50 degrees in the negative direction between the pretest and the mid-term MTAI scores for female student teachers teaching academic subjects at the secondary level was significant at the .05 level. The 1.93 mean difference in the negative direction between the mid-term and the post-test MTAI scores was not significant. An over-all mean difference of 19.21 degrees in the negative direction between the pretest and the post-test MTAI scores of this group was significant at the .05 level.

Male and Female Student Teachers Teaching Academic Subjects at the Secondary Level. When the scores of male and female student teachers teaching academic subjects at the secondary level during the spring semester were combined, the mean difference between their pretest and post-test MTAI scores of 12.62 degrees in the negative direction was significant at the .01 level. A mean difference of 1.38 degrees between the mid-term and the post-test MTAI scores was not significant. The over-all mean difference of 13.88 degrees in the negative direction between their pretest and post-test MTAI scores was significant at the .01 level.

Male Student Teachers Teaching Non-Academic Subjects at the Secondary Level. Male student teachers teaching non-academic subjects at the secondary level had a mean difference in the negative direction of 10.48 degrees between their pretest and mid-term MTAI scores. This difference was significant at the .05 level. A change of 6.74 degrees in the positive direction between their mid-term and post-test MTAI scores was not significant. Neither was the over-all mean difference of 2.46 degrees in the negative direction between their pretest and post-test MTAI scores.

Female Student Teachers Teaching Non-Academic Subjects at the Secondary Level. A mean difference of 19.14 degrees in the negative direction between the pretest and mid-term MTAI scores for this group was significant at the .05 level. The mean change of 2.86 degrees in the positive direction between their mid-term and post-test MTAI scores was not significant. The over-all mean difference of 14.14 degrees in the negative direction between the pretest and post-test MTAI scores of this group was significant at the .05 level.

Male and Female Student Teachers Teaching Non-Academic Subjects at the Secondary Level. When the MTAI scores of the male and female student teachers teaching non-academic subjects at the secondary level were combined,

the mean difference of 14.81 degrees in the negative direction between their pretest and mid-term scores was significant at the .01 level. The mean difference of 4.90 degrees in the positive direction between their mid-term and post-test MTAI scores was not significant. Neither was the mean difference of 8.30 degrees in the negative direction between their pretest and post-test MTAI scores.

The Pattern of Attitude Change. Although the mean MTAI scores and the significance of mean differences between sets of scores have been presented in Tables V and VI, the over-all pattern of changes that occurred can be more clearly visualized if presented graphically. Figure 1 shows the pattern of change for the fall semester student teachers while Figure 2 shows the pattern of change for the spring semester student teachers.

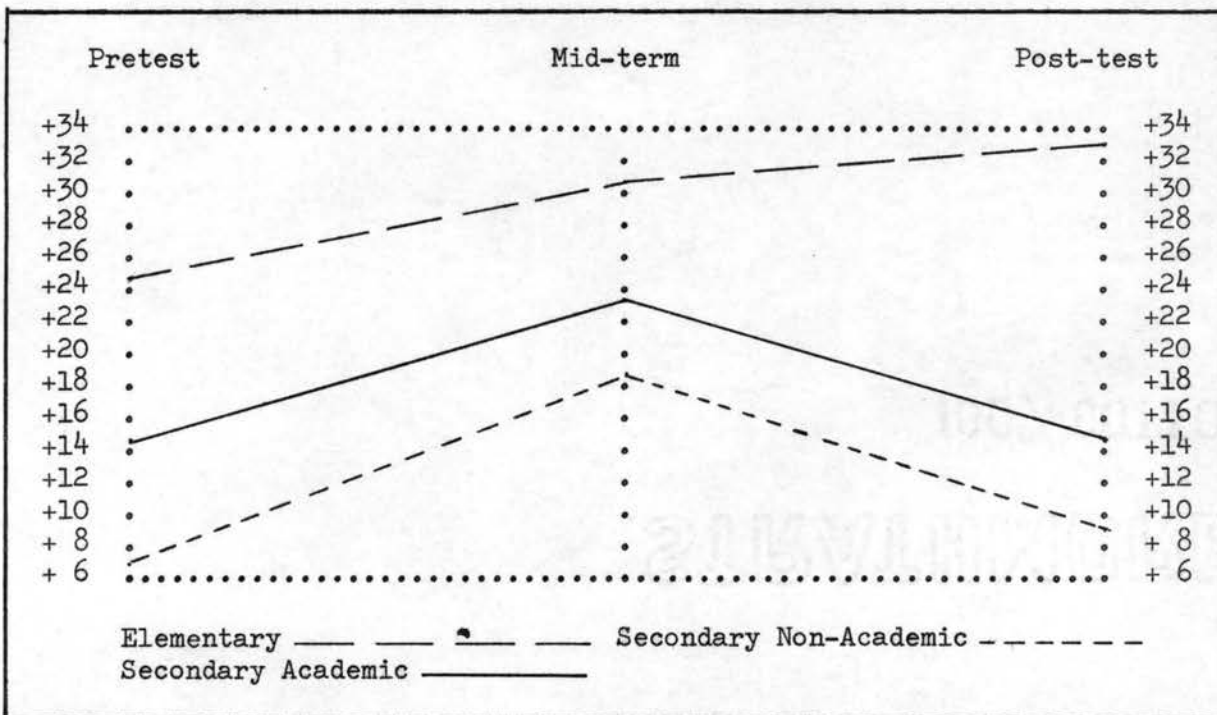


Figure 1. Pattern of Change by Level and Area for the Fall Semester

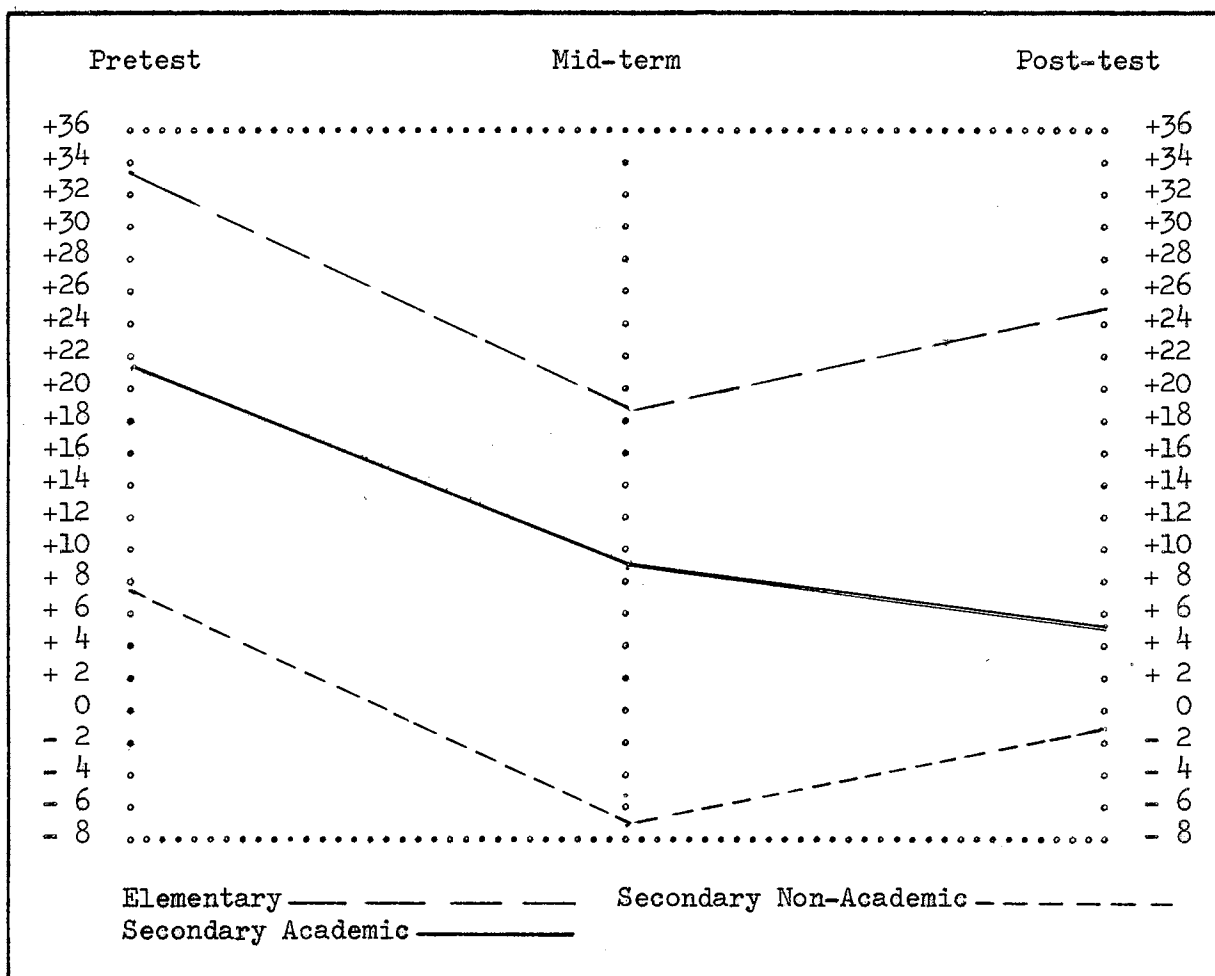


Figure 2. Pattern of Change by Level and Area for the Spring Semester

Differences Related to Sex During the Fall Semester

In order to determine the differences related to sex, the mean MTAI scores made by the male student teachers were compared with the mean MTAI scores made by the female student teachers. Comparisons were made between the males and females teaching at the elementary level, the males and females teaching academic subjects at the secondary level, the males and females teaching non-academic subjects at the secondary level, and all males and all females teaching at the secondary level.

Using the analysis of variance technique, each set of MTAI scores was analyzed to determine the differences between the mean MTAI scores

of the males and females. The significance of the resulting F ratios was determined by entering Table F, pages 451-454 of Garrett (21) with the appropriate degrees of freedom.

A comparison of the mean MTAI scores of the male student teachers with the mean MTAI scores of the female student teachers and the F ratios resulting from the analyses for the fall semester are given in Tables VII, VIII, IX, and X. A comparison of the mean MTAI scores of male student teachers with the mean MTAI scores of the female student teachers and the resulting F ratios for the spring semester are given in Tables XI, XII, XIII, and XIV.

Differences Between the Sexes at the Elementary Level. Although the pretest mean MTAI score of the female student teachers as given in Table VII was 17.45 degrees greater than the pretest mean score of the male student teachers, the resulting F ratio indicates that this difference was not significant. By mid-term, the difference between the mean MTAI scores of the males and the females had increased to 30.70 degrees, which yielded an F ratio of 5.50, which was significant at the .05 level. The F ratio of 3.70 resulting from the difference of 16.04 degrees between the post-test mean scores of the male and female student teachers was not significant.

Differences Between the Mean MTAI Scores of Male and Female Student Teachers Teaching Academic Subjects at the Secondary Level. As Table VIII indicates, female student teachers scored higher than the male student teachers at all three testings, although none of the resulting F ratios were significant.

Differences Between the Mean MTAI Scores of Male and Female Student Teachers Teaching Non-Academic Subjects at the Secondary Level. Female student teachers teaching non-academic subjects at the secondary level

TABLE VII

A COMPARISON OF THE MEAN MTAI SCORES OF THE MALE AND THE FEMALE STUDENT
TEACHERS WHO TAUGHT AT THE ELEMENTARY LEVEL
FALL SEMESTER

Test	Males		Females		Difference
	N	Mean MTAI Score	N	Mean MTAI Score	
Pretest	8	+10.00	42	+27.45	17.45
Mid-term	4	+ 3.50	30	+34.20	30.70*
Post-test	8	+16.25	42	+36.29	16.04

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN THE MEAN MTAI
SCORES OF THE MALE AND THE FEMALE STUDENT TEACHERS WHO TAUGHT
AT THE ELEMENTARY LEVEL
FALL SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Between Sexes	1	2046.82	
Pretest MTAI Within Sex	48	960.38	2.13
Mid-term MTAI Between Sexes	1	3326.44	
Mid-term MTAI Between Sexes	32	604.74	5.50*
Post-test MTAI Between Sexes	1	2697.61	
Post-test MTAI Within Sex	48	727.21	3.70

TABLE VIII

A COMPARISON OF THE MEAN MTAI SCORES OF THE MALE AND THE FEMALE STUDENT
TEACHERS WHO TAUGHT ACADEMIC SUBJECTS AT THE SECONDARY LEVEL
FALL SEMESTER

Test	Males		Females		Difference
	N	Mean MTAI Score	N	Mean MTAI Score	
Pretest	40	+11.80	14	+20.79	8.99
Mid-term	27	+22.52	7	+29.00	6.48
Post-test	40	+13.15	14	+18.29	5.14

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN THE MEAN MTAI
SCORES OF THE MALE AND THE FEMALE STUDENT TEACHERS WHO TAUGHT
ACADEMIC SUBJECTS AT THE SECONDARY LEVEL
FALL SEMESTER

Source of Variation	df	Mean Squares	F Ratio
Pretest MTAI Between Sexes	1	837.34	
Pretest MTAI Within Sex	52	779.22	1.07
Mid-term MTAI Between Sexes	1	233.52	
Mid-term MTAI Within Sex	32	815.15	.28
Post-test MTAI Between Sexes	1	273.52	
Post-test MTAI Within Sex	52	954.27	.28

scored higher than the male student teachers teaching non-academic subjects at the secondary level on all but the post-testings. The only difference between their mean MTAI scores given in Table IX that was significant was at the mid-term. The F ratio of 5.40 resulting from a difference of 30.70 degrees between their mean MTAI scores at mid-term was significant at the .05 level.

Differences Between the Mean MTAI Scores of All Male and All Female Student Teachers Teaching at the Secondary Level. When the scores of all male student teachers teaching at the secondary level were combined and their mean scores compared with the mean scores of all the female student teachers teaching at the secondary level, a difference of 15.25 degrees between their pretest mean MTAI scores was significant at the .01 level. Although Table X shows that the mean scores for the females were higher than the mean scores for the males on the mid-term and the post-test, the differences were not significant.

Differences Related to Sex During the Spring Semester

Differences Between the Mean MTAI Scores of Male and Female Student Teachers Teaching at the Elementary Level. Table XI shows that the female student teachers who taught at the elementary level during the spring semester had higher mean scores on all three MTAI testings than did the male student teachers at this level. The differences of 15.00 degrees between their pretest means and 19.89 degrees between their post-test means were not significant. A difference of 29.56 degrees between their mean MTAI scores at mid-term yielded an F ratio of 9.56 which was significant at the .01 level.

Differences Between the Mean MTAI Scores of Male and Female Student Teachers Teaching Academic Subjects at the Secondary Level. A difference

TABLE IX

A COMPARISON OF THE MEAN MTAI SCORES OF THE MALE AND THE FEMALE STUDENT
TEACHERS WHO TAUGHT NON-ACADEMIC SUBJECTS AT THE SECONDARY LEVEL
FALL SEMESTER

Test	Males		Females		Difference
	N	Mean MTAI Score	N	Mean MTAI Score	
Pretest	19	+1.95	14	+13.33	11.38
Mid-term	12	+7.67	10	+31.70	24.03*
Post-test	19	+4.89	14	+14.53	9.64

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN THE MEAN MTAI
SCORES OF THE MALE AND THE FEMALE STUDENT TEACHERS WHO TAUGHT
NON-ACADEMIC SUBJECTS AT THE SECONDARY LEVEL
FALL SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Between Sexes	1	1086.69	
Pretest MTAI Within Sex	32	892.76	1.21
Mid-term MTAI Between Sexes	1	3150.55	
Mid-term MTAI Within Sex	20	583.14	5.40*
Post-test MTAI Between Sexes	1	778.74	
Post-test MTAI Within Sex	32	609.36	1.27

*Significant at the .05 level of confidence

TABLE X

A COMPARISON OF THE MEAN MTAI SCORES OF ALL MALE AND ALL FEMALE
STUDENT TEACHERS WHO TAUGHT AT THE SECONDARY
LEVEL, DISREGARDING SUBJECT AREA
FALL SEMESTER

Test	Males		Females		Difference
	N	Mean MTAI Score	N	Mean MTAI Score	
Pretest	59	+ 8.63	29	+16.93	8.33
Mid-term	39	+17.95	17	+30.59	12.64
Post-test	59	+10.49	29	+16.34	5.85

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN THE MEAN MTAI
SCORES OF ALL MALE AND ALL FEMALE STUDENT TEACHERS WHO TAUGHT
AT THE SECONDARY LEVEL, DISREGARDING SUBJECT AREA
FALL SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Between Sexes	1	1340.70	
Pretest MTAI Within Sex	86	822.55	1.63
Mid-term MTAI Between Sexes	1	1891.41	
Mid-term MTAI Within Sex	54	733.52	2.57
Post-test MTAI Between Sexes	1	666.15	
Post-test MTAI Within Sex	86	815.13	.8172

TABLE XI

A COMPARISON OF THE MEAN MTAI SCORES OF THE MALE AND THE FEMALE STUDENT
TEACHERS WHO TAUGHT AT THE ELEMENTARY LEVEL
SPRING SEMESTER

Test	Males		Females		Difference
	N	Mean MTAI Score	N	Mean MTAI Score	
Pretest	15	+22.00	56	+37.00	15.00
Mid-term	15	- 4.40	56	+25.16	29.56*
Post-test	7	+ 7.86	44	+27.75	19.89

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN THE MEAN MTAI
SCORES OF THE MALE AND THE FEMALE STUDENT TEACHERS WHO TAUGHT
AT THE ELEMENTARY LEVEL
SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Between Sexes	1	2661.97	
Pretest MTAI Within Sex	69	885.07	3.00
Mid-term MTAI Between Sexes	1	10338.34	
Mid-term MTAI Within Sex	69	1081.06	9.56*
Post-test MTAI Between Sexes	1	2389.87	
Post-test MTAI Within Sex	49	1372.06	1.74

*Significant at the .01 level of confidence.

of 24.73 degrees between the mean pretest MTAI scores of male and female student teachers teaching academic subjects at the secondary level yielded an F ratio of 9.81 which was significant at the .01 level. Although the mean scores of the females were also higher than the mean scores of the males at mid-term and on the post-test, as Table XII indicates, the differences were not significant.

Differences Between the Mean MTAI Scores of Male and Female Student Teachers Teaching Non-Academic Subjects at the Secondary Level. There were no significant differences between the males and the females on either of the three MTAI testings for this group, although the results reported in Table XIII show that the mean scores of the females were larger than the mean scores of the males at all three testings.

Differences Between the Mean MTAI Scores of All Male and Female Student Teachers Teaching at the Secondary Level. When the MTAI scores of all male student teachers teaching at the secondary level were combined and their mean scores compared with the mean scores of all female student teachers teaching at the secondary level, the only means that were significantly different were those of the pretest. Table XIV shows that the females' mean score was 15.25 degrees higher on the pretest than the mean score of the males. The resulting F ratio of 6.59 indicates that this difference was significant at the .01 level. The differences between their mid-term and post-test mean scores were not significant although the females' mean scores were also higher at both of these testings.

The Pattern of Attitude Change and the Pattern of Differences Related to Sex. Although the mean MTAI scores and the significance of differences between the mean scores of the males and the females have been given in Tables VII through XIV, the differences between the males and females can

TABLE XII

A COMPARISON OF THE MEAN MTAI SCORES OF THE MALE AND THE FEMALE STUDENT TEACHERS WHO TAUGHT ACADEMIC SUBJECTS AT THE SECONDARY LEVEL
SPRING SEMESTER

Test	Males		Females		Difference
	N	Mean MTAI Score	N	Mean MTAI Score	
Pretest	36	+12.67	20	+37.40	24.73*
Mid-term	36	+ 3.31	20	+18.90	15.59
Post-test	28	+ .82	14	+14.93	14.11

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN THE MEAN MTAI SCORES OF THE MALE AND THE FEMALE STUDENT TEACHERS WHO TAUGHT NON-ACADEMIC SUBJECTS AT THE SECONDARY LEVEL
SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Between Sexes	1	7865.20	
Pretest MTAI Within Sex	54	801.61	9.81*
Mid-term MTAI Between Sexes	1	3126.69	
Mid-term MTAI Within Sex	54	987.88	3.16
Post-test MTAI Between Sexes	1	1857.44	
Post-test MTAI Within Sex	40	1265.08	1.46

*Significant at the .01 level of confidence

TABLE XIII

A COMPARISON OF THE MEAN MTAI SCORES OF THE MALE AND THE FEMALE STUDENT TEACHERS WHO TAUGHT NON-ACADEMIC SUBJECTS AT THE SECONDARY LEVEL
SPRING SEMESTER

Test	Males		Females		Difference
	N	Mean MTAI Score	N	Mean MTAI Score	
Pretest	21	+3.05	21	+11.95	8.90
Mid-term	21	-7.43	21	- 7.19	.24
Post-test	15	+ .07	15	- 2.27	2.34

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN THE MEAN MTAI SCORES OF THE MALE AND THE FEMALE STUDENT TEACHERS WHO TAUGHT
NON-ACADEMIC SUBJECTS AT THE SECONDARY LEVEL
SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Between Sexes	1	832.59	
Pretest MTAI Within Sex	40	737.55	1.13
Mid-term MTAI Between Sexes	1	.60	
Mid-term MTAI Within Sex	40	902.76	.0006
Post-test MTAI Between Sexes	1	40.83	
Post-test MTAI Within Sex	28	1080.21	.0037

TABLE XIV

A COMPARISON OF THE MEAN MTAI SCORES OF ALL MALE AND ALL FEMALE
STUDENT TEACHERS WHO TAUGHT AT THE SECONDARY
LEVEL, DISREGARDING SUBJECT AREA
SPRING SEMESTER

Test	Males		Females		Difference
	N	Mean MTAI Score	N	Mean MTAI Score	
Pretest	56	+9.12	40	+24.37	15.25*
Mid-term	56	- .65	40	+ 5.54	6.19
Post-test	43	+ .56	29	+ 6.03	5.47

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN THE MEAN MTAI
SCORES OF ALL MALE AND ALL FEMALE STUDENT TEACHERS WHO TAUGHT
AT THE SECONDARY LEVEL, DISREGARDING SUBJECT AREA
SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Between Sexes	1	5540.85	
Pretest MTAI Within Sex	96	840.10	6.59*
Mid-term MTAI Between Sexes	1	912.45	
Mid-term MTAI Within Sex	96	1020.39	.8942
Post-test MTAI Between Sexes	1	519.42	
Post-test MTAI Within Sex	70	1185.65	.4381

*Significant at the .01 level of confidence

be more clearly visualized if presented graphically. Figure 3 shows the patterns of change for the males and females teaching at the elementary level for both the fall and spring semesters. The differences between the patterns of change for the males and females teaching academic subjects at the secondary level for both semesters are shown graphically in Figure 4, while the same information for those teaching non-academic subjects at the secondary level is presented in Figure 5. The results of combining the males teaching academic subjects with those teaching non-academic subjects and comparing their mean scores with the mean scores of female student teachers of the combined areas are shown in Figure 6.

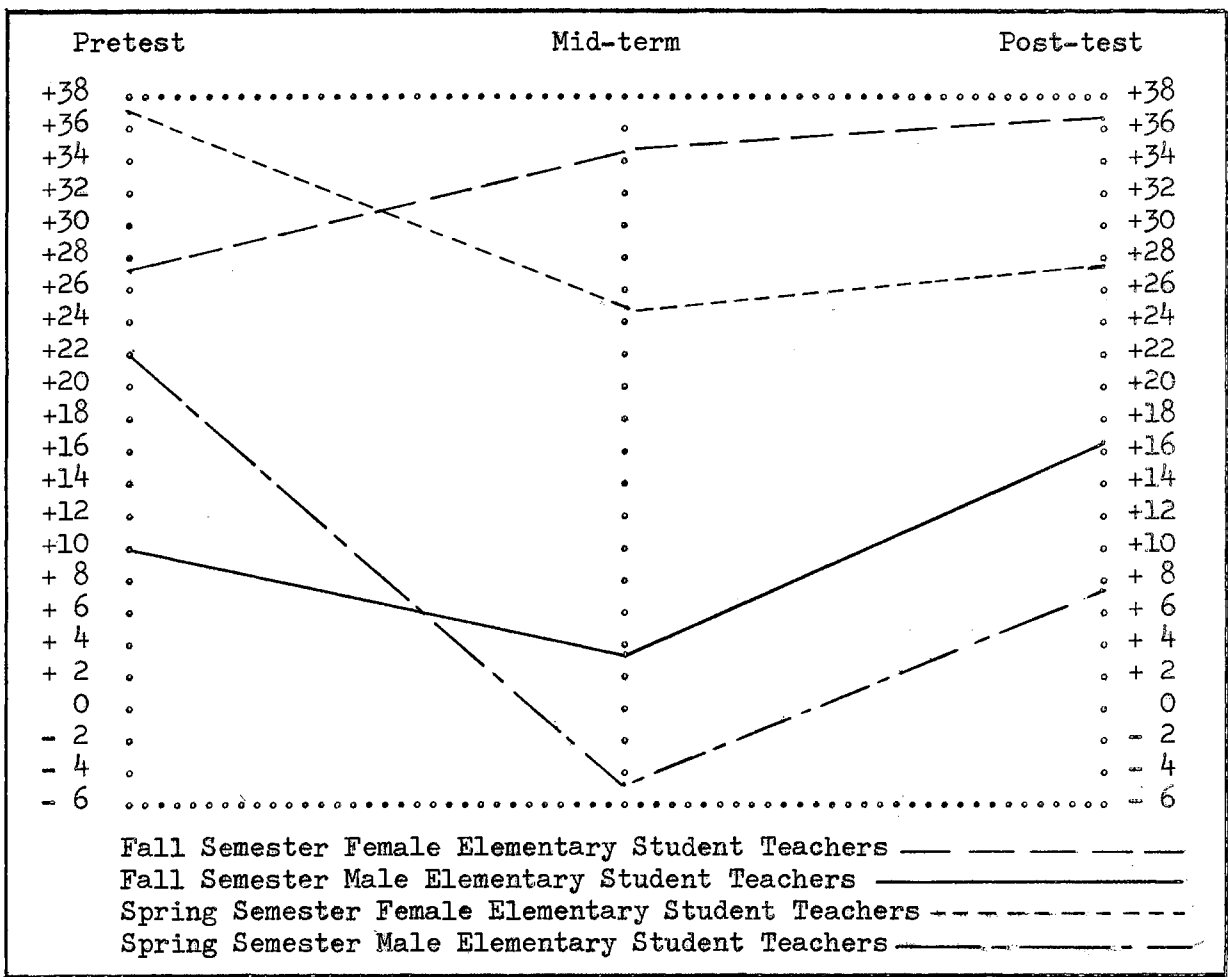


Figure 3. Differences Between the Patterns of Change for the Male and Female Elementary Student Teachers by Semesters

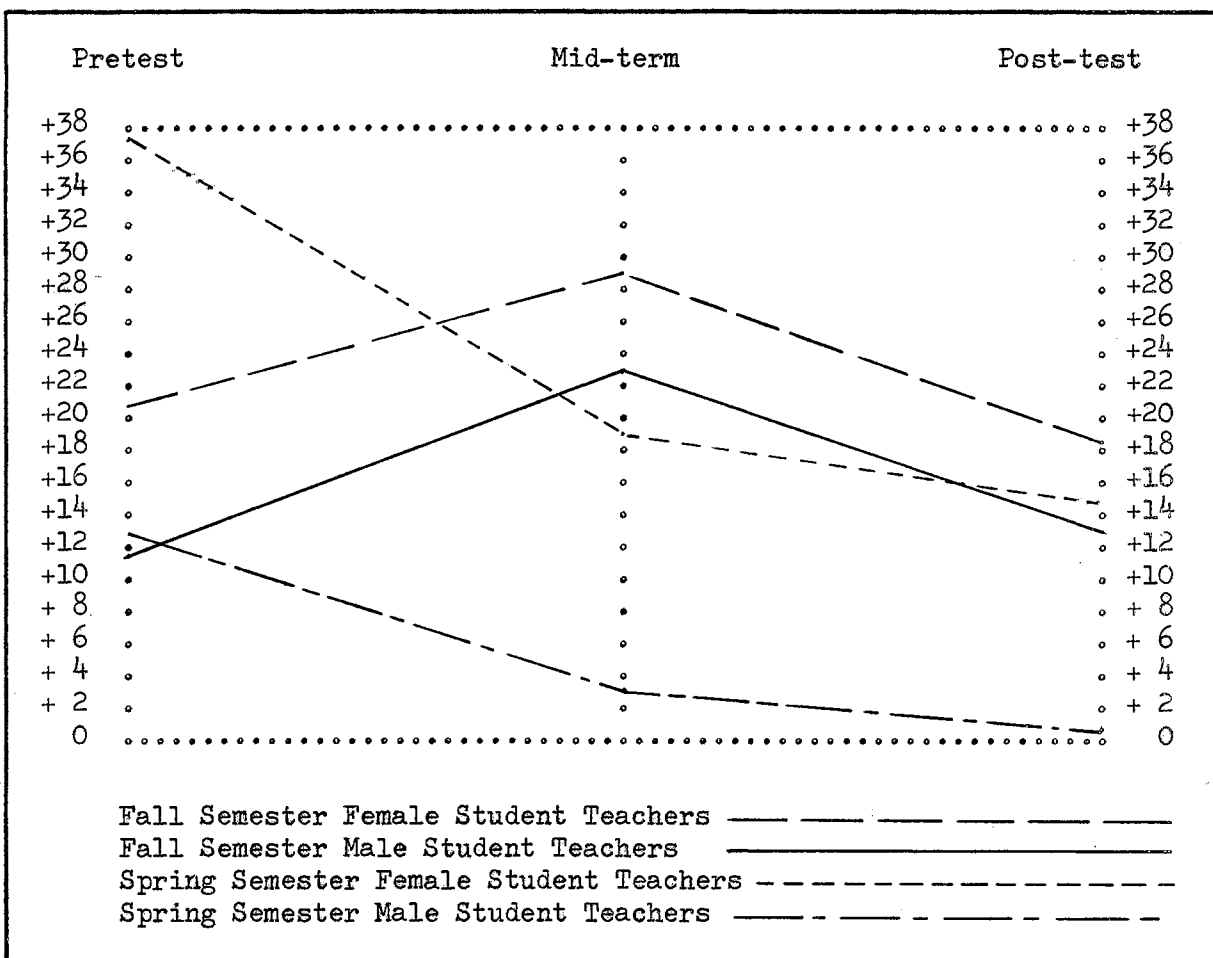


Figure 4. Differences Between the Patterns of Attitude Change for the Male and Female Secondary Student Teachers Who Taught Academic Subjects by Semesters

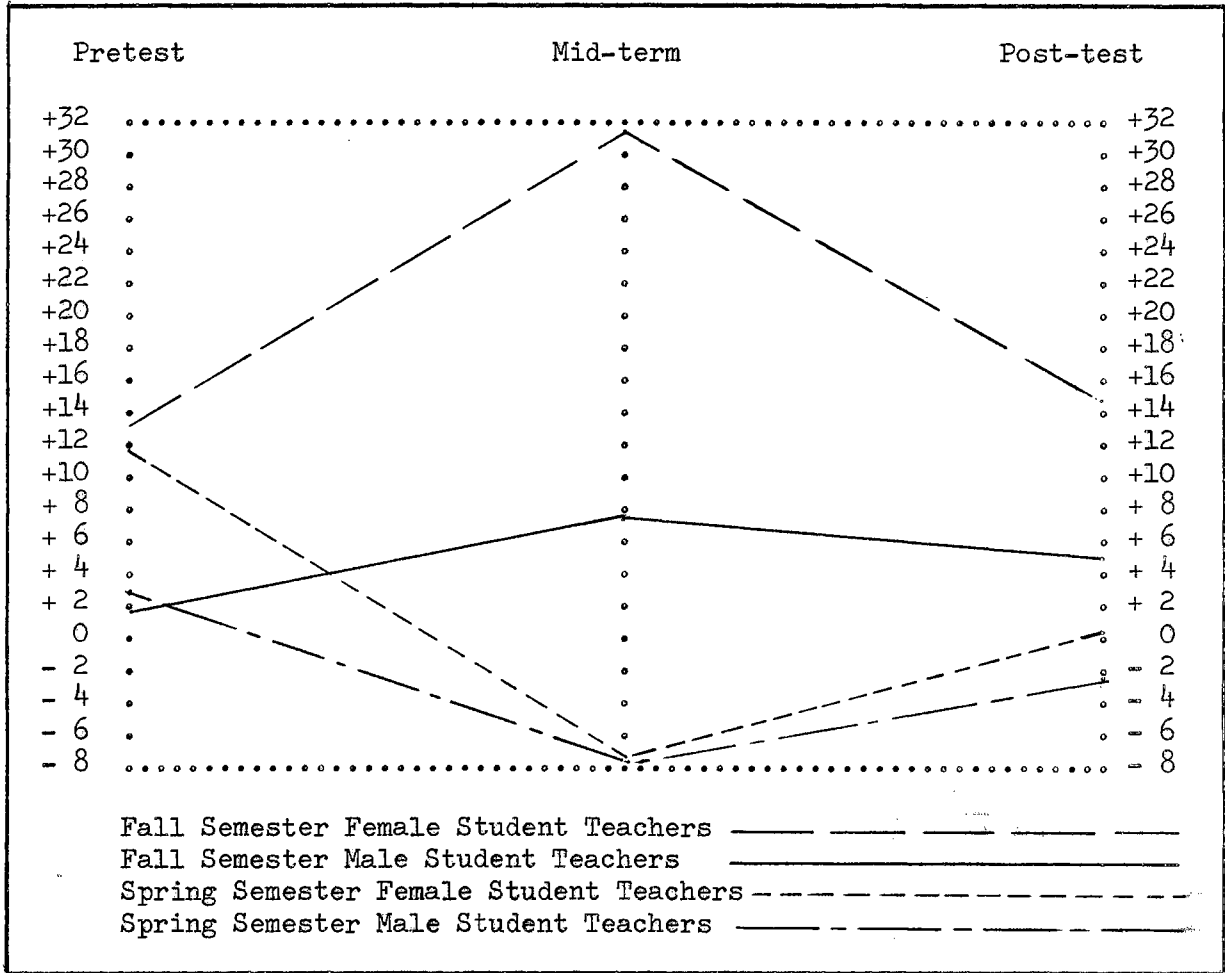


Figure 5. Differences Between the Patterns of Attitude Change for the Male and Female Secondary Student Teachers Who Taught Non-Academic Subjects by Semesters

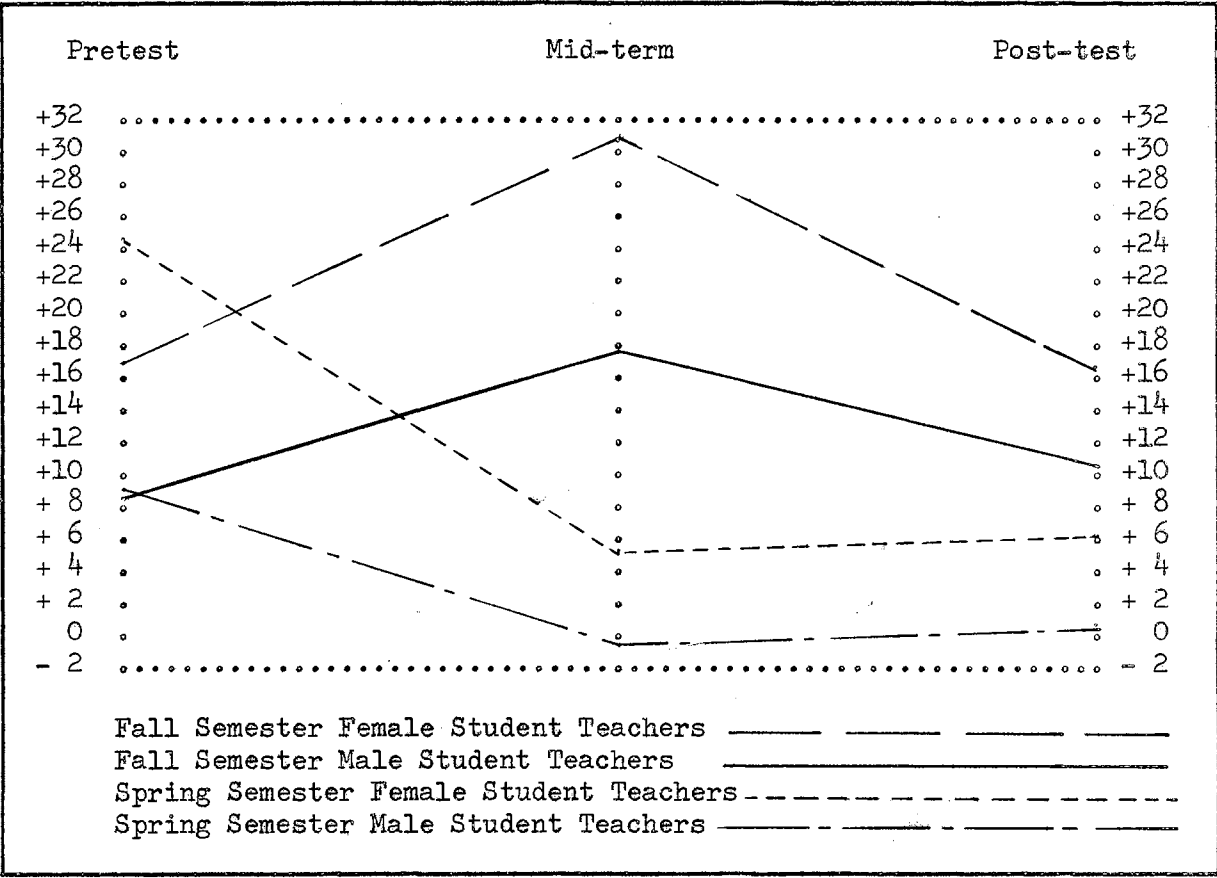


Figure 6. Differences Between the Patterns of Attitude Change for the Male and Female Secondary Student Teachers Disregarding Subject Area by Semesters

Differences Related to School Size

In order to determine if there is an apparent relationship between changes of attitude that occur during the student-teaching experience and the size of the school in which the student teaching is done, a number of comparisons were made.

The Elementary Level. The mean MTAI scores of student teachers who did their student teaching in elementary schools with thirteen or more teachers were compared with the mean MTAI scores of student teachers who did their student teaching in elementary schools with twelve or less teachers. This division was selected because it represented the median for the fall semester elementary student teachers. Exactly one-half of the fall semester elementary student teachers for whom complete sets of data were obtained did their student teaching in each division.

The comparisons made at the elementary level were based on the combined MTAI scores of the primary and intermediate student teachers of both sexes. The results of the comparisons made for the fall semester elementary student teachers are given in Table XV, while the results of the comparisons made for the spring semester elementary student teachers are given in Table XXIII.

The Secondary Level. Comparison made at the secondary level were based on an arbitrary classification of school sizes. Secondary schools with fifteen or less teachers were classified as small, while those with sixteen to forty teachers were classified as medium size schools. Secondary schools with forty or more teachers were classified as large.

Separate comparisons according to school sizes were made for (1) male student teachers who taught academic subjects, (2) female student teachers who taught academic subjects, (3) male student teachers who taught non-academic

TABLE XV

A COMPARISON OF THE MEAN MTAI SCORES OF ELEMENTARY STUDENT TEACHERS WHO TAUGHT IN SCHOOLS WITH TWELVE OR LESS TEACHERS WITH THE MEAN MTAI SCORES OF ELEMENTARY STUDENT TEACHERS WHO TAUGHT IN SCHOOLS WITH THIRTEEN OR MORE TEACHERS
FALL SEMESTER

Test	School Size by Number of Teachers				Difference
	Twelve or Less		Thirteen or More		
	N	Mean MTAI Score	N	Mean MTAI Score	
Pretest	25	+26.16	25	+23.16	3.00
Mid-term	18	+26.17	16	+35.56	9.39
Post-test	25	+35.44	25	+30.72	4.72

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN THE MEAN MTAI SCORES OF ELEMENTARY STUDENT TEACHERS WHO TAUGHT IN SCHOOLS WITH TWELVE OR LESS TEACHERS WITH THE MEAN MTAI SCORES OF ELEMENTARY STUDENT TEACHERS WHO TAUGHT IN SCHOOLS WITH THIRTEEN OR MORE TEACHERS
FALL SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Between Schools	1	125.50	
Pretest MTAI Within Schools	48	1000.68	.01
Mid-term MTAI Between Schools	1	747.80	
Mid-term MTAI Within Schools	32	685.33	1.09
Post-test MTAI Between Schools	1	278.48	
Post-test MTAI Within Schools	48	777.61	.04

subjects, (4) female student teachers who taught non-academic subjects, (5) all male secondary student teachers, disregarding subject area, (6) all female secondary student teachers, disregarding subject area, and (7) all secondary student teachers, disregarding sex and subject area. The results of all comparisons for the fall semester secondary student teachers according to school sizes are given in Tables XVI through XXII. The results of the same comparisons for the spring semester student teachers are given in Tables XXIV through XXXI.

Fall Semester Elementary Student Teachers. As Table XVI shows, when the mean MTAI scores of the fall semester elementary student teachers who taught in schools that were below the median size were compared with the mean MTAI scores of those who taught in schools that were above the median size, no significant differences were found on either the pretest, the mid-term or the post-test. Figure 7 illustrates the differences in patterns of attitude change related to school size at the elementary level during the fall semester.

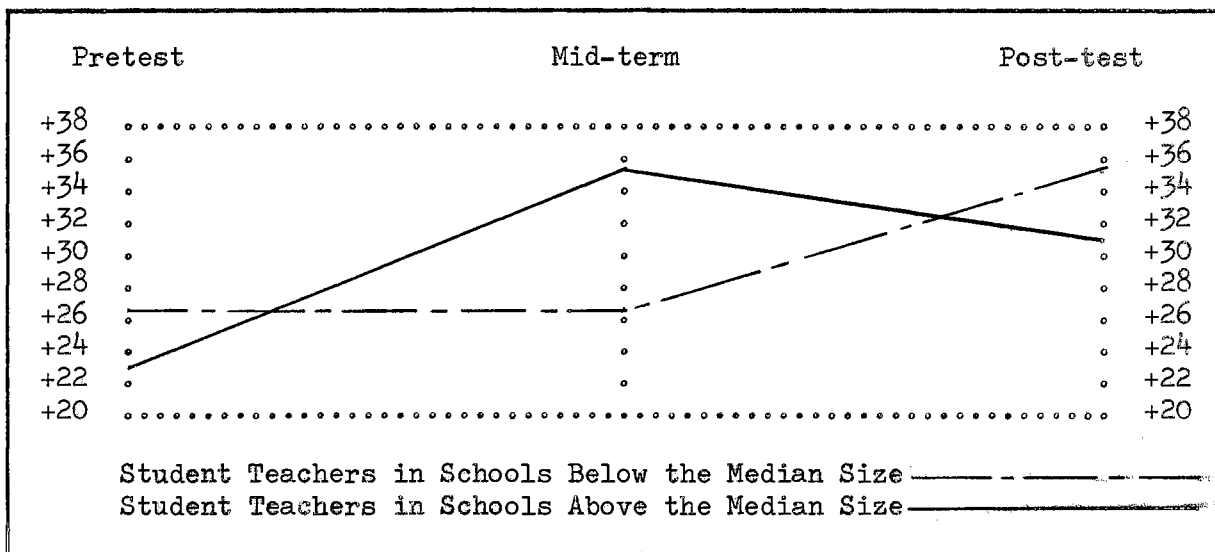


Figure 7. Patterns of Attitude Change for Elementary Student Teachers During the Fall Semester by School Size

TABLE XVI

A COMPARISON OF THE MEAN MTAI SCORES OF MALE SECONDARY STUDENT TEACHERS WHO TAUGHT ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
FALL SEMESTER

Test	Student Teachers Compared by School Size ^a					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	14	+ 2.71	17	+16.88	9	+16.33
Mid-term	10	+13.10	10	+25.10	7	+32.29
Post-test	14	+ 4.29	17	+15.59	9	+22.33

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES AMONG MEAN MTAI SCORES OF MALE SECONDARY STUDENT TEACHERS WHO TAUGHT ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
FALL SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	889.89	
Pretest MTAI Within Schools	37	655.37	1.35
Mid-term MTAI Among Schools	2	810.76	
Mid-term MTAI Within Schools	24	893.88	.91
Post-test MTAI Among Schools	2	980.06	
Post-test MTAI Within Schools	37	761.05	1.28

^aSchools with 3-15 teachers are classified as small; 16-39 teachers as medium, and 40 or more teachers as large.

Fall Semester Secondary Student Teachers

Male Student Teachers Who Taught Academic Subjects. No significant differences were found among the mean MTAI scores of male student teachers who taught academic subjects in the small, the medium-size, or the large schools on either the pretest, the mid-term test, or the post-test. Although none of the differences were significant, as the F ratios given in Table XVI indicate, the student teachers in the small schools had lower mean MTAI scores on all three testings than did the student teachers in the medium-size schools or the large schools. The student teachers in the medium-size schools had lower mean MTAI scores than those in the large schools on all but the pretest. Figure 8 illustrates the differences related to school size among the means of the male student teachers who taught academic subjects at the secondary level.

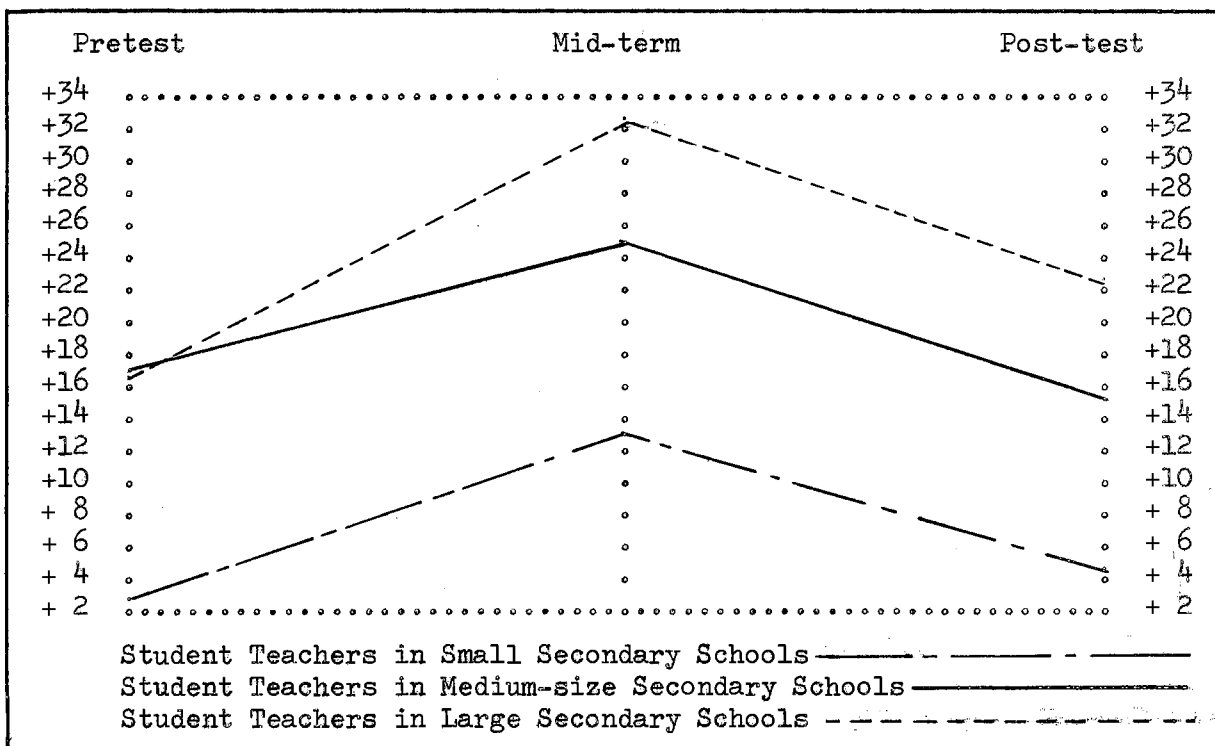


Figure 8. Patterns of Attitude Change of Male Secondary Student Teachers Who Taught Academic Subjects During the Fall Semester by School Size

Female Student Teachers Who Taught Academic Subjects. The F ratios given in Table XVII indicate there were no significant differences among the mean MTAI scores of the female student teachers who taught academic subjects in either the small, the medium-size, or the large secondary schools. Although there were no significant differences among their mean MTAI scores on any of the three tests, Figure 9 helps to clarify the overall picture of differences related to school size and patterns of attitude changes.

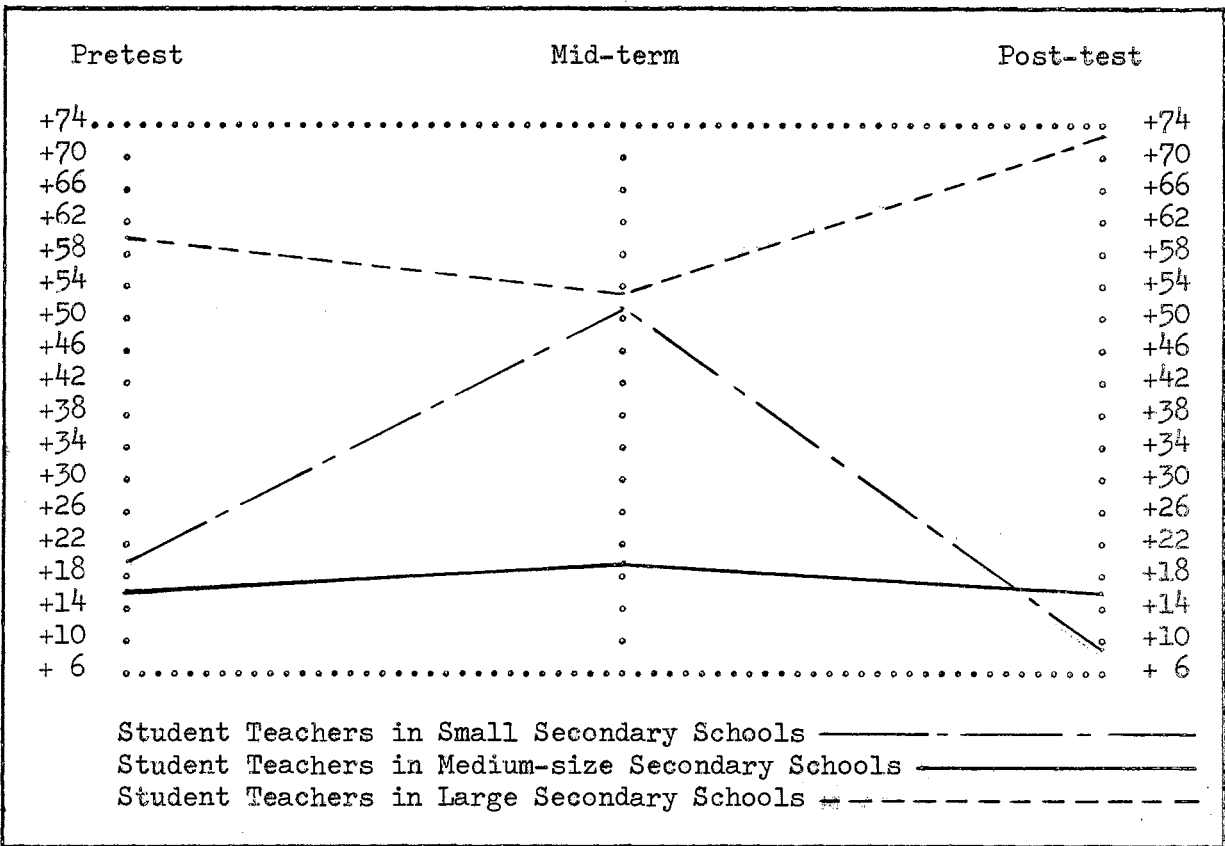


Figure 9. Patterns of Attitude Change of Female Secondary Student Teachers Who Taught Academic Subjects During the Fall Semester by School Size

Male Student Teachers Who Taught Non-Academic Subjects. Although the F ratio given in Table XVIII indicates there were significant differences among the mean MTAI scores of those in the small, the medium-size, and the

TABLE XVII

A COMPARISON OF THE MEAN MTAI SCORES OF FEMALE SECONDARY STUDENT TEACHERS WHO TAUGHT ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
FALL SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	4	+20.00	9	+16.78	1	+60.00
Mid-term	1	+51.00	5	+19.80	1	+53.00
Post-test	4	+ 9.50	9	+16.11	1	+73.00

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN THE MEAN MTAI SCORES OF FEMALE SECONDARY STUDENT TEACHERS WHO TAUGHT ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
FALL SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	842.40	
Pretest MTAI Within Schools	11	1164.14	.5853
Mid-term MTAI Among Schools	2	741.60	
Mid-term MTAI Within Schools	4	381.70	1.94
Post-test MTAI Among Schools	2	1672.48	
Post-test MTAI Within Schools	11	1468.90	1.13

TABLE XVIII

A COMPARISON OF THE MEAN MTAI SCORES OF MALE SECONDARY STUDENT TEACHERS WHO TAUGHT NON-ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
FALL SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	4	+34.25	6	+ 4.00	9	-13.78*
Mid-term	2	+24.00	5	+20.00	5	-11.20*
Post-test	4	+22.25	6	+ 7.00	9	- 4.22

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN MEAN MTAI SCORES OF MALE SECONDARY STUDENT TEACHERS WHO TAUGHT NON-ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
FALL SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	3212.32	
Pretest MTAI Within Schools	16	651.52	4.93*
Mid-term MTAI Among Schools	2	1536.93	
Mid-term MTAI Within Schools	9	267.64	5.74*
Post-test MTAI Among Schools	2	989.74	
Post-test MTAI Within Schools	16	447.39	2.21

*Significant at the .05 level

large schools on the pretest and the mid-term test, the assumption of equal variance with such a small sample is rather precarious. According to Garrett (21, p. 286), "A simple check on the equality of sample variances is to calculate the sum of squares for each group separately, divide by the appropriate df, and test the largest V against the smallest V using the F test." The results of this test for equality of variances for the pretest and the mid-term test are given below.

Results for Pretest

<u>School Size</u>	<u>df</u>	<u>Sum of Squares</u>	<u>Mean Squares</u>
Small	3	1388.75	462.92
Medium	5	4744.00	948.80
Large	8	4291.56	536.44

When the largest variance, 948.80 for the medium-size schools is checked against the smallest variance, 462.92 for the small school, the resulting F ratio is 2.04. Entering Table D, page 451 of Garrett (21), $F_{.05}$ with 5/3 df must equal 9.01. Since the resulting F ratio is not significant, it would appear that the differences are true differences and not the results of unequal variances due to the small sample. When the same test is applied to the mid-term scores, the result is similar.

Results for Mid-term

<u>School Size</u>	<u>df</u>	<u>Sum of Squares</u>	<u>Mean Squares</u>
Small	4	1394.00	348.50
Medium	1	8.00	8.00
Large	4	1006.80	251.70

When the largest variance, 348.50 for the small schools, is checked against the smallest variance, 8.00 for the medium-size school, the resulting F ratio is 43.56. Entering Table D, page 451 of Garrett (21), $F_{.05}$ with 4/1 df must equal 224.57 to be significant. Since the obtained F is not significant, it must be assumed the variances are equal and the F is a valid test.

In order to determine which means differed significantly, the t test was applied. A t of 3.62, significant at the .01 level, was computed for the difference between the mean pretest score of those in the small schools and the mean pretest score of those in the large schools. The difference between the mean score of those in the small schools and the mean score of those in the medium-size schools yielded a t of 1.83 which was not significant. Since the difference between the means of those in the medium-size schools and the means of those in the large schools was smaller than the difference between the means of those in the medium-size schools and the means of those in the small schools, a t was not computed for this difference.

At mid-term, the difference between the means of those in the small schools and of those in the large schools was significant at the .01 level, and the difference between the means of those in the medium-size schools and those in the large schools was significant at the .05 level.

As Table XVIII indicates, the significant differences that existed on the pretest and the mid-term test between the mean scores of the male student teachers who taught non-academic subjects in the small schools and the male student teachers who taught non-academic subjects in the large schools were not present on the post-test.

When the patterns of change for the male student teachers who taught non-academic subjects in the small schools, the medium-size schools, and the large schools are shown graphically with the over-all pattern for this group, and disregarding school size, it becomes apparent that these differences are possibly the result of chance due to the size of the sample. Figure 10 illustrates this point. Further evidence supporting this interpretation is present when the pattern of change for this group

is compared with the over-all patterns of change for the fall semester as shown in Figures 1 through 10. While differences related to sex and subject area are not always significant, the degree of consistency of the over-all patterns of change exhibited by the other sub-groups strongly suggests that this group is not a random sample of the total student-teacher population.

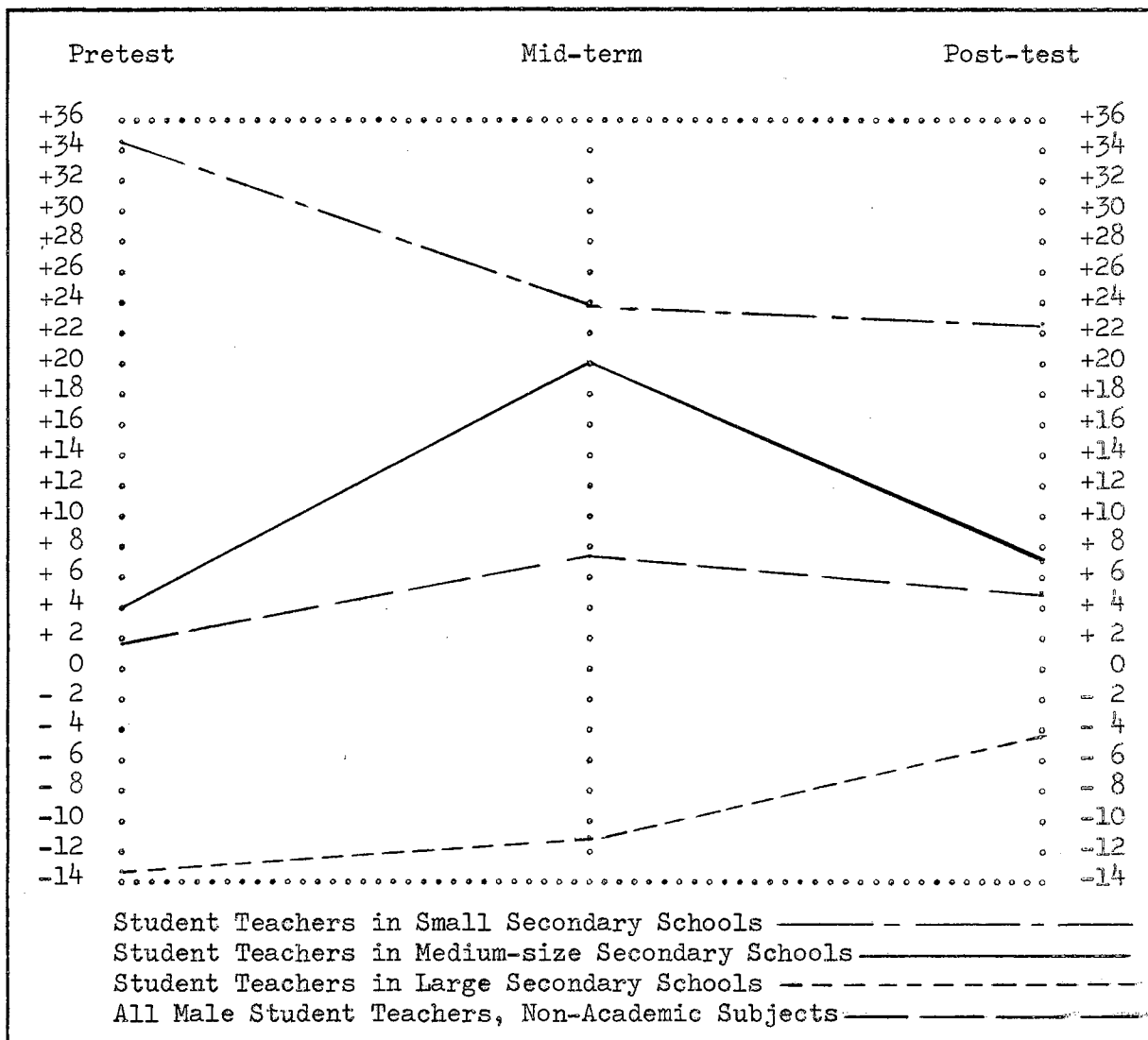


Figure 10. Patterns of Attitude Change of Male Secondary Student Teachers Who Taught Non-Academic Subjects During the Fall Semester by School Size

Female Student Teachers Who Taught Non-Academic Subjects. The F ratios given in Table XIX indicate there were no significant differences among the

means of the female student teachers who taught non-academic subjects in the small, the medium-size, or the large schools on either the pretest, the mid-term, or the post MTAI. The mean scores of those who were in the large schools were higher at every testing than were the means of those who were in the small and the medium-size schools, while the means of those in the medium-size schools were higher on every testing than the means of those in the small schools. The pattern of change for this group is shown graphically in Figure 11.

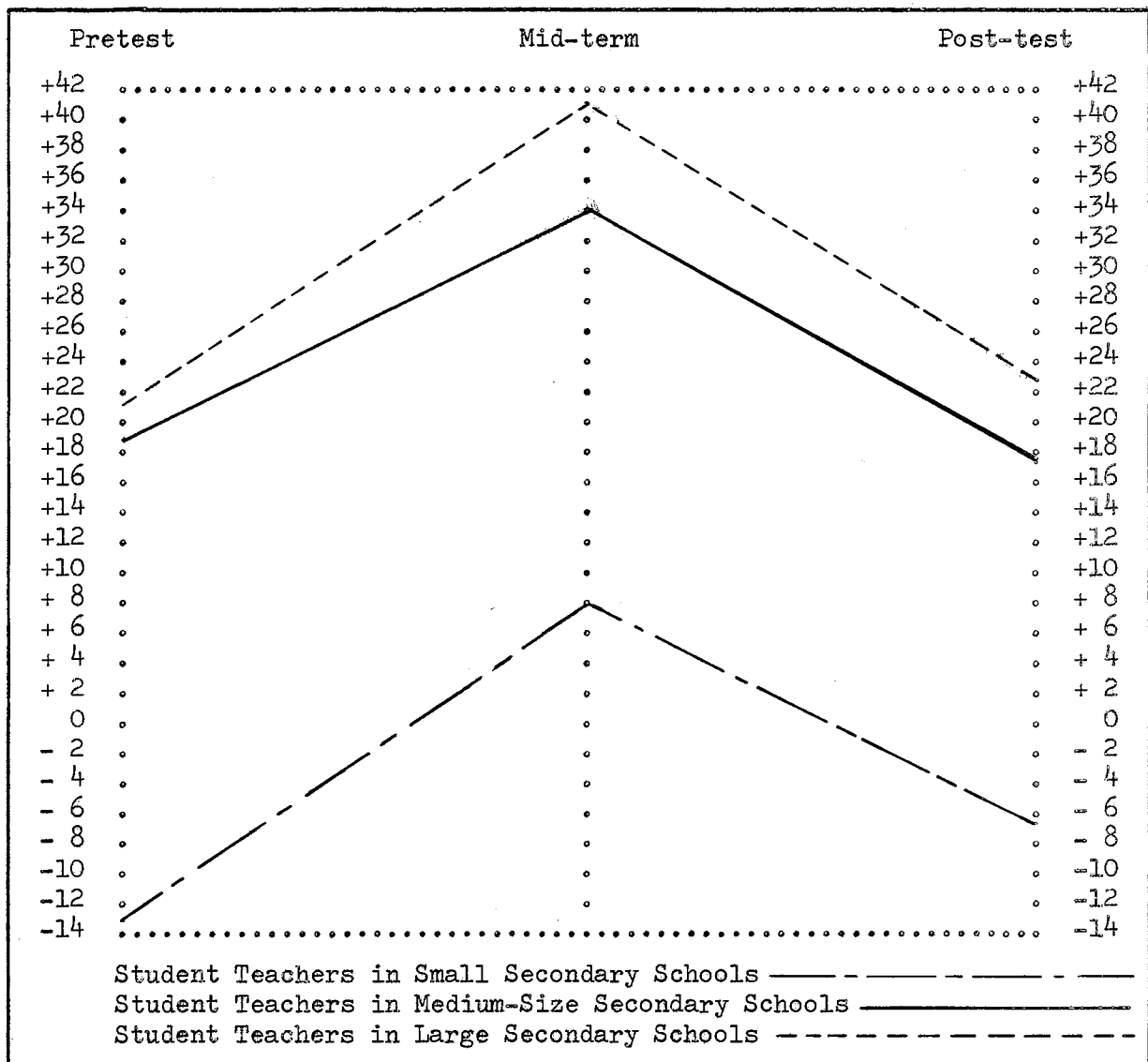


Figure 11. Patterns of Attitude Change of Female Secondary Student Teachers Who Taught Non-Academic Subjects During the Fall Semester by School Size

TABLE XIX

A COMPARISON OF THE MEAN MTAI SCORES OF FEMALE SECONDARY STUDENT TEACHERS WHO TAUGHT NON-ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
FALL SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	3	-13.00	7	+18.71	5	+21.60
Mid-term	2	+ 8.00	4	+34.00	4	+41.25
Post-test	3	- 6.33	7	+17.71	5	+22.60

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN MEAN MTAI SCORES OF FEMALE SECONDARY STUDENT TEACHERS WHO TAUGHT NON-ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
FALL SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	1312.35	
Pretest MTAI Within Schools	12	757.89	1.74
Mid-term MTAI Among Schools	2	754.68	
Mid-term MTAI Within Schools	7	667.25	1.13
Post-test MTAI Among Schools	2	851.22	
Post-test MTAI Within Schools	12	721.61	1.17

All Male Student Teachers at the Secondary Level, Disregarding Subject Area. When the MTAI scores of all male student teachers at the secondary level were combined, disregarding subject area and compared on the basis of the size of the schools in which they did their student teaching, there were no significant differences among their mean scores as Table XX indicates. Although the pattern of change illustrated in Figure 12 is consistent with the general patterns for the fall semester, the male student teachers in the medium-size schools had higher mean scores at all three testings than did those in the small and large schools.

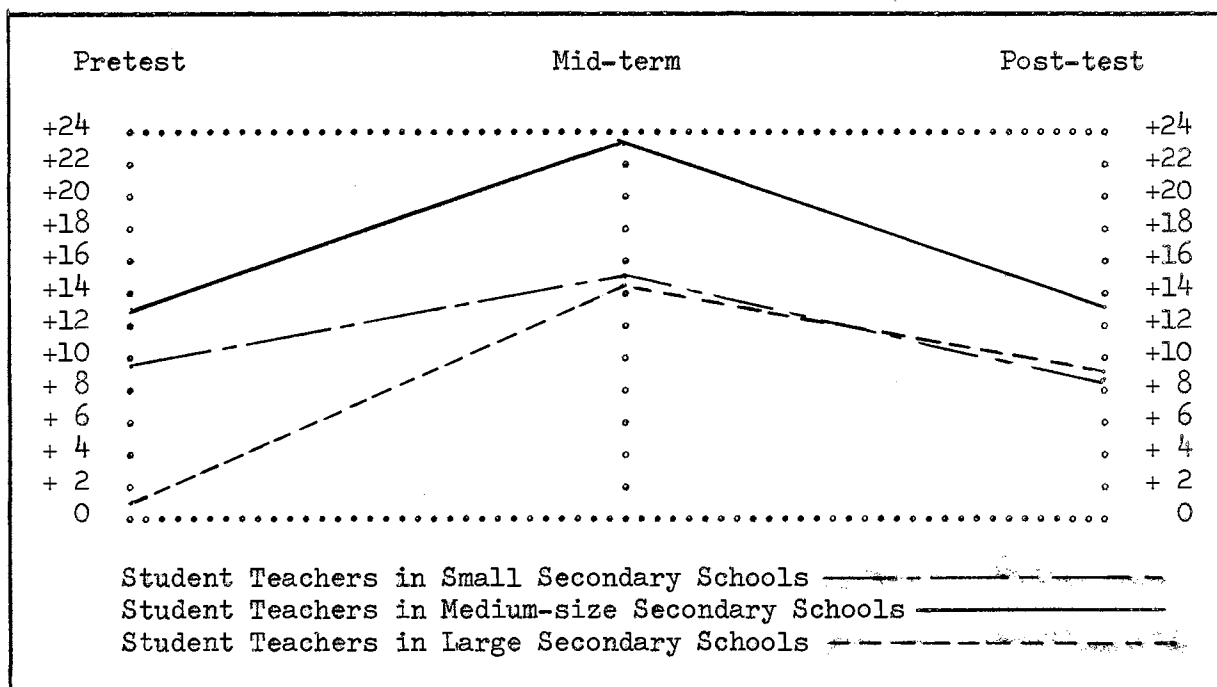


Figure 12. Patterns of Attitude Change of All Male Secondary Student Teachers During the Fall Semester by School Size

All Female Student Teachers at the Secondary Level, Disregarding Subject Area. No significant differences were found among the mean MTAI scores of female student teachers who taught in the small, the medium-size, or the large secondary schools. Table XXI gives the means and the significance of differences among the means, while Figure 13 illustrates these differences graphically.

TABLE XX

A COMPARISON OF THE MEAN MTAI SCORES OF ALL MALE SECONDARY STUDENT
TEACHERS BY SCHOOL SIZE, DISREGARDING SUBJECT AREA
FALL SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	18	+ 9.72	23	+13.52	18	+ 1.28
Mid-term	12	+14.92	15	+23.40	12	+14.17
Post-test	18	+ 8.28	23	+13.35	18	+ 9.06

SUMMARY OF ANALYSIS OF VARIANCE OF DIFFERENCES BETWEEN THE MEAN MTAI
SCORES OF ALL MALE SECONDARY STUDENT TEACHERS BY SCHOOL SIZE,
DISREGARDING SUBJECT AREA
FALL SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	772.42	
Pretest MTAI Within Schools	56	760.41	1.01
Mid-term MTAI Among Schools	2	363.86	
Mid-term MTAI Within Schools	36	823.95	.4416
Post-test MTAI Among Schools	2	156.49	
Post-test MTAI Within Schools	56	711.10	.2200

TABLE XXI

A COMPARISON OF THE MEAN SCORES OF ALL FEMALE SECONDARY STUDENT
TEACHERS BY SCHOOL SIZE, DISREGARDING SUBJECT AREA
FALL SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	7	+ 5.86	16	+17.63	6	+28.00
Mid-term	3	+22.33	9	+26.11	5	+43.60
Post-test	7	+ 2.71	16	+16.81	6	+31.00

SUMMARY OF ANALYSIS OF DIFFERENCES BETWEEN MEAN MTAI SCORES OF ALL
FEMALE SECONDARY STUDENT TEACHERS BY SCHOOL SIZE,
DISREGARDING SUBJECT AREA
FALL SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	800.63	
Pretest MTAI Within Schools	26	961.91	.8322
Mid-term MTAI Among Schools	2	615.68	
Mid-term MTAI Within Schools	14	570.63	1.07
Post-test MTAI Among Schools	2	1296.34	
Post-test MTAI Within Schools	26	1052.84	1.23

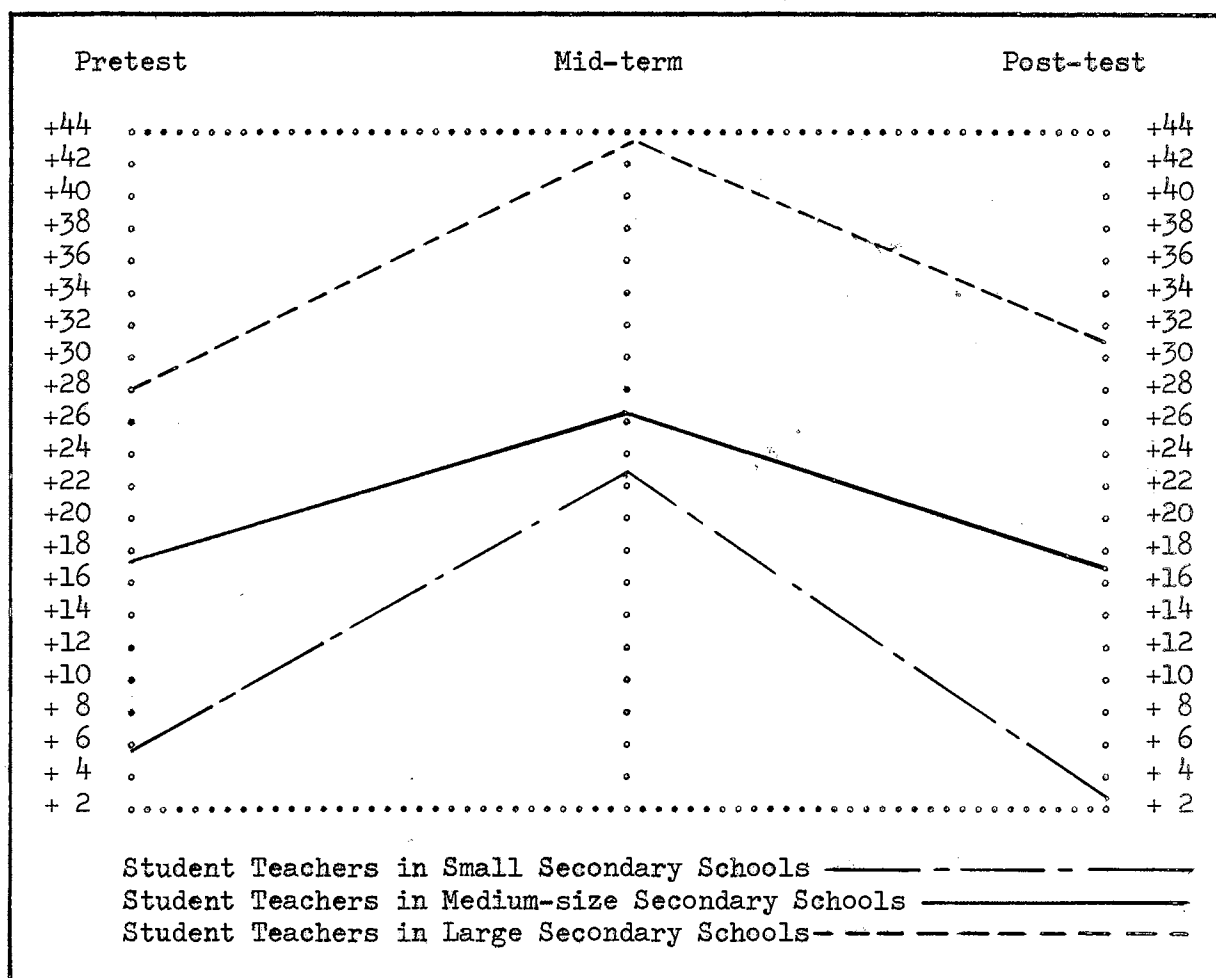


Figure 13. Patterns of Attitude Change of All Female Secondary Student Teachers During the Fall Semester by School Size

All Secondary Student Teachers by School Size, Disregarding Sex and Subject Area. Table XXII gives the mean scores and the F ratio of variances among the means for all secondary student teachers by school size, disregarding sex and subject area. As the F ratios indicate, there were no significant differences among the mean MTAI scores of the secondary student teachers who taught in the small schools, the large schools, or the medium-size schools. Figure 14 illustrates graphically, the differences among their mean scores and the over-all pattern of change related to school size.

TABLE XXII

A COMPARISON OF THE MEAN MTAI SCORES OF ALL SECONDARY STUDENT TEACHERS
BY SCHOOL SIZE, DISREGARDING SEX AND SUBJECT AREA
FALL SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	25	+ 8.64	39	+15.21	24	+ 7.96
Mid-term	15	+16.40	24	+24.42	17	+22.82
Post-test	25	+ 6.72	39	+14.77	24	+14.54

SUMMARY OF ANALYSIS OF VARIANCE OF DIFFERENCES BETWEEN MEAN MTAI SCORES
OF ALL SECONDARY STUDENT TEACHERS BY SCHOOL SIZE, DISREGARDING
SEX AND SUBJECT AREA
FALL SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	519.64	
Pretest MTAI Within Schools	85	835.78	.6217
Mid-term MTAI Among Schools	2	309.76	
Mid-term MTAI Within Schools	53	771.36	.4015
Post-test MTAI Among Schools	2	567.76	
Post-test MTAI Within Schools	85	819.20	.6930

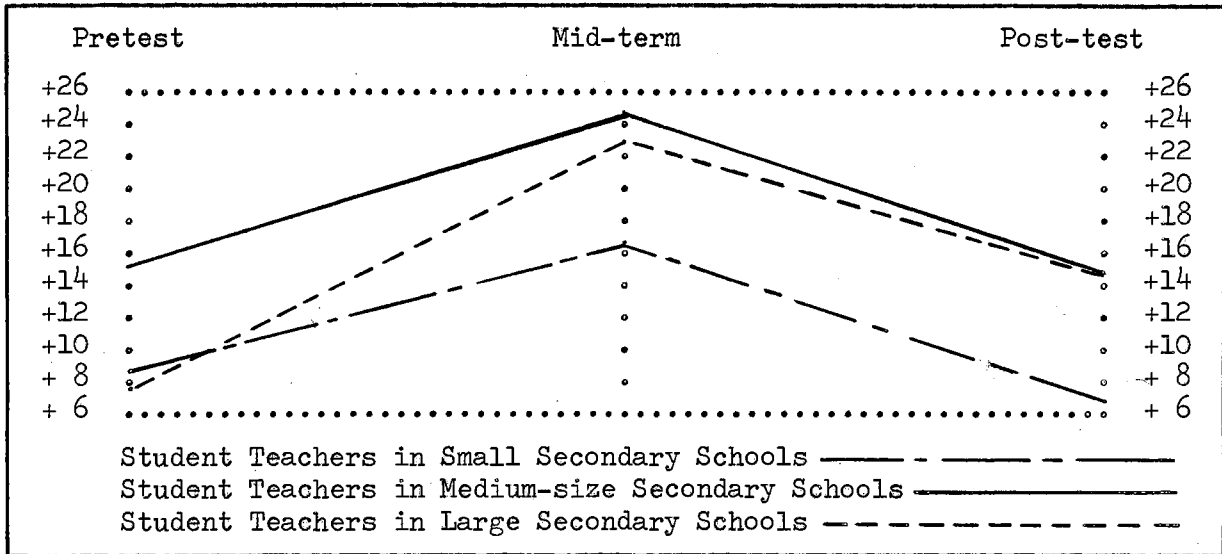


Figure 14. Patterns of Attitude Change of All Secondary Student Teachers During the Fall Semester by School Size

Spring Semester Elementary Student Teachers. Spring semester elementary student teachers who taught in schools that were above the median size did not differ significantly from those who taught in elementary schools that were below the median size on either the pretest, the mid-term test, or the post-test. The mean scores and F ratios for these comparisons are given in Table XXIII. Figure 15 shows that their patterns of change were very similar.

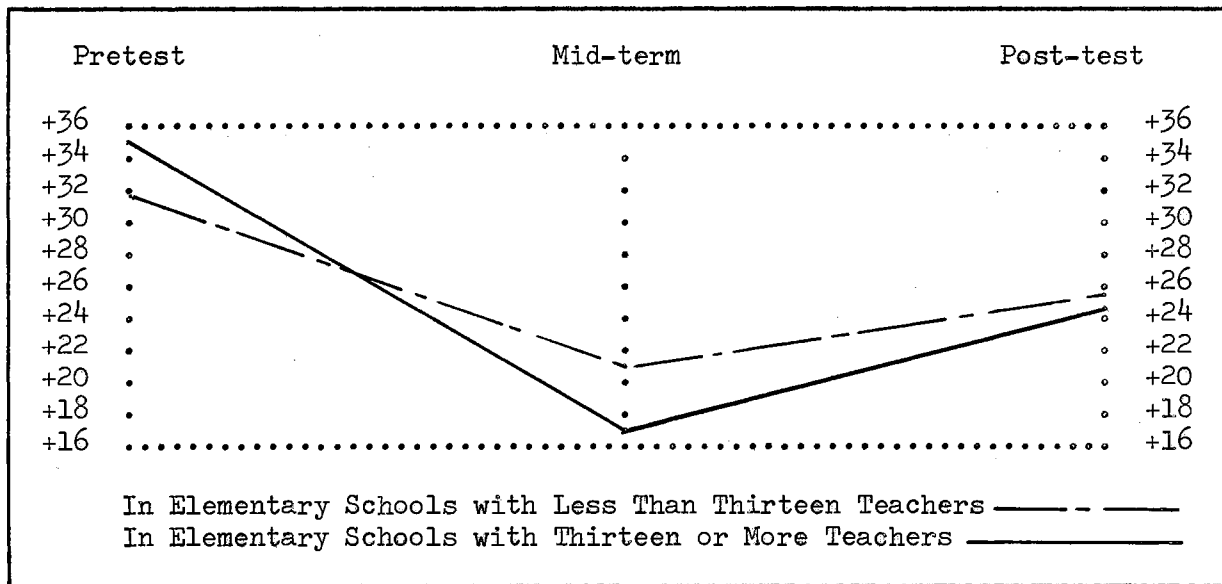


Figure 15. Patterns of Attitude Change for Elementary Student Teachers During the Spring Semester by School Size

TABLE XXIII

A COMPARISON OF THE MEAN MTAI SCORES OF ELEMENTARY STUDENT TEACHERS WHO TAUGHT IN SCHOOLS WITH LESS THAN THIRTEEN TEACHERS WITH THE MEAN MTAI SCORES OF ELEMENTARY STUDENT TEACHERS WHO TAUGHT IN SCHOOLS WITH THIRTEEN OR MORE TEACHERS
SPRING SEMESTER

Test	Student Teachers Compared by School Size				
	Twelve or Less Teachers		Thirteen or More Teachers		Difference
	N	Mean MTAI Score	N	Mean MTAI Score	
Pretest	29	+31.90	42	+35.17	+3.27
Mid-term	29	+21.21	42	+17.33	+3.88
Post-test	24	+25.79	27	+24.33	+1.46

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN MEAN MTAI SCORES OF ELEMENTARY STUDENT TEACHERS WHO TAUGHT IN SCHOOLS WITH LESS THAN THIRTEEN TEACHERS WITH THE MEAN MTAI SCORES OF ELEMENTARY STUDENT TEACHERS WHO TAUGHT IN SCHOOLS WITH THIRTEEN OR MORE TEACHERS
SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Between Schools	1	183.45	
Pretest MTAI Within Schools	69	920.99	.1991
Mid-term MTAI Between Schools	1	257.40	
Mid-term MTAI Within Schools	69	1227.16	.2097
Post-test MTAI Between Schools	1	27.02	
Post-test MTAI Within Schools	49	1420.28	.0190

Spring Semester Secondary Student Teachers

Male Student Teachers Who Taught Academic Subjects. The F ratios given in Table XXIV show there were no significant differences among the mean scores of male student teachers who taught academic subjects in the small, the medium-size, or the large secondary schools on either the pretest or the mid-term test. On the post-test, however, the mean difference of 52.38 degrees between those in the large schools and those in the small schools yielded a t of 3.21, significant at the .01 level. The t of 2.24 for the mean difference of 32.98 degrees between those in the medium-size schools and those in the large schools was significant at the .05 level. When the test for equality of variances was applied, the F ratio between the largest and the smallest variances was 1.44, which was not significant.

As Figure 16 shows, the patterns of change for those in each classification of schools were very similar until mid-term.

Female Student Teachers Who Taught Academic Subjects. As the F ratios given in Table XXV indicate, there were no significant differences among the mean scores of the female student teachers who taught academic subjects in the small, the medium-size, or the large secondary schools. Figure 17 illustrates the pattern of change and the differences between the mean scores of those in each classification of schools.

TABLE XXIV

A COMPARISON OF THE MEAN MTAI SCORES OF MALE SECONDARY STUDENT TEACHERS WHO TAUGHT ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
SPRING SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	8	+ 5.13	20	+ 8.20	8	+31.38
Mid-term	8	- 2.37	20	- 4.25	8	+27.88
Post-test	6	-22.67	15	- 3.27	7	+29.71*

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN MEAN MTAI SCORES OF MALE SECONDARY STUDENT TEACHERS WHO TAUGHT ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	1827.03	
Pretest MTAI Within Schools	33	937.03	1.94
Mid-term MTAI Among Schools	2	3114.57	
Mid-term MTAI Within Schools	33	967.23	3.22
Post-test MTAI Among Schools	2	4702.21	
Post-test MTAI Within Schools	25	972.63	4.83*

*Significant at the .05 level of confidence

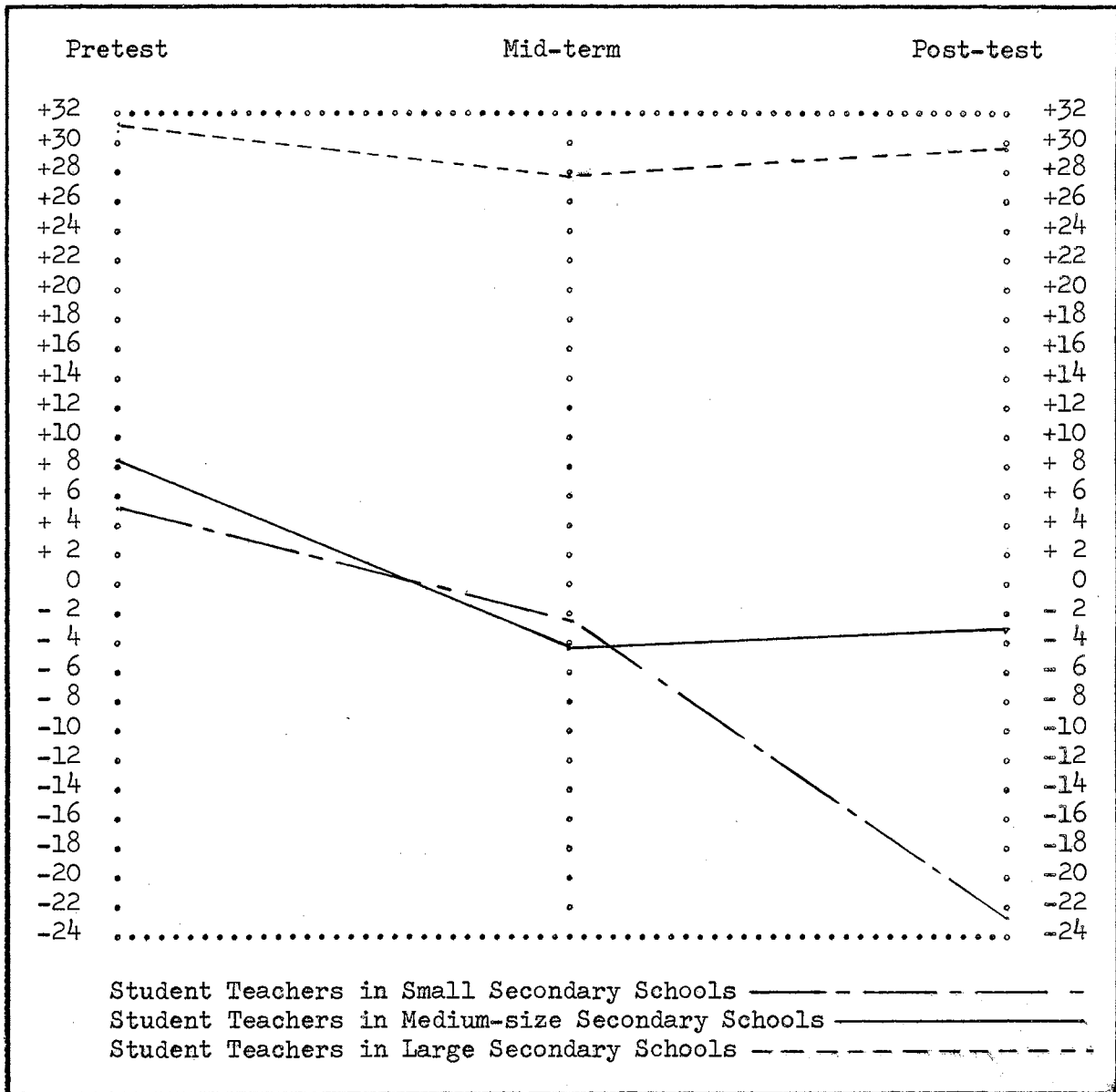


Figure 16. Patterns of Attitude Change of Male Secondary Student Teachers Who Taught Academic Subjects During the Spring Semester by School Size

TABLE XXV

A COMPARISON OF THE MEAN MTAI SCORES OF FEMALE SECONDARY STUDENT TEACHERS WHO TAUGHT ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
SPRING SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	2	+28.50	5	+34.20	12	+40.00
Mid-term	2	+36.00	5	+ 8.60	12	+20.23
Post-test	2	+23.00	4	- 5.50	8	+23.13

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN MEAN MTAI SCORES OF FEMALE SECONDARY STUDENT TEACHERS WHO TAUGHT ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	148.75	
Pretest MTAI Within Schools	17	494.90	.3005
Mid-term MTAI Among Schools	2	569.15	
Mid-term MTAI Within Schools	17	827.03	.6881
Post-test MTAI Among Schools	2	1168.53	
Post-test MTAI Within Schools	11	1322.35	.8836

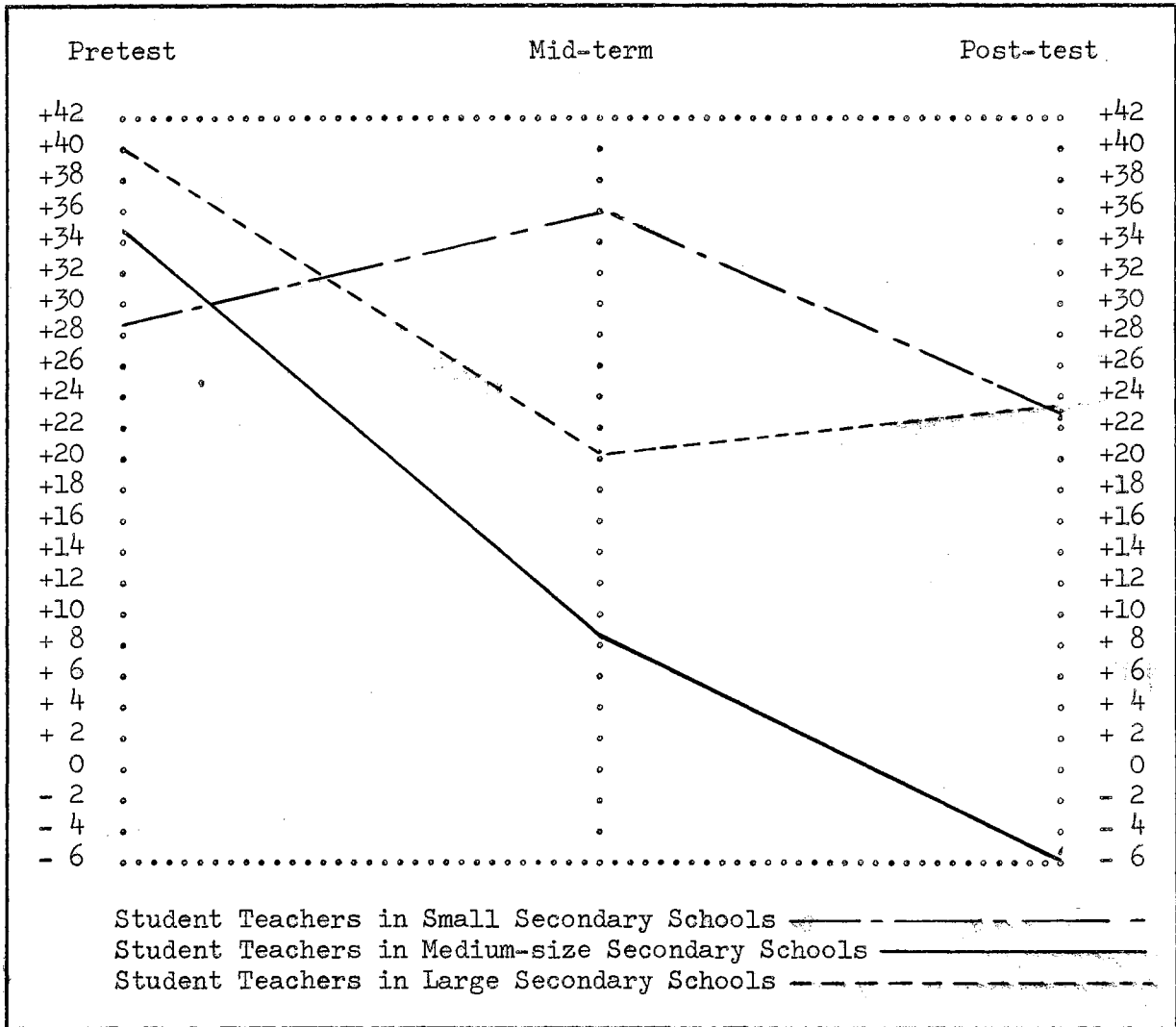


Figure 17. Patterns of Attitude Change of Female Secondary Student Teachers Who Taught Academic Subjects During the Spring Semester by School Size

Male Student Teachers Who Taught Non-Academic Subjects. The F ratios given in Table XXVI show there were no significant differences among the mean scores of the male student teachers who taught non-academic subjects in the small, the medium-size, or the large secondary schools on either the pretest, the mid-term test, or the post-test. The differences among the three groups and their patterns of change are shown in Figure 18.

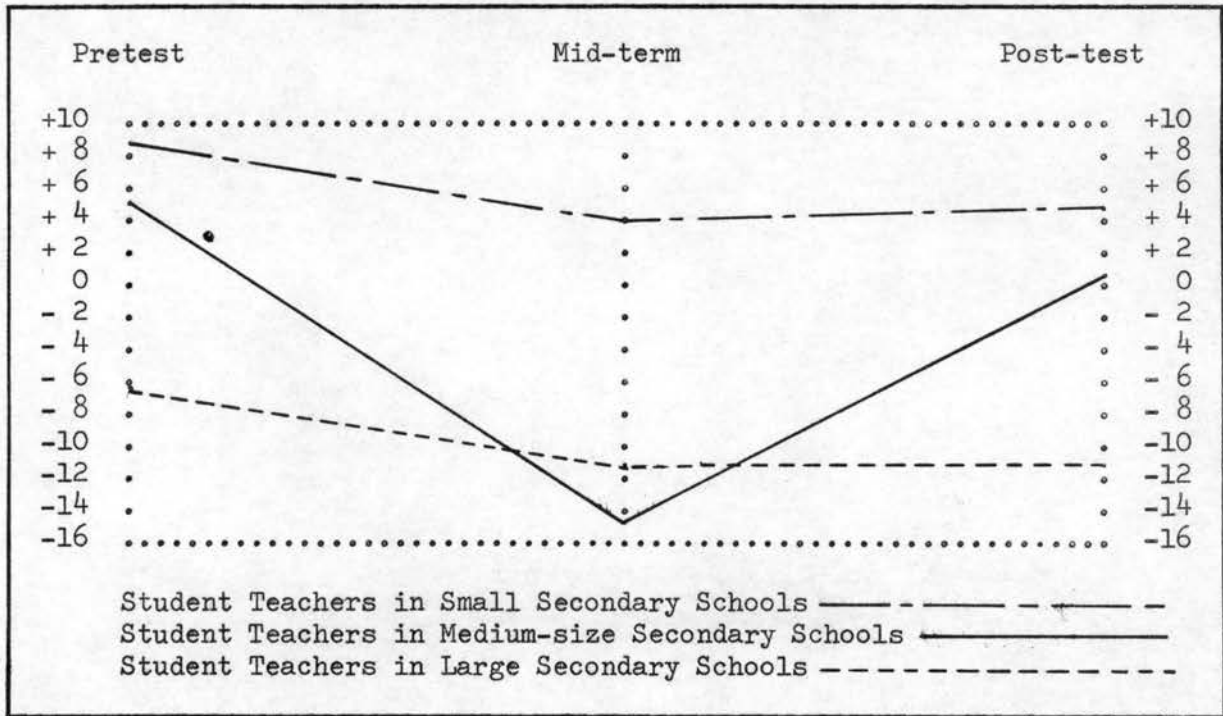


Figure 18. Patterns of Attitude Change of Male Secondary Student Teachers Who Taught Non-Academic Subjects During the Spring Semester by School Size

Female Student Teachers Who Taught Non-Academic Subjects. No significant differences were found between the mean scores of female student teachers who taught non-academic subjects in the small, the medium-size, or the large secondary schools on either the pretest, the mid-term test, or the post-test. The mean scores for each group and the F ratios are given in Table XXVII, while Figure 19 illustrates the differences among the three groups.

TABLE XXVI

A COMPARISON OF THE MEAN MTAI SCORES OF MALE SECONDARY STUDENT TEACHERS WHO TAUGHT NON-ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS SPRING SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	7	+8.86	8	+ 5.13	6	- 6.50
Mid-term	7	+4.00	8	-14.50	6	-11.33
Post-test	7	+4.57	5	+ .40	3	-11.00

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN MEAN MTAI SCORES OF MALE SECONDARY STUDENT TEACHERS WHO TAUGHT NON-ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	408.86	
Pretest MTAI Within Schools	18	817.29	.5002
Mid-term MTAI Among Schools	2	702.90	
Mid-term MTAI Within Schools	18	990.96	.7093
Post-test MTAI Among Schools	2	255.01	
Post-test MTAI Within Schools	12	1425.41	.1789

TABLE XXVII

A COMPARISON OF THE MEAN MTAI SCORES OF FEMALE SECONDARY STUDENT TEACHERS WHO TAUGHT NON-ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
SPRING SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	5	+10.60	11	+13.18	5	+10.60
Mid-term	5	- 2.40	11	-13.55	5	+ 2.00
Post-test	4	- .25	7	-10.86	4	+10.75

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN MEAN MTAI SCORES OF FEMALE SECONDARY STUDENT TEACHERS WHO TAUGHT NON-ACADEMIC SUBJECTS IN SMALL, MEDIUM, OR LARGE SCHOOLS
SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	17.46	
Pretest MTAI Within Schools	18	774.34	.0225
Mid-term MTAI Among Schools	2	490.66	
Mid-term MTAI Within Schools	18	882.55	.0555
Post-test MTAI Among Schools	2	605.29	
Post-test MTAI Within Schools	12	951.70	.0636

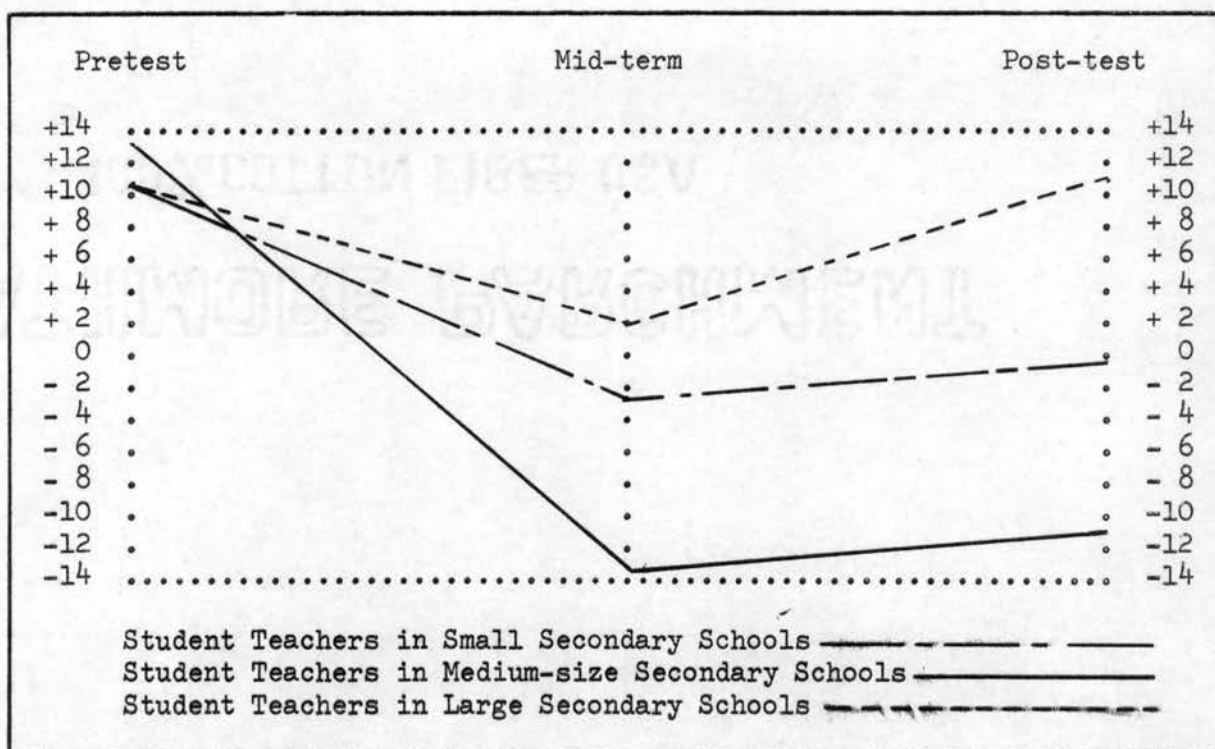


Figure 19. Patterns of Attitude Change of Female Secondary Student Teachers Who Taught Non-Academic Subjects During the Spring Semester by School Size

All Male Student Teachers at the Secondary Level, Disregarding Subject Area. The F ratios given in Table XXVIII indicate, that when subject area was disregarded, there were no significant differences among the means of those who did their student teaching in the small, the medium-size, or the large secondary schools. The patterns of change and the differences among the groups are illustrated in Figure 20.

TABLE XXVIII

A COMPARISON OF THE MEAN MTAI SCORES OF ALL MALE SECONDARY STUDENT
TEACHERS BY SCHOOL SIZE, DISREGARDING SUBJECT AREA
SPRING SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	15	+6.87	28	+7.32	14	+15.14
Mid-term	15	+ .60	28	-7.18	14	+11.07
Post-test	13	-8.00	20	-2.35	10	+17.50

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN MEAN MTAI SCORES
OF ALL MALE SECONDARY STUDENT TEACHERS BY SCHOOL SIZE,
DISREGARDING SUBJECT AREA
SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	337.29	
Pretest MTAI Within Schools	54	938.10	.3595
Mid-term MTAI Among Schools	2	1570.17	
Mid-term MTAI Within Schools	54	1032.94	1.52
Post-test MTAI Among Schools	2	1995.78	
Post-test MTAI Within Schools	40	1183.73	1.68

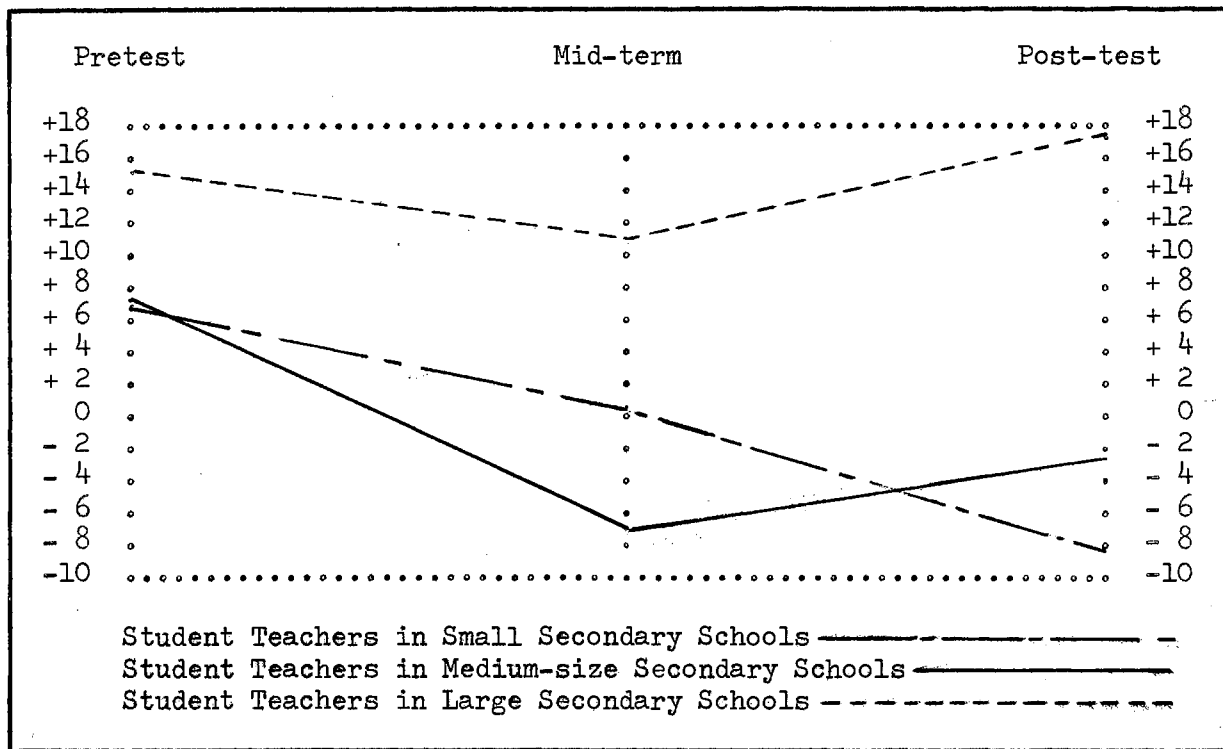


Figure 20. Patterns of Attitude Change of All Male Secondary Student Teachers During the Spring Semester by School Size

All Female Student Teachers Who Taught at the Secondary Level,

Disregarding Subject Area. Although the mean scores of the female student teachers who taught in the large schools were higher for all three testings than the means of those who taught in the medium-size or the small secondary schools, as indicated in Table XXIX, none of the differences were significant. The differences among their means and the over-all pattern of change is illustrated in Figure 21.

TABLE XXIX

A COMPARISON OF THE MEAN MTAI SCORES OF ALL FEMALE SECONDARY STUDENT
TEACHERS BY SCHOOL SIZE, DISREGARDING SUBJECT AREA
SPRING SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	7	+15.71	16	+19.75	18	+31.83
Mid-term	7	+ 8.57	16	- 6.62	18	+15.17
Post-test	6	+ 7.50	11	- 8.91	12	+19.00

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN MEAN MTAI SCORES
OF ALL FEMALE SECONDARY STUDENT TEACHERS BY SCHOOL SIZE,
DISREGARDING SUBJECT AREA
SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	934.29	
Pretest MTAI Within Schools	38	722.34	1.29
Mid-term MTAI Among Schools	2	2050.12	
Mid-term MTAI Within Schools	38	919.42	2.22
Post-test MTAI Among Schools	2	2243.28	
Post-test MTAI Within Schools	26	1044.94	2.14

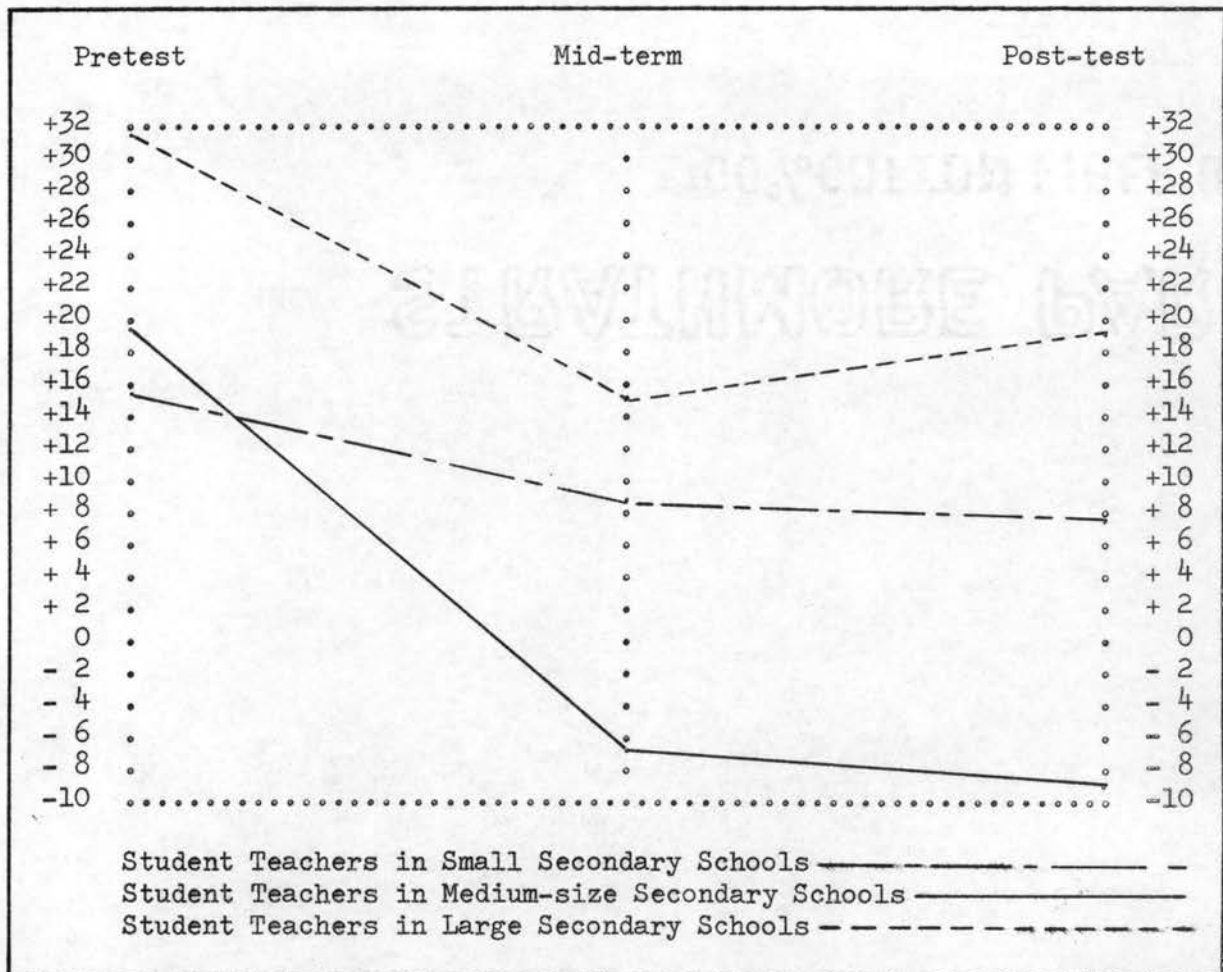


Figure 21. Patterns of Attitude Change of All Female Secondary Student Teachers During the Spring Semester by School Size

All Secondary Student Teachers Who Taught During the Spring Semester, Disregarding Sex and Subject Area. On the pretest, when the scores of males and females were combined disregarding subject area, there were no significant differences among the mean scores of those who taught in the small schools, the medium-size schools, and the large schools. At mid-term, however, as Table XXX indicates, the F ratio of 4.02 for differences among the means, was significant at the .05 level. In order to determine which means differed significantly, the t test was applied. The t of 2.82 for the difference of 20.36 degrees between the mean scores of those who did their student teaching in the medium-size schools and those who did

TABLE XXX

A COMPARISON OF THE MEAN MTAI SCORES OF ALL SECONDARY STUDENT TEACHERS
BY SCHOOL SIZE, DISREGARDING SEX, AND SUBJECT AREA
SPRING SEMESTER

Test	Student Teachers Compared by School Size					
	Small Schools		Medium Schools		Large Schools	
	N	Mean MTAI Score	N	Mean MTAI Score	N	Mean MTAI Score
Pretest	22	+9.68	44	+11.84	32	+24.53
Mid-term	22	+3.14	44	- 6.98	32	+13.38*
Post-test	19	-3.11	31	- 4.68	22	+18.32*

SUMMARY OF ANALYSIS OF VARIANCE FOR DIFFERENCES BETWEEN MEAN MTAI SCORES
OF ALL SECONDARY STUDENT TEACHERS BY SCHOOL SIZE,
DISREGARDING SEX, AND SUBJECT AREA
SPRING SEMESTER

Source of Variation	df	Mean Squares	F ratio
Pretest MTAI Among Schools	2	1971.94	
Pretest MTAI Within Schools	95	865.75	2.27
Mid-term MTAI Among Schools	2	3857.28	
Mid-term MTAI Within Schools	95	959.53	4.02*
Post-test MTAI Among Schools	2	3846.82	
Post-test MTAI Within Schools	69	1098.86	3.50*

*Significant at the .05 level of confidence

their student teaching in the large schools was significant at the .05 level.

A t of 1.10 for the difference of 10.24 degrees between the mean scores of those who did their student teaching in the small schools and those who did their student teaching in the large schools was not significant.

No t was computed for the difference of 10.12 degrees between the mean scores of those who did their student teaching in the small schools and those who did their student teaching in the medium-size schools.

Since the F ratio of variances among the post-test means was significant at the .05 level, the t test was applied to the differences between post-test means.

A t of 2.42 for the difference of 23.00 degrees between the mean scores of those who taught in the medium-size schools and those who taught in the large schools was significant at the .05 level.

A t of 1.99 was found for the difference of 21.43 degrees between the mean post-test score of those who taught in the small schools and those who taught in the large schools. This t was not significant at the .05 level.

Since the difference between the mean scores of those who taught in the small schools and those who taught in the medium-size schools was only 1.57 degrees, no t was computed for this difference.

The over-all pattern of change and the differences among the means of those who taught in the three classifications of secondary schools is shown in Figure 22.

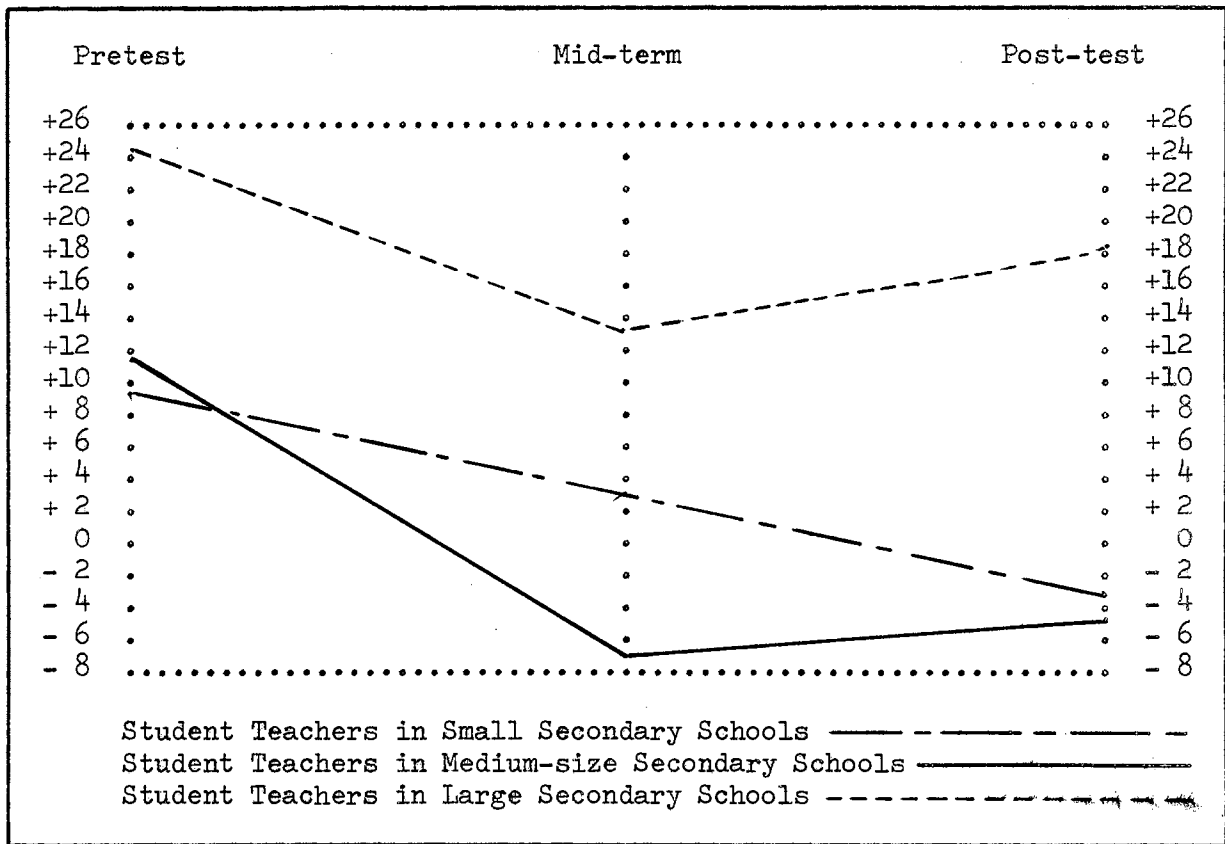


Figure 22. Patterns of Attitude Change of All Secondary Student Teachers During the Spring Semester by School Size

The Relationship Between the Attitudes of the Student Teachers and the Attitudes of Their Cooperating Teachers

Although data were received from one hundred, four fall semester cooperating teachers and one hundred, forty-one spring semester cooperating teachers, only data received from cooperating teachers of student teachers who were used in the final analyses were analyzed. Twenty-four returns from fall semester cooperating teachers were not used because of incomplete data from the student teachers, while forty-six returns from spring semester cooperating teachers were discarded for the same reason.

Fall Semester Cooperating Teachers

The mean pretest, mid-term, and post-test MTAI scores of the student teachers were compared with the mean MTAI scores of their cooperating teachers. Comparisons were made between: (1) the elementary student teachers and their cooperating teachers, (2) secondary student teachers who taught academic subjects and their cooperating teachers, (3) secondary student teachers who taught non-academic subjects and their cooperating teachers, (4) all secondary student teachers combined and their cooperating teachers, and (5) all student teachers combined and their cooperating teachers. The results of these comparisons and the significant of differences between means are given in Table XXXI. Since the cooperating teachers took the MTAI only once, that score is used for all comparisons. Differences in the mean scores of cooperating teachers at mid-term for the fall semester and on the post-test for the spring semester are the results of sampling differences, since each student teacher's score was matched with his or her cooperating teacher's score in the comparisons.

Elementary Student Teachers and Their Cooperating Teachers. No significant differences were found between the mean scores of the student teachers and the mean score of their cooperating teachers on either the pretest, the mid-term test, or the post-test. The pattern of attitude change for the elementary student teachers in relation to the mean score for their cooperating teachers is shown in Figure 23.

Secondary Student Teachers Who Taught Academic Subjects and Their Cooperating Teachers. As Table XXXI indicates, there were no significant differences between the mean scores of the secondary student teachers who taught academic subjects and their cooperating teachers on either the pretest, the mid-term test, or the post-test. The differences between

TABLE XXXI

A COMPARISON OF THE MEAN MTAI SCORES OF MALE AND FEMALE STUDENT TEACHERS
COMBINED, WITH THE MEAN MTAI SCORES OF THEIR COOPERATING TEACHERS
FALL SEMESTER

Data Compared	N	Mean MTAI Score		Difference	t
		Student Teachers	Cooperating Teachers		
ELEMENTARY					
Pretest	23	+25.83	+21.96	3.87	.43
Mid-term	17	+32.35	+19.17	12.64	1.54
Post-test	23	+31.30	+21.96	9.34	1.25
SECONDARY ACADEMIC					
Pretest	37	+14.65	+13.43	1.22	.17
Mid-term	26	+28.46	+12.81	15.65	1.93
Post-test	37	+17.84	+13.43	4.41	.63
SECONDARY NON-ACADEMIC					
Pretest	20	+ 5.10	+ 7.55	2.45	.24
Mid-term	13	+20.38	+15.92	4.46	.37
Post-test	20	+ 9.85	+ 7.55	2.30	.25
ALL SECONDARY					
Pretest	57	+11.30	+11.37	.07	.00
Mid-term	38	+25.77	+13.85	11.92	1.78
Post-test	57	+15.04	+11.37	3.67	.65
ALL STUDENT TEACHERS					
Pretest	80	+15.48	+14.41	1.07	.22
Mid-term	56	+27.77	+13.85	12.14	2.29*
Post-test	80	+19.71	+14.41	5.30	1.14

*Significant at the .05 level of confidence

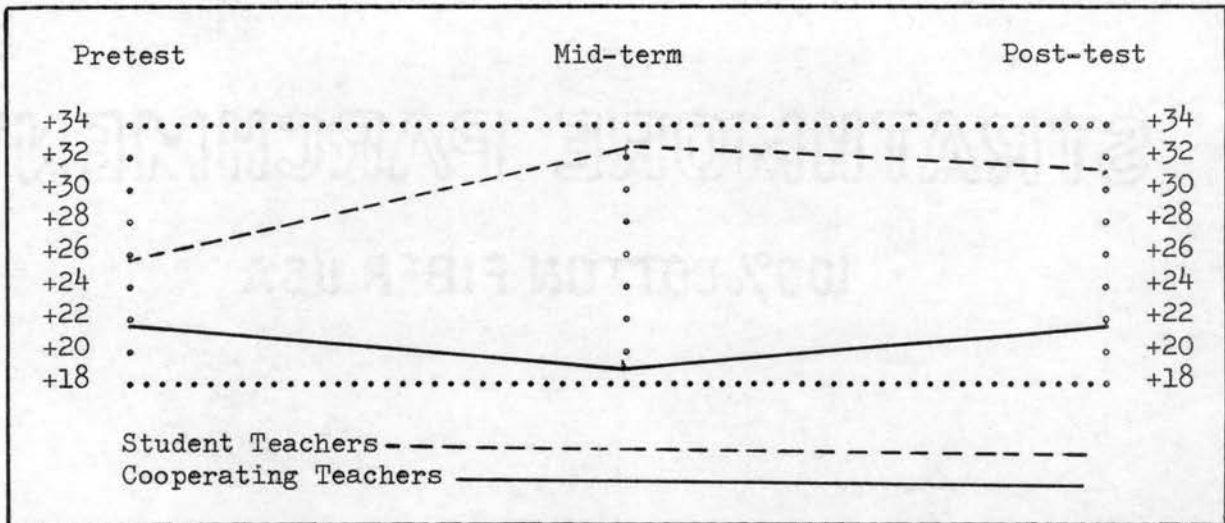


Figure 23. The Relationship Between the Attitudes of the Elementary Student Teachers and the Attitudes of Their Cooperating Teachers, Fall Semester

the mean scores of the secondary student teachers who taught academic subjects and the mean score of their cooperating teachers are graphically shown in Figure 24.

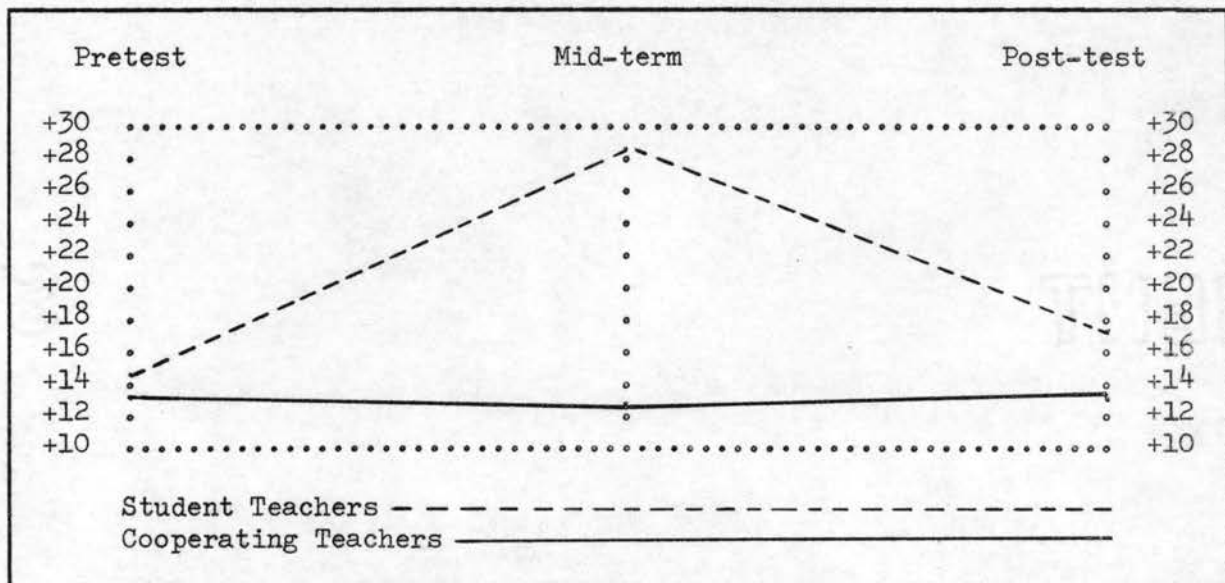


Figure 24. The Relationship Between the Attitudes of Secondary Student Teachers Who Taught Academic Subjects and the Attitudes of Their Cooperating Teachers, Fall Semester

Secondary Student Teachers Who Taught Non-Academic Subjects and Their Cooperating Teachers. The secondary student teachers who taught non-academic subjects did not differ significantly from their cooperating teachers on either of the three testings. Figure 25 shows the differences between the mean scores of the student teachers and the mean scores of their cooperating teachers.

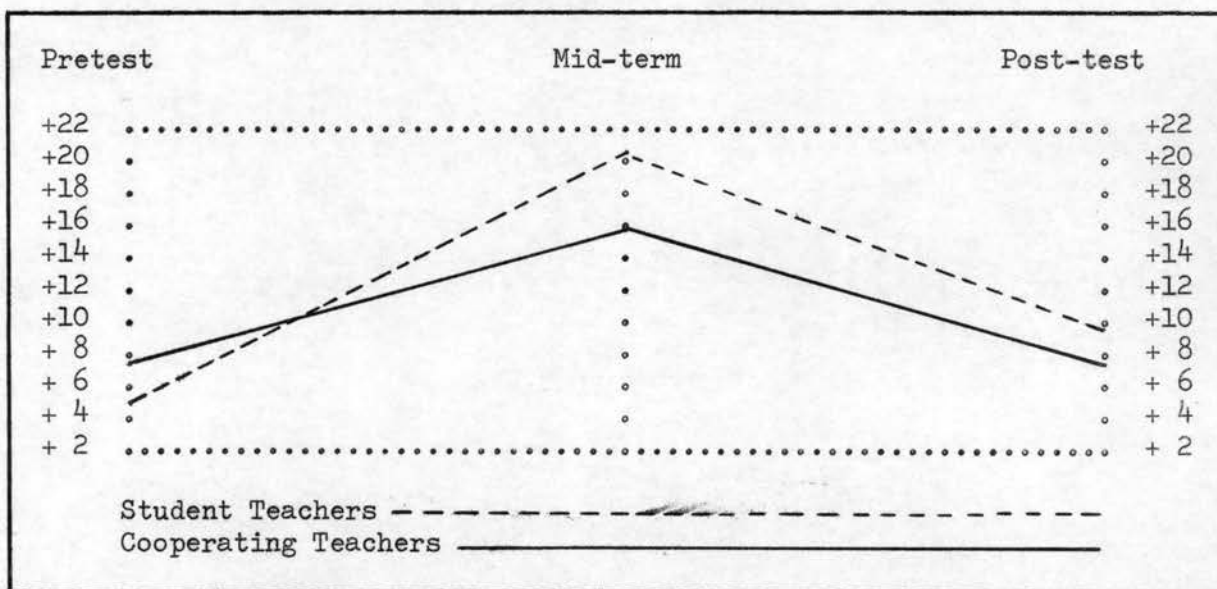


Figure 25. The Relationship Between the Attitudes of Secondary Student Teachers Who Taught Non-Academic Subjects and the Attitudes of Their Cooperating Teachers, Fall Semester

All Secondary Student Teachers and Their Cooperating Teachers. There were no significant differences between the mean scores of all secondary student teachers combined and the mean scores of their cooperating teachers. The disparities between the mean scores of the secondary student teachers and the mean scores of their cooperating teachers are shown in Figure 26.

All Student Teachers Combined and Their Cooperating Teachers. When the mean scores of all student teachers combined were compared with the mean scores of their cooperating teachers, it was found that the student teachers differed significantly from their cooperating teachers on the

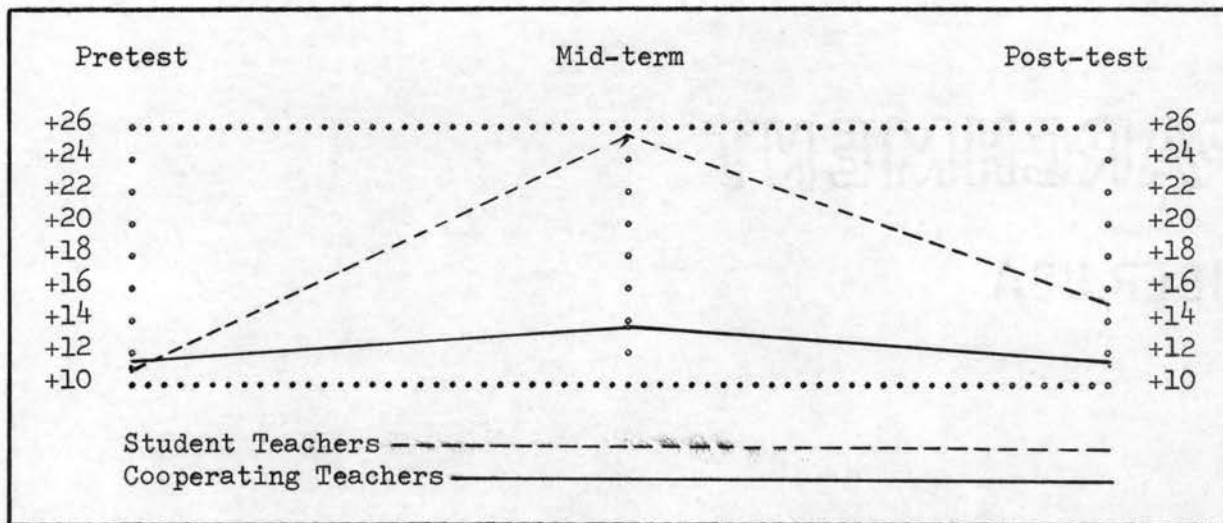


Figure 26. The Relationship Between the Attitudes of All Secondary Student Teachers and the Attitudes of Their Cooperating Teachers, Fall Semester

mid-term test only. The over-all pattern of differences between the mean scores of the student teachers and the mean scores for their cooperating teachers is shown in Figure 27.

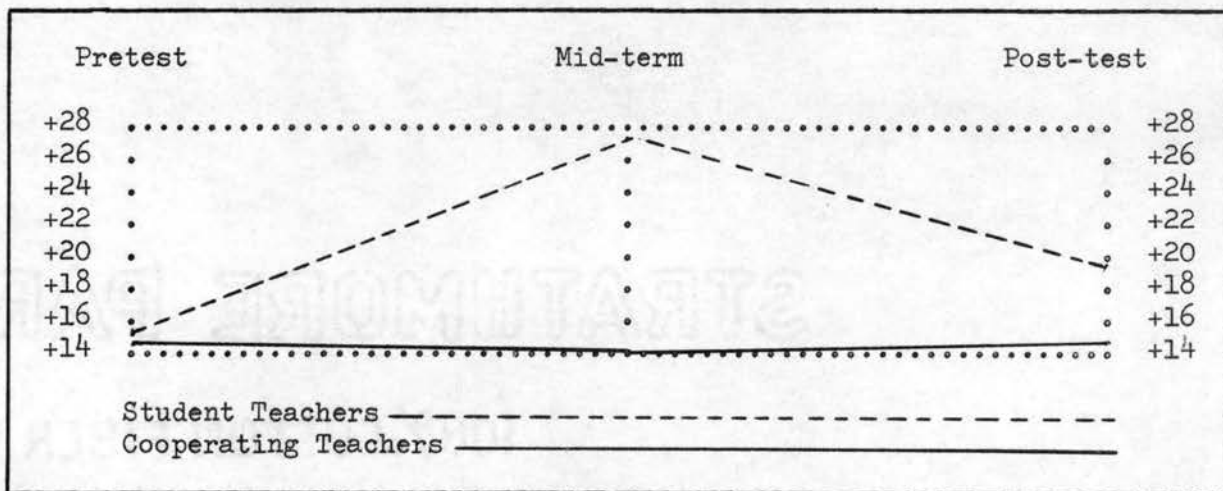


Figure 27. The Relationship Between the Attitudes of All Fall Semester Student Teachers and the Attitudes of Their Cooperating Teachers

Spring Semester Cooperating Teachers

Elementary Student Teachers and Their Cooperating Teachers. As Table XXXII indicates, the mean MTAI scores of the spring semester elementary student teachers were higher at every testing than the mean scores of their cooperating teachers. Although the student teachers' mean scores were higher at every testing than the mean scores of their cooperating teachers, only the difference of 31.94 degrees between the student teachers' pretest mean score and their cooperating teachers' mean score was significant at the .05 level. Figure 28 shows the over-all pattern of change and the differences between the student teachers' scores and those of their cooperating teachers.

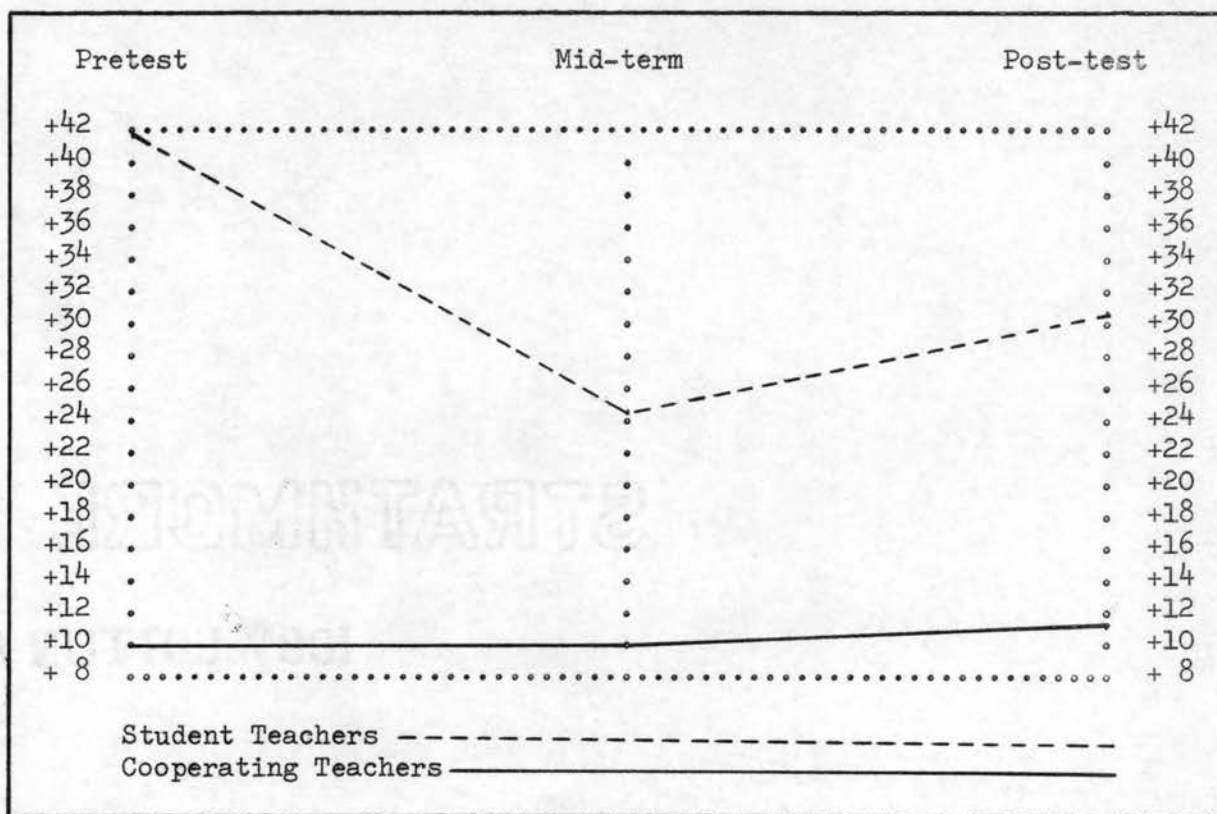


Figure 28. The Relationship Between the Attitudes of the Elementary Student Teachers and the Attitudes of Their Cooperating Teachers, Spring Semester

TABLE XXXII

A COMPARISON OF THE MEAN MTAI SCORES OF MALE AND FEMALE STUDENT TEACHERS
COMBINED, WITH THE MEAN MTAI SCORES OF THEIR COOPERATING TEACHERS
SPRING SEMESTER

Data Compared	N	Mean MTAI Score		Difference	t
		Student Teachers	Cooperating Teachers		
ELEMENTARY					
Pretest	36	+41.94	+10.00	31.94	4.61*
Mid-term	36	+24.28	+10.00	14.28	1.87
Post-test	27	+30.26	+11.22	19.04	2.00
SECONDARY ACADEMIC					
Pretest	37	+23.22	+14.24	8.98	1.25
Mid-term	37	+ 9.97	+14.24	4.27	.55
Post-test	29	+ 4.76	+ 6.90	2.14	.24
SECONDARY NON-ACADEMIC					
Pretest	22	+11.27	+ 2.86	8.41	.99
Mid-term	22	- 5.59	+ 2.86	11.59	1.32
Post-test	15	+ 9.93	+ 6.00	3.93	.70
ALL SECONDARY					
Pretest	59	+18.76	+10.00	8.76	1.57
Mid-term	59	+ 4.17	+10.00	5.83	.98
Post-test	44	+ 7.50	+ 6.59	.91	.00
ALL STUDENT TEACHERS					
Pretest	95	+27.55	+10.00	17.55	3.93*
Mid-term	95	+11.79	+10.00	1.79	.37
Post-test	71	+15.55	+ 8.35	7.20	1.26

*Significant at the .01 level of confidence

Secondary Student Teachers Who Taught Academic Subjects and Their Cooperating Teachers. The comparison of the mean MTAI scores given in Table XXXII indicate that the student teachers who taught academic subjects in the secondary schools did not differ significantly from their cooperating teachers on either the pretest, the mid-term test, or the post-test. The over-all pattern of change for this group and the differences between their mean scores and the mean scores of their cooperating teachers is shown in Figure 29.

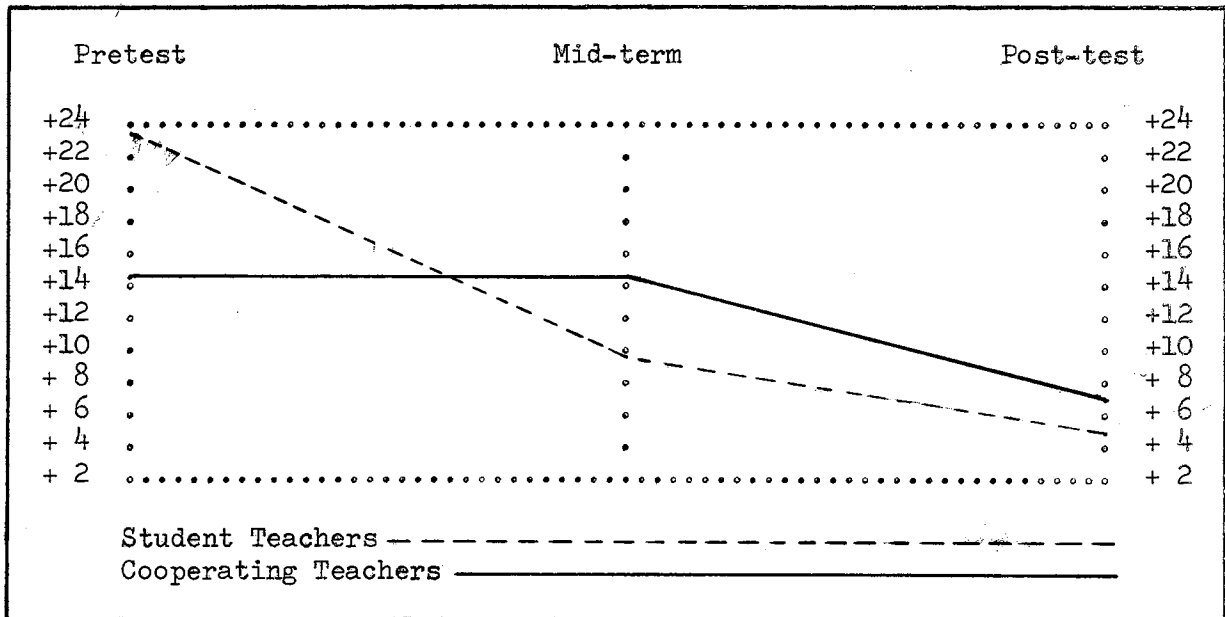


Figure 29. The Relationship Between the Attitudes of the Secondary Student Teachers Who Taught Academic Subjects and the Attitudes of Their Cooperating Teachers, Spring Semester

Secondary Student Teachers Who Taught Non-Academic Subjects and Their Cooperating Teachers. There were no significant differences between the mean scores of the spring semester secondary student teachers who taught non-academic subjects and the mean scores of their cooperating teachers. Figure 30 shows the differences between their mean scores on the pretest, the mid-term test, and the post-test.

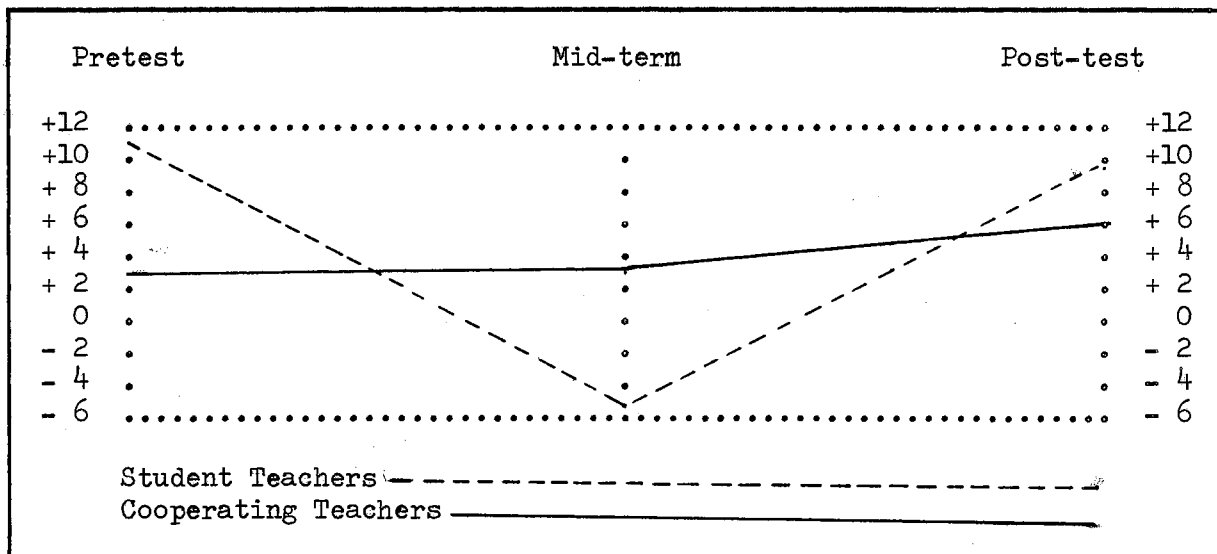


Figure 30. The Relationships Between the Attitudes of the Secondary Student Teachers Who Taught Non-Academic Subjects and the Attitudes of Their Cooperating Teachers, Spring Semester

All Secondary Student Teachers and Their Cooperating Teachers. There were no significant differences between the mean scores of all secondary student teachers combined and the mean scores of their cooperating teachers. The differences between the mean scores of the spring semester secondary student teachers and the mean scores of their cooperating teachers are shown in Figure 31.

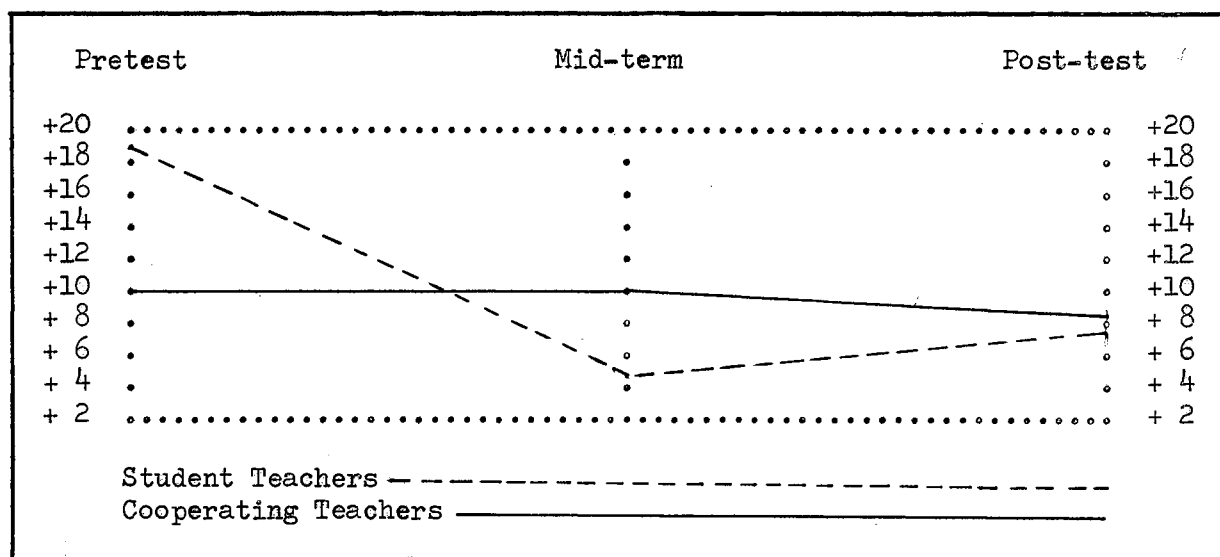


Figure 31. The Relationship Between the Attitudes of All Secondary Student Teachers and Their Cooperating Teachers, Spring Semester

All Spring Semester Student Teachers Combined and Their Cooperating Teachers. When the mean scores of all spring semester student teachers combined were compared with the mean score of their cooperating teachers, it was found that the student teachers differed significantly from their cooperating teachers on the pretest only. The differences between the mean scores of the student teachers and the mean scores of their cooperating teachers are shown in Figure 32.

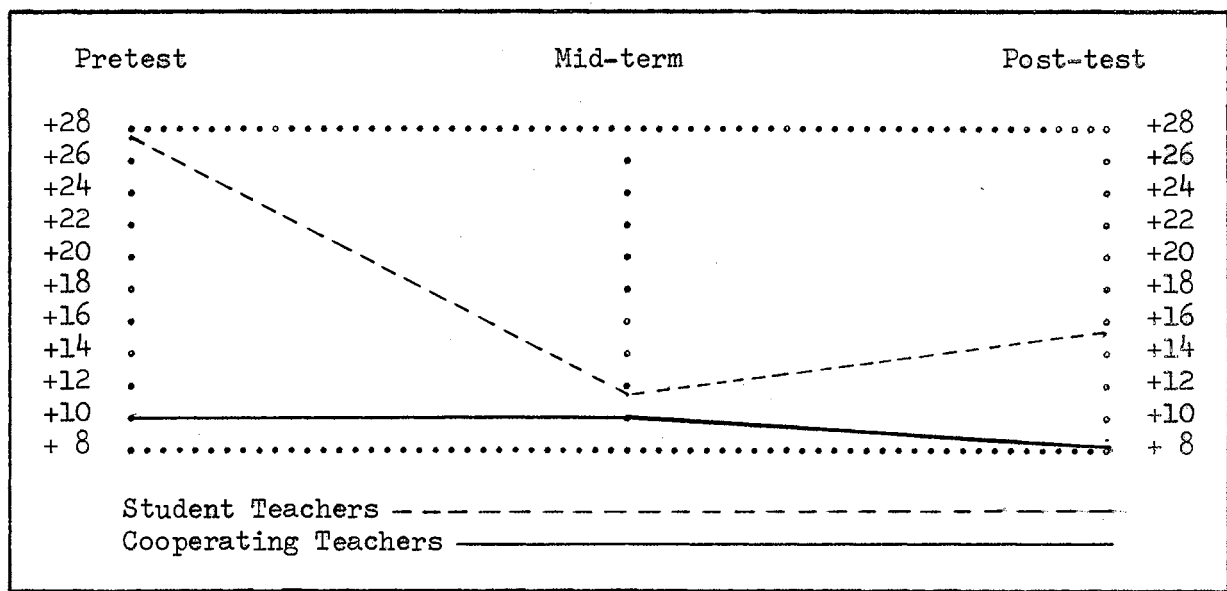


Figure 32. The Relationship Between the Attitudes of All Spring Semester Student Teachers and the Attitudes of Their Cooperating Teachers

The Relationship Between Changes of Attitude and Personality Traits

In an effort to determine if there is an apparent relationship between either the degree or direction of attitude change and the strength of certain manifest needs associated with personality traits, the EPPS was given to the student teachers at the same time as the pretest MTAI.

The difference between each student teacher's pretest MTAI score and his post-test MTAI score was used as a measure of the degree and the direction

of attitude change. The EPPS scores were used as a measure of the strength of the various manifest needs associated with the personality traits the instrument purports to measure. Using these criteria, the following comparisons were made for each semester: (1) The mean EPPS scores of male student teachers whose MTAI score changed eight degrees or more in a positive direction between the pretest and the post-test were compared with the mean EPPS scores of male student teachers whose MTAI score changed eight degrees or more in the negative direction between the pretest and the post-test. (2) The mean EPPS scores of female student teachers whose MTAI score changed eight degrees or more in the positive direction between the pretest and the post-test were compared with the mean EPPS scores of female student teachers whose MTAI score changed eight degrees or more in the negative direction between the pretest and the post-test. (3) The mean EPPS scores of male student teachers whose MTAI score changed fifteen degrees or more in the positive direction between the pretest and the post-test were compared with the mean EPPS scores of male student teachers whose MTAI score changed fifteen degrees or more in the negative direction between the pretest and the post-test. (4) The mean EPPS scores of female student teachers whose MTAI score changed fifteen degrees or more in the positive direction between the pretest and the post-test were compared with the mean EPPS scores of female student teachers whose MTAI score changed fifteen degrees or more in the negative direction between the pretest and the post-test. The results of these comparisons for the fall semester, and the significance of differences between the means are given in Tables XXXIII through XXXVI. Tables XXXVII through XL give the results of the same comparisons for the spring semester.

Fall Semester Comparisons of EPPS Scores

Male Student Teachers Who Changed Eight Degrees or More in the Positive Direction Compared with Male Student Teachers Who Changed Eight Degrees or More in the Negative Direction. The results given in Table XXXIII show that the male student teachers who changed in the positive direction did not differ significantly from the male student teachers who changed in the negative direction on any one of the fifteen personality scales.

Female Student Teachers Who Changed Eight Degrees or More in the Positive Direction Compared with Female Student Teachers Who Changed Eight Degrees or More in the Negative Direction. The results of the comparisons given in Table XXXIV indicate there were no significant differences between the female student teachers who changed eight degrees or more in the positive direction and the female student teachers who changed eight degrees or more in the negative direction on any one of the fifteen EPPS variables.

Male Student Teachers Who Changed Fifteen Degrees or More in the Positive Direction Compared With the Male Student Teachers Who Changed Fifteen Degrees or More in the Negative Direction. The male student teachers who changed in the positive direction differed significantly from the male student teachers who changed in the negative direction on only one of the EPPS variables. As Table XXXV indicates, male student teachers who changed fifteen degrees or more in the negative direction on the MTAI between the pretest and the post-test had a significantly higher mean score on the EPPS intraception variable than those who changed in the positive direction.

TABLE XXXIII

A COMPARISON OF THE MEAN EPPS SCORES OF MALE STUDENT TEACHERS WHO CHANGED EIGHT POINTS OR MORE IN THE POSITIVE DIRECTION ON THE MTAI WITH THE MEAN EPPS SCORES OF MALE STUDENT TEACHERS WHO CHANGED EIGHT POINTS OR MORE IN THE NEGATIVE DIRECTION ON THE MTAI FALL SEMESTER

EPPS Scale	Mean EPPS Scores		Difference	t
	Positive Change (N=30)	Negative Change (N=22)		
Achievement	15.37	14.41	.96	.86
Deference	13.47	13.77	.30	.24
Order	13.00	12.00	1.00	.67
Exhibition	14.43	14.50	.07	.06
Autonomy	12.33	11.95	.38	.31
Affiliation	14.33	15.91	1.58	1.58
Intracception	16.13	18.00	1.87	1.54
Succorance	10.27	10.23	.04	.03
Dominance	16.33	15.68	.65	.55
Abasement	15.33	14.64	.69	.47
Nurturance	13.80	14.41	.61	.50
Change	15.23	13.77	1.46	1.10
Endurance	14.23	15.09	.86	.56
Heterosexuality	13.00	13.09	.09	.06
Aggression	12.37	11.68	.69	.67
Consistency	11.10	11.80	.70	1.24

TABLE XXXIV

A COMPARISON OF THE MEAN EPPS SCORES MADE BY FEMALE STUDENT TEACHERS WHO CHANGED EIGHT POINTS OR MORE IN THE POSITIVE DIRECTION ON THE MTAI WITH THE MEAN EPPS SCORES OF FEMALE STUDENT TEACHERS WHO CHANGED EIGHT POINTS OR MORE IN THE NEGATIVE DIRECTION ON THE MTAI FALL SEMESTER

EPPS Scale	Mean EPPS Scores		Difference	t
	Positive Change (N=33)	Negative Change (N=16)		
Achievement	12.88	12.56	.32	.26
Deference	13.45	13.56	.11	.11
Order	12.42	12.88	.46	.33
Exhibition	13.21	13.94	.73	.65
Autonomy	10.06	10.13	.07	.04
Affiliation	18.09	16.94	1.15	.96
Intracception	18.36	19.69	1.33	1.06
Succorance	13.39	13.38	.01	.007
Dominance	12.67	13.19	.52	.33
Abasement	16.58	14.75	1.83	1.24
Nurturance	16.58	16.81	.23	.13
Change	16.48	17.25	.77	.57
Endurance	14.91	14.06	.85	.58
Heterosexuality	12.64	10.44	2.20	1.12
Aggression	8.36	9.88	1.52	1.22
Consistency	11.58	11.88	.30	.53

TABLE XXXV

A COMPARISON OF THE MEAN EPPS SCORES MADE BY MALE STUDENT TEACHERS WHO CHANGED FIFTEEN POINTS OR MORE IN THE POSITIVE DIRECTION ON THE MTAI WITH THE MEAN EPPS SCORES OF MALE STUDENT TEACHERS WHO CHANGED FIFTEEN POINTS OR MORE IN THE NEGATIVE DIRECTION ON THE MTAI FALL SEMESTER

EPPS Scale	Mean EPPS Scores		Difference	t
	Positive Change (N=15)	Negative Change (N=11)		
Achievement	15.13	14.73	.40	.26
Deference	13.33	14.18	.85	.71
Order	14.07	10.45	3.62	1.84
Exhibition	15.07	13.82	1.25	.82
Autonomy	11.13	13.55	2.42	1.41
Affiliation	14.60	15.18	.38	.42
Intracception	15.00	18.91	3.91	2.52*
Succorance	10.53	8.36	2.17	1.68
Dominance	17.40	16.18	1.22	.71
Abasement	16.00	14.55	1.45	.58
Nurturance	13.87	13.18	.69	.40
Change	14.40	15.09	.69	.33
Endurance	15.27	16.82	1.55	.68
Heterosexuality	11.87	13.27	1.40	1.03
Aggression	11.73	11.64	.09	.06
Consistency	11.40	11.45	.05	.07

*Significant at the .05 level of confidence

Female Student Teachers Who Changed Fifteen Degrees or More in the Positive Direction Compared With the Female Student Teachers Who Changed Fifteen Degrees or More in the Negative Direction. An examination of the results of the comparisons given in Table XXXVI reveals that the female student teachers who changed fifteen degrees or more in the positive direction had a significantly greater mean score on the abasement variable of the EPPS than those who changed in the negative direction.

Spring Semester Comparisons of EPPS Scores

Male Student Teachers Who Changed Eight Degrees or More in the Positive Direction Compared with Male Student Teachers Who Changed Eight Degrees or More in the Negative Direction. The spring semester male student teachers who changed eight degrees or more in the positive direction were found to differ significantly on two of the EPPS variables. As Table XXXVII indicates, male student teachers who changed in the negative direction had a significantly greater mean score on the autonomy scale than those who changed in the positive direction. On the other hand, the male student teachers who changed in the positive direction had a significantly greater mean score on the nurturance scale.

Female Student Teachers Who Changed Eight Degrees or More in the Positive Direction Compared with the Female Student Teachers Who Changed Eight Degrees or More in the Negative Direction. There were no significant differences between the mean EPPS scores of the female student teachers who changed in the positive direction and the ones who changed eight degrees or more in the negative direction on any of the fifteen personality variables. However, there was a significant difference between the two groups on the consistency scale. As Table XXXVIII indicates, the female student teachers

TABLE XXXVI

A COMPARISON OF THE MEAN EPPS SCORES MADE BY FEMALE STUDENT TEACHERS WHO CHANGED FIFTEEN POINTS OR MORE IN THE POSITIVE DIRECTION ON THE MTAI WITH THE MEAN EPPS SCORES OF FEMALE STUDENT TEACHERS WHO CHANGED FIFTEEN POINTS OR MORE IN THE NEGATIVE DIRECTION ON THE MTAI FALL SEMESTER

EPPS Scale	Mean EPPS Scores		Difference	t
	Positive Change (N=21)	Negative Change (N=14)		
Achievement	13.48	12.36	1.12	.82
Deference	13.67	13.79	.12	.12
Order	12.95	12.64	.31	.19
Exhibition	13.05	13.93	.88	.69
Autonomy	9.86	9.79	.07	.04
Affiliation	17.62	16.86	.75	.53
Intraception	18.05	19.57	1.52	1.05
Succorance	13.33	13.93	.60	.38
Dominance	11.71	14.07	2.36	1.48
Abasement	17.33	14.07	3.26	2.05*
Nurturance	16.19	17.00	.81	.41
Change	16.24	17.29	1.05	.66
Endurance	15.52	13.64	1.88	1.12
Heterosexuality	12.24	10.79	1.45	.63
Aggression	8.43	10.36	1.93	1.41
Consistency	11.38	11.71	.33	.50

*Significant at the .05 level of confidence

TABLE XXXVII

A COMPARISON OF THE MEAN EPPS SCORES MADE BY MALE STUDENT TEACHERS WHO CHANGED EIGHT POINTS OR MORE IN THE POSITIVE DIRECTION ON THE MTAI WITH THE MEAN EPPS SCORES OF MALE STUDENT TEACHERS WHO CHANGED EIGHT POINTS OR MORE IN THE NEGATIVE DIRECTION ON THE MTAI SPRING SEMESTER

EPPS Scale	Mean EPPS Scores		Difference	t
	Positive Change (N=11)	Negative Change (N=30)		
Achievement	14.91	14.37	.54	.34
Deference	12.00	12.53	.53	.55
Order	13.64	13.87	.23	.11
Exhibition	12.82	14.23	1.41	.91
Autonomy	9.18	12.47	3.29	2.07*
Affiliation	16.18	14.00	2.18	1.58
Intracception	15.09	16.13	1.04	.86
Succorance	13.64	11.20	2.44	1.97
Dominance	12.45	14.77	2.32	1.80
Abasement	13.91	14.17	.26	.15
Nurturance	17.36	14.10	3.26	2.36*
Change	15.18	14.97	.21	.22
Endurance	15.27	15.23	.04	.02
Heterosexuality	15.45	14.67	.78	.31
Aggression	11.00	13.00	2.00	1.40
Consistency	10.55	10.77	.22	.29

*Significant at the .05 level of confidence

TABLE XXXVIII

A COMPARISON OF THE MEAN EPPS SCORES MADE BY FEMALE STUDENT TEACHERS WHO CHANGED EIGHT POINTS OR MORE IN THE POSITIVE DIRECTION ON THE MTAI WITH THE MEAN EPPS SCORES OF FEMALE STUDENT TEACHERS WHO CHANGED EIGHT POINTS OR MORE IN THE NEGATIVE DIRECTION ON THE MTAI SPRING SEMESTER

EPPS Scale	Mean EPPS Scores		Difference	t
	Positive Change (N=14)	Negative Change (N=44)		
Achievement	14.36	14.00	.36	.26
Deference	15.14	14.34	.80	.79
Order	10.50	12.89	2.39	1.81
Exhibition	15.07	14.59	.48	.51
Autonomy	11.07	11.52	.45	.45
Affiliation	16.93	16.98	.05	.04
Intracception	18.07	16.91	1.16	.84
Succorance	12.07	12.94	.87	.49
Dominance	12.50	12.30	.20	.13
Abasement	16.93	15.41	1.52	1.02
Nurturance	16.43	15.64	.79	.58
Change	17.00	15.84	1.16	.85
Endurance	13.93	13.98	.05	.03
Heterosexuality	10.36	12.95	2.59	1.34
Aggression	10.36	9.70	.66	.48
Consistency	12.50	11.18	1.32	2.378*

*Significant at the .05 level of confidence

who changed in the positive direction were significantly more consistent than those who changed in the negative direction.

Male Student Teachers Who Changed Fifteen Degrees or More in the Positive Direction Compared with the Male Student Teachers Who Changed Fifteen Degrees or More in the Negative Direction. The comparisons given in Table XXXIX show that the male student teachers who changed in the positive direction had a significantly greater mean score on the succorance variable than those who changed in the negative direction. The two groups did not differ significantly on any of the other EPPS variables.

Female Student Teachers Who Changed Fifteen Degrees or More in the Positive Direction Compared with the Female Student Teachers Who Changed Fifteen Degrees or More in the Negative Direction. The comparisons of the mean EPPS scores given in Table XL show that the female student teachers who changed in the negative direction exhibited a higher manifest need for order than did those who changed in the positive direction. Although the only difference between mean scores of those who changed in the positive direction and those who changed in the negative direction for the fifteen personality traits was on the order scale, the female student teachers who changed in the negative direction were significantly less consistent than those who changed in the positive direction.

TABLE XXXIX

A COMPARISON OF THE MEAN EPPS SCORES MADE BY MALE STUDENT TEACHERS WHO CHANGED FIFTEEN POINTS OR MORE IN THE POSITIVE DIRECTION ON THE MTAI WITH THE MEAN EPPS SCORES OF MALE STUDENT TEACHERS WHO CHANGED FIFTEEN POINTS OR MORE IN THE NEGATIVE DIRECTION ON THE MTAI SPRING SEMESTER

EPPS Scale	Mean EPPS Scores		Difference	t
	Positive Change (N=8)	Negative Change (N=20)		
Achievement	14.50	14.50	.00	.00
Deference	11.75	13.25	1.50	1.26
Order	12.88	13.95	1.07	.41
Exhibition	11.00	13.90	2.90	1.83
Autonomy	8.88	11.90	3.02	1.56
Affiliation	16.63	14.10	2.53	1.59
Intracception	14.88	16.45	1.57	.90
Succorance	14.38	10.75	3.63	2.56*
Cominance	12.50	13.55	1.05	.63
Abasement	15.00	15.10	.10	.43
Nurturance	18.63	14.10	4.53	1.69
Change	14.63	14.80	.17	.15
Endurance	15.88	15.45	.43	.20
Heterosexuality	15.25	15.55	.30	.09
Aggression	10.75	12.20	1.45	.82
Consistency	11.00	10.75	.25	.32

*Significant at the .05 level of confidence

TABLE XL

A COMPARISON OF THE MEAN EPPS SCORES MADE BY FEMALE STUDENT TEACHERS WHO CHANGED FIFTEEN POINTS OR MORE IN THE POSITIVE DIRECTION ON THE MTAI WITH THE MEAN EPPS SCORES OF FEMALE STUDENT TEACHERS WHO CHANGED FIFTEEN POINTS OR MORE IN THE NEGATIVE DIRECTION ON THE MTAI SPRING SEMESTER

EPPS Scale	Mean EPPS Scores		Difference	t
	Positive Change (N=9)	Negative Change (N=31)		
Achievement	14.11	14.52	.41	.22
Deference	14.56	14.16	.40	.35
Order	9.44	12.48	3.02	2.10*
Exhibition	15.00	14.35	.65	.56
Autonomy	11.44	11.26	.18	.13
Affiliation	15.56	16.81	1.25	.81
Intracception	19.67	17.23	2.44	1.57
Succorance	12.11	12.42	.31	.14
Dominance	11.67	13.00	1.33	.62
Abasement	16.56	14.58	1.98	1.02
Nurturance	16.33	15.65	.68	.41
Change	17.11	16.48	.63	.32
Endurance	14.11	13.97	.14	.06
Heterosexuality	12.11	13.19	1.08	.56
Aggression	11.33	9.94	1.39	.73
Consistency	12.44	10.87	1.57	2.48*

*Significant at the .05 level of confidence

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study was concerned with the following questions: (1) To what degree, and in what direction, either positive or negative, do the attitudes of student teachers toward pupils change during an eighteen-week student-teaching experience? (2) Is the degree and direction of attitude change the same during the first half of the student-teaching experience as during the last half? (3) Is there a significant relationship between either the degree or direction of attitude change and variables such as: (a) the grade level taught; (b) the major area of teaching; (c) the size of the school in which the student teaching is done; (d) the sex of the student teacher; (e) the attitudes of the cooperating teachers; and, (f) the strength of the manifest needs associated with any of the fifteen personality traits measured by the EPPS, and if so, which ones? (4) What disparities exist between the attitude scores of the cooperating teachers and the attitude scores of the student teachers before they begin their student teaching, and are these disparities the same after they have completed their student teaching? (5) Is the pattern of attitude change the same during the spring semester as the pattern of attitude change during the fall semester?

The hypotheses of this study were: (1) There will be no significant relationship between either the degree or direction of attitude changes of student teachers toward pupils and: (a) the length of time spent in

student teaching; (b) grade level taught; (c) subject area taught; (d) sex of the student teacher; (e) the size of the school in which the student teaching is done; (f) the attitudes of the cooperating teachers; or, (g) personality traits of the student teachers. (2) There will be no significant change in the disparities that exist between the attitudes of the student teachers and the attitudes of the cooperating teachers before they begin their student teaching and after they have completed their student teaching.

General Summary

The basic design used in seeking answers to the questions and to test the hypotheses of the study was a variation of what Garrett (21) called the "Single Group Method." In this method, the same instrument is administered to the same subjects on one or more occasions, and differences between testings analyzed.

The data used in this study as a measure of attitude and attitude change were MTAI raw scores obtained from three different testings. The student teachers took the MTAI first as a pretest before they began their student teaching. After approximately nine weeks of student teaching, they took the MTAI again as a mid-term test. A final testing during the last week of student teaching provided a post-test MTAI score.

EPPS raw scores obtained at the same time as the pretest MTAI scores were used as a measure of the strength the various manifest needs associated with certain personality traits.

Comparisons made between the attitudes of the student teachers and the attitudes of their cooperating teachers were based on one MTAI score obtained from the cooperating teacher.

The means and variances were obtained by means of the IBM 1410 Computer. The significance of differences were determined through the use of the F ratio of variances and/or the t test.

Summary of Findings Related to Attitude Change at the
Elementary Level During the Fall Semester

Female Student Teachers Who Taught at the Primary Level. A mean difference of 6.67 degrees in the positive direction between the pretest MTAI scores of female student teachers who taught at the primary level and their mid-term MTAI scores was not significant. Neither was the mean difference of 4.00 degrees in the positive direction between their mid-term and post-test MTAI scores significant. However, when both of these differences were combined to represent the mean difference between their pretest and post-test MTAI scores, the resulting mean difference of 10.67 degrees in the positive direction was found to be significant at the .01 level.

Male Student Teachers Who Taught at the Intermediate Level. A mean difference of 15.75 degrees in the positive direction between the pretest MTAI scores and the mid-term MTAI scores made by the male student teachers who taught in the intermediate grades was found to be significant at the .05 level. The mean difference of 2.25 degrees in the negative direction between their mid-term and post-test MTAI scores was not significant. A mean difference of 13.50 degrees in the positive direction between their pretest and post-test MTAI scores was significant at the .05 level of confidence.

Female Student Teachers Who Taught at the Intermediate Level. Although no significant mean differences between any two sets of MTAI scores were observed for the female student teachers teaching in the intermediate grades, the greatest difference was between their pretest and mid-term MTAI scores.

All Male and Female Elementary Student Teachers Combined. When grade level and the sex factors were disregarded, a mean difference of 8.97 degrees in the positive direction between the pretest and mid-term MTAI scores of elementary student teachers was observed. This difference was significant at the .05 level. A mean difference of 1.44 degrees in the positive direction between their mid-term and post-test MTAI scores was not significant. The total change of 10.41 degrees in the positive direction between the pretest and post-test MTAI scores of fall semester elementary student teachers was found to be significant at the .01 level of confidence.

Summary of Findings Related to Attitude Change at the
Elementary Level During the Spring Semester

Female Student Teachers Who Taught at the Primary Level. A mean difference of 10.46 degrees in the negative direction between the pretest and mid-term MTAI scores of female student teachers who taught in the primary grades was found to be significant at the .01 level. The mean difference of 1.94 degrees in the positive direction between their mid-term and post-test MTAI scores was not significant. The total change of 8.52 degrees in the negative direction between their pretest and post-test MTAI scores was significant at the .01 level.

Male Student Teachers Who Taught at the Intermediate Level. A mean difference of 25.46 degrees in the negative direction between the pretest and mid-term MTAI scores of spring semester male student teachers who taught at the intermediate level was significant at the .05 level. A shift in the positive direction during the last half of the semester resulted in a mean difference of 7.00 degrees between the mid-term and the post-test MTAI scores. This difference was not significant. An over-all change of 14.00 degrees in the negative direction between the pretest and post-test MTAI scores was not significant.

Female Student Teachers Who Taught at the Intermediate Level. The mean difference of 24.00 degrees in the negative direction between the pretest and mid-term MTAI scores of the female student teachers who taught at the intermediate level during the spring semester was not significant. A mean difference of 7.29 degrees in the positive direction between their mid-term and post-test MTAI scores was not significant either. Although the mean difference of 16.71 degrees in the negative direction between the pretest and the post-test MTAI scores was not as great as the difference between the pretest and the mid-term scores, this difference was found to be significant at the .05 level.

All Male and Female Elementary Student Teachers Combined. When both the primary and intermediate level male and female student teachers were combined, a mean difference of 14.98 degrees in the negative direction between their pretest and mid-term MTAI scores was found to be significant at the .01 level of confidence. A mean change of 4.39 degrees in the positive direction between the mid-term and post-test MTAI scores was not significant. The over-all change of 10.59 degrees in the negative direction for the spring semester elementary student teachers between their pretest and post-test MTAI scores was significant at the .01 level.

Summary of Findings Related to Attitude Change at the Secondary Level During the Fall Semester

Male Student Teachers Who Taught Academic Subjects at the Secondary Level. The mean difference of 9.26 degrees in the positive direction between the pretest and mid-term MTAI scores of male student teachers who taught academic subjects at the secondary level during the fall semester was significant at the .01 level of confidence. Neither the mean difference of 6.74 degrees in the negative direction between the

mid-term and the post-test MTAI scores, nor the mean difference of 2.52 degrees in the positive direction between the pretest and the post-test MTAI scores were significant.

Female Student Teachers Who Taught Academic Subjects at the Secondary Level. There were no significant differences between any two sets of MTAI scores for the female student teachers who taught academic subjects at the secondary level during the fall semester.

Male and Female Student Teachers Who Taught Academic Subjects at the Secondary Level. A mean difference of 6.17 degrees in the positive direction between the pretest and mid-term MTAI scores was the only change significant at the .05 level, observed for this sub-group.

Male Student Teachers Who Taught Non-Academic Subjects at the Secondary Level. There were no significant differences between any two sets of MTAI scores of the fall semester male student teachers who taught non-academic subjects at the secondary level.

Female Student Teachers Who Taught Non-Academic Subjects at the Secondary Level. A mean difference of 11.80 degrees in the positive direction between the pretest and the mid-term MTAI scores of female student teachers who taught non-academic subjects at the secondary level was not significant. A shift in the negative direction of 16.10 degrees between the mid-term and post-test MTAI was significant at the .01 level. The mean difference of 1.20 degrees in the positive direction between the pretest and post-test MTAI scores was not significant.

Male and Female Student Teachers Who Taught Non-Academic Subjects at the Secondary Level. A mean change of 9.23 degrees in the positive direction between the pretest and mid-term MTAI scores of all fall semester male and female student teachers who taught non-academic subjects at the

secondary level was significant at the .05 level. A mean difference of 9.14 degrees in the negative direction between the mid-term and the post-test MTAI scores was significant at the .01 level of confidence. The over-all change of 2.18 degrees in the positive direction between the pretest and the post-test MTAI scores was not significant.

Summary of Findings Related to Attitude Change at the
Secondary Level During the Spring Semester

Male Student Teachers Who Taught Academic Subjects at the Secondary Level. The mean differences of 10.11 degrees in the negative direction between the pretest and the mid-term MTAI scores and 1.11 degrees in the negative direction between the mid-term and post-test MTAI scores were not significant. When the two are combined, however, to represent the mean difference between the pretest and the post-test MTAI scores, the resulting difference of 11.22 degrees in the negative direction is significant at the .05 level. When the pretest and mid-term MTAI scores of those for whom a post-test score was not obtained are included in the analysis, a mean difference of 9.36 degrees in the negative direction between the pretest and the mid-term MTAI scores was found to be significant at the .05 level.

Female Student Teachers Who Taught Academic Subjects at the Secondary Level. A mean difference of 17.28 degrees in the negative direction between the pretest and the mid-term MTAI scores was found to be significant at the .05 level. The mean difference of 1.93 degrees, also in the negative direction, between the mid-term and post-test MTAI scores was not significant; however, the over-all mean difference of 19.21 degrees in the negative direction between the pretest MTAI scores and the post-test MTAI scores was significant at the .05 level of confidence.

Male and Female Student Teachers Who Taught Academic Subjects at the Secondary Level. The mean difference of 12.50 degrees in the negative direction between the pretest and the mid-term MTAI scores of male and female student teachers who taught academic subjects at the secondary level was significant at the .01 level. The mean difference of 1.38 degrees in the negative direction between their mid-term and post-test MTAI scores was not significant. The over-all mean difference of 13.88 degrees in the negative direction between their pretest and post-test MTAI scores was significant at the .01 level of confidence.

Male Student Teachers Who Taught Non-Academic Subjects at the Secondary Level. A mean difference of 9.40 degrees in the negative direction between the pretest and mid-term MTAI scores of male student teachers who taught non-academic subjects at the secondary level during the spring semester was found to be significant at the .05 level. A change in the positive direction of 6.74 degrees between the mid-term and the post-test MTAI scores was not significant. The mean difference of 2.46 degrees in the negative direction between the pretest and the post-test MTAI scores was not significant.

Female Student Teachers Who Taught Non-Academic Subjects at the Secondary Level. A mean difference of 17.00 degrees in the negative direction between the pretest and mid-term MTAI scores of this group was significant at the .01 level. A shift in the positive direction of 2.86 degrees between the mid-term and post-test MTAI scores was not significant. The mean difference of 14.14 degrees in the negative direction between the pretest and post-test MTAI scores was significant at the .05 level of confidence.

Male and Female Student Teachers Who Taught Non-Academic Subjects at the Secondary Level. When the MTAI scores of the male and female student teachers who taught non-academic subjects at the secondary level were combined, a mean difference of 13.20 degrees in the negative direction between their pretest and mid-term scores was found to be significant at the .01 level. The mean difference of 4.90 degrees in the positive direction between their mid-term and post-test MTAI scores was not significant. Neither was the mean difference of 8.40 degrees in the negative direction between their pretest and post-test MTAI scores.

Summary of Findings Related to Sex

Differences Between Male and Female Student Teachers at the Elementary Level During the Fall Semester. Although the mean MTAI scores of the female elementary student teachers were higher for every testing than the mean scores for the male elementary student teachers, the differences between their mean scores were not significant for the pretest or the post-test. At the mid-term, however, a difference of 30.70 degrees in favor of the females was significant at the .05 level.

Differences Between Male and Female Student Teachers at the Elementary Level During the Spring Semester. The female student teachers at the elementary level during the spring semester also scored higher on every testing than the male elementary student teachers, although the difference of 29.56 degrees between their mean scores at the mid-term was the only difference that was significant. This difference was significant at the .01 level.

Differences Between Male and Female Student Teachers Who Taught Academic Subjects at the Secondary Level During the Fall Semester. No

significant differences were found on any of the testings between the male and female student teachers who taught academic subjects at the secondary level during the fall semester.

Differences Between Male and Female Student Teachers Who Taught Academic Subjects at the Secondary Level During the Spring Semester.

A difference of 24.73 degrees between the mean pretest MTAI scores of male and female student teachers who taught academic subjects at the secondary level during the spring semester was found to be significant at the .01 level. Although the females scored higher on the mid-term and the post test than the males, neither the difference between their mid-term mean scores nor the difference between their post-test mean scores was significant.

Differences Between Male and Female Student Teachers Who Taught Non-Academic Subjects at the Secondary Level During the Fall Semester.

The female student teachers who taught non-academic subjects at the secondary level during the fall semester scored higher on every testing than did the male student teachers although only the difference of 24.03 degrees between their mid-term mean MTAI scores was significant at the .05 level.

Differences Between Male and Female Student Teachers Who Taught Non-Academic Subjects at the Secondary Level During the Spring Semester.

There were no significant differences between the mean scores of the male and female student teachers who taught non-academic subjects during the spring semester. The female student teachers scored higher than the males on the pretest and the mid-term test, although there was a difference of 2.34 degrees in favor of the male student teachers between their post-test means.

Differences Between Male and Female Student Teachers Who Taught at the Secondary Level During the Fall Semester, Disregarding Subject Area.

When subject area was disregarded, there were no significant differences between the mean scores of the males and females on any one of the three testings, although the mean scores of the females were higher at every testing than the mean scores of the males.

Differences Between Male and Female Student Teachers Who Taught at the Secondary Level During the Spring Semester, Disregarding Subject Area.

The mean MTAI scores of the female student teachers were consistently higher than the mean scores of the male student teachers, although the only difference that was significant was between their pretest means. A difference of 15.25 degrees between their pretest means was found to be significant at the .01 level of confidence.

Summary of Findings Related to School Size

Differences Related to School Size at the Elementary Level. There was no significant differences either semester between the mean MTAI scores of elementary student teachers who taught in elementary that were above the median size and the mean MTAI scores of those who taught in elementary schools that were below the median size.

Differences Related to School Size at the Secondary Level During the Fall Semester. The male student teachers who taught non-academic subjects at the secondary level was the only sub-group for whom significant differences related to school size were found during the fall semester. Although there were no significant differences among the mean post-test scores of the student teachers who taught in the small schools, the medium-size schools, and the large schools, there were significant differences

among their pretest and their mid-term means. The pretest mean score of the student teachers who were in the small schools was 48.03 degrees greater than the pretest mean score of the student teachers who were in the large schools, and 30.25 degrees greater than the pretest mean score of the student teachers who were in the medium-size schools. The difference of 48.03 degrees between the pretest means of the student teachers who were in the large schools and the pretest means of the student teachers who were in the small schools was significant at the .01 level, while the difference between the mean of the student teachers in the medium-size schools and the mean of the student teachers in the small schools was not significant.

At mid-term, however, the mean score of the student teachers who were in the small schools was significantly greater at the .01 level than the mean score of the student teachers who were in the large schools, and greater at the .05 level than the mean score of the student teachers who were in the medium-size schools.

An examination of the differences among the means of those in the small schools, the medium-size schools, and the large schools for all other sub-groups reveals that except for the comparison of all male student teachers at the secondary level disregarding subject area, this was the only sub-group in which the mean scores of the student teachers who were in the small schools were consistently greater than the mean scores of those in the medium-size and the large schools.

In view of the small sample of male student teachers who taught non-academic subjects at the secondary level, and their extreme deviation from the general pattern of change observed for the other sub-groups, the probability of these differences having occurred by chance appear to be much greater than the level of significance suggests.

Differences Related to School Size at the Secondary Level During the Spring Semester. Although there was a tendency for the student teachers in the large schools to score higher on the MTAI than those in the small and medium-size schools, there were only three sets of means with significant differences. The male student teachers who taught academic subjects in the large secondary schools scored significantly higher at the .01 level than the male student teachers who taught academic subjects in the small secondary schools, and significantly higher at the .05 level than those in the medium-size school.

When male and female student teachers were combined, disregarding subject area, the student teachers in the large secondary schools scored significantly higher at the .05 level than the student teachers in the medium-size schools on both the mid-term and the post-test. The difference between the mean score of the student teachers in the large schools and the student teachers in the small schools was not significant on either the mid-term or the post-test, although the mean for those in the large schools were greater on both tests.

Summary of Findings Relating to Differences Between the Student Teachers and Their Cooperating Teachers

Differences Between the Fall Semester Student Teachers and Their Cooperating Teachers. When the mean MTAI scores of the student teachers were compared with the mean MTAI scores of their cooperating teachers by sub-groups, there were no significant differences between their means on either the pretest, the mid-term, or the post-test. When all fall semester student teachers were combined, disregarding sex, grade level, and subject area, the student teachers' mean mid-term score was significantly greater at the .05 level than the mean score for the cooperating teachers. There

was a tendency for the student teachers' mean scores to be greater than the mean score of their cooperating teachers for every sub-group.

Differences Between the Spring Semester Student Teachers and Their Cooperating Teachers. The spring semester elementary student teachers' mean pretest score was significantly greater at the .01 level than the mean score of their cooperating teachers. This was the only significant difference when the student teachers were compared with their cooperating teachers by sub-groups. However, when the student teachers were combined, disregarding sex, grade level taught and subject area taught, and compared with their cooperating teachers, the student teachers' mean pretest score was significantly greater at the .01 level than the mean score of their cooperating teachers. Although this difference was the only significant difference, the student teachers' mean scores on the mid-term and the post-test were greater than the mean score of their cooperating teachers. Table XLI summarizes significant results of analyses of variance relating to the MTAI.

Summary of Findings Relating to Attitude Change and Personality Traits

In an attempt to determine if there is a significant relationship between either the degree or the direction of attitude change and any one of the fifteen EPPS variables, four sets of comparisons were made for each semester. Comparisons of the mean EPPS scores were made by sex, between the student teachers who changed eight degrees or more in the positive direction on the MTAI between the pretest and the post-test, and the student teachers who changed eight degrees or more in the negative direction on the MTAI between the pretest and the post-test. In addition, the mean EPPS scores of the student teachers who changed

TABLE XLI

SUMMARY OF SIGNIFICANT RESULTS OF ANALYSES OF VARIANCE
(F RATIOS) RELATING TO THE MTAI

Comparison	Pretest	Mid-term	Post-test
FALL SEMESTER, ELEMENTARY LEVEL Males--Females	-----	5.50*	-----
SPRING SEMESTER, ELEMENTARY LEVEL Males--Females	-----	9.56**	-----
FALL SEMESTER, ELEMENTARY LEVEL, BY SCHOOL SIZE Under 13 Teachers--Over 13 Teachers	-----	-----	-----
SPRING SEMESTER, ELEMENTARY LEVEL, BY SCHOOL SIZE Under 13 Teachers--Over 13 Teachers	-----	-----	-----
FALL SEMESTER, SECONDARY LEVEL Academic Males--Academic Females Non-Academic Males--Non-Academic Females All Males--All Females	-----	5.40*	-----
SPRING SEMESTER, SECONDARY LEVEL Academic Males--Academic Females Non-Academic Males--Non-Academic Females All Males--All Females	9.81** 6.59*	-----	-----
FALL SEMESTER, SECONDARY LEVEL, BY SCHOOL SIZE Academic Males Academic Females Non-Academic Males Non-Academic Females All Males All Females All Secondary	----- 4.93*	----- 5.74*	-----
SPRING SEMESTER, SECONDARY LEVEL, BY SCHOOL SIZE Academic Males Academic Females Non-Academic Males Non-Academic Females All Males All Females All Secondary	-----	----- 4.02*	4.83* ----- ----- ----- ----- ----- 3.50*

*Significant at the .05 level of confidence

**Significant at the .01 level of confidence

TABLE XLI (Continued)

Comparison	Pretest	Mid-term	Post-test
FALL SEMESTER, ELEMENTARY LEVEL			
Student Teachers--Cooperating Teachers			
SPRING SEMESTER, ELEMENTARY LEVEL			
Student Teachers--Cooperating Teachers	4.61*		
FALL SEMESTER, SECONDARY LEVEL, ACADEMIC SUBJECTS			
Student Teachers--Cooperating Teachers			
NON-ACADEMIC SUBJECTS			
Student Teachers--Cooperating Teachers			
ALL SECONDARY			
Student Teachers--Cooperating Teachers			
ALL ELEMENTARY AND SECONDARY COMBINED			
Student Teachers--Cooperating Teachers		2.29*	
SPRING SEMESTER, SECONDARY LEVEL, ACADEMIC SUBJECTS			
Student Teachers--Cooperating Teachers			
NON-ACADEMIC SUBJECTS			
Student Teachers--Cooperating Teachers			
ALL SECONDARY			
Student Teachers--Cooperating Teachers			
ALL ELEMENTARY AND SECONDARY COMBINED			
Student Teachers--Cooperating Teachers	3.93*		

*Significant at the .05 level of confidence

fifteen degrees or more in the positive direction on the MTAI between the pretest and the post-test were compared with the mean EPPS scores of the student teachers who changed fifteen degrees or more in the negative direction on the MTAI between the pretest and the post-test.

Differences Between the Personality Traits of Student Teachers Who Changed Eight Degrees or More in the Positive Direction and the Student Teachers Who Changed Eight Degrees or More in the Negative Direction During the Fall Semester. There were no significant differences for either sex, on any of the fifteen EPPS variables between the student teachers who changed eight degrees or more in the positive direction and the student teachers who changed eight degrees or more in the negative direction during the fall semester.

Differences Between the Personality Traits of Student Teachers Who Changed Fifteen Degrees or More in the Positive Direction and the Student Teachers Who Changed Fifteen Degrees or More in the Negative Direction During the Fall Semester. When the extremes were examined, only one significant difference for each sex was found. Male student teachers who changed fifteen degrees or more in the negative direction were found to have a significantly greater mean score at the .05 level on the intraception scale than the male student teachers who changed fifteen degrees or more in the positive direction.

Female student teachers who changed fifteen degrees or more in the positive direction had a significantly greater mean score, at the .05 level, on the abasement scale than the female student teachers who changed fifteen degrees or more in the negative direction.

Differences Between the Personality Traits of Student Teachers Who Changed Eight Degrees or More in the Positive Direction and Student Teachers Who Changed Eight Degrees or More in the Negative Direction During the Spring Semester. Male student teachers who changed eight degrees or more in the positive direction were found to have differed significantly from the male student teachers who changed eight degrees or more in the negative direction on two of the fifteen EPPS scales. The male student teachers who changed eight degrees or more in the negative direction had a mean score on the autonomy scale that was significantly greater at the .05 level than the mean score of the student teachers who changed eight degrees or more in the positive direction. On the nurturance scale, however, the male student teachers, who changed eight degrees or more in the positive direction had a mean score that was significantly greater at the .05 level than the mean score of the male student teachers who changed eight degrees or more in the negative direction.

The female student teachers who changed eight degrees or more in the positive direction did not differ significantly from the female student teachers who changed eight degrees or more in the negative direction on any of the fifteen EPPS scales, although the mean consistency score of the female student teachers who changed in the positive direction was significantly greater at the .05 level than the mean consistency score of the female student teachers who changed in the negative direction.

Differences Between the Personality Traits of Student Teachers Who Changed Fifteen Degrees or More in the Positive Direction and Student Teachers Who Changed Fifteen Degrees or More in the Negative Direction During the Spring Semester. Only one significant difference for each sex was found between the spring semester student teachers who changed fifteen degrees or more in the positive direction and the student teachers who changed fifteen degrees or more in the negative direction. The male student teachers who changed fifteen degrees or more in the positive direction had a mean score on the succorance scale that was significantly greater at the .05 level than the mean score of the student teachers who changed in the negative direction.

The female student teachers who changed fifteen degrees or more in the negative direction had a mean score on the order scale that was significantly greater at the .05 level than the mean score of the female student teachers who changed fifteen degrees or more in the negative direction. Although the female student teachers who changed fifteen degrees or more in the positive direction differed significantly from the female student teachers who changed fifteen degrees or more in the negative direction on only one of the fifteen EPPS variables, the student teachers who changed in the positive direction had a significantly greater mean consistency

score at the .05 level than the female student teachers who changed in the negative direction. Table XLII summarizes the significant results of analyses of variance of EPPS scores as related to positive or negative change on the MTAI.

TABLE XLII

SUMMARY OF SIGNIFICANT RESULTS OF ANALYSIS OF VARIANCE (F RATIOS) OF EPPS SCORES AS RELATED TO POSITIVE OR NEGATIVE CHANGE ON THE MTAI (TABLES XXXIII TO XL)

EPPS Scale	Male Student Teachers				Female Student Teachers			
	Fall		Spring		Fall		Spring	
	+8 -8	+15 -15	+8 -8	+15 -15	+8 -8	+15 -15	+8 -8	+15 -15
Achievement	---	-----	-----	-----	---	-----	-----	-----
Deference	---	-----	-----	-----	---	-----	-----	-----
Order	---	-----	-----	-----	---	-----	-----	2.10*
Exhibition	---	-----	-----	-----	---	-----	-----	-----
Autonomy	---	-----	2.07*	-----	---	-----	-----	-----
Affiliation	---	-----	-----	-----	---	-----	-----	-----
Intracception	---	2.52*	-----	-----	---	-----	-----	-----
Succorance	---	-----	-----	2.56*	---	-----	-----	-----
Dominance	---	-----	-----	-----	---	-----	-----	-----
Abasement	---	-----	-----	-----	---	2.05*	-----	-----
Nurturance	---	-----	2.36	-----	---	-----	-----	-----
Change	---	-----	-----	-----	---	-----	-----	-----
Endurance	---	-----	-----	-----	---	-----	-----	-----
Heterosexuality	---	-----	-----	-----	---	-----	-----	-----
Aggression	---	-----	-----	-----	---	-----	-----	-----
Consistency	---	-----	-----	-----	---	-----	2.38*	2.48*

*Significant at the .05 level of confidence

Conclusions of the Study

The findings of this investigation seem to justify the following conclusions:

1. The attitudes of student teachers toward pupils as measured by the MTAI appear to change more during the first half of an eighteen-week

student-teaching experience than during the last half. In view of the rather abrupt change of attitude observed between the pretest and the mid-term test, and then an apparent "leveling-off," or a change in the opposite direction between the mid-term test and the post-test, it would seem as if the first half of the student-teaching experience has a more traumatic effect on the student teachers than the last half of the experience. As a result, the stability of attitudes as measured by the mid-term MTAI score seems questionable.

2. Although there is a relationship between MTAI scores and sex, apparently there is no significant relationship between either the direction of attitude change or the degree of change and sex. Although the female student teachers tended to score higher on the MTAI at every testing than the males, their patterns of attitude change were quite similar. Differences that were present between the males and the females on the pretest were quite similar at the mid-term and on the post-test.

3. The grade level taught seems to have no apparent effect either on the direction or the degree of attitude change. Although the student teachers at the elementary level scored higher on the MTAI than the student teachers at the secondary level, differences that were present between their pretest scores were also present at mid-term and on the post-test.

4. Student teachers who taught academic subjects at the secondary level tended to score higher on the MTAI than the student teachers who taught non-academic subjects, although the direction and the degree of change for each group were not different.

5. There is no apparent relationship between the direction of attitude change and the size of the schools in which the student teaching is done. Differences related to school size were more apparent at the secondary

level than at the elementary. While differences among the mean scores of the student teachers in the small, the medium-size, and the large secondary schools were not significant, there was a tendency for the student teachers in the large schools to score higher and to be more stable in their attitudes toward pupils than the student teachers in the small or the medium-size schools.

6. The student teachers used in this investigation were more positive in their attitudes toward pupils than their cooperating teachers, although the more authoritarian attitudes of their cooperating teachers appear to have little influence on either the direction or the degree of attitude change of the student teachers.

7. Although a significant relationship at the .05 level was found between the direction of attitude change and the mean score made by male student teachers on the EPPS intraception, autonomy, nurturance, and succorance scales, and by the females on the abasement and order scales, evidence as to the relationship between the degree of attitude change and the personality traits seems rather inconclusive. Even when the consistency scores were considered with the other fifteen personality scales, only eight differences, significant at the .05 level, were found in one hundred, twenty eight comparisons. Thus it would appear that these differences were very little, if any, better than chance occurrences.

8. The pattern of attitude change during the spring semester differed from the pattern of attitude change during the fall semester. While a part of this difference might be attributed to the difference in data collecting procedures, evidence seems to suggest that the pattern of change observed during the spring semester may be the result of factors associated with the time of the school year in which they began their student teaching.

Recommendations

As a result of this investigation, the writer makes the following recommendations:

1. A similar study should be conducted by Northeastern State College, using more controlled testing conditions.

2. The practice of permitting students to return to their home system, and in many instances the high school from which they graduated, to do their student teaching should be studied rather carefully, especially in cases where the high schools are quite small.

3. Some experimentation should be done in regard to determining what changes of attitude would occur as a result of placing students with a small high school background in a large high school for their student-teaching experience.

4. More research is needed in order to determine what factors associated with the student-teaching experience tend to cause or influence negative attitude changes.

5. The possibility of constructing and validating an attitude inventory in which the items are "disguised" as factual information should be explored.

6. A more thorough study of the relationship between personality and attitude changes should be conducted.

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APPENDIX A

DESCRIPTIVE TABLE I

INTERCORRELATIONS, MEAN SCORES AND STANDARD DEVIATIONS OF THREE SCORING METHODS (MTAI, FORM A)^a, THREE CRITERIA, AND A COMBINED CRITERION FOR A GROUP OF 100 UNSELECTED TEACHERS IN FOURTH, FIFTH, AND SIXTH GRADES

	Y ₂	Y ₃	X ₁	X ₂	X ₃	X ₄	R _y .123	M	SD	R
Y ₁	.966*	.922	.461	.566	.305	.589	.626	45.32	37.18	.93
Y ₂		.973	.438	.565	.294	.576	.615	85.32	16.84	.88
Y ₃			.436	.566	.303	.578	.617	40.66	31.27	.93
X ₁				.428	.387	.808		50.06	9.96	
X ₂					.217	.726		50.02	10.01	
X ₃						.715		50.01	10.04	
X ₄								50.07	7.52	

*All correlations in this table are significant at the five percent level or better.

Y₁, Y₂, Y₃ = three scoring methods. Norms in this Manual are based on Y₁^b
 X₁ = Principals' Ratings, T-score
 X₂ = Expert's Ratings, T-score
 X₃ = Pupils' Ratings, T-score
 X₄ = Combined T-score (average of X₁, X₂, X₃)
 R = Reliability (Split-half, Spearman-Brown)

^aMTAI, Form A was used in this study.

^bMethod Y₁ has been adopted by the authors as the standard method of scoring, and was used in this study.

DESCRIPTIVE TABLE II

COEFFICIENTS OF CORRELATION BETWEEN THE EPPS VARIABLES AND
THE TAYLOR MANIFEST ANXIETY SCALE AND THE
GUILFORD-MARTIN PERSONNEL INVENTORY

EPPS Variables	Mean	SD	Taylor Manifest Anxiety Scale	Guilford-Martin Personnel Inventory		
				Cooper- ativeness	Agree- ableness	Objec- tivity
1. Achievement	13.37	4.80	-.14	.02	-.12	.16
2. Deference	12.19	3.58	-.08	.21	.33*	.06
3. Order	10.13	4.26	-.18	.17	.21*	.18
4. Exhibition	14.69	3.40	.18	-.08	-.14	-.17
5. Autonomy	12.71	4.79	-.09	-.29*	-.36*	-.04
6. Affiliation	16.57	4.38	.09	.08	.24*	-.05
7. Intraception	16.52	4.88	-.06	.06	.13	.12
8. Succorance	12.57	4.65	.22*	-.18	-.20	-.39*
9. Dominance	15.47	4.94	.10	-.04	-.26*	-.01
10. Abasement	15.40	5.39	.18	.03	.33*	-.11
11. Nurturance	15.58	5.00	.07	.11	.28*	-.09
12. Change	16.30	4.52	-.07	-.02	.06	.08
13. Endurance	12.59	5.27	-.22*	.24*	.23*	.31*
14. Heterosexuality	14.13	5.90	.03	.00	-.22*	-.05
15. Aggression	11.80	4.74	.00	-.37*	-.51*	-.16
Consistency Score	11.75	1.68	.08	.05	.05	.03
Mean			13.79	68.14	34.43	43.83
SD			7.21	15.96	11.15	12.34

*Correlations significant at the 5 per cent level.

DESCRIPTIVE TABLE III
 COEFFICIENTS OF INTERNAL CONSISTENCY AND STABILITY
 FOR THE EPPS VARIABLES

Variable	Internal Consistency ^a		Stability ^b	SD
	$r_1 I$	$r_1 I$		
1. Achievement	.74	.74	14.46	4.09
2. Deference	.60	.78	12.02	3.68
3. Order	.74	.87	11.31	4.45
4. Exhibition	.61	.74	14.43	3.67
5. Autonomy	.76	.83	13.63	4.48
6. Affiliation	.70	.77	15.40	4.09
7. Intraception	.79	.86	17.00	5.60
8. Succorance	.76	.78	12.09	4.59
9. Dominance	.81	.87	15.72	5.28
10. Abasement	.84	.88	14.10	4.96
11. Nurturance	.78	.79	14.04	4.78
12. Change	.79	.83	16.17	4.88
13. Endurance	.81	.86	12.52	5.11
14. Heterosexuality	.87	.85	15.08	5.66
15. Aggression	.84	.78	11.55	4.57
Consistency Score		.78	11.59	1.79
N	1509		89	

^aSplit-half, based on 14 items against 14 items, corrected. Means and standard deviations for each table appear in Table 2 (15, p. 10)

^bTest and retest with one week interval. Means and standard deviations are for first testing.

DESCRIPTIVE TABLE IV

CORRELATIONS OBTAINED BETWEEN INVENTORY SCORES (ORIGINAL AND SIMPLIFIED SCORING) AND RATINGS CONSIDERED SEPARATELY AND IN COMBINATION TOGETHER WITH CORRELATIONS OBTAINED BETWEEN THE RATINGS, FOR THE 100 UNSELECTED TEACHERS

	Original Scoring		Simplified Scoring	
	r*		r*	
Inventory and Principals' Ratings.....	.434	.082	.445	.081
Inventory and Classroom Observations.....	.486	.077	.485	.077
Inventory and Pupils' Attitudes.....	.452	.080	.456	.080
Inventory and Three Validating Criteria Combined.....	.594	.065	.596	.065
	.595**	.065		
Inventory and Combination of Classroom Observations and Principals' Ratings...	.536	.072	.544	.071
Inventory and Combination of Classroom Observations and Pupils' Attitudes.....	.576	.067	.579	.067
Inventory and Combination of Principals' Ratings and Pupils' Attitudes.....	.534	.072	.543	.071
Classroom Observations and Principals' Ratings.....	.480	.077	----	----
Classroom Observations and Pupils' Attitudes.....	.326	.067	----	----
Principals' Ratings and Pupils' Attitudes.....	.389	.085	----	----

*These obtained r's are all statistically significant at the 1 per cent level: Guilford, J. P. Fundamental Statistics in Psychology and Education (New York: McGraw-Hill Book Company, 1942), Table D, P. 324.

**Multiple correlation coefficient.

DESCRIPTIVE TABLE V

DISTRIBUTION OF SENIOR HIGH SCHOOL STUDENT TEACHERS WHO COMPLETED A FULL SEMESTER OF STUDENT TEACHING: BY SEMESTER, SEX, SUBJECT AREA, AND SIZE OF SCHOOL, 1963-64

Size ^a of School	Fall Semester					Spring Semester				
	Academic		Non-Academic		Total	Academic		Non-Academic		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
108	2	0	1	1	4	1	2	3	1	7
92	1	0	0	0	1	0	0	1	1	2
81	1	0	1	1	3	1	0	0	0	1
78	0	0	2	1	3	1	2	4	1	8
73	2	1	2	3	8	7	7	8	5	27
65	0	0	0	0	0	3	0	0	0	3
55	2	0	0	0	2	0	0	0	0	0
48	1	0	1	0	2	1	0	0	0	1
46	0	0	0	1	1	1	1	1	1	4
40	0	0	1	1	2	0	1	0	0	1
36	0	0	0	0	0	1	0	0	1	2
34	0	0	0	0	0	3	0	1	0	4
31	0	0	0	2	2	2	0	0	0	2
30	0	0	1	0	1	0	0	0	0	0
29	3	2	1	3	9	5	2	11	2	20
25	3	0	3	1	7	4	0	1	3	8
24	2	2	1	0	5	1	2	0	2	5
23	0	0	0	0	0	2	3	0	0	5
20	4	1	2	1	8	6	1	0	0	7
19	3	1	0	0	4	2	1	0	2	5
18	2	1	2	0	5	2	1	1	2	6
17	0	1	0	3	4	3	0	3	0	6
16	0	0	0	0	0	3	3	2	0	8
15	1	0	0	0	1	0	0	0	0	0
14	3	2	1	1	7	0	0	3	2	5
13	1	0	0	0	1	0	0	2	0	2
12	2	1	1	1	5	2	0	2	2	6
11	2	1	0	0	3	1	2	0	2	5
10	1	0	1	1	3	3	0	1	1	5
9	0	0	0	0	0	2	0	0	0	2
8	0	0	0	0	0	2	0	0	0	2
6	1	0	0	0	1	0	0	0	0	0
5	3	0	0	0	3	0	0	0	0	0
4	0	0	0	0	0	0	0	2	0	2
3	0	0	0	0	0	0	0	1	0	1
Total	40	13	21	21	95	59	28	47	28	162

^aSize of school is indicated by the number of teachers regularly employed in the school.

DESCRIPTIVE TABLE VI

DISTRIBUTION OF JUNIOR HIGH SCHOOL STUDENT TEACHERS WHO COMPLETED A FULL SEMESTER OF STUDENT TEACHING: BY SEMESTER, SEX, SUBJECT AREA, AND SIZE OF SCHOOL, 1963-64

Size ^a of School	Fall Semester					Spring Semester				
	Academic		Non-Academic		Total	Academic		Non-Academic		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
108	0	0	0	0	0	0	1	1	0	2
47	3	0	1	0	4	1	2	1	2	6
46	0	0	0	0	0	0	0	1	1	2
41	0	0	0	0	0	0	1	0	0	1
35	0	0	0	0	0	1	0	0	0	1
34	0	0	0	0	0	3	0	0	0	3
33	0	0	0	0	0	0	1	1	1	3
28	3	1	0	0	4	4	0	1	1	6
24	0	0	0	0	0	0	1	0	0	1
23	0	0	0	0	0	1	0	0	1	2
22	1	0	0	1	2	0	0	0	0	0
19	0	0	0	1	1	7	2	3	2	14
18	0	1	0	0	1	0	0	0	0	0
15	1	0	0	0	1	1	0	0	0	1
11	0	0	0	0	0	1	0	0	0	1
10	0	0	0	0	0	1	0	0	0	1
9	0	0	0	0	0	0	1	0	0	1
8	2	0	0	0	2	0	0	0	0	0
Total	10	2	1	2	15	20	9	8	8	45

^aSize of school is indicated by the number of teachers regularly employed in the school.

DESCRIPTIVE TABLE VII

DISTRIBUTION OF ELEMENTARY STUDENT TEACHERS WHO COMPLETED
A FULL SEMESTER OF STUDENT TEACHING: BY SEMESTER,
SEX, GRADE LEVEL, AND SIZE OF SCHOOL, 1963-64

Size ^a of School	Fall Semester					Spring Semester				
	Primary		Intermediate		Total	Primary		Intermediate		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
48	0	0	0	0	0	0	0	0	1	1
30	0	0	0	0	0	0	1	0	0	1
29	0	0	0	0	0	0	1	0	0	1
28	0	2	0	0	2	0	0	0	0	0
27	0	1	0	1	2	0	0	1	0	1
26	0	0	0	0	0	0	0	1	0	1
25	0	1	1	0	2	0	4	0	0	4
23	0	3	0	0	3	0	0	0	0	0
20	0	0	0	0	0	0	1	0	0	1
19	0	4	0	0	4	0	6	1	2	9
18	0	0	0	0	0	0	2	0	0	2
17	0	1	0	0	1	0	6	3	0	9
16	0	0	1	1	2	0	1	0	1	2
15	0	3	0	2	5	0	1	0	2	3
14	0	9	2	3	14	1	11	4	6	22
13	0	2	1	1	4	0	4	0	0	4
12	0	1	1	4	6	0	5	1	1	7
11	0	0	0	0	0	0	2	0	0	2
10	0	3	1	1	5	0	1	2	2	5
8	0	6	2	0	8	2	5	2	0	9
7	0	3	0	2	5	0	7	4	0	11
6	0	0	2	2	4	1	4	2	1	8
5	0	0	0	0	0	0	1	0	1	2
4	0	1	0	0	1	0	0	0	0	0
3	0	0	0	0	0	0	0	1	0	1
2	0	0	0	0	0	0	1	0	0	1
Total	0	40	12	16	68	4	64	22	17	107

^aSize of school is indicated by the number of teachers regularly employed in the school.

DESCRIPTIVE TABLE VIII

RATIO BY SEMESTER OF THOSE WHO ENROLLED TO TEACH NON-ACADEMIC SUBJECTS
TO THOSE WHO ENROLLED TO TEACH ACADEMIC SUBJECTS
AT THE SECONDARY LEVEL

Semester	Enrollment by Subject Area		Ratio
	Non-Academic	Academic	
Fall	53	63	1/1.1886
Spring	96	114	1/1.1875
Total	149	177	1/1.1878

DESCRIPTIVE TABLE IX

RATIO BY SEMESTER OF FEMALE STUDENT TEACHERS TO MALE STUDENT
TEACHERS WHO COMPLETED THE STUDENT-TEACHING
EXPERIENCE AT THE SECONDARY LEVEL

Semester	Female	Male	Ratio
Fall	38	72	1/1.8945
Spring	73	134	1/1.8356
Total	111	206	1/1.8554

DESCRIPTIVE TABLE X

RATIOS BY SEMESTER OF STUDENT TEACHERS WHO COMPLETED THEIR STUDENT-TEACHING EXPERIENCE IN NON-ACADEMIC SUBJECT AREAS TO STUDENT TEACHERS WHO COMPLETED THEIR STUDENT-TEACHING EXPERIENCE IN ACADEMIC SUBJECT AREAS AT THE SENIOR HIGH SCHOOL LEVEL AND AT THE JUNIOR HIGH SCHOOL LEVEL

Semester	Senior High School Level			Junior High School Level		
	Non-Academic	Academic	Ratio	Non-Academic	Academic	Ratio
Fall	42	53	1/1.26	3	12	1/4.0
Spring	75	87	1/1.16	16	29	1/1.81
Total	117	140	1/1.20	19	41	1/2.16

DESCRIPTIVE TABLE XI

RATIOS BY SEMESTER OF FEMALE STUDENT TEACHERS WHO COMPLETED THEIR STUDENT-TEACHING EXPERIENCE TO MALE STUDENT TEACHERS WHO COMPLETED THEIR STUDENT-TEACHING EXPERIENCE AT THE JUNIOR AND THE SENIOR HIGH SCHOOL LEVELS

Semester	Senior High School Level			Junior High School Level		
	Female	Male	Ratio	Female	Male	Ratio
Fall	34	61	1/1.79	4	11	1/2.75
Spring	56	106	1/1.91	17	28	1/1.65
Total	90	167	1/1.86	21	39	1/1.86

DESCRIPTIVE TABLE XII

RATIOS BY SEMESTER OF THOSE WHO TAUGHT AT THE PRIMARY LEVEL
TO THOSE WHO TAUGHT AT THE INTERMEDIATE LEVEL

Semester	Primary	Intermediate	Ratio
Fall	40	28	1.43/1
Spring	68	39	1.74/1
Total	108	67	1.61/1

DESCRIPTIVE TABLE XIII

RATIO BY SEMESTER OF FEMALE STUDENT TEACHERS WHO COMPLETED THEIR
STUDENT-TEACHING EXPERIENCE TO MALE STUDENT TEACHERS WHO
COMPLETED THEIR STUDENT-TEACHING EXPERIENCE: AT THE
PRIMARY AND THE INTERMEDIATE LEVELS

Semester	Primary Level			Intermediate Level			Ratio M/F
	Male	Female	Ratio PM/PF	Male	Female	Ratio IM/IF	
Fall	0	40		11	17	1/1.55	1/5.18
Spring	4	64	1/16	22	17	1.29/1	1/3.12
Total	4	104	1/26	33	34	1/1.03	1/3.73

APPENDIX B

RELIABILITY OF THE MTAI

On page 14 of the MTAI Manual (10), the authors state that by using the Spearman-Brown split-half technique, the standard scoring method has "...consistently..." produced a reliability coefficient of .93. Regardless of how a reliability coefficient is computed, it is only an estimate of the percentage of the total variance that is not due to error.

In order to make a quick estimate of the reliability of the variances obtained in this investigation, the Kuder-Richardson (28) formula 21 (K-R 21) was used. In this formula

$$r_{tt} = \frac{n}{n-1} \frac{\sigma^2 - \bar{p}\bar{q}}{\sigma^2};$$

when

n = number of items in the instrument

$$\bar{p} = \frac{M_t}{n}, \text{ and}$$

$$\bar{q} = 1 - \bar{p}.$$

Although one cannot expect estimates of reliability obtained by one method to be identical to those obtained by another, when the K-R 21 is applied to the means and variances of scores from which a reliability coefficient has been obtained by the split-half method, a fairly accurate comparison can be made.

The results of the authors' experimentation with the MTAI as shown in Descriptive Table I, Appendix A, indicate that when the standard scoring method was used, they obtained a mean of 45.32 and a standard deviation of 37.18. The Spearman-Brown split-half technique produced a reliability

coefficient of .93 from this set of scores. The results produced by applying the K-R 21 to means and variances reported by the authors in the MTAI Manual are given below.

Source of Mean and Variance	Mean	σ^2	r_{tt}^{S-B}	$r_{tt}^{K-R\ 21}$
TABLE V, page 14				
Standard Scoring Method (Y_1)	45.32	1382.35	.93	.983
Experimental Scoring Method (Y_2)	85.32	283.59	.88	.872
Experimental Scoring Method (Y_3)	40.66	977.81	.93	.976
TABLE I, page 8 (Norms)				
High School Seniors	12.8	998.56	—	.994
University Freshmen	4.8	735.21	—	.999
BEGINNING EDUCATION JUNIORS				
Early Childhood	65.9	788.04	—	.956
Elementary	59.5	691.69	—	.953
Secondary, Academic Subjects	48.3	852.64	—	.967
Secondary, Non-Academic Subjects	44.1	734.41	—	.963
GRADUATING EDUCATION SENIORS				
Early Childhood	80.4	510.76	—	.932
Elementary	77.4	610.09	—	.944
Secondary, Academic Subjects	67.8	590.49	—	.943
Secondary, Non-Academic Subjects	63.3	645.16	—	.950
Graduate Students	64.0	1108.89	—	.982

When the standard scoring method (Y_1) has been used, and the K-R 21 is applied to the mean and variance thus obtained, the resulting estimate of reliability is greater than that produced by the Spearman-Brown split-half technique. When the mean and variance were obtained by using the "right" responses only, as in experimental scoring method Y_2 , the result obtained by K-R 21 is quite comparable to that produced by the Spearman-Brown formula. In the case of scoring method Y_3 , which is a "right minus wrong" formula that is very similar to the standard scoring method, the K-R 21 estimate of reliability is greater than that obtained by the Spearman-Brown formula.

The results produced by applying the K-R 21 to selected means and variances obtained in this investigation are given below.

Source of Mean and Variance	Mean	σ^2	$r_{tt}^{K-R 21}$
FALL SEMESTER, ALL STUDENT TEACHERS			
Pretest	16.18	927.02	.991
Mid-term	25.11	745.54	.982
Post-test	19.91	896.92	.977
Cooperating Teachers	14.41	943.37	.986
SPRING SEMESTER STUDENT TEACHERS ¹			
Pretest	27.55	798.07	.977
Mid-term	11.79	1096.92	.996
Post-test	15.55	1275.01	.986
Cooperating Teachers	10.00	989.02	.996

The estimates of reliability given above are obviously overestimates.

However, Kuder and Richardson (28, p. 159) state:

If Equation 22 is used to get an estimate of \bar{p} , the reliability coefficient can be quickly estimated from the mean, standard deviation, and the number of items. This formula may be regarded as a sort of foot-rule method of estimating test reliability without the necessity of splitting halves, rescoring twice, and calculating a correlation coefficient. According to theory and to the applications already made, the formula may be expected to give an underestimate of the reliability coefficient in situations not favorable for its application. If Equation 21 should give a higher value than the split-half, one would suspect the latter of being abnormally low because of some unfavorable way of splitting. The split-half Spearman-Brown coefficient cannot be regarded as the standard from which to judge other estimates. The split-half method involving use of the Spearman-Brown formula may produce estimates of reliability which are either too high or too low. Reliabilities obtained from the formulas presented here are never overestimates. When the assumptions are rigidly fulfilled, the figures obtained are the exact values of test reliability as herein defined; if the assumptions are not met, the figures obtained are underestimates.

¹All student teachers for whom a score was received from their cooperating teacher.

VITA

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Thesis: A STUDY OF THE RELATIONSHIP BETWEEN SELECTED INFLUENCES AND CHANGES OF ATTITUDE TOWARD PUPILS THAT OCCUR DURING AN EIGHTEEN-WEEK STUDENT-TEACHING EXPERIENCE

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