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A STUDY OF ATTITUDE CHANGE IN STUDENTS DURING THE INTERVAL OF A COURSE IN EDUCATION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

John Robert Alberti, B.S., M.A.

* * * * * * *

The Ohio State University
1967

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A survey of the Educational Index for the past five years shows an increasing concern with a two-fold problem in higher education—(1) accommodating the overwhelming numbers of incoming students and (2) maintaining quality education at all levels and in all areas. This concern is especially pressing, though not unique, to colleges and departments of education. This special concern stems from two separate factors.

The first of these factors is the criticism from outside the ranks of professional educators. Though critics have been active for some time, impetus has been added by James Conant in his book, The Education of American Teachers. The great prestige enjoyed by Dr. Conant has caused many who would ordinarily dismiss his criticisms, if made by some lesser figure, to pay close attention to them.

The second factor is criticism from within the ranks of professional educators themselves. This criticism, in itself, is not a recent phenomenon. On the contrary, there has been a continuous effort on the part of professional educators to improve education at all levels. The practice of certifying teachers, the development of such accrediting associations as the National Council for the Accreditation of Teacher

Education, the transformation of normal schools into colleges of education, all have been largely the results of the efforts of professional educators to raise the educational level of the nation's teachers. Howick's study of the published criticism of teacher education from 1929 to 1939 indicates this to be true. He states, "Most of the criticism for the . . . period were written by educators, and very few come from laymen."

Over twenty years ago, Troyer reported on the efforts of several universities to improve their teacher education programs. The literature in the field abounds with descriptions of experimental programs in the 1930's such as the "New College" of Teachers College, Columbia University; Brooklyn College; Syracuse; and Northwestern University. These programs were formulated to meet the needs for providing adequately trained teachers for schools and problems of the times.

There are forces today, however, which lend a greater urgency to the issue of improvement. The tremendous growth in enrollment mentioned above is one of these. An even more fantastic growth is occurring in knowledge being accumulated by mankind. The rate at which man is increasing his knowledge presents unprecedented challenges in terms of storing, disseminating, retrieving and using it.

The role of the teacher is being reconsidered in light of this last phenomenon. Even the most ambitious individual in the most highly


specialized field is hard-pressed to keep abreast of the knowledge in his area. Traditional content areas are being faced with constant decisions regarding selecting, condensing, and synthesizing information in their fields to effect economy of time and effort. Teachers can no longer be "storehouses of information" transmitting knowledge to their students. Even if teachers could cope with this task, the knowledge which they pass on to their students would probably be obsolete before the students could utilize it.

Russell gives a graphic illustration of the problem in his book Change and Challenge in Education. He depicts the plight of a student who mastered a skill, very much in demand at the time, who later becomes unemployable. The student's skill became obsolete due to the advent of automation. Russell's contention is that the emphasis in all education must be to provide the basic educational skills which permit students to adapt to a radically changing world.

These forces indicate that attention must be given to the need for economy of effort in education. There is little time to spare on non-productive enterprises in education—that is, non-productive in terms of over-all goals.

There are large demands upon the economy in terms of resources. Education is in competition with military spending, highway building, and other government activities. Hence, there are more and more demands upon education and a corresponding tendency for funds to be allocated

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elsewhere. It would seem that every effort should be expended to ascertain the effectiveness of current educational practices. In other words, a systematic, objective evaluation of practice related to achievement in terms of educational goals is needed.

Matters, in a recent study, concluded this and stated that "the influence of international events and public interests in all aspects of education have accentuated the need for re-evaluation of teacher-education programs."

It is within the context of this complex social, political, economic setting that the present study is cast.

Matters maintains, "The introductory courses in the professional sequence of undergraduate education of teachers is the foundation upon which the entire teacher education program is developed." It is the foundation course in teacher education at The Ohio State University that will be utilized in this study. It is hoped that this study will represent a step toward a comprehensive evaluation of teacher education at its base—the introductory course in the professional education sequence.

Statement of the Problem

There is a need for economy of effort and resources in education which arises from expanded knowledge and increased number of students in colleges and universities.

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6 Ibid.
An effect upon teacher education has been pressure to increase general education and specialized education requirements—possibly at the expense of electives and professional education courses. If, indeed, there is to be a restriction in any part of the educational program, a close look should be taken to determine to what extent the elements of the program are meeting their stated objectives. If any elements are not meeting their objectives, they should be eliminated or modified so that they will do so.

Purpose of the Study

The purpose of this study is to examine to what extent one element of the teacher education program at The Ohio State University is meeting its stated objective. To accomplish this purpose, this study will attempt to determine to what extent a change in attitude towards teaching occurs among students taking an introductory course in education.

Rationale for the Study

Education 408 at The Ohio State University is formally titled "Introduction to the Study of Education." It is described in the Ohio State University Bulletin as "an introductory study of cultural factors that effect education, with students helped to understanding through an examination of their own lives." This description implies that the course is intended to appeal to affective at least as well as to cognitive learning.

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Among the aims and organization of the College of Education as stated in the Bulletin is the following: "The College of Education holds the view that professional education involves more than the achievement by its students of academic knowledge and skill required to perform their occupational duties. It conceives professional education to include the related development of acceptable social and personal attitudes [emphasis supplied], ethical standards, and social responsibility." 8

In the Education 408 syllabus under the heading "Scope and Content" the following statement appears: "Education 408 is planned to provide you with the opportunity to survey the field of education and the job of teaching. This course should provide a major portion of the information you will need to decide whether or not you want to pursue the profession." 9 It may be inferred from this and the other statements quoted that a major purpose of this course is to effect attitudinal change with respect to teaching. This change is not necessarily restricted to effecting change in one direction. As one examines the stated course objectives, it is obvious that a student could discover that his attitude toward teaching as a vocation for him has gone from favorable to unfavorable as easily as it could have gone in the opposite direction.

If one wishes to evaluate the course in terms of its major objective, one must measure the degree to which the student's attitude changes over the interval of the course. In order to be of greater value

8 Ibid., p. 253.

9 Course Syllabus, Education 408, Summer 1966, The Ohio State University.
in course improvement, the evaluation should ascertain what kind of student, with what kind of background, is affected in what way?

This kind of information could furnish a basis for intelligent action leading toward decisions affecting the course and the entire college program. This study, therefore, should have implications for any area of study where a change and an appraisal of attitude is considered important.

**Definition of Terms**

Attitude. Thurstone and Edwards define attitude as the degree of effect associated with some psychological object. To have a favorable attitude is to "like" something— to have an unfavorable attitude is to "dislike" it.\(^10\)

Dogmatism. Rokeach uses the term "dogmatism" to refer to openness or closedness of mind— high dogmatic is closed; low dogmatic is open.\(^11\) This definition is used in this study.

**Hypotheses to Be Tested**

In each hypothesis the term attitude refers to attitude towards teaching.

1. Attitude change in students will occur during the interval of a one quarter, three credit-hour course in education.

2. Attitude change will not occur in students during the interval of a comparable course in speech.


3. There will be no initial differences in attitude between students enrolled in an education course and students enrolled in a course in speech.

4. There will be no relationship between degree of dogmatism of the students and amount and direction of their attitude change.

5. There will be no relationship between attitude change of students and their academic aptitude as indicated by the American College Test.

6. There will be no relationship between academic achievement of students as indicated by their rank in their high school graduating classes and their attitude change.

7. There will be no relationship between the ages of the students and their attitude change.

8. There will be no relationship between students' attitude change and the size and type of high school from which the students graduated.

9. There will be no relationship between students' attitude change and their performance in an introductory course in education as indicated by their course grades.

10. There will be no relationship between students' attitude change and their performance in other college courses as indicated by their grade point averages.

11. There will be no relationship between the level of occupation of students' parents and the students' attitude changes.

The theoretical rationale for these hypotheses is discussed in Chapter III.
Assumptions

The following assumptions are made regarding this study:\(^{12}\)

1. The population of the introductory course in education and in an elementary course in speech is comprised of comparable students. The students are drawn from the same university population and, as both are introductory courses, have primarily freshmen and few upper-classmen. In fact, some students were enrolled concurrently in the two courses. (Students so enrolled were eliminated from the study.)

2. The effects of influences other than those resulting from participation in either course are randomly distributed over the population of the study. This may be assumed as students enrolled in the two classes experience the same environmental conditions at the university and in the community. They live in the same communities and operate in the same milieu.

3. Students in both courses answered questionnaires as they actually believed. Students were assured their answers would in no way affect their grades or treatment in the course. It would be logical, in any case, to assume any bias would be equally constant in the two groups. As the study is concerned with compassion and change, a constant bias would not affect the results.

Limitations

The following are limitations of the study:

1. Anonymity for the subjects was not possible due to the need to compare scores on questionnaires at the beginning and at the end of the study. This could affect the manner in which subjects responded.

\(^{12}\)These assumptions will be explained more fully under "Setting and Procedures," below, p. 10.
2. The study was done with a summer-school population which was composed of a greater proportion of local students than is true during the remainder of the year.

Setting and Procedures

Setting.—This study was conducted during the 1965-1966 academic year at The Ohio State University. Students in two different freshman level courses from different colleges within the University were used as subjects. The experimental group consisted of 237 students from Education 408—"Introduction to the Study of Education"—of the College of Education. A quasi-control group consisted of fifty-eight students enrolled in Speech 401—"Effective Speaking"—of the College of Arts and Sciences.

Education 408 is a three credit-hour course which meets three days a week. Two meetings each week are devoted to lectures on various topics of concern to students of education. Each lecture is delivered by a different guest lecturer who may be either from within or from outside of the College of Education. The lectures are held in various auditoriums designed to hold from four to nine hundred students. In the summer session used in the study, approximately three hundred students were enrolled at the beginning of the quarter.

The third meeting of each week is utilized for discussion of the lectures, assigned readings in the course textbook, and outside assignments. These classes are conducted by teaching assistants working on the Doctor of Philosophy degree in various areas of professional education. All teaching assistants possess at least a Master's degree and have had teaching experience in public schools.
The course is under the direction of a senior professor, at the
time of this study, a full professor in the area of guidance education.

Course grades are based on written assignments given by each
individual instructor and on common objective-type examinations given in
the large group meetings. The written work assigned by the individual
instructors is made as comparable as possible. Experience has shown that
the instructors assign comparable grades to this work. Approximately
three-fourths of the course grade depends upon performance on the examina-
tions and one-fourth upon instructor assigned work.

Speech 401—"Effective Speaking"—was chosen as a quasi-control
group for this study because it is a freshman-level course not directly
concerned with public schools. It is non-technical in the sense in which
courses in mathematics, engineering, or dental technology are technical.
Thus, it is logical to assume that students enrolled in Speech 401 would
approximate the students in Education 408, also a non-technical freshman
level course. As stated above under "Assumptions," the students in the
two courses are drawn from the same university population.

The purpose in selecting a course not directly involved in public
school issues was to control the intervening variable of influences out-
side of the classroom. As indicated under "Assumptions" the students in
the two courses are subject to the same environmental influences. If
attitude toward education changes as a result of the student's associ-
ations and experiences outside of the classroom, the change should be
equal for students enrolled in a freshman course in speech and for
students enrolled in a freshman course in education. Therefore, if
attitude change is equal in the two groups, it may be inferred that the
change resulted either from equal influence within the two courses or from equal influence outside of the classroom. As the two courses have different content and different instructors, it would seem more logical to assume an equal change in student's attitude would be the result of factors outside of the classroom. If attitude toward education changes differently among students in the education classes, it would seem logical to infer that the change is the result of some factors occurring in the classroom.

As the reason for using a control group was only to control the intervening variable of environmental impact, no attempt was made to investigate grading practices or classroom procedures in the speech classes. These practices and procedures are not germane to the present study. Further, no dogmatism measures, biographical, nor academic data were gathered for the Speech 401 students.

Procedures.—A review of the literature produced no satisfactory instrument for measuring general attitude toward teaching. The greater share of studies concerned with measuring attitude in education utilized the Minnesota Teacher Attitude Inventory (MTAI). This instrument measures more specific attitude toward style of teaching and attitude toward children than was desired for this study. Other studies used instruments either not appropriate for this study or of doubtful validity. Rather than use an instrument of doubtful validity, an attitude toward teaching questionnaire was developed especially for the purposes of this study. Data on this instrument are presented in Chapter II.

The ATTS was administered to all subjects in the study during the first week of the 1966 Summer Quarter at The Ohio State University. The
same scale was administered to all subjects at the time of their final examinations.

Students who were enrolled previously or concurrently in both Education 408 and Speech 401 were eliminated from the study. Also, students in Speech 401 who were concurrently enrolled in any other education course were eliminated from the study. These enrollment data were obtained from the students who indicated such information on their answer sheets at the time of the first administration of the ATTS.

In addition to the ATTS, the students in Education 408 were given Form "E" of Rokeach's Dogmatism Scale (DS).

The following academic information and biographical data were obtained for each Education 408 student from his personnel records in the College of Education office:

1. Standard score on the social sciences portion of the American College Test (ACT).
2. Composite standard score on the American College Test.
3. Class rank in his highschool graduating class—indicated by upper, middle, or lower third.
4. Age.
5. Size and type of high school attended as indicated by its location and the size of its graduating class.
6. Course grade in Education 408. Letter grades were converted to a numerical scale on the basis of A=4, B=3, C=2, D=1, and E=0.
7. College cumulative grade-point average.
8. Class level—freshman, sophomore, junior, or senior.
All of the above data were transposed as necessary to enable them to be used in the MR-90 program.\textsuperscript{13} The standard scores on the ACT, age, and cumulative point hour were used as obtained directly from the students' records. Class rank was indicated as "1" for upper, "2" for middle, and "3" for lower.

High schools were classified and coded according to the following scheme:

- city public school—1
- Catholic—4
- suburban public school—2
- consolidated—5
- small town public—3
- night school—6

The course grade in Education 408 was transposed on the basis of A=4, B=3, C=2, D=1, F=0. Class level was transposed on the basis of freshman=1, sophomore=2, junior=3, senior=4, and post-graduate=5.

Parents' occupation was separated into three general categories—"professional and managerial," "teacher," and "all others." These values were based on an occupational prestige study by North and Hatt of the University of Chicago reported by Hughes.\textsuperscript{14} Occupations rated above public school teaching in prestige by the North and Hatt study were assigned a value of "1" and those rated below public school teaching were given a value of "3." Public school teaching was assigned a value of "2." In instances where the occupation reported by the subject was not listed in the North and Hatt study, the occupation judged to be closest was used in determining the prestige value. In cases where both parents

\textsuperscript{13}See MR-90 Program, Appendix A.

were employed, the occupation rate higher by the North and Hatt study was used.

All data, including scores on the DS and ATTS, were tabulated for each individual student. The students were identified only by code number after all data pertaining to them were obtained. Data on the ATTS were utilized in two different ways. One was to compare responses on each individual item of the questionnaire between pre- and post-tests in the same group, and to compare responses on each item, pre and post, between groups. The second use was to utilize the data for reporting and comparing composite attitude scores between the pre- and post-test of the Education 408 group in order to determine correlations with academic and biographical data.

All raw data-answer sheets on the ATTS and DS, and tabulated biographical, academic, and test scores, were key punched onto IBM cards and verified by the Test Development Center of The Ohio State University. Personnel from the Test Development Center then processed the cards on an IBM 7094 computer at The Ohio State Computer Laboratory.

All correlation coefficients were computed using the Ohio State University MR-90 program.15 The ATTS data were analyzed using the Ohio State Questionnaire Analysis program (OSQA).16 These data and results are reported in Chapter III.

15See MR-90 in Appendix A.
16See OSQA in Appendix B.
Summary and Overview

Chapter I has presented the background, purpose and rationale for the study. It has included hypotheses to be tested, a definition of terms, assumptions made regarding the study, limitations of the study, and the setting and procedures of the study.

Chapter II describes the construction of the Attitude toward Teaching Questionnaire as well as the Dogmatism Scale used in the study. Research related to relevant attitude studies is reviewed.

Chapter III reports and discusses data collected relevant to the hypotheses of the study.

Chapter IV contains a summary, conclusions, and recommendations for further, related research.
CHAPTER II

INSTRUMENTS USED IN THE STUDY

Studies of Attitude and Attitude Measurement

The measurement of attitude has occupied the attention of countless investigators for over three decades. Techniques for measuring attitudes have been developed, discarded, revived and improved.

As early as 1920's, H. H. Remmers\(^1\) was actively engaged in the task of attitude measurement. In 1929 L. L. Thurstone and E. J. Chave\(^2\) developed their scaling techniques for measuring attitude. In 1932 Rensis Likert\(^3\) presented his method of summation ratings in an attempt to improve the process of determining attitude by paper and pencil tests.

Projective techniques and observation of behavior also have been utilized in the search for accurate assessment of attitude. In one such attempt the investigators confessed: "Our own experience with projective methods as a means of getting richer data on opinions was anything but successful . . . it was our experience that the best method of getting richer material about a man's opinion was by the rather naive and direct


means of asking him. Twenty-seven years before this statement was made, Thurstone had concluded that "we just remain content to use opinions . . . as indexes of attitude." Edwards in 1957 reinforced this point of view by observing "It would seem that, despite the limitations of direct questions, verbal behavior under many circumstances would provide a better, that is a more accurate indicator, of feelings or attitudes of individuals than observations of non-verbal behavior . . . ."

Osgood and his associates developed a bi-polar adjective procedure in which a subject indicates his feelings about a psychological object by checking one of a series of adjectives describing the object. This technique is called the "scientific differential." The semantic differential yields a total score which indicates a favorable or unfavorable position as well as an indication of the intensity of feeling.

In addition to attempts to measure attitude, many investigators have been concerned with relationships between various factors and attitudes and causes of attitudes and attitude changes.

Sherif, Sherif, and Nebergall maintain that an individual's attitude on an issue can be assessed only if the procedures yield the

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5 L. L. Thurstone, op. cit., p. 217.


8 This technique was considered for use in the present study. However, the time deemed necessary to develop a valid instrument using this method precluded its use.
limits of the position he accepts (latitude of acceptance) or rejects
(latitude of rejection), relative to the bounds of available alternatives.

... The study of attitudes and their change will acquire a sound basis
if the procedures ... are guided by due concern for psychological
processes involved in attitude functioning. 9

Festinger introduced the concept of "cognitive dissonance" to
explain some aspects of attitude change. An individual will try to
reduce dissonance (inconsistencies) by rejecting information which tends
to produce dissonance. By the same token he will try to achieve conson­
ance by accepting information tending to produce it. 10

Many studies have investigated the relationship between attitude
change and exposure to a formal educational experience. In a study
relating attitude and perception changes to an instructional technique
Romoser found that education students shifted toward an attitude of
greater leniency and tolerance after instruction in interaction analysis,
a system of classifying classroom verbal behavior. 11

McCabe investigated attitude change, as measured by the MTAI,
which occurred during a course in elementary education. She found a
slight, positive relationship between attitude and scores on the ACT and
between attitude and grade on the course exam. She found a slight

9Carolyn W. Sherif, Muzafer Sherif, and Roger E. Nebergall,
Attitude and Attitude Change (Philadelphia: W. B. Saunders Company,
1965), pp. 3-4.

10 Leon A. Festinger, The Theory of Cognitive Dissonance (Evanston:
Row-Peterson Co., 1963), p. 3.

11 Richard C. Romoser, "Change in Attitude and Perception in
Teacher Education Students Associated with Instruction in Interaction
negative correlation between attitude and age, attitude and year in college, and attitude and scores on the ACT.\textsuperscript{12}

Better found significant attitude modification toward teaching and classroom functions in an introductory course in education. Most of the changes he identified occurred in attitude dealing with the teacher's role and the purposes of education. He found no changes in attitude dealing with methods and procedures.\textsuperscript{13}

Anderson's study of attitude change during student teaching revealed a slight positive gain in attitude on twenty concepts of teaching. She found no significant relationships between attitude change and students' university records.

In reviewing these and many more studies of the effects of educational experience, it was noted that attitudes on specific functions were usually sought. These might be the role of the teacher, the role of the school, or attitudes toward permissive-authoritarian behavior. In many of the studies, change in a positive direction was sought by the investigator or by the course used in this investigation.


The Attitude Toward Teaching Scale

Although hundreds of studies concerned with attitudes have been done, no study reviewed furnished an instrument appropriate to the purposes of this study. The Mental Measurement's Yearbook\(^1\) and Tests in Print\(^2\) also failed to produce a satisfactory instrument. Many of the studies in this general area utilized the Minnesota Teacher Attitude Inventory which is more specifically oriented toward measuring the attitude of teacher toward students than general attitude toward teaching. Other studies used instruments which were also concerned with more specific dimensions of education or were of unknown validity for the purposes pursued in this study. Finally an instrument was located which seemed to contain the appropriate content. This instrument was modified in a manner described below and formed the basis of the ATTS.

Construction of the Attitude Toward Teaching Scale

The ATTS was constructed using a combination of two scaling techniques—the equal appearing interval technique of Thurstone and Chave\(^3\) and the summated ratings technique of Likert.\(^4\) Edwards has described a very similar procedure under the label of "scale discrimination technique."\(^5\)

The Thurstone technique employs a number of judges who rank items on a one through eleven scale. The items may be ranked from least favorable rated as "1" to most favorable rated as "11" or the values may be reversed. Although either scheme may be used, the more usual is to give the favorable item the higher scale value. Items which have a wide range of values assigned by the judges are rejected.

The interquartile range (Q) is calculated for each item and serves as a measure of consistency in thus accepting or rejecting each item. A high Q value indicates an ambiguous item. A low Q value indicates a consistent interpretation of an item by the scaling judges.

In compiling items for an attitude scale using this technique, the usual procedure is to select items which approximate the entire continuum from "1" to "11" and which have low Q values. An individual's score is the average scale value of items to which he indicates he agrees. Items for the ATTS were selected from two forms of a scale constructed by Floyd D. Miller reported in 1934 in a study validating a generalized attitude scale using the above equal-appearing interval technique.

An examination of the items revealed they very closely approximated the types of information appropriate to this study. These items are reported in Appendix C and the method used in constructing the instruments is presented below. Miller reports:

A specific scale to measure attitude toward teaching was constructed to serve as an outside validating criterion for a generalized scale. The opinions for this scale were collected by Irving S. Schrod. Some of these were made by students and teacher, and others were taken from literature on the subject.
The ninety statements which were chosen from the scatter diagram were divided into two forms of 45 statements each. In the making of two forms, if two statements had approximately the same scale value, one statement was placed in Form A and the other in Form B, and no statements were chosen that had a Q value of more than 3. Care was also taken to keep the average Q values near the same for Forms A and B. The range in Form A of the scale value was from 1.3 to 10.7, and the range in Form B was from 1.3 to 10.5. The distribution of the scale values in the two forms was not exactly even but so nearly so that the difference in the average scale value was very small.

The reliability of scale values for this experiment are for Form A, .11, and for Form B, .11. Thurstone found a P.E. med. of .06 scale units for his scale values. This, he found, was a very satisfactory reliability. The reliability of the scores in this experiment would have been greater if N had been 300 instead of 160, as was used in this experiment. If N were 300, the probable error of the scale values would be for Form A, .08, and for Form B, .08.19

Miller administered these two scales, simultaneously, to 140 students and instructors at Purdue University. He found a correlation of .77 between the two forms. This correlation is sufficiently high to distinguish between groups. The mean scores on form A and form B were 7.68 and 7.85 respectively. The standard deviation of scores on form A was 1.89; for form B it was 1.96.20

Although the content and reliability of the scales developed by Miller were satisfactory, the length and somewhat awkward scoring arrangements were not deemed satisfactory for this study.

In addition, there was no indication of the discrimination power of the items—except for the Q values which is only a general indicator


20 Ibid., p. 102.
of discrimination. Also, the items which fall in the neutral areas of the favorable-unfavorable continuum would seem to be of little value in discriminating between those of favorable and unfavorable attitude.

Another possibility to be considered was that the items constructed over thirty years ago would not be valid today.

In order to remedy the above shortcomings the decision was made to use the scale-discrimination as described by Edwards.\(^{21}\)

Thirty highly favorable and twenty-six highly unfavorable items were chosen from the two forms of Miller's scale.

The fifty-six items then were reproduced and given to approximately three-hundred students in Education 408 in the 1966 Winter Quarter with the request to check "yes" or "no" if they thought an item represented an opinion held by someone whom they knew. It was explained that the respondent, himself, did not have to hold any of the opinions stated.

The statements then were examined for "yes" responses. The arbitrary criterion for acceptance was set at ten "yes" responses. As soon as ten "yes" responses were tabulated for an item, it was assumed to possess face validity. All of the items were marked "yes" a minimum of ten times. However, it was apparent that, although no count past ten was kept, the highly unfavorable items received a very high rate of "no" responses. As these students, presumably, were interested in becoming teachers, it is understandable that they would refuse to believe that anyone would look upon teaching as unfavorably as was expressed in some of the items. For instance, it was necessary to go through almost all

of the returned statements before ten "yes's" were recorded for the
statement "Teachers are parasites."

Ten favorable and ten unfavorable items as indicated by their Q
values were taken from the list described above. All of the selected
items were taken from those on Miller's form "A." A twenty-item scale
then was formed from these items in which the favorable items were listed
as the odd-numbered and the unfavorable items were listed as the even-
numbered items.

The inclusion of unfavorable and favorable items is recommended
by Edwards:

Approximately half of the selected statement should be favor­
able so that the strongly agree response carries the 4 weight
and the strongly disagree response the 0 weight. The other
half should consist of unfavorable statements so that the
scoring system is reversed. The advantage of having both
kinds of statements represented in the final scale is to
minimize possible response sets of subjects that might be
generated if only favorable or unfavorable statements were
included in the scale.22

A study by Couch and Keniston23,24 supports this and gives a
rationale for inclusion of both favorable and unfavorable items. In this
study it was found that "yeasayers" are more passive and "naysayers" are
more active in approaching solutions of problems. In any case, it seems

22Ibid., p. 155.

23Arthur Couch and Kenneth Keniston, "Yea-sayers and Nay-sayers,"
Journal of Abnormal and Social Psychology, Vol. 60, No. 2 (1960),
p. 170.

24James B. Taylor, "The Yeasayer and Social Desirability: A
comment on the Couch and Keniston Paper," Journal of Abnormal and Social
cludes that what is often referred to as "response set" is in reality a
tendency to endorse socially unacceptable items.
advisable to include both favorable and unfavorable items to reduce response set.

The items were edited to make them clearer and, in some cases, to modernize the language. Hereafter, this instrument will be referred to as ATTS-A.

The same procedure was followed in respect to items from Miller’s form B. Items from form B were selected to be as close as possible to those from form A in terms of scale value. In instances in which the scale values of more than one item from form B was the same as the item from form A, the item with the closest Q value was used. The resulting scale hereafter will be referred to as ATTS-B.

Table "1" shows ATTS-A with Miller’s original scale values and Q values. Table "2" shows ATTS-B with Miller’s original scale values and Q values.

The two forms of the ATTS then were examined by eight judges— instructors who were presently, or who previously had taught, Education 408—for face validity. The judges were asked if the items on the two forms were related to the content, objectives, and concerns of the course. There was substantial agreement among the judges that all of the items were of such a nature. All items on both forms thus were assumed to have face validity.

The next step in the development of the ATTS was to administer the two forms to determine the discrimination ability of each item.
<table>
<thead>
<tr>
<th>Item</th>
<th>Inter-quartile range (Q)</th>
<th>Scale Value (S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching is the most necessary of the professions.</td>
<td>1.8</td>
<td>10.7</td>
</tr>
<tr>
<td>2. Teaching is just another means of existing.</td>
<td>2.9</td>
<td>3.0</td>
</tr>
<tr>
<td>3. Teaching is the most interesting of the professions.</td>
<td>2.6</td>
<td>9.7</td>
</tr>
<tr>
<td>4. Teaching tends to get one in a rut.</td>
<td>2.3</td>
<td>9.1</td>
</tr>
<tr>
<td>5. Teaching is inspirational for the teacher.</td>
<td>2.6</td>
<td>9.1</td>
</tr>
<tr>
<td>6. The teaching profession is twenty years behind the times in its methods.</td>
<td>2.6</td>
<td>2.5</td>
</tr>
<tr>
<td>7. Teaching increases one's ability to meet people socially and intellectually.</td>
<td>1.7</td>
<td>9.7</td>
</tr>
<tr>
<td>8. Teaching is a dull, uneventful life.</td>
<td>2.3</td>
<td>2.4</td>
</tr>
<tr>
<td>9. Teaching furnishes a chance for self-expression.</td>
<td>2.0</td>
<td>8.8</td>
</tr>
<tr>
<td>10. Teaching is a lazy man's job.</td>
<td>1.9</td>
<td>2.0</td>
</tr>
<tr>
<td>11. Teaching develops one's leadership ability.</td>
<td>1.8</td>
<td>9.0</td>
</tr>
<tr>
<td>12. Teaching develops in one a cynical attitude towards life.</td>
<td>2.8</td>
<td>2.9</td>
</tr>
<tr>
<td>13. Teachers are the nation's leaders.</td>
<td>2.3</td>
<td>10.0</td>
</tr>
<tr>
<td>14. Teachers are business and social misfits.</td>
<td>2.2</td>
<td>2.0</td>
</tr>
<tr>
<td>15. Teachers are the molders of society.</td>
<td>2.2</td>
<td>8.7</td>
</tr>
<tr>
<td>16. Teachers are parasites.</td>
<td>1.2</td>
<td>1.3</td>
</tr>
<tr>
<td>17. Dealing with youth tends to keep a teacher young, alert, and active.</td>
<td>2.1</td>
<td>9.5</td>
</tr>
<tr>
<td>18. Most teachers have one-track minds.</td>
<td>2.8</td>
<td>2.7</td>
</tr>
<tr>
<td>19. The teaching profession has the best chance to develop good citizens.</td>
<td>2.0</td>
<td>2.7</td>
</tr>
<tr>
<td>20. Teachers are overbearing and boresome.</td>
<td>1.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Item</td>
<td>Interquartile Range (Q)</td>
<td>Scale Value (S)</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>1. Teaching has more influence on a nation than any other profession.</td>
<td>1.7</td>
<td>10.3</td>
</tr>
<tr>
<td>2. Teaching isolates a person from the rest of the world.</td>
<td>2.9</td>
<td>2.9</td>
</tr>
<tr>
<td>3. Teaching is one of the greatest stimulants to one's mental activity.</td>
<td>2.0</td>
<td>9.6</td>
</tr>
<tr>
<td>4. Teaching is a monotonous occupation.</td>
<td>2.6</td>
<td>2.8</td>
</tr>
<tr>
<td>5. Teaching is an education for the teacher as well as for the student.</td>
<td>2.9</td>
<td>9.4</td>
</tr>
<tr>
<td>6. Modern teaching is inferior to that of twenty years ago.</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>7. Teaching develops one's personality and character.</td>
<td>1.3</td>
<td>9.8</td>
</tr>
<tr>
<td>8. Teaching is routine drudgery.</td>
<td>2.6</td>
<td>2.7</td>
</tr>
<tr>
<td>9. Teaching is the best means of self-expression.</td>
<td>2.0</td>
<td>8.8</td>
</tr>
<tr>
<td>10. The intellectual level of modern teachers is very low.</td>
<td>1.9</td>
<td>1.8</td>
</tr>
<tr>
<td>11. Teaching develops independence and a sense of responsibility.</td>
<td>2.4</td>
<td>9.5</td>
</tr>
<tr>
<td>12. Teaching has no future.</td>
<td>2.2</td>
<td>2.3</td>
</tr>
<tr>
<td>13. The teaching profession performs more actual good for mankind than any other.</td>
<td>2.1</td>
<td>10.1</td>
</tr>
<tr>
<td>14. Failures in other lines of business usually become teachers.</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>15. The intellectual standards of a country depend upon its teachers.</td>
<td>2.3</td>
<td>9.6</td>
</tr>
<tr>
<td>16. The teaching profession on a whole is untruthful and unreliable.</td>
<td>1.1</td>
<td>1.3</td>
</tr>
<tr>
<td>17. Teachers determine the moral standards of a nation.</td>
<td>2.8</td>
<td>9.4</td>
</tr>
<tr>
<td>18. Teaching stifles ambition in the teacher.</td>
<td>2.0</td>
<td>2.5</td>
</tr>
<tr>
<td>19. Teaching is one of the best means of serving humanity.</td>
<td>1.7</td>
<td>10.5</td>
</tr>
<tr>
<td>20. Teaching today is more like babysitting than teaching.</td>
<td>1.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>
The following directions were given with each form: (In all administration the ATTS was identified by the title "Teaching Opinionnaire.")

The following is a survey of opinions of people in general about public school teaching. Many different opinions are represented and you may yourself agree with some and disagree with others. You may find yourself uncertain about some. Using the system below, indicate what your personal feeling about the statement is. Place the appropriate number in the space to the left of the item.

(1, I disagree very strongly; 2, I disagree; 3, I am uncertain; 4, I agree; 5, I very strongly agree)

The two forms of ATTS were administered to students enrolled in Speech 416—"Introduction to Speech"—in the Winter Quarter 1966 at The Ohio State University.

The two forms were stacked alternately in groups of twenty-five and distributed to students in a large-group lecture section. Each student responded to only one form. The number of students responding to form A was 129. The number responding to form B was 142.

The ATTS was scored in the following manner. The total of the responses to the odd-numbered items on each paper was entered at the bottom of the response column. The total of the responses to the even-numbered items was entered at the top of the response column. The score on the even-numbered items was converted then using the rationale that a "5" response to a favorable item would be the same as a "1" response to an even-numbered item. A "4" response to a favorable item is the same as a "2" response to an unfavorable item. A "3" response (I am uncertain) would be weighted equally for favorable and unfavorable items.

Rather than converting each even-numbered item individually, the same final result could be obtained by converting the total score on the
even-numbered items to the equivalent total score on odd-numbered items. The following table was used in the conversion. The highest possible score on each half being 50 \((10 \times 5)\); the lowest possible score being 10 \((10 \times 1)\).

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>50</td>
<td>21</td>
<td>39</td>
</tr>
<tr>
<td>11</td>
<td>49</td>
<td>22</td>
<td>38</td>
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<tr>
<td>12</td>
<td>48</td>
<td>23</td>
<td>37</td>
</tr>
<tr>
<td>13</td>
<td>47</td>
<td>24</td>
<td>36</td>
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<tr>
<td>14</td>
<td>46</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>15</td>
<td>45</td>
<td>26</td>
<td>34</td>
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<tr>
<td>16</td>
<td>44</td>
<td>27</td>
<td>33</td>
</tr>
<tr>
<td>17</td>
<td>43</td>
<td>28</td>
<td>32</td>
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<tr>
<td>18</td>
<td>42</td>
<td>29</td>
<td>31</td>
</tr>
<tr>
<td>19</td>
<td>41</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>20</td>
<td>40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For scores on even-numbered items of 29 or less, the score in column I indicated the score on even-numbered items and the score in column II indicated the converted score.

For scores of 31 or higher on the even-numbered items, the score for the items was read in column II and the converted score was read in column I.

A score of 30 would be equal for both odd and even. (This would correspond to an average of "3" for each item and a "3" on the odd items equals the value of a "3" on the even items.)

The converted score for the even-numbered items then was added to the score on the odd-numbered items to give a total score for the instrument.

Edwards suggests that what is desired in the method of summated ratings is "a set of 20 to 25 statements that will differentiate between the high and the low groups"\(^{25}\) responding to an instrument.

The method of determining the discrimination power of an item reported by Edwards is to obtain

... the frequency distribution of scores based upon the responses to all statements ... then take the 25 (or some other) per cent of the subjects with the highest total scores and also the 25 per cent of the subjects with the lowest total scores. ... assume that these two groups provide criterion groups in terms of which to evaluate the individual statements. In evaluating the responses of the high and low groups to the individual statements ... find the ratio

\[
t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{S_H^2}{N_H} + \frac{S_L^2}{N_L}}}
\]

where

\[X_H = \text{the mean score on a given statement for the high group}\]

\[X_L = \text{the mean score on the same statement for the low group}\]

\[S_H^2 = \text{the variance of the distribution of responses of the high group to the statement}\]

\[S_L^2 = \text{the variance of the distribution of responses of the low group to the statement}\]

\[N_H = \text{the number of subjects in the high group}\]

\[N_L = \text{the number of subjects in the low group}\]

If \(N_H = N_L\), as will be the case if ... one selects the same percentage of the total number of subjects for the high and low groups, then the formula ... can be written

\[
t = \frac{\bar{X} - \bar{X}_L}{\sqrt{\frac{(X_H - \bar{X}_H)^2 + (X_L - \bar{X}_L)^2}{N(N - 1)}}}
\]

where \((X_H - \bar{X}_H) = (X_H - \bar{X}_H)^2\)

and \((X_L - \bar{X}_L) = (X_L - \bar{X}_L)^2\)
The value of \( t \) is a measure of the extent to which a given statement differentiates between the high and the low groups. As a crude and approximate rule of thumb... any value equal to or greater than 1.75... indicates that the average response of the high and low groups to a statement differs significantly, provided ... 25 or more subjects are in the high group and also in the low group. \(^{26}\)

The scores on ATTS-A and the scores on ATTS-B were placed in their respective rank-order. The high 25 scores and the low 25 scores then were selected on each. On ATTS-A the range of high scores was 81-88; the range of the low scores was 50-66. On ATTS-B the range of the high scores was 84-96; the range of the low scores was 53-58.

The data from the answer sheets of the above scores were punched onto IBM cards and verified by the Test Development Center of The Ohio State University. The cards were fed into the IBM 7094 computer programmed to calculate the \( t \)'s according to the above formula in which \( N_H = N_L \). The results for ATTS-A are given in Table 3, \( n = 25 \) column. The results for ATTS-B are given in Table 4, \( n = 25 \) column.

Although the converted score on the even-numbered items was calculated in order to get the total score for ranking purposes, the raw score (unconverted) was used in computing \( t \)-scores. For this reason \( t \)-scores on even-numbered items are negative. When \( \bar{X}_H - \bar{X}_L \) in the numerator of the formula is calculated using nonconverted scores, the \( \bar{X}_H \) will almost always be lower than \( \bar{X}_L \).

It will be noted that all items except item 6 in ATTS-A were well above the 1.75 value. Even that value when rounded off to the nearest one-hundredth falls into the acceptable range. However, as the \( n \) of 25 represented only approximately 19 per cent of the total students taking

\(^{26}\) Ibid., pp. 152-153.
ATTS-A and approximately 17 per cent of the total taking ATTS-B, it was decided to determine the t-scores using larger numbers.

In the Summer 1966 Quarter at The Ohio State University approximately four-hundred students enrolled in either Education 408 or Speech 401 were given ATTS-A and ATTS-B simultaneously. Of 400 tests given, 311 were usable. The rest were rejected as one or more of the items was unanswered. The scores were calculated and the respective forms placed in rank order.

The discrimination value of the items on the two scales were calculated. This time the highest 80 and the lowest 80 scores were used. This represented approximately a 25 per cent sample. Again, the papers were given to the Test Development Center for processing. The data were processed as before with the resultant t-scores also reported in Tables 1 for ATTS-A \((n = 80)\) and in Table 2 for ATTS-B \((n = 80)\).

Inspection of the t-scores, using the larger sample, indicates all items are significant beyond the 1.75 criterion level as suggested by Edwards.

In addition to the t-scores, on the second administration of ATTS-A and ATTS-B additional statistical data were calculated. All of the responses on both forms were punched on IBM cards and were verified by the Test Development Center. The data cards were run on the MR-90 program and the mean scores and standard deviations were found for the odd, even, and total scores for each form of the ATTS and the Pearson Product-Moment correlation coefficient between the two forms was calculated.

The results of these calculations are reported in Table 5.
<table>
<thead>
<tr>
<th>Item</th>
<th>$N = 80$</th>
<th>$N = 25$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching is the most necessary of the professions.</td>
<td>6.399</td>
<td>4.755</td>
</tr>
<tr>
<td>2. Teaching is just another means of existing.</td>
<td>5.078</td>
<td>4.366</td>
</tr>
<tr>
<td>3. Teaching is the most interesting of the professions.</td>
<td>9.051</td>
<td>5.833</td>
</tr>
<tr>
<td>4. Teaching tends to get one in a rut.</td>
<td>7.993</td>
<td>3.966</td>
</tr>
<tr>
<td>5. Teaching is inspirational for the teacher.</td>
<td>8.390</td>
<td>5.526</td>
</tr>
<tr>
<td>6. The teaching profession is twenty years behind the time in its methods.</td>
<td>6.434</td>
<td>1.7463</td>
</tr>
<tr>
<td>7. Teaching increases one's ability to meet people socially and intellectually.</td>
<td>6.309</td>
<td>4.642</td>
</tr>
<tr>
<td>8. Teaching is a dull, uneventful life.</td>
<td>9.9724</td>
<td>5.613</td>
</tr>
<tr>
<td>9. Teaching furnishes a chance for self-expression.</td>
<td>4.415</td>
<td>3.266</td>
</tr>
<tr>
<td>10. Teaching is a lazy man's job.</td>
<td>9.881</td>
<td>5.219</td>
</tr>
<tr>
<td>11. Teaching develops one's leadership ability.</td>
<td>6.440</td>
<td>3.005</td>
</tr>
<tr>
<td>12. Teaching develops in one a cynical attitude towards life.</td>
<td>6.101</td>
<td>4.199</td>
</tr>
<tr>
<td>13. Teachers are the nation's leaders.</td>
<td>10.1677</td>
<td>5.359</td>
</tr>
<tr>
<td>14. Teachers are business and social misfits.</td>
<td>8.381</td>
<td>6.235</td>
</tr>
<tr>
<td>15. Teachers are the molders of society.</td>
<td>8.675</td>
<td>5.614</td>
</tr>
<tr>
<td>16. Teachers are parasites.</td>
<td>6.343</td>
<td>4.113</td>
</tr>
<tr>
<td>17. Dealing with youth tends to keep a teacher young, alert, and active.</td>
<td>6.627</td>
<td>5.164</td>
</tr>
<tr>
<td>18. Most teachers have one-track minds.</td>
<td>6.515</td>
<td>3.089</td>
</tr>
<tr>
<td>19. The teaching profession has the best chance to develop good citizens.</td>
<td>5.1353</td>
<td>7.513</td>
</tr>
<tr>
<td>20. Teachers are overbearing and boresome.</td>
<td>8.5516</td>
<td>3.819</td>
</tr>
</tbody>
</table>
### TABLE 4

**t SCORES FOR ITEMS ON ATTS-B**

<table>
<thead>
<tr>
<th>Item</th>
<th>N = 80</th>
<th>N = 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching has more influence on a nation than any other profession.</td>
<td>5.618</td>
<td>5.196</td>
</tr>
<tr>
<td>2. Teaching isolates a person from the rest of the world.</td>
<td>11.428</td>
<td>3.831</td>
</tr>
<tr>
<td>3. Teaching is one of the greatest stimulants to one's mental activity.</td>
<td>8.090</td>
<td>6.754</td>
</tr>
<tr>
<td>4. Teaching is a monotonous occupation.</td>
<td>6.638</td>
<td>7.882</td>
</tr>
<tr>
<td>5. Teaching is an education for the teacher as well as for the student.</td>
<td>5.771</td>
<td>4.682</td>
</tr>
<tr>
<td>6. Modern teaching is inferior to that of twenty years ago.</td>
<td>4.211</td>
<td>5.164</td>
</tr>
<tr>
<td>7. Teaching develops one's personality and character.</td>
<td>6.359</td>
<td>3.148</td>
</tr>
<tr>
<td>8. Teaching is routine drudgery.</td>
<td>9.099</td>
<td>7.504</td>
</tr>
<tr>
<td>9. Teaching is the best means of self-expression.</td>
<td>5.827</td>
<td>5.539</td>
</tr>
<tr>
<td>10. The intellectual level of modern teachers is very low.</td>
<td>9.416</td>
<td>5.722</td>
</tr>
<tr>
<td>11. Teaching develops independence and a sense of responsibility.</td>
<td>7.171</td>
<td>6.274</td>
</tr>
<tr>
<td>12. Teaching has no future.</td>
<td>6.785</td>
<td>6.557</td>
</tr>
<tr>
<td>13. The teaching profession performs more actual good for mankind than any other.</td>
<td>5.493</td>
<td>5.408</td>
</tr>
<tr>
<td>14. Failures in other lines of business usually become teachers.</td>
<td>5.080</td>
<td>5.472</td>
</tr>
<tr>
<td>15. The intellectual standards of a country depend upon its teachers.</td>
<td>4.221</td>
<td>3.941</td>
</tr>
<tr>
<td>16. The teaching profession on a whole is untruthful and unreliable.</td>
<td>8.556</td>
<td>7.036</td>
</tr>
<tr>
<td>17. Teachers determine the moral standards of a nation.</td>
<td>6.416</td>
<td>3.599</td>
</tr>
<tr>
<td>18. Teaching stifles ambition in the teacher.</td>
<td>5.106</td>
<td>4.929</td>
</tr>
<tr>
<td>19. Teaching is one of the best means of serving humanity.</td>
<td>8.667</td>
<td>6.298</td>
</tr>
<tr>
<td>20. Teaching today is more like babysitting than teaching.</td>
<td>6.372</td>
<td>6.198</td>
</tr>
</tbody>
</table>
### TABLE 5

MEAN SCORES AND STANDARD DEVIATIONS OF ATTS-A AND ATTS-B

<table>
<thead>
<tr>
<th></th>
<th>Sum</th>
<th>Mean</th>
<th>Sum of Squares</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATTS-A, Odd items</td>
<td>11472</td>
<td>36.887</td>
<td>430660</td>
<td>4.914</td>
</tr>
<tr>
<td>ATTS-A, Even items</td>
<td>13064</td>
<td>42.006</td>
<td>554320</td>
<td>4.227</td>
</tr>
<tr>
<td>ATTS-B, Odd items</td>
<td>11501</td>
<td>36.981</td>
<td>431825</td>
<td>4.583</td>
</tr>
<tr>
<td>ATTS-B, Even items</td>
<td>12924</td>
<td>41.556</td>
<td>542472</td>
<td>4.173</td>
</tr>
<tr>
<td>ATTS-A, Total score</td>
<td>24531</td>
<td>78.878</td>
<td>1953157</td>
<td>7.663</td>
</tr>
<tr>
<td>ATTS-B, Total score</td>
<td>24415</td>
<td>78.505</td>
<td>1933293</td>
<td>7.317</td>
</tr>
</tbody>
</table>

N = 311

An inspection of the mean scores on the two forms shows the closeness of the results obtained. On the odd-numbered items there is a difference in the means of .094, on the even-numbered items a difference of .450, and on the tests as a whole, a difference of .373.

An examination of the standard deviations of the two forms also indicates a closeness between the results of the two forms. The difference between the standard deviations of the odd-numbered items is .331, the difference between the standard deviations of the even-numbered items is .054, and between the standard deviations of the two tests as a whole is .346.

The correlation coefficient of .76, not corrected for attenuation, indicates a reliability sufficient to differentiate between the means of the two groups.27

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27 In view of the closeness of the results of the two forms of the ATTS, one would ordinarily expect a somewhat higher correlation coefficient. The lower coefficient may be explained by the relative homogeneity of the group as indicated by the standard deviation. A wider spread in scores probably would have resulted in a higher coefficient.
Up to this point, the matter of unidimensionality has not been considered. Unidimensionality is the degree to which each item in a scale measures the same attitude. In any instrument which utilizes a summated rating, this is obviously important. Remmers states that items selected by the combination of Thurstone's technique and the item analysis used in the summated ratings technique "... exhibit satisfactory unidimensionality."\(^2\)\(^8\) This is particularly true when items with neutral values on Thurstone's scale are eliminated.

The procedures used to establish the validity of the items on the two forms of the ATTS, the closeness of the results using an "n" of 311 (see Table 5) and the uncorrected correlation of .76 are assumed to establish the validity of both forms for use in measuring group attitude toward teaching.\(^2\)\(^9\)

As there was a time factor in administering the post-test to the groups in this study, it was decided to use ATTS-A as both the pre- and post-test. It is assumed that the time interval of approximately ten weeks would preclude memory as a significant factor in the measurement of attitude change.

The Dogmatism Scale

The concept of dogmatism as described by Rokeach has direct implications for any study of attitudes. Basically the underlying concept in Rokeach's theory is the relationship between what a person believes

\(^2\)\(^8\) Remmers, op. cit., p. 129.

\(^2\)\(^9\) The procedures used constructing the ATTS were corroborated by Dr. Robert Ostrom of the Department of Psychology, The Ohio State University.
and how a person thinks. As Rokeach states, "... we will address ourselves to the relation between belief and thought and to the possibility that there is a basic unity between them." Further Rokeach states, "To say a person is dogmatic or that his belief system is closed is to say something about the way he believes and the way he thinks—not only about single issues but also about networks of issues." These networks of issues are hypothesized as being on a continuum—at one extreme, the "disbelief system" and at the other end, the "belief" system. Rokeach says, "In considering the properties of belief systems it is necessary to keep this continuum in mind. We will employ the term 'dogmatic' synonymously with closed..." High dogmatic is "closed" and low dogmatic is "open."

If belief and thinking are related, then any change in attitude will be dependent upon the cognitive process and vice-versa. The crux of the matter can be found in the following passage from Rokeach:

The more closed the system, the more is the acceptance of a particular belief assumed to depend upon irrelevant internal drives and/or arbitrary reinforcements from external authority. The relation among beliefs... depends on such irrelevant considerations rather than on considerations of logical consistency.... On the other hand, the more open the system the more... the person addresses himself to objective structural requirements—that is logical relationships.

It would appear that there would be a strong relationship between an individual's degree of dogmatism and any changes in attitudes which

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30 Rokeach, op. cit., p. 7.
31 Ibid., p. 5.
32 Ibid.
33 Ibid., p. 61.
might result from undergoing a formal educational experience. In this study, dogmatism is measured by the DS developed by Rokeach.34

The items for the DS were constructed deductively by the author based on the various theorized characteristics of open and closed systems. The assumption underlying the items was that

if a person agrees strongly . . . with a statement it would indicate that he possesses one extreme of the characteristic being tapped, and if he strongly disagrees, that he possesses the opposite extreme. . . . Some of the statements appearing in the Dogmatism Scale were inspired by spontaneous remarks we overheard being made by persons we thought intuitively to be closed minded.35

The subjects taking the DS respond on a six-point scale:

+1 I agree a little
+2 I agree on the whole
+3 I agree very much

-1 I disagree a little
-2 I disagree on the whole
-3 I disagree very much

The total score on the DS is the sum of scores obtained on all items.36 Rokeach reports that "the DS went through five editions. A total of 89 items were tried out in the initial scale and in four successive revisions. The aim of these revisions was to take advantage of continuing refinements in our theoretical formulations and to increase reliability.37

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34 For a complete report on the Construction of the Dogmatism Scale, see Rokeach, cited above. The particular instrument used to measure dogmatism in the present study contains the 40 items reported for form E of the Dogmatism Scale reported in Rokeach, pp. 413-415, plus twenty filler items.

35 Rokeach, op. cit., p. 72.

36 Ibid., p. 73.

37 Ibid.
The reliabilities reported by Rokeach for the DS range from .68 to .85 using Ohio State University students. These were obtained using samples ranging from 22 to 58 in number. The test-retest method was used with six months between tests.\(^3^8\) (This is theoretically sound as dogmatism is considered to be a stable characteristic.)

In addition to the reliability coefficients, Rokeach reports that subjects agreed or disagreed with most of the items in a consistent manner. Item analyses compared the scoring of subjects in the upper and lower quarters of the frequency distributions. These analyses showed that high and low subjects differed consistently "in a statistically significant manner."\(^3^9\)

**Summary of Chapter II**

In this chapter literature relevant to the concept and measurement of attitudes was reviewed. The methodology used in the construction of the ATTS was presented along with pertinent statistical data.

The theoretical base for the concept of dogmatism was discussed and a summary given of the methods used in constructing the Dogmatism Scale. Pertinent reliability data for the DS also was reported. It was concluded that these instruments were necessary and sufficient to accomplish the objectives of the study.

\(^{3^8}\)Ibid., p. 90.

\(^{3^9}\)Ibid.
CHAPTER III

PRESENTATION AND DISCUSSION OF DATA

The primary purpose of this study was to determine to what extent a change in attitude toward teaching occurs among students taking an introductory course in education. A further purpose is to examine to what extent relationships exist between any attitude change and selected biographical, educational, and personality factors of the students.

In order to accomplish these purposes the following hypotheses were formulated:

1. Attitude change in students will occur during the interval of a one-quarter, three credit-hour course in education.

2. Attitude change will not occur in similar students during the same interval of a comparable course in speech.

3. There will be no initial differences in attitude toward education between students enrolled in an education course and students enrolled in a course in speech.

4. There will be no relationship between the degree of dogmatism of students and the amount and direction of their attitude change.

5. There will be no relationship between the attitude change of students and their academic aptitude as indicated on the American College Test.

6. There will be no relationship between students' attitude change and the prior academic achievement of the students as indicated by their rank in their high school graduating classes.

41
7. There will be no relationship between students' attitude change and their ages.

8. There will be no relationship between students' attitude change and the size and type of high school from which the students graduated.

9. There will be no relationship between students' attitude change and their performance in an introductory course in education as indicated by their course grades.

10. There will be no relationship between students' attitude change and their performance in their college work as indicated by their grade-point averages.

11. There will be no relationship between students' attitude change and the occupation of their parents.

Discussion of the Hypotheses

Hypothesis one.—The primary purpose of Education 408 is to furnish prospective teachers with a broad view of the field of public education. This is done in order to help students to decide whether or not to follow teaching as a career. Students taking this possess attitudes toward teaching based upon their own personal experiences in school and the influence of their families and friends. It was an observation of the writer over the period of two years as an instructor in the course that these attitudes usually had been the result of a somewhat limited experience on the part of most students. For example, in an autobiography of one student, the following statement occurred. "I want to be a teacher because all schools are clean, pleasant places in which to work." This student had completed her entire education, to date, in a wealthy
suburban school district noted for the excellence of its physical plant. Other students had impressions that teaching afforded a leisurely existence with short hours and long periods of vacations.

As most college students' view of education had been from the point of view of a public school student, in their autobiographies they evidenced very little awareness of the role of teachers aside from their roles in the classroom and in the school's co-curricular activities program. The teachers appeared to some as autonomous individuals pretty much free to do as they wished in the classroom with few demands placed upon them by society.

Many students, both men and women, viewed teaching as a temporary occupation to be used as a stepping stone to either another career or in the case of women students, to marriage. Some evidenced a belief that teaching consisted of relating facts from a textbook to students—a task which, although boring, would not seem too difficult for them to master. Others saw working with the raw materials of a child's mind as a professional responsibility and a challenge. Many students saw teachers as relatively under-paid; yet others saw the chance for upward social movement through teaching.

As the course was designed to give a frank look at the positive and negative side of teaching, it was hypothesized that this would cause a change of attitude in different directions for different students. The "polyannas" might be disenchanted; the cynics challenged. In any case, personal knowledge would be extended and supplemented with public knowledge. Thus, the hypothesis that attitude change would occur during the interval of an introductory course in education.
Hypothesis two.--"No attitude change will occur during the interval of a course in speech," was formulated to produce a control for the intervening variable of campus environment.

It would be expected that contact with students from different school systems, or even different schools within the same system, could produce a change in attitude toward teaching among students who had a relatively limited experience with schools. For this reason, a course not directly concerned with was chosen as a control.

It was assumed that Speech 401 would contain a representative group of students very similar to students in Education 408 in background and ability. Therefore, it could be assumed that any attitude change taking place due to Campus environment would affect the two groups in approximately the same manner. Any difference in change of attitude between the two groups could be attributed to something which occurred during the interval of the respective courses. As the course in speech was not specifically designed to produce a change in attitude toward teaching, the hypothesis was formulated that no change in attitude would occur.

Hypothesis three.--"There will be no initial difference between the attitude between students enrolled in an education course and students enrolled in a course in speech" was designed to test the assumption that students who enroll in a course in education would have a more favorable attitude toward teaching than would those who enrolled in a course in speech. Although some students enrolled in the Speech 401 might be interested in some day becoming teachers, all of the students enrolling in Education 408 were presumed to be interested to some extent in becoming
teachers. It was assumed that students wishing to enter a profession would view that profession more favorably than those not intending to enter it.

The hypothesis was stated in the null form. By rejecting the null form, the hypothesis that there is a difference between the attitude of the two groups of students can be accepted. The determination of which group is more favorable can be ascertained by examination of the data.

Hypothesis four.—"There will be no relationship between dogmatism of students and their attitude change." This is based upon the belief-disbelief dimension of Rokeach's theory. Attitudes which have been built up over twelve or more years of personal association with teachers and teaching are assumed to be firmly held. According to Rokeach's discussion on open and closed system high dogmatics accept a particular belief in terms of irrelevant, internal drives and for reinforcements from external authority rather than by consideration of logic. Conversely, the open system is more susceptible to logical relationship.

Thus, the high dogmatic person will tend to accept that information which reinforces his beliefs and disbeliefs and reject that which tends to be in conflict with his beliefs and disbeliefs. Exposure to information, therefore, would tend not to influence his attitude. Conversely, to the low dogmatic, information would be assessed according to its logic, and accordingly influence his attitude. Therefore, attitude change would be inversely related to dogmatism. The higher the dogmatism the lower the attitude change. By rejecting the null hypothesis, a fact of a relationship between dogmatism and attitude change could be
established. The direction of the relationship could be ascertained by the sign of the relationship—positive or negative.

**Hypothesis five.**—"There will be no relationship between the attitude change of students and their academic aptitudes as indicated on the American College Test." This hypothesis rests on the assumption that there is a direct relationship between the amount of new information a person acquires and the extent to which his attitude changes, if other factors are held constant—the greater the information gain, the greater the possibility for attitudes to change.

If this is the case, those students with greater potential for acquiring information would have the greater possibility for attitude change. One indication of the potential for acquiring information is the American College Test—the higher the score on the test, the greater the potential. In this study, two separate scores on the ACT were utilized.

One was the score on the social science section of the ACT. This score was utilized as the nature and content of Education 408 is that of a course in the social sciences. It is assumed that the skills contributing to successful performance on the Social Science section of the ACT would contribute also to successful performance (including information gain) in Education 408.

The composite ACT score also was used in investigating the relationship between academic potential and attitude change. The ACT composite score indicates the over-all academic performance of a student by combining his scores on the mathematics, English, natural science, humanities, and social science scores. The underlying rationale for using the ACT composite score is essentially the same as for using the
ACT social science score. However, the composite score provides a broader look at academic performance than does a single section of the ACT. Again, by rejecting the null hypothesis a relationship between ACT scores and attitude change could be established.

Hypothesis six.—"There will be no relationship between students' attitude change and academic achievement as indicated by their rank in their high school graduating classes." The rationale for this hypothesis is the same as for hypothesis five—the greater the ability to learn, the greater the possibility for attitude change. High school class rank is an indication of a student's academic achievement. Although there are factors other than academic aptitude involved in determining a student's class rank in high school, it is a relatively reliable indicator of academic achievement. It is an indication of his actual performance in a primarily classroom situation. It would be logical to expect students who have done well in school as indicated by class rank will continue to do well in classroom work in college. By rejecting the null hypothesis it will be possible to establish whether or not there is a relationship between high school class rank and attitude change. Again, the data will reveal the direction of any relationships.

Hypothesis seven.—"There will be no relationship between students' attitude change and their ages." The rationale for this hypothesis is based on the fact that in any freshman class there is usually a number of students who have been out of high school for a year or longer and, thus, are older than the average. These students would have been subjected to work, military or some other experiences, not directly related to teaching. Thus, they would have had the opportunity
to compare teaching with other modes of earning a living. It is assumed
that these persons will have a more "realistic" attitude towards teaching
and thus their attitudes would not be influenced as much as would those
of the more naive student.

Hypothesis eight.--"There will be no relationship between
students' attitude change and the size and type of high school from which
they graduated." To a large degree a student's attitude toward teaching
would reflect the type of school from which he has graduated. It is
assumed that most students will have graduated from schools in which they
began their high school careers, or from similar schools. Any attitude
change would reflect a widening of awareness regarding the teaching
situation in different schools. Students from parochial schools, in
particular, might experience a wide change in attitude when confronted
with the actualities of teaching in a public school system. Students
from suburban schools might be expected to experience a change of attitude
toward teaching when exposed to the problems of center city schools. By
rejecting the null hypothesis in this case a relationship would be
established between attitude change and the size and type of school from
which the student graduated.

Hypothesis nine.--"There will be no relationship between
students' attitude change and their performance in an introductory course
as indicated by their course grades." By rejecting the hypothesis, a
relationship between knowledge gain and attitude change could be
established. A high grade in Education 408 will be accepted as prima
facie evidence of more information regarding the course than a low grade
would indicate. Those who have learned more would have a greater oppor-
tunity to experience attitude change.
Hypothesis ten.—"There will be no relationship between students' attitude change and their performance in their college work as evidenced by their grade-point averages." This hypothesis is designed to test the relationship between over-all performance in college work and attitude change. Again, those evidencing the greatest potential for learning by this criterion are expected to exhibit the greatest attitude change.

Hypothesis eleven.—"There will be no relationship between students' attitude change and the occupation of their parents." This hypothesis was designed to determine if the level of occupation of a student's parents would influence his attitude toward teaching. It is theorized here that students whose parents are engaged in occupations which rate below teaching in prestige will change favorably toward teaching. Those whose parents are engaged in occupations rated above teaching, it is theorized, would also experience an increase in favorable attitude toward teaching. Further, it is hypothesized, that children of teachers would experience no change in attitude. These last students would have a broader view of the profession than would students not so intimately associated with the profession.

Data Relating to the Hypotheses

The mean scores of the Education 408 students on the ATTS-A pre- and post-tests are reported in Table 6.

The means on the pre-test and post-tests were 79.63 and 80.56 respectively. For purposes of consistency, hypothesis one will be re-stated in the null form—attitude change will not occur during the interval of a one-quarter three credit-hour introductory course in
TABLE 6
ATTITUDE CHANGE OF EDUCATION 408 STUDENTS
FROM THE ATTS-A PRE-TEST AND POST-TEST

| Score of all subjects on ATTS-A Post-test | 18449 | 80.56 |
| Score of all subjects on ATTS-A Pre-test  | 18236 | 79.63 |
| Difference (Post-test--Pre-test)         | 213   | .93   |
| Absolute change of all subjects from     | 1337  | 5.83  |
| ATTS-A Pre-test to ATTS-B Post-test      |       |       |

N = 229

education—and tested statistically. A "t" test of the difference in the means\(^1\) was made and resulted in \(t = 1.82\). With a \(t\) of this value, the null hypothesis is accepted. (It is customary to accept the null hypothesis when \(t\) is less than 1.96.) Therefore, hypothesis one—attitude change in students will occur during the interval of a one-quarter three credit-hour course in education—is rejected using the \(t\) test as a criterion.


The \(t\) in this instance is computed using the formula:

\[ t = \frac{\bar{X}_2 - \bar{X}_1}{\sqrt{S_{X_2}^2 + S_{X_1}^2 - 2r_{XY} S_{X_1} S_{X_2}}} \]

where:
- \(\bar{X}_1\) = Mean of pre-test
- \(\bar{X}_2\) = Mean of post-test
- \(S_{X_1}\) = Standard of Error of \(\bar{X}_1\)
- \(S_{X_2}\) = Standard of Error of \(\bar{X}_2\)
- \(r_{XY}\) = Coefficient of correlation between pre- and post-test scores
However, it was anticipated that attitude change would occur in both directions. That is, some students would undergo a shift toward a more favorable and some would shift toward a less favorable attitude. Should this have occurred, the changes would tend to balance out. An examination of the mean scores on the pre- and post-test would not reveal these changes.

If the algebraic changes in attitude of the Education 408 students are compared with their absolute changes in Table 6, the fact of change in both directions is affirmed. Total absolute change is the sum of the changes from pre-test to post-test without regard to the direction, or sign, of the change.

The change between the means of the pre-test and post-test is .93 and the mean absolute change is 5.83 as reported in Table 6. This difference between the algebraic and absolute change values indicates a change in both positive and negative directions with a somewhat greater change in the positive direction.

The ATTS-A responses by category level for the Education 408 students are reported in Tables 7 and 8. Table 7 reports the responses for the pre-test and Table 8 reports the post-test responses. Table 9 reports the pre- and post-test mean and change in mean response on each item, and the significance of the difference between these two means as

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2There is a slight difference between the data in this table and data in Tables 6, 7, and 8. This difference results from using an \( N = 229 \) and an \( N = 237 \) (in Tables 6, 7, and 8). The data from Table 9 were calculated on the MR-90 program from final data on each subject. There was a loss of eight subjects due to the omission of some data other than ATTS-A scores. It is assumed that these eight scores represent a random loss and will not appreciably alter the results.
TABLE 7

NUMBER OF RESPONSES AT EACH CATEGORY LEVEL OF EDUCATION 408
STUDENTS TO ITEMS ON ATT-S-A PRE-TEST  

N = 237

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### TABLE 8

NUMBER OF RESPONSES AT EACH CATEGORY LEVEL OF EDUCATION 408
STUDENTS TO ITEMS ON ATTS-A POST-TEST  
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\[ \chi^2 = 513.619 \]
determined by the chi square test.\(^3\) An examination of these three tables indicates that not only did individual students' attitudes change in different directions, but also the group mean moved positively in some cases and negatively in others.

As in the case of individual student's change, the over-all absolute change for the complete test would not be detected by examining the change in the over-all mean change on the ATTS-A. Therefore, what actually has been rejected by the use of the t test is not the significance of the change in attitude, but rather the significance of over-all change of attitude in one direction—in this case positive.

By utilizing the additive properties of chi squares it is possible to accommodate the significance of changes in both direction. The sum of the chi squares of the twenty items is 513.619. Using this value and a degrees of freedom of 20, the difference between performance on the pre-test and post-test is significant at beyond the .005 level.

At this level of confidence, the null hypothesis can be rejected and the hypothesis that attitude change will occur can be accepted.

An examination of Table 9 reveals a significant mean change occurred on eleven items of the ATTS-A. Each of these eleven changes was significant at the unusually high level of .0005 as indicated by the chi square test. On seven of the items the direction of change was from less to more favorable and on four items the change was from more to less favorable.

\(^3\)Smith, op. cit., pp. 105-107.
Items 3, 5, 6, and 12 indicated a decline in favorable attitude. Items 8, 9, 10, 11, 14, 17, and 18 indicated an increase in favorable attitude. ⁴

When the items on which there was a decrease in mean score are compared with the items on which there was an increase in mean score (converted, as explained in Chapter II, in the case of even-numbered items) certain relationships can be noted. For example, item three—"Teaching is the most interesting of the professions"—showed a decline in favor, while item eight—"Teaching is a dull uneventful life"—showed an increase in favor. This would indicate a shift toward a more neutral appraisal of the profession. This could be interpreted as a feeling that teaching may not be the most exciting career, yet it does offer a degree of challenge. This interpretation is reinforced by examining items five and seventeen. Item five—"Teaching is inspirational for the teacher"—showed a decrease, and item seventeen—"Dealing with youth tends to keep a teacher young, alert, and active"—showed an increase in favorable attitude. The implication here might be that even though there was a decline in the view that teaching is an inspiring occupation, there was an increase in the view that teaching is at least stimulating enough to keep a teacher active and alert.

There are six items on the ATTS-A which relate specifically to the teacher rather than to the profession generally. Of these six items,

⁴ The reader is reminded of the scoring scheme employed in ATTS-A. The lower the numerical value of a response to an even-numbered item, the more favorable the attitude. Therefore, a decrease in the mean score on an even-numbered item from pre-test to post-test would indicate movement from a less to a more favorable attitude. On odd-numbered items the relationship is a direct one—the higher the score the more favorable the attitude.
there was significant attitude change on two—item fourteen—"Teachers are business and social misfits"—and item eighteen—"Teachers have one-track minds"—both of which showed a shift toward a more favorable attitude. This may have resulted from an increased awareness of the problems teachers face and the ability needed to cope with problems and the intellectual ability required to prepare for teaching.

Item six states, "The teaching profession is twenty years behind the times in its methods." The change on this item might reflect an increased awareness on the part of education students that their own school systems have not kept up with the times. It was observed in many autobiographies that students made comments to the effect that "our school system is one of the top ten in the state." Possibly when confronted with practices in some exceptional "light house" districts, students generalized that their schools, and most others, actually were twenty years behind the times.

Item 12—"Teaching develops a cynical attitude toward life"—showed a rather definite shift toward an unfavorable attitude. Although the post-test mean response of 2.08 is very close to the "I disagree" category, the pre-test mean response was 1.41 which is closer to the "I disagree strongly" response. This attitude shift may have resulted from the students' exposure to critical examination of many public school practices. To a student who views teaching as the "perfect profession," even constructive criticism may be viewed as evidence of cynicism on the part of the critic. In other words, the attitude shift may have resulted from what the students observed about people--their education instructors--who had been in public education for some time, but who no longer were teaching in the public schools.
In summary, students, after taking an introductory course in education, tend to believe less that--

1. Teaching is the most interesting profession.
2. Teaching is inspiring for the teacher.
3. Teaching is a dull uneventful life.
4. Teaching is a lazy man's job.
5. Teachers are business and social misfits.
6. Teachers have one-track minds.

On the other hand the students tend to believe more that--

1. Teaching methods are twenty years behind the times.
2. Teaching furnishes a chance for self-expression.
3. Teaching develops one's leadership ability.
4. Teaching develops a cynical attitude toward life.
5. Teaching helps keep a person young, alert, and active.

Tables 10, 11, and 12 contain data relevant to the second hypothesis of the study—"Attitude change will not occur in similar students during the same interval of a comparable course in speech."5

Table 10 is a report of the number of responses on the ATTS-A pre-test at each category level for Speech 401 students. Table 11 presents the corresponding information for the post-test. Table 12 shows mean response of the Speech 401 students on each individual item of the pre-test and the post-test and also the significance of the

5Some experts in experimental design would favor a hypothesis that attitude change would be different in the control group rather than not occur at all. However, the hypothesis as stated is used conventionally. See Donald T. Campbell and Julian C. Stanley in N. L. Gage, Handbook of Research on Teaching (Chicago: Rand-McNally and Co., 1963), pp. 171-246.
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**TABLE 12**

SIGNIFICANCE OF DIFFERENCE BETWEEN SPEECH 401 STUDENTS' PRE-TEST AND POST-TEST RESPONSES ON INDIVIDUAL ITEMS OF ATTS-A

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Scores on even-numbered items have been converted as explained in Chapter II.
differences in the means. The sum of the chi-squares with the level of
significance of the sums is reported also.

An examination of Table 12 reveals change in the mean on seven
items significant at the .05 level or beyond. In all cases, these
changes were in the direction of a less favorable attitude. In fact, all
items except items one and sixteen showed the same tendency, although the
other differences were not significant.

The over-all mean on the pre-test was 80.77 and on the post-test
the mean was 75.19. The total of the chi-squares of the individual items
produces a total chi-square of 88.52 which indicates a change on the
combined items significant beyond the .005 level.

Significant changes in responses occurred on items 3, 4, 5, 8, 11,
12, and 17. After examining these items, it can be noted that students
in Speech 401 changed from a more favorable to a less favorable attitude
toward teaching. The students feel less strongly that—

1. Teaching is the most interesting of professions.
2. Teaching is inspirational for the teacher.
3. Teaching develops one's leadership ability.
4. Dealing with youth tends to keep a teacher young, alert
   and active.

Conversely the students feel more strongly that—

1. Teaching tends to get one in a rut.
2. Teaching is a dull, uneventful life.
3. Teaching develops a cynical attitude toward life.

---

Attention is called to the fact that the significance level of
these differences is much lower than those in the case of the Education
408 Post-test—Pre-test differences.
In view of the significance level of change in the above items and the significance of the combined change on all items of the ATTS-A, the hypothesis that "no change takes place during the interval of a course in speech" is rejected. Therefore, it can be stated that change in attitude did occur.

It should be recalled that attitude of the Speech 401 students was measured in order to provide a control of the variable of effect of environment in changing attitude towards education. It was assumed that a course not directly concerned with the topic of teaching would not, itself, influence attitude. If this assumption is true, the attitude change in the students probably resulted from some factor or factors outside of the speech classroom. It can be speculated as to what these factors were. Perhaps the fact that the Speech 401 students are mostly liberal arts students enrolled in the College of Arts and Sciences may have been a factor.

It is relatively common on campuses which have both a college of education and a liberal arts college to find that there is some degree of difference of opinion regarding the value of professional education. A student enrolled in the arts college might have the tendency to accept the position endorsed by his college which could account for the drop in favor with which he views teaching.

There is also the possibility that the general campus environment may have contributed to the change in attitude. When a student is exposed to a wider acquaintance with other occupations, perhaps the one with which he probably had had the most direct experience--teaching--suffers by comparison.
If general campus environment has contributed to the change, the fact that education students did not undergo a change similar to the speech students must be accounted for as they are in the same general environment.

One possible explanation would be that a student enrolled in the College of Education may not be exposed to the same forces as the student enrolled in the College of Arts and Sciences. Although they are living in the campus environment outside of the classroom, perhaps they form friendships with other students interested in becoming teachers. In this way, education students would tend to insulate themselves from "unfriendly influences."

Another explanation may be that the influence of the introductory course in education, itself, may tend to counteract the campus environmental forces. Perhaps by focusing the student's attention on the teaching profession, other forces impinging upon the student may be minimized. There is the factor of the student's involvement in this consideration. If the student is committed to becoming a teacher, there may be a tendency to reject opinions negative to teaching whether they come from the faculty or from other students. As long as the student is enrolled in an education course he is constantly reminded of his intention to become a teacher.

As stated earlier, it was assumed that a course not directly concerned with the topic of education would produce no effect upon attitudes toward teaching. It is possible that this assumption is not valid and that factors within the speech course may have accounted for the decline in attitude noted. This is possible though not probable as
several different instructors were involved and there was no planned inclusion of the topic of education. Again, perhaps the instructors in speech evidenced a negative attitude toward public school teaching.

Although the hypothesis that "attitude change will not occur during the interval of a course in speech" must be accepted, it has been established that the change in attitude of the speech students is different from the change in attitude of the education students.

The mean attitude of the education students moved in a favorable direction significantly on a greater number of items than it moved in an unfavorable direction. In addition, the over-all mean of the education students moved in a slightly more favorable direction. All of the significant changes of the speech students, on the other hand, were in the less favorable direction as was the over-all mean score.

Data relevant to hypothesis three—"There will be no initial differences in attitude between students enrolled in an education course and students enrolled in a course in speech"—are presented in Table 13. The responses by category level for the two groups on the ATTS-A pre-test have been presented in previous tables—Table 7 for the education group and Table 10 for the speech students.

It was theorized that, initially, students enrolled in a course in education would hold a more favorable attitude toward teaching than would students in a course in speech. This prediction was based on the assumption that most students who enrolled in the education course planned to be teachers while the majority of those in the speech course were not committed to a teaching career. Although there were students enrolled in the speech course who had taken, or were concurrently taking,
TABLE 13

SIGNIFICANCE OF DIFFERENCE BETWEEN EDUCATION 408 AND SPEECH 401
MEAN RESPONSES ON INDIVIDUAL ITEMS OF ATTSA-A. PRE-TEST

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<td>.230</td>
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</table>

| Total    | 80.77<sup>a</sup>   | 79.44<sup>a</sup>   |                   |                    |                     |                   |

<sup>a</sup>These totals reflect the converted values of even-numbered items as explained in Chapter II.
Education 408 or some other course in education, these students were eliminated from the study. In any case, the proportion of prospective teachers was assumed to be much less in the speech course than in the education course. It would seem logical that students planning to enter a profession would hold that profession in higher esteem than someone not planning to enter it. Therefore, the hypothesis actually to be tested was that there would be a difference in the direction of a more favorable attitude on the part of the education group.

The data from Table 13 indicate the reverse of this to be true. The mean ATTS-A pre-test score for speech group was 80.77 and for the education group it was 79.44. The sum of the chi-squares of the differences in means of the two groups on individual items on the ATTS-A is 238.312. This indicates a difference between the responses of the two groups significant at beyond the .005 level for the list as a whole. The means of the two groups indicate an over-all more favorable attitude on the part of the speech group.

There was a difference in responses between the two groups on twelve items significant at the .025 level or beyond. Six of these indicated a more favorable attitude on the part of the speech group, and six indicated a more favorable attitude on the part of the education group.

Items on which the education group indicated a significantly more favorable attitude were the following:

1. Teaching is the most necessary of the professions.
2. Teaching is the most interesting of the professions.
3. Teaching is inspirational for the teacher.
12. Teaching develops in one a cynical attitude toward life.

17. Dealing with youth tends to keep a teacher young, alert, and active.

In addition to these items, the education group indicated a more—though not significantly so—favorable attitude on the following items:

2. Teaching is just another means of existing.

4. Teaching tends to get one in a rut.

13. Teachers are the nation's leaders.

19. The teaching profession has the best chance to develop good citizens.

20. Teachers are overbearing and boresome.

Items on which the speech group indicated a significantly more favorable attitude were the following:

8. Teaching is a dull uneventful life.


10. Teaching is a lazy man's job.

11. Teaching develops one's leadership ability.

14. Teachers are business and social misfits.

18. Most teachers have one-track minds.

In addition, the speech group evidenced a more—again, not significantly so—favorable attitude on the following items:

7. Teaching increases one's ability to meet people socially and intellectually.

15. Teachers are the molders of society.

16. Teachers are parasites.
It should be noted that with one exception in every item for both groups the mean score was above three—the neutral point. In other words, as a group, both the education and the speech students had a positive or favorable attitude toward teaching. This favorable attitude is reflected also in the means for the groups on the ATTS-A as a whole. The mean neutral point for the entire instrument is 60. This is the average of a three—"I am uncertain"—response on each of the twenty items. The means of both groups were considerably above 60.

The one exception referred to above was the 2.84 mean response of the education group on item 17—"Dealing with youth tends to keep a teacher young, alert, and active." This would indicate a response by the group between "I disagree" to "I am uncertain" although much closer to the latter than the former. This may be an indication of a slightly unfavorable attitude towards teaching, or it may simply be a reflection upon students themselves as viewed by their peers.

Items 10, 14, and 18 are ones which relate directly to the teacher. On each of these items, the speech group indicated a significantly (at the .0005 level) more favorable attitude. It would seem paradoxical that students who apparently want to become teachers would have a less favorable attitude toward teachers than would students not expressly committed to education. This apparent paradox might be explained partially by a statement made in many education students' autobiographies that they wish to be better teachers than the ones whom they have had in school. In other words, there is evidence of a missionary purpose to improve teaching. Another possible explanation—one which probably would be rejected by college instructors involved—is that in retrospect teachers in public schools were not so bad.
There is an apparent inconsistency in the respective positions taken by the speech students on item three—"Teaching is the most interesting of the professions"—and item eight—"Teaching is a dull, uneventful life." Education students agreed more strongly with item three and disagreed more strongly with item eight than did the speech students. The implication in this situation is that the speech students have a more positive attitude toward all professions than do the education students. Even though the speech students feel less strongly that teaching is the most interesting of the professions they do not feel as strongly as do the education people that teaching is dull.

In any case, there was a significant difference between the initial attitudes of the education and the speech groups, with the speech students evidencing a slightly more favorable attitude. Therefore, hypothesis three is rejected.

Table 14 is a report of the comparison of the speech group with the education group on the ATTS-A post-test. As indicated earlier, the attitude of the speech group changed in a negative direction and the attitude of the education group changed in a positive direction during the interval of courses involved. As a result of these shifts, it could be logically assumed that the attitudes of the two groups either would be more similar on the post-test than they were on the pre-test, or they would reverse their respective positions to the extent that they would differ even more.

An examination of the over-all mean scores indicates the latter occurred. The speech group went from an over-all pre-test mean of 80.77 to a post-test mean of 75.19. The education students went from pre-test mean of 79.94 to a post-test of 80.47.
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<tr>
<th>Item No.</th>
<th>Speech 401 Mean (I)</th>
<th>Educ. 408 Mean (II)</th>
<th>Difference (I-II)</th>
<th>Kolmogorov-Smirnov</th>
<th>Chi Square</th>
<th>Significance Level</th>
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<td></td>
<td>115.456</td>
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If the number of individual items is considered, it appears the two groups are more nearly similar on the post-test than they were on the pre-test. As indicated in Table 14, there is a significant difference in the means of the two groups on only eight items on the post-test as compared with a significant difference of twelve items on the pre-test. Further, the significance level of the difference on the eight items of the post-test is not as great as on the twelve items on the pre-test.

However, the significant differences between the two groups on the individual items on the post-test are all at the .025 level or beyond and all indicate a more favorable attitude on the part of the education students.

The eight items on the post-test on which there is a significant difference are the following:

3. Teaching is the most interesting of the professions. (The significance level of the differences between the two groups increased from .001 on the pre-test to .0005 on the post-test.)

4. Teaching tends to get one in a rut. (There was no significant difference between the groups on the pre-test on this item.)

5. Teaching is inspirational for the teacher. (Both groups dropped in mean response on this item.)

8. Teaching is a dull, uneventful life. (The two groups switched position on this item. The education group mean went from 1.80 to 1.53 whereas the speech group mean went from 1.41 to 1.93.)
11. Teaching develops one's leadership ability. (The two groups remained almost the same on this item.)

13. Teachers are the nation's leaders. (There was no significant difference between the two groups on this item on the pre-test.)

17. Dealing with youth tends to keep a teacher young, alert and active. (The relative positions of the two groups switched on this item. The education group mean increased from 2.84 to 3.76.)

19. The teaching profession has the best chance to develop good citizens. (There was no significant difference between the two groups on this item on the pre-test.)

The items on which there was a significant difference between the groups on the pre-test and not on the post-test are listed below. After each item the reason for and the direction of the change is given.

1. Teaching is the most necessary of the professions—The mean score for the speech group on the post-test increased—more favorable.

6. The teaching profession is twenty years behind the times—The speech group mean score increased—less favorable.

9. Teaching furnishes a chance for self expression—The mean score of the education group increased—more favorable.

10. Teaching is a lazy man's job—The mean score of the education group decreased (more favorable) and the mean score of the speech group increased (less favorable).
12. Teaching develops in one a cynical attitude toward life—The mean of the education students increased (less favorable) more than did the mean of the speech students.

14. Teachers are business and social misfits—The mean of the education students decreased (more favorable) and the mean of the speech students increased (less favorable).

18. Most teachers have one track minds—The mean of the education students decreased (more favorable) and the mean of the speech students increased (less favorable).

The reduction in the number of items on which there were significant differences between the means of the two groups on the post-test is reflected in the sum of the individual item chi-squares of the post-test and the pre-test. These were 115.456 and 238.312 respectively.

There is an apparent contradiction when the two groups are first compared on the basis of over-all score and then on the basis of scores on individual items. Using the over-all means as a measure of comparison, it appears that the groups were more similar in attitude on the pre-test than on the post-test as there was a difference in the over-all means of 1.33 on the pre-test and a difference in the over-all means of 5.26 on the post-test. Using the criterion of individual items as a comparison it appears that the two groups are more similar on the post-test than on the pre-test. There is a significant difference on the post-test on only eight items compared to a significant difference on twelve items on the pre-test. This apparent contradiction is explained in two ways.

One, some items on which there was significant difference between the means of the two groups in the post-test reflect a complete reversal
of the two groups showing an increase in the total mean score of the education group and a corresponding decrease in the total mean score of the speech group.

The second explanation is that there was a decrease in favorable attitude of the speech group on several items on which there was a significant difference between the two groups on the pre-test. This decline brought the scores of the two groups closely enough together on these items to make the difference non-significant. This would reflect a decrease in the number of items on which there was a significant difference and at the same time tend to increase the difference between the overall means of the two groups.

In summary, it can be observed that during the interval in which they were enrolled in their respective courses, the attitude of the speech students declined and attitude of the education students increased in respect to teaching in the public schools.

Hypothesis four states that there would be no relationship between the degree of dogmatism of the students and the amount and direction of their attitude change. This hypothesis was based on the relationship between cognition and belief as outlined above. The correlation coefficient reported in Table 15 between dogmatism scores and absolute attitude change was -0.08. This relationship is in the hypothesized direction but it is too low to be significant. Therefore, hypothesis four is accepted. Under the conditions of this study, no relationship between dogmatism and attitude change was established. Suggestions for additional investigation of this relationship is discussed in Chapter IV.
TABLE 15
CORRELATION COEFFICIENTS BETWEEN THE FACTORS USED TO TEST HYPOTHESIS IN THE STUDY

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<tr>
<th></th>
<th>Attitude Change</th>
<th>Dogmatism Score</th>
<th>ACT Social Studies</th>
<th>ACT Composite</th>
<th>High School Class Ranka</th>
<th>Age</th>
<th>High School Class Size</th>
<th>Accum. Point Hour (College)</th>
<th>Education 408 Grade</th>
<th>Parents Occupation</th>
<th>College Class</th>
<th>Type of High School</th>
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<td>-0.48</td>
<td>0.04</td>
<td>0.03</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.19</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The coding schemes described in Chapter I should be consulted before interpreting direction of correlation.

Numbers underlined indicate relationship at the following significance level:
- \( r = \pm 0.14 = 0.05 \) level
- \( r = \pm 0.18 = 0.01 \) level

A significance of \( \pm 0.05 \) indicates only five times out of 100 would an \( r \) of this magnitude occur by chance.
Hypothesis five states there will be no relationship between attitude change of students and their academic aptitude as indicated by the ACT. The correlation coefficients between attitude change and the ACT data were +.02 for the ACT social studies section and -.03 for the ACT composite score. With correlations this low, the hypothesis must be accepted and the conclusion drawn that under the conditions of this study, there was no relationship between attitude change and academic aptitude as measured by the ACT.

The rationale for this hypothesis was based on the assumption that students with higher academic aptitude would be more likely to experience a greater information gain and thus have more of a basis for changing their attitudes. Although there was no relationship established between attitude change and academic aptitude, the correlation coefficient between Education 408 grades and the social studies section of the ACT was .43. Although this correlation is too low for individual prediction, with an N=229 the relationship is significant at the .01 level of confidence.

The correlation coefficient between the composite score on the ACT and Education 408 grade is .48. This relationship is significant at the .01 level of confidence with an N=229. Although there is no relationship between attitude change and ACT scores, there is a relationship between knowledge gain as indicated by course grades and aptitude as indicated by the social studies and composite scores of the ACT.

Hypothesis six states there will be no relationship between academic achievement of students as indicated by their rank in their high school graduating classes and their attitude change. The rationale for this hypothesis, again, was based on the assumption that skill in
acquiring knowledge would furnish a greater potential for attitude change. The correlation coefficient between attitude change and high school class rank from Table 15 is .05. This is low enough to accept the hypothesis of no relationship.

The relationship between high school class rank and Education 408 grade was -.33. This relationship is significant beyond the .01 level with a N = 229. Performance in the education course is directly related to academic ability. The negative correlation as indicated by high school class rank coefficient is accounted for by the scheme used in indicating class rank. The highest rank is "1" and the lowest rank is "3." The course grade ranking is reversed with the highest rank "4" (a grade of "A") and the lowest rank is "0" (a grade of "E"—failing).

Hypothesis seven states there will be no relationship between the age of the students and their attitude change. The correlation between these two factors is .02 which indicates no significant relationship. Therefore, hypothesis seven is accepted. However, there were low but significant relationships between age and other factors.

There was a -.14 correlation between age and dogmatism—significant at the .05 level of confidence. This could be interpreted as a tendency for dogmatism to decrease from some point in the late teens, although no research discovered by the writer substantiates this. Another explanation could be that the older person who for one reason or another takes an introductory course in education tends to be the one who

?The r = -.33 between class rank and high school rank should be interpreted as a positive relationship in the sense that those who tend to rank higher in class rank also tend to rank higher in the course grade.
is less dogmatic. It has been the writer's experience that older students in the course appear to be less dogmatic. However, in view of Rokeach's findings of the inability of college professors to distinguish between high and low dogmatics, this observation must be suspect until empirically verified.

There are negative correlations between age and ACT social studies score (−.29), and age and ACT composite score (−.35). These correlations indicate a relationship significant at the .01 level of confidence. A possible explanation for this negative correlation might be that students who have not scored as well on the ACT do not decide to attend college upon graduation. However, after spending time outside of school they decide to try again. An examination of the correlation between these accumulative point-hour and age factors indicates a low negative correlation (−.05). Although this correlation is not significant, the negative direction indicates they tend not to do as well as the younger students in their college work over-all. However, the correlation between age and Education 408 grade is .00. Thus, there is no evidence to indicate that older students do better or more poorly in this course.

Hypothesis eight states there will be no relationship between students' attitude change and the size and type of school from which they graduated. Table 15 shows a correlation of .08 between attitude change and both the size and the type of school attended. This size correlation indicates no significant relationship, and the hypothesis of no relationship is accepted. An inspection of Table 15 reveals an

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interesting correlation significant at the .01 level (.18) between high school size and high school rank. Since high school class rank is indicated by a low number ("1" = highest rank) and high school size is indicated numerically—the higher the number the larger the school—+.18 indicates a negative relationship. From this relationship it might be concluded that the smaller schools were represented in the education course by students ranking higher in their respective classes than were the larger schools.

There is no indication that there is any difference between the academic ability of students who rank the same in their respective schools. The correlations between high school size and scores on the ACT social studies and the ACT comprehensive are .05 and .02 respectively. These are, in reality, negative correlations but they are not large enough to be significant.

The correlations between high school size and academic ability are indicated by performance in college classes and yield no significant relationship. The correlations between class size and accumulative point hour and class size and Education 408 grade are -.07 and .00 respectively. However, in the case of accumulative point hour, the relationship is a positive one as contrasted to the negative relationship shown on the ACT. Of course, the .00 correlation between high school size and Education 408 grade provides no information in terms of degree or direction of relationship.

When hypothesis eight is examined in terms of type of school, no significant relationship is established. This might indicate no actual significant relationship exists or it might indicate an inadequate
classification system was used in this study. The method used to assign scale values to the school was arbitrary and may have been inappropriate.

In any case, by the procedures used in this study the hypothesis that there will be no relationship between students' attitude change and the size and type of high school from which the students graduated is accepted.

Hypothesis nine states there will be no relationship between students' attitude change and their performance in an introductory course in education as indicated by their course grades. Table 15 shows the correlation between Education 408 course grade and attitude change is .09. This is too low to be significant, although the relationship is in the hypothesized direction. Therefore, hypothesis nine is accepted.

An inspection of Table 15 reveals a number of statistically significant correlations which are of interest in this study, however.

There is a correlation of -.23 between dogmatism and course grade. This correlation is very close to the correlations between dogmatism and the ACT social studies score (-.21), the ACT composite score (-.23), and the accumulative point hour (-.25). All of these indicate a relationship significant at the .01 level which suggests the higher dogmatic students tend to do more poorly than low dogmatic students by these indicators of academic performance.

The correlations between course grade and ACT social studies score (.44), ACT composite score (.48), high school class rank (-.33), and accumulative point hour (.69) are significant at beyond the .01 level.

\[ r = .69 \] is spuriously high, however. The Education 408 grade is included in accumulative point hour, therefore a relationship would ordinarily be expected.
These are not unexpected relationships as one would anticipate those who
evidence higher academic performance on other measures to register higher
performance in an education course.10

The correlation between Education 408 grade and college class is
significant and positive—.29. This is to be expected, also, as the
upperclassmen taking a freshman level course ordinarily would be expected
to perform somewhat better than freshmen. In this instance it would be
even more expected as the majority of the freshmen students in this study
were beginning their first quarter of college work.

Hypothesis ten states there will be no relationship between
students' attitude change and their performance in other college courses
as indicated by their grade point averages. The correlation of .07 indicated in Table 15 demands the acceptance of this hypothesis. A compar-
ison of the correlation coefficients between the Education 408 grade and
the various other factors in the table with the correlation coefficients
between the point hour and the same factors, shows a very strong similar-
ity between the two sets of correlations. In view of the .69 correlation
between the Education 408 grade and the accumulative point hours, the
similarity is not surprising. In view of this strong—in one case
identical—similarity, a discussion of these data would be redundant.
Therefore, the discussion of data for hypothesis nine will suffice for a
discussion of the data for hypothesis ten.

Hypothesis eleven states there will be no relationship between
the level of occupation of students' parents and the students' attitude

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10. This tends to refute a comment heard by the writer on innumer-
able occasions that the poorer students do better in this course than do
the better students.
change. The correlation between these two factors, as read from Table 15, is -.03. This correlation is low enough to justify the acceptance of the hypothesis. This low correlation may be due to an actual absence of relationship or it may be due to the rather gross values assigned to the parents' occupations. Perhaps a more refined weighting of occupation may have produced a more significant relationship. In any case, no significant relationship between parents occupation and attitude change was established using the procedures in this study.

Summary of Chapter III

Chapter III presented the results of the ATTS-A given to a group of speech students and to a group of education students at the beginning and end of a summer quarter at The Ohio State University. These data were compared and analyzed in terms of hypotheses relative to attitude change.

In addition to the ATTS-A data, Dogmatism scores and various academic and biographical data were collected on the education students. These data were analyzed for relationships in terms of hypotheses regarding attitude change. In addition, relationships not directly concerned with, but tangential to, the hypotheses were discussed.

Conclusions and recommendations for further research suggested by the analysis of the above data will be discussed in Chapter IV.
CHAPTER IV

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine to what extent a change in attitude toward teaching occurred among students taking an introductory course in education. A further purpose of the study was to examine what relationship existed between any attitude change and selected biographical, educational, and personality factors of the students.

Procedures

In order to accomplish these purposes, a scale (ATTS-A) was developed to measure attitude toward teaching and given to students enrolled in Education 408—titled "An Introduction to the Study of Education"—at The Ohio State University during the 1966 Summer Quarter. The ATTS-A was administered to the students during the first week of the quarter and again during the final examination period at the end of the quarter.

As a control, students in Speech 401—titled "Effective Speaking"—at The Ohio State University also were given the ATTS-A at the beginning of the 1966 Summer Quarter and again at the time of the final examination at the end of the quarter.

In addition to the ATTS-A, students in Education 408 were given Form E of Rokeach's Dogmatism Scale and the following data were obtained.
from the students' records:

1. Standard scores on the social science portion and the composite score of the ACT.
2. The student's rank in his high school graduating class.
3. The student's age.
4. The size and type of high school from which the student graduated.
5. The student's course grade in Education 408.
6. The student's accumulative grade-point average.
7. Class level of the student.
8. The occupations of the student's parents.

Results

Eleven hypotheses were formulated and tested, using the above data, with the following results:

1. Attitude toward teaching change in students will occur during the interval of a one-quarter, three credit-hour course in education—hypothesis accepted.

2. Attitude change will not occur in students during the interval of a comparable course in speech—hypothesis rejected.

3. There will be no initial differences in attitude between students enrolled in an education course and students enrolled in a course in speech—hypothesis rejected.

4. There will be no relationship between degree of dogmatism of students and the amount and direction of their attitude change—hypothesis accepted.
5. There will be no relationship between attitude change of students and their academic aptitude as indicated by the ACT—hypothesis accepted.

6. There will be no relationship between academic achievement of students as indicated by their rank in their high school graduating classes and their attitude change—hypothesis accepted.

7. There will be no relationship between the ages of students and their attitude change—hypothesis accepted.

8. There will be no relationship between students' attitude change and the size and type of school from which the students' graduated—hypothesis accepted.

9. There will be no relationship between students' attitude change and their performance in a course in education as indicated by their course grades—hypothesis accepted.

10. There will be no relationship between students' attitude change and their performance in other college classes as indicated by their grade-point averages—hypothesis accepted.

11. There will be no relationship between the level of occupation of students' parents and the students' attitude change—hypothesis accepted.

Findings Related to the Hypotheses

Attitude of students enrolled in Education 408 changed in both positive and negative directions. Some students became more favorable toward teaching and others became less favorable. Not only individuals, but the group as a whole changed in different directions on some aspects.
of attitude toward teaching as measured by the ATTS-A. As a group, however, the change was toward a slightly more favorable position.

The attitude change in students enrolled in Speech 401 also varied with the individual. However, as a group, the students moved toward a less favorable position on every aspect except one as measured by the ATTS-A. Over-all, there was a significant change in the group toward a less favorable attitude.

The Speech 401 students had a significantly more favorable attitude than the Education 408 students at the beginning of the quarter and a significantly less favorable attitude at the end of the quarter. The finding that the speech students, initially, had a more favorable attitude was contrary to expectations.

No relationships at a significant level were established between attitude change and the other factors examined in this study.

Conclusions

From the data examined, the following conclusions are drawn in relation to the purposes of the study:

1. Attitude change toward teaching occurred differently among students enrolled in an introductory course in education than among students enrolled in a course in speech. This difference tends to indicate that the attitudinal objectives of the education course were being met. Whether this was the result of the course or of other factors was not established.

2. No pattern of relationships was found to exist between degree of attitude change and types of students in terms of ability, background, and degree of dogmatism.
Related Findings and Recommendations
for Further Research

In addition to the major findings related to the hypotheses of the study, other relationships of interest were discovered.

Chief among these was the consistent negative relationship between dogmatism and all academic achievement indicators considered in the study.

There have been contradictory findings reported on the relationship of learning and dogmatism. Christensen found no evidence of a relationship between dogmatism and classroom learning in an introductory class in psychology. He concluded, however, that aptitude and dogmatism were independent. Ehrlich found, to the contrary, that dogmatism is inversely related to classroom learning in an introductory sociology class. However, he also concluded that academic aptitude and dogmatism were independent.

In another study, Zagona and Zurcher found a low (-.18) but significant correlation (at the .001 level) between dogmatism and academic aptitude measured by the verbal sub-test of the College Qualification Test.

The findings in the present study would seem to substantiate that there is a relationship between dogmatism and classroom learning and

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between dogmatism and academic aptitude. A possible explanation for the difference in findings in the various studies is that the usual technique used is to dichotomize groups into high and low dogmatics. Perhaps this procedure tends to miss some of the significant relationships in the intermediate groups. In order to determine if this occurs, a more thorough investigation of those who score in the intermediate ranges on the Dogmatism Scale is recommended.

The absence of findings of significant relationships between attitude changes and dogmatism could be attributed to the neglect of an important component of Rokeach's theory--that dealing with party-line change. He states "A 'party line' change is assumed to take place in a person if he changes a particular . . . belief as a result of some instruction emanating from his authority figure." In other words, a high dogmatic and a low dogmatic person may evidence identical change in attitude but for different reasons. The low dogmatic may change as a result of a logical examination of issues, whereas the high dogmatic changes because someone whom he views as an authority figure tells him to change. Therefore, in order to determine relationships between attitude change and dogmatism, the way in which the student views the information given must be investigated. Research into students' perceptions of teachers is recommended. It was found in this study that the speech students had an initially more favorable attitude toward teaching than did the education students. This suggests the need for research into the self-perceptions of the education students and into their motivation for becoming teachers.

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Rokeach, op. cit., p. 49.
Further research into possible causes of the difference in attitude change between students enrolled in education courses and in other courses is recommended. The design of the present study indicated a difference in attitude change between the two groups, but it did not establish a causal relationship between the changes and the courses involved. Additional studies designed to control environmental variables within the College of Education, the College of Arts and Sciences, other colleges within the University, and within campus sub-groups may prove fruitful in identifying possible causal relationships.

Studies involving attitude change related to student involvement, self-concept, and perception of various occupation also may prove of value in identifying attitudinal change causes. Such studies may be of great value if in-depth data are obtained on the subjects.

The present study should be replicated in order to establish the reliability of the findings. In addition, a longitudinal study is recommended to determine to what extent the attitudes and relationships indicated by the study vary over the period of the college career. A comparison of attitudes of the education students as college freshmen with attitude of the same students after student teaching or after a year of teaching experience may be of value.

A comparison of attitudes of students who drop out of education with those who become teachers may reveal crucial attitudes associated with retention in teacher education programs.

It has been observed by the writer that many students--particularly men--who graduate from the College of Education transfer into teacher education programs from other colleges of the University. An
investigation of the attitudes of these transfer students—when they enter and when they graduate from the College of Education—may reveal attitudes crucial in the retention of students in the teacher education process.

In summary, such investigations may identify characteristic attitudes of successful teachers—at various stages of their careers and preparation—which could play an important part in the selection, retention, and preparation of future teachers.
APPENDIX A

MR90-MULTIPLE REGRESSION

Purpose

This program is designed to perform the multiple regression analysis under the hypothesis

\[ y = b_0 + b_1x_1 + b_2x_2 + \ldots + b_kx_k \]

where the \( x_i \) are the observable independent variables, \( y \) is the observable dependent variable, and the \( b_i \) (regression coefficients) are the constants to be estimated.

Several sets of \( y \)'s may be used with the same set of \( x \)'s. The problems will be solved simultaneously and separate sets of solutions for the \( b_i \) will be obtained. If several separate regression problems are to be solved, they may be attacked consecutively and need only be separated by the appropriate control cards.

Normal output for MR90 includes the following items:

1. For the observable independent and dependent variables: sums, sums of squares, sums of cross products, means, standard deviations, unbiased covariances and correlations.

2. Associated with every set of \( b_i \)'s: the estimate of \( b_i \), standard deviation of \( b_i \), and the "t" ratio for the significance of \( b_i \).

3. Associated with every set of dependent variables: standard deviation of residuals, multiple correlation coefficient \( R \), \( R^2 \), and the F ratio for the significance of \( R \).
In addition to the normal output MR90 also provides the following optional outputs:

4. An option to stop the computation after the completion of item 1 of the normal output. This feature enables the user to obtain the correlations without completing the computation of the regression coefficients.

5. An option to test the hypothesis

\[ H_{i_1, \ldots, i_s} : b_{i_1} = \ldots = b_{i_s} = 0 \]

for any combination of subscripts \( i_1, i_2, \ldots, i_s \) chosen from the set \( 1, 2, \ldots, I \). Any number of hypotheses may be tested for a single regression problem.

6. An option for computing the residuals for every observation. However, this option is subject to the restriction that it cannot be used when testing multiple hypotheses.

All input data must be provided on cards in the required format (see section on data cards). However, if the data cards are punched in an IOH type format, they may first be processed by a special transformation program MRTR. This program transforms the data to the format required by MR90 which in turn reads the transformed data from a special tape. The user may also specify that the transformed variables be punched onto cards as well as written on tape. All results of MR90 are printed out and each output item will be specifically identified.
RESTRICTIONS

1. If $I =$ number of independent variables and
   $J =$ number of dependent variables, then
   $N = I + J \leq 53$ and $I \geq 1$ during time sharing.

   For non-time sharing operations a special MR90 program deck is
   available for which the maximum $N$ is 100.

2. The number of sets of observations, $M$, must be in the range
   $3 \leq M \leq 9999$, subject to the restriction that $M \geq 1 + 2$.

3. This program operates through the OSU System only.

USAGE

A. This program is a complete package containing its own input and
   output routines and is included on the OSU System Subroutine Library
   tape. A special 9 card driver deck (or a special transformation
   program deck MRTR) must be used to call in MR90.

   A typical card deck will consist of the following:

   1. 2 JOB ID cards (These cards include identification, job
      number, time, and page estimates.)

   2. 9 card driver deck (Includes the necessary file control cards,
      entry cards and system specification cards.)

   3. Setup card.

   4. Control Switch card.

   5. Data deck.

   6. Multiple hypotheses cards or accumulate sum tape card, if
      desired.

      Items 3 to 6 above may be repeated as many times as
      necessary if more than one job is to be processed.

   7. End Control Card.
The data and control cards mentioned above will be described in detail in later sections.

A programmer can also call MR90 from his own program if he provides the necessary file control cards (described in B below). The calling sequence is simply

\[
\text{CALL MR90}
\]

However, the computed results are not available to the programmer for use in his program.

B. Two physical tape units (4 programmer files) are used during computations. The file names are:

1. WSMFIL (B01) - Total output binary file.
2. RSDFIL (A01) - Input binary file.
3. WSDFIL (AO1) - Total output binary file.
4. RSDIN (B01) - Input binary file.

The necessary file control cards are included in the 9 card driver deck.

**ACCURACY**

To preserve accuracy all computations leading to the correlation matrix are done in fixed-point, double-precision arithmetic. However, the matrix inversion and ensuing computation of the regression coefficients are done in floating-point, single-precision arithmetic. Since an exact error analysis is not available for the floating-point computations, the following procedure is carried out. At the completion of the computation, the inverse correlation matrix \( C^{-1} \) is inverted, yielding \( (C^{-1})^{-1} \). This matrix, \( (C^{-1})^{-1} \), and the original correlation matrix \( C \) are then compared elementwise and the absolute value of the largest difference between
corresponding elements and its location are printed out as the last line of output in the form

\[ E(i,j) = x, xxxxxxxx\$^{\pm}xx. \]

This output provides an indication of the accuracy of the matrix inversion computation and, therefore, of the reliability of the regression coefficients and related outputs.

**OUTPUT PAGE ESTIMATE**

Let \( NP \) be the number of pages, then for

**Case 1.** \((I + J < 50)\)

For simple regression: \( NP = 4 + \frac{N(N+1)}{100} + J \)

For each multiple hypothesis add \( J \) pages.

For computing residuals add \( \frac{M\cdot P}{50} \) pages.

**Case 2.** \((50 \leq I + J \leq 94)\)

For simple regression: \( NP = 5 + \frac{N(N+1)}{100} + 2J \)

For each multiple hypothesis add \( J \) or \( 2J \) pages, depending on whether the reduced \( I \) is less than or greater than 50.

For computing residuals add \( \frac{M\cdot J}{50} \) pages.

**SETUP CARD**

This card provides the program with necessary information concerning the characteristics of the problem, e.g., the number of independent and dependent variables, and the number of decimal positions in each variable. It also enables the user to provide identification for his output listings.
The format for the setup card is as follows:

col.  1 : l
col.  2 : blank
cols. 3-6 : xxxx  number of observations (not checked by program)
col.  7 : blank
cols. 8-12 : Identification (used as output identification)
col.  13 : blank
cols. 14-15 : xx  number of independent variables (I)
col.  16 : blank
cols. 17-18 : xx  number of dependent variables (J)
col.  19 : blank
cols. 20-72 : D_1^D_2^...^D_k

D_k is the number of digits to the right of the decimal point in the \( k \text{th} \) variable. Each \( D_k \) must have a value less than or equal to six. The first blank after column 20 indicates the end of the setup card. If more than one card is necessary to hold the D's, a second setup card may be used. In the second setup card, columns 1 to 19 are punched exactly the same as in the first setup card, while the remaining D's are punched starting in column 20.

The first card of a data deck must be a setup card. However, if several problems are stacked together, each having the same number of variables with identical formats, then the data decks for the problems following the first need not be preceded by setup cards. Thus, in stacked problems setup cards are required only when the data for a given problem differs in format from that of the preceding problem.
CONTROL SWITCH CARD

Following the setup card and immediately preceding the data deck, a control switch card must be inserted. This card consists of a series of switches which indicate to the program which of the several optional outputs are desired. The format of the control switch card is as follows:

<table>
<thead>
<tr>
<th>col.</th>
<th>Switches</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2-6</td>
<td>not used</td>
</tr>
<tr>
<td>7</td>
<td>Data Transformation Switch</td>
</tr>
<tr>
<td>8</td>
<td>Punch Data Cards Switch</td>
</tr>
<tr>
<td>9</td>
<td>Save Data for Residuals Switch</td>
</tr>
<tr>
<td>10</td>
<td>Write Sum Tape Switch</td>
</tr>
<tr>
<td>11</td>
<td>Compute Regression Coefficients Switch</td>
</tr>
<tr>
<td>12</td>
<td>Compute Residuals Switch</td>
</tr>
<tr>
<td>13-72</td>
<td>not used</td>
</tr>
</tbody>
</table>

If column 7 = 0, this switch is not examined.

If more than one regression problem is being run in a single job then a control switch card must precede each data deck.
DATA CARDS

These cards contain the actual observed values of the independent and dependent variables. The format of the data cards is as follows:

col. 1 : 3

col. 2 : Card Number (Must be increasing if more than one card is required to hold an observation. 0 or 1 can be used as the initial value but blanks may not be used.)

cols. 3-6 : Observation Number (Must be increasing with a starting value > 0. No blanks are permitted in this field.)

col. 7 : Blank

cols. 8-11 : Identification (Not checked by program)

col. 13-72 : $\pm xx\cdots x + xx\cdots x + xx\cdots x \ldots$ Variables

$S_1$ $S_2$ $S_3$

cols. cols. cols.

1. $1 \leq S_k \leq 6$ (i.e., 1 to 6 columns per variable)

2. Signs must be punched.

3. The first blank after column 13 indicates the end of the card.

4. Numbers may not be split at the end of a card.

5. Independent variables are punched first; dependent variables last. More than one card may be required to record all variables of a single observation. All variables should be punched in the same order for every observation.

6. Each observation must begin on a new card.

7. All data is punched in integer form. Decimal points are not permitted on data cards. The position of the decimal point for each variable is specified on the setup card.

(For example, the variable $x_k = 12.237$ is punched as $+12237$.)
ACCUMULATE SUM TAPE CARD

This control card directs the program to accumulate all the sums that have been written on the sum tape thus far and to proceed as if these sums were computed from new data cards. If this accumulated sum is not to be included in a later accumulation of sums, then the clear sum tape switch must be on, i.e., it must be equal to 1. Whenever a clear sum tape switch is not zero, all the previously saved data for computing residuals will be cleared after the residuals have been computed for the regression equation of the accumulated data. The format of the Accumulate Sum Tape Card is as follows:

col. 1 : 5

cols. 2-8 : not used.

col. 9 : Clear Sum Tape Switch

0 : sum tape is not cleared after sums are accumulated.
1 : sum tape is cleared after sums are accumulated.

col. 10 : Write New Sum Tape Switch

0 : do not write new sum tape.
1 : write new sum tape.

col. 11 : Compute Regression Coefficients Switch

0 : do not compute regression coefficients; i.e., stop after computing correlation matrix.
1 : compute regression coefficients.

col. 12 : Compute Residuals Switch

0 : do not compute residuals.
1 : compute residuals.

cols. 13-72 : not used.
ERROR MESSAGES FROM MR90

1. SETUP CARDS INCOMPLETE

Upon encountering an incorrect setup card the program prints the above message and then skips over succeeding cards until it reads another setup card. Therefore, if several regression problems are stacked, the ones with incomplete setup cards will be passed over while the correct ones will be run.

2. SUM OF SQUARES TOO LARGE

This message indicates that MR90 has generated a sum of squares exceeding present MR90 handling capacity. The program skips over succeeding cards until it encounters another setup or control switch card.

3. NEGATIVE OR ZERO VARIANCE

This message indicates that a negative or zero variance has been generated. This condition is caused by one or more variables being constant for all observations and makes it impossible to complete the regression analysis. The program skips over succeeding cards until another setup or control switch card is read.

4. INCORRECT CARD

This message indicates that one of the data cards or control cards is punched incorrectly. The image of the incorrect card is printed below the error message. The program skips over succeeding cards until another setup or control switch card is read.

5. FOLLOWING X (i) DELETED DUE TO SINGULARITY OF CORRELATION MATRIX

\[ I = xx, xx, \text{ etc.} \]

This message is caused by the generation of a zero pivot element during the matrix inversion process and indicates the correlation matrix is singular and cannot, therefore, be inverted. The program deletes the variables which yield the zero pivots, inverts the reduced correlation matrix, and proceeds on with the regression analysis.

6. WRONG DECK FOR TRANSFORMATION

This message occurs when the MR90 driver deck is used when column 7 of the control switch card is non-zero, indicating that MRTR should be used.
FORMULAE USED IN REGRESSION ANALYSIS

NOTATION

\( x_1, x_2, \ldots \) observable independent variables.
\( y_1, y_2, \ldots \) observable dependent variables.
\( y_j, x_i \ldots \) \( j \)th observation of the \( j \)th dependent and \( i \)th independent variables.

\( I = \) number of independent variables.
\( J = \) number of dependent variables.
\( N = I + J \)
\( M = \) number of sets of observations.

SAMPLE MEANS:

\[ \bar{x}_i = \frac{1}{M} \sum_{i=1}^{M} x_i \]

SAMPLE SUMS OF SQUARES:

\[ SS_i = \sum_{i=1}^{M} x_i^2 \]

SAMPLE SUMS OF SQUARED DEVIATIONS:

\[ s_i^2 = \sum_{i=1}^{M} (x_i - \bar{x}_i)^2 \]
\[ s_y^2 = \sum_{i=1}^{M} (y_i - \bar{y})^2 \]
SAMPLE SUMS OF CROSS DEVIATIONS:

\[ S_{ij} = (x_i - \bar{x}_i)(x_j - \bar{x}_j) = x_i x_j - \frac{1}{M} x_i x_j \]

UNBIASED STANDARD DEVIATIONS:

\[ i = \sqrt{\frac{1}{M-1} (x_i - \bar{x}_i)^2} = \sqrt{\frac{S_i^2}{M-1}} \]

UNBIASED COVARIANCES:

\[ i_j = \frac{1}{M-1} (x_i - \bar{x}_i)(x_j - \bar{x}_j) = \frac{S_{ij}}{M-1} \]

CORRELATION COEFFICIENT:

\[ r_{ij} = \frac{S_{ij}}{S_i S_j} \]

(The output of \( r_{ij} \) includes \( i = 1, 2, ..., N \) and \( j = i, i+1, ..., N \))

Elements of inverse correlation matrix are denoted by \( r_{ij}^* \).

\[ \beta_i = \frac{r_{ij} r_{ij}^*}{i \neq 0}, \]

\[ j=1 \]

\[ M \]

\[ \beta_0 = \frac{1}{S_y} \]
APPENDIX B

OHIO STATE QUESTIONNAIRE ANALYSIS

PURPOSE

To tabulate and summarize the results of questionnaires and surveys of the multiple choice variety.

RESTRICTIONS

1. OSQA is a FAP program with SCATRAN subroutines and will operate during non-time-sharing periods only.

2. For restrictions on size of data and preparation of the data deck see Appendixes B and C.

3. This program may be called by a 4-card driver deck obtainable from the Computer Center Librarian.

USAGE

This program handles multiple sets of data (classification groups) under the control of data control cards (see Appendix B). For each classification group it is possible to get a frequency count and percentage response for each response level for each question. In addition it is possible to compare the responses of two groups to the same question. If such a comparison is desired one can obtain for each item on the questionnaire: (1) the mean answer of both groups and the difference of the means, (2) the Kolmogorov-Smirnov statistic, and (3) the Chi-Square approximation and its significance level.

This program can process one and two column data under a variety of output formats (see Appendix D).

TIMING

<table>
<thead>
<tr>
<th>Participants</th>
<th>Cards</th>
<th>Groups</th>
<th>Items</th>
<th>Formats</th>
<th>Timing (execution)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1050</td>
<td>2100</td>
<td>6</td>
<td>46</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>12</td>
<td>24</td>
<td>2</td>
<td>43</td>
<td>7</td>
<td>0.9</td>
</tr>
</tbody>
</table>

In general, the time consuming part of OSQA is in preparing output formats and the only dependence on the number of participants is the card reading time.
STORAGE

14,328 locations + 1,329 locations in upper common + subroutines IOH, RDsid, SEP, SUR and WRSOD.

SOURCE

Western Data Processing Center, UCLA. John R. B. Whittlesey modified by D. Fleckner

DEFINITIONS (Appendix A of OSQA)

- \( i_{-}\text{max} \) -- Item number (question number) of last item scored on questionnaire (e.g. if one desires 5 questions to be tabulated then \( i_{-}\text{max} = 5 \)).

- \( j_{-}\text{max} \) -- The maximum response level over the entire set of questions (e.g. if \( i_{-}\text{max} = 2 \) and question 1 allows 0, 1, 2, 3, or 4 as responses and question 2 allows 0, 1, or 2 as responses, then \( j_{-}\text{max} = 4 \)).

- \( N \) -- Number of cards per participant.

- \( j_{-}\text{top}(k) \) -- The maximum response level for the \( k \)th question.

INPUT DECK (Appendix B of OSQA)

I. The input deck consists of the following:

A. Header card (required)

- Header card (required)
- Indicator card(s) (optional)
- Program ready card (required)

B. Data deck

- Classification spacer card 1 (optional)
- Data cards 1
- Classification spacer card 2 (optional)
- Data cards 2
- 
- 
- Classification spacer card \( n \) (optional)
- Data cards \( n \)
- End program card (required)

II. A detailed description of the input deck follows:

A. Header deck
1. HEADER CARD (required)

Col. 1  "1" punched (required).

Col. 2  N

Col. 3  The numbering pattern of the question:

"0" punch for card number and column number 1-07, 1-08, ..., 11-72, ..., G-72.

(See also C.-2.);

"1" punch for consecutive 1, 2, ..., 999.

Col. 4-6  The number of the last column to be scored in accordance with column 3.

Assume column 4-6 = XYZ and M column data is processed:

Case 1  Col. 3 had "0" punch:

X = number of last card, YZ = (M*last item) + 6
(e.g. 232 for 2 column data means last item to be scored is the 13th item of 2nd card).

Case 2  Col. 3 has "1" punch:

XYZ = number of last item to be scored (e.g. 076 means 76 questions are to be processed per participant).

Col. 7-8  j-max.  If column 7 = 0, then the data will be assumed to be 1 column.

Col. 9  Determines if classification groupings are desired.

"0" or blank if classification spacer cards used;

"1" punch if all data is one classification.

Col. 10  Determines how comparisons between groups should be made.

"0" punch if comparison between each group and next one;

"1" punch if comparison between the "first group" and all others.
Col. 11-12 Item "cut-off" value. This is not used at present, leave blank.

Col. 13 Determines if blanks should be ignored.

"1" punch causes blanks to be flagged as errors. Otherwise blanks are ignored.

Col. 14 "O" punch.

Col. 15-18 Not used at present.

Col. 19-54 Determines the output format(s).

"1" punch column y means selection of format y;

"j" punch in column y means selection of format y, but zeros should be omitted from tabulation;

"b" in column y means format y not selected.

Col. 55-72 Not used at present.

2. INDICATOR CARD(S) (optional)

Col. 1 "2" punch (required).

Col. 2-5 Not used.

Col. 6 Indicator card number: 1 = first card, ..., N = last card.

Col. 7-72 j-top(k) where k = column of punch.
(e.g. in first indicator card, j-top(7) = 5 means the maximum response level for the item in column 7 is 5).

If no indicator cards are provided, j-top(k) = j = max for every k.

3. PROGRAM READY CARD (required)

Col. 1 "8" punch (required).

Col. 2-72 Project identification (optional).

Columns 2-6 of project ID are printed as the heading of the output formats.
B. Data deck

1. CLASSIFICATION SPACER CARD

Col. 1-6 999998 (required).

Col. 7 "1" punch identifies the following data cards as a "first group." The first classification card encountered defines the first "first group" and need not have a "1" punch in column 7.

Col. 8-72 Group identification.

(Column 7-12 of previous group ID will be printed for each item under format 24.)

2. DATA CARDS

Col. 1-5 Unique participant identification. Any numeric or alphabetic punch is acceptable except the combination 99999.

Col. 6 Card number for participant: 1 = first card, ..., N = last card.

Col. 7-72 Item scores.

3. END PROGRAM CARD

Col. 1-6 999999 (required).

AVAILABLE FORMATS (Appendix D of OSQA)

<table>
<thead>
<tr>
<th>Format number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Percentage responses for present group using one column data.</td>
</tr>
</tbody>
</table>
| 24 | Statistical measure between groups (for each item):

1. Means and difference of means

2. Kolmogorov-Smirnov Test\textsuperscript{1}

3. Chi-Square approximation and significance level\textsuperscript{2} |


APPENDIX C

MILLER'S ORIGINAL SCALES

<table>
<thead>
<tr>
<th>Scale Value</th>
<th>Q Value</th>
<th>Form A</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.7</td>
<td>1.8</td>
<td>1. To strive to teach well is to pattern after Christ, who was the Master Teacher. There can be no higher calling.</td>
</tr>
<tr>
<td>10.2</td>
<td>1.6</td>
<td>2. Teaching is one of the most necessary of the professions.</td>
</tr>
<tr>
<td>10.0</td>
<td>2.3</td>
<td>3. Teachers are the nation's leaders.</td>
</tr>
<tr>
<td>9.8</td>
<td>2.0</td>
<td>4. The teaching profession has the best chance to develop good citizens.</td>
</tr>
<tr>
<td>9.7</td>
<td>2.0</td>
<td>5. Teaching develops the mind.</td>
</tr>
<tr>
<td>9.7</td>
<td>1.7</td>
<td>6. Teaching increases one's ability to meet people socially and intellectually.</td>
</tr>
<tr>
<td>9.7</td>
<td>2.6</td>
<td>7. I believe that teaching is the most interesting of the professions.</td>
</tr>
<tr>
<td>9.5</td>
<td>2.1</td>
<td>8. Dealing with youth tends to keep a teacher young, alert, and active.</td>
</tr>
<tr>
<td>9.4</td>
<td>2.8</td>
<td>9. Teachers determine the moral standard of a nation.</td>
</tr>
<tr>
<td>9.1</td>
<td>2.3</td>
<td>10. Teaching is inspirational.</td>
</tr>
<tr>
<td>9.0</td>
<td>1.8</td>
<td>11. Teaching develops leadership.</td>
</tr>
<tr>
<td>8.9</td>
<td>2.3</td>
<td>12. Teaching requires more intelligence than most professions.</td>
</tr>
<tr>
<td>8.8</td>
<td>2.0</td>
<td>13. Teaching furnishes a chance for self-expression.</td>
</tr>
<tr>
<td>8.8</td>
<td>2.7</td>
<td>14. Teaching experience is valuable as an opening to broader and more advanced positions.</td>
</tr>
<tr>
<td>8.7</td>
<td>2.2</td>
<td>15. Teachers are the molders of society.</td>
</tr>
<tr>
<td>6.7</td>
<td>2.9</td>
<td>16. Teachers do very well considering the small amount of co-operation they get from school boards.</td>
</tr>
<tr>
<td>5.8</td>
<td>2.6</td>
<td>17. The best teachers are those recruited from the industries.</td>
</tr>
<tr>
<td>5.8</td>
<td>2.2</td>
<td>18. The most effective teaching is by private tutoring.</td>
</tr>
<tr>
<td>5.2</td>
<td>2.5</td>
<td>19. Teachers are for the most part just average college students.</td>
</tr>
<tr>
<td>5.1</td>
<td>2.2</td>
<td>20. Too many teachers do other work on the side.</td>
</tr>
<tr>
<td>5.0</td>
<td>2.9</td>
<td>21. Teachers should not be taken too seriously.</td>
</tr>
<tr>
<td>5.0</td>
<td>2.1</td>
<td>22. Students would learn more if the teacher followed the textbook more closely.</td>
</tr>
<tr>
<td>4.9</td>
<td>2.6</td>
<td>23. Teachers depend too much on textbooks.</td>
</tr>
<tr>
<td>4.6</td>
<td>2.4</td>
<td>24. Teaching is too often used by women merely as a stepping stone to marriage.</td>
</tr>
<tr>
<td>4.2</td>
<td>2.4</td>
<td>25. Teaching does not draw persons with a practical turn of mind.</td>
</tr>
<tr>
<td>4.1</td>
<td>1.9</td>
<td>26. Most teachers have exalted ideas of their own importance.</td>
</tr>
<tr>
<td>Scale Value</td>
<td>Q Value</td>
<td>Form A</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td>3.9</td>
<td>2.3</td>
<td>27. Too many instructors show no interest in subjects they teach.</td>
</tr>
<tr>
<td>3.7</td>
<td>2.9</td>
<td>28. The importance of teaching is overestimated.</td>
</tr>
<tr>
<td>3.6</td>
<td>2.7</td>
<td>29. Teaching is an occupation requiring only mediocre ability.</td>
</tr>
<tr>
<td>3.5</td>
<td>2.7</td>
<td>30. Teachers are exceedingly egotistical.</td>
</tr>
<tr>
<td>3.3</td>
<td>2.5</td>
<td>31. Teaching is merely a routine job.</td>
</tr>
<tr>
<td>3.2</td>
<td>2.6</td>
<td>32. Most teachers get by on sheer bluff rather than knowledge.</td>
</tr>
<tr>
<td>3.0</td>
<td>2.9</td>
<td>33. Teaching is just another means of existing.</td>
</tr>
<tr>
<td>3.0</td>
<td>0.5</td>
<td>34. I believe that teaching tends to get one in a rut.</td>
</tr>
<tr>
<td>2.9</td>
<td>2.8</td>
<td>35. Teaching develops a cynical attitude toward life.</td>
</tr>
<tr>
<td>2.7</td>
<td>2.8</td>
<td>36. Most teachers have one-track minds.</td>
</tr>
<tr>
<td>2.6</td>
<td>2.5</td>
<td>37. The teaching profession is twenty years behind the times in their methods.</td>
</tr>
<tr>
<td>2.4</td>
<td>1.9</td>
<td>38. Teachers are overbearing and boresome.</td>
</tr>
<tr>
<td>2.4</td>
<td>2.3</td>
<td>39. Teaching is a dull, uneventful life.</td>
</tr>
<tr>
<td>2.3</td>
<td>2.4</td>
<td>40. Teaching is a short cut to old age.</td>
</tr>
<tr>
<td>2.3</td>
<td>2.7</td>
<td>41. Most teachers are so careless in their dress that they look like bums.</td>
</tr>
<tr>
<td>2.0</td>
<td>2.2</td>
<td>42. Teachers are social and business misfits.</td>
</tr>
<tr>
<td>2.0</td>
<td>1.9</td>
<td>43. Teaching is a lazy man's job.</td>
</tr>
<tr>
<td>1.8</td>
<td>1.9</td>
<td>44. Teaching leads to insanity more often than other kinds of work.</td>
</tr>
<tr>
<td>1.3</td>
<td>1.2</td>
<td>45. Teachers are parasites.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Form B</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.5</td>
</tr>
<tr>
<td>10.3</td>
</tr>
<tr>
<td>10.1</td>
</tr>
<tr>
<td>9.8</td>
</tr>
<tr>
<td>9.6</td>
</tr>
<tr>
<td>9.6</td>
</tr>
<tr>
<td>9.5</td>
</tr>
<tr>
<td>9.4</td>
</tr>
<tr>
<td>9.3</td>
</tr>
<tr>
<td>9.2</td>
</tr>
<tr>
<td>9.1</td>
</tr>
<tr>
<td>9.0</td>
</tr>
<tr>
<td>8.9</td>
</tr>
<tr>
<td>8.8</td>
</tr>
</tbody>
</table>

1. Teaching is one of the best means of serving humanity.  
2. Teaching has more influence on a nation than any other profession.  
3. The teaching profession performs more actual good for mankind than any other.  
4. Teaching develops personality and character.  
5. Teaching is one of the greatest stimulants to mental activity.  
6. The intellectual standards of a country depend upon its teachers.  
7. Teaching develops independence and a sense of responsibility.  
8. Teaching school is an education for the teacher as well as the pupil.  
9. Teaching requires more than mere knowledge.  
10. Teaching offers exceptional opportunities for making friends.  
11. Teaching is a genteel and cultured profession.  
12. The teaching profession ranks high socially.  
13. Teaching is the oldest and most honored profession.  
14. Teaching is the best means of self-expression.
<table>
<thead>
<tr>
<th>Scale Value</th>
<th>Q Value</th>
<th>Form B</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.6</td>
<td>1.7</td>
<td>15. Much self-satisfaction can be derived from teaching.</td>
</tr>
<tr>
<td>6.8</td>
<td>3.0</td>
<td>16. Teaching is fairly well paid for the training required.</td>
</tr>
<tr>
<td>6.1</td>
<td>2.1</td>
<td>17. Good pupils make the good teachers.</td>
</tr>
<tr>
<td>5.8</td>
<td>1.7</td>
<td>18. Women make the best teachers.</td>
</tr>
<tr>
<td>5.2</td>
<td>2.8</td>
<td>19. Teachers expect too much of the students.</td>
</tr>
<tr>
<td>5.1</td>
<td>2.2</td>
<td>20. Too many teachers like to teach, but can't.</td>
</tr>
<tr>
<td>5.0</td>
<td>2.8</td>
<td>21. Teachers are too prone to give their own ideas and not enough facts.</td>
</tr>
<tr>
<td>4.9</td>
<td>2.8</td>
<td>22. Most teachers do not understand their pupils.</td>
</tr>
<tr>
<td>4.9</td>
<td>2.7</td>
<td>23. Teachers are too idealistic.</td>
</tr>
<tr>
<td>4.7</td>
<td>1.7</td>
<td>24. Teachers take themselves too seriously.</td>
</tr>
<tr>
<td>4.3</td>
<td>2.5</td>
<td>25. Teachers have too much of a superiority complex.</td>
</tr>
<tr>
<td>4.2</td>
<td>1.8</td>
<td>26. Teaching is not often done wholeheartedly.</td>
</tr>
<tr>
<td>4.1</td>
<td>2.1</td>
<td>27. Teachers do not take enough interest in their jobs.</td>
</tr>
<tr>
<td>3.8</td>
<td>2.8</td>
<td>28. Teaching offers few opportunities for advancement.</td>
</tr>
<tr>
<td>3.8</td>
<td>2.9</td>
<td>29. Teachers do not consider the opinions of others.</td>
</tr>
<tr>
<td>3.5</td>
<td>2.5</td>
<td>30. Teachers get into a rut quicker than persons in other professions.</td>
</tr>
<tr>
<td>3.4</td>
<td>2.9</td>
<td>31. Teaching becomes boresome in a short time.</td>
</tr>
<tr>
<td>3.3</td>
<td>2.4</td>
<td>32. Most teachers are unfit for such a responsible position.</td>
</tr>
<tr>
<td>3.0</td>
<td>2.9</td>
<td>33. Teaching is not a healthful profession.</td>
</tr>
<tr>
<td>2.9</td>
<td>2.9</td>
<td>34. Teaching isolates a person from the rest of the world.</td>
</tr>
<tr>
<td>2.8</td>
<td>2.6</td>
<td>35. Teaching is a monotonous occupation.</td>
</tr>
<tr>
<td>2.6</td>
<td>2.7</td>
<td>36. Teaching routine is drudgery.</td>
</tr>
<tr>
<td>2.5</td>
<td>2.0</td>
<td>37. Teaching stifles ambition.</td>
</tr>
<tr>
<td>2.5</td>
<td>1.0</td>
<td>38. Modern methods of teaching require nursemaids, not teachers.</td>
</tr>
<tr>
<td>2.4</td>
<td>2.4</td>
<td>39. Modern teaching is inferior to that of twenty years ago.</td>
</tr>
<tr>
<td>2.3</td>
<td>2.2</td>
<td>40. Teaching has no future.</td>
</tr>
<tr>
<td>2.2</td>
<td>2.1</td>
<td>41. People teach only when they find nothing else to do.</td>
</tr>
<tr>
<td>2.0</td>
<td>2.1</td>
<td>42. The moral standard of the teaching profession is very low.</td>
</tr>
<tr>
<td>1.9</td>
<td>1.8</td>
<td>43. The intellectual level of modern teachers is very low.</td>
</tr>
<tr>
<td>1.8</td>
<td>1.8</td>
<td>44. Failures in other lines of business usually become teachers.</td>
</tr>
<tr>
<td>1.3</td>
<td>1.1</td>
<td>45. The teaching profession as a whole is untruthful and unreliable.</td>
</tr>
</tbody>
</table>
APPENDIX D

ATTITUDE TOWARD TEACHING, FORM A

(Teaching Opinionnaire)

The following is a survey of opinions of people in general about public school teaching. Many different opinions are represented and you may yourself agree with some and disagree with others. You may find yourself uncertain about some. Using the system below, indicate what your personal feeling about the statement is. Place the appropriate number in the space to the left of the item.

(1, I disagree very strongly; 2, I disagree; 3, I am uncertain 4, I agree; 5, I very strongly agree)

____1. Teaching is the most necessary of the professions.
____2. Teaching is just another means of existing.
____3. Teaching is the most interesting of the professions.
____4. Teaching tends to get one in a rut.
____5. Teaching is inspirational for the teacher.
____6. The teaching profession is twenty years behind the times in its methods.
____7. Teaching increases one's ability to meet people socially and intellectually.
____8. Teaching is a dull, uneventful life.
____10. Teaching is a lazy man's job.
____11. Teaching develops one's leadership ability.
____12. Teaching develops in one a cynical attitude towards life.
____13. Teachers are the nation's leaders.
____14. Teachers are business and social misfits.
____15. Teachers are the molders of society.
____16. Teachers are parasites.
____17. Dealing with youth tends to keep a teacher young, alert, and active.
____18. Most teachers have one-track minds.
____19. The teaching profession has the best chance to develop good citizens.
____20. Teachers are overbearing and boresome.
APPENDIX E

ATTITUDE TOWARD TEACHING, FORM B

(Teaching Opinionnaire)

The following is a survey of opinions of people in general about public school teaching. Many different opinions are represented and you may find yourself agreeing with some and disagreeing with others. You may find yourself uncertain about others. Using the system below, indicate what your personal feeling about the statement is. Place the appropriate number in the space to the left of the item.

(1, I disagree very strongly; 2, I disagree; 3, I am uncertain 4, I agree; 5, I agree very strongly)

1. Teaching has more influence on a nation than any other profession.
2. Teaching isolates a person from the rest of the world.
3. Teaching is one of the greatest stimulants to one’s mental activity.
4. Teaching is a monotonous occupation.
5. Teaching is an education for the teacher as well as for the student.
6. Modern teaching is inferior to that of twenty years ago.
7. Teaching develops one’s personality and character.
8. Teaching is routine drudgery.
10. The intellectual level of modern teachers is very low.
11. Teaching develops independence and a sense of responsibility.
12. Teaching has no future.
13. The teaching profession performs more actual good for mankind than any other.
14. Failures in other lines of business usually become teachers.
15. The intellectual standards of a country depend upon its teachers.
16. The teaching profession on a whole is untruthful and reliable.
17. Teachers determine the moral standards of a nation.
18. Teaching stifles ambition in the teacher.
19. Teaching is one of the best means of serving humanity.
20. Teaching today is more like babysitting than teaching.
BIBLIOGRAPHY

Books


**Periodicals**


Unpublished Materials

Course Syllabus, Education 408. Columbus, Ohio: College of Education, The Ohio State University, Summer, 1966.