

THE REVISION AND DEVELOPMENT OF A
CLOTHING PRETEST, FOR APPRAISING
COMPETENCIES OF FIRST YEAR
CLOTHING STUDENTS

By

JANE C. BERRY

Bachelor of Science in Home Economics

Southwest Texas State College

San Marcos, Texas

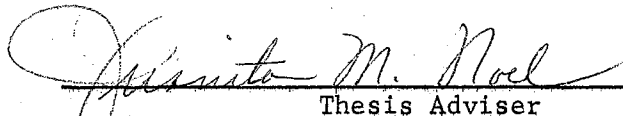
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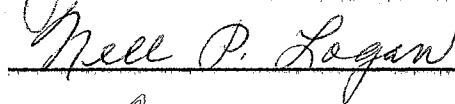
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Thesis Approved:


Thesis Adviser


Nell P. Logan


Loren MacVicar

Dean of the Graduate School

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CHAPTER I

INTRODUCTION

Evaluation is closely associated with many of the perplexing problems facing educators today. Recently published data from the United States Office of Education's annual survey of 1962 college enrollment shows over a fifty per cent increase in the total number of women entering American colleges and universities during a five-year period, beginning in 1957 (28). No longer is the problem one of attracting students to pursue college study. Today's colleges and universities are faced not only with the difficult task of identifying those students who will benefit from instruction, but they are also responsible for providing the capable student an environment in which potentiality can be fully developed. Evaluation is clearly a part of the solution to both.

Regardless of similarities in instruction for a given course at the secondary level, students entering college tend to show a wide range of differences in aptitude, interest, achievement, and skill. Various evaluative techniques and instruments are often employed in determining the beginning college student's qualifications and previous experiences so that greater individualization of instruction may be provided.

Certain courses at the college level are required of the majority

of beginning students because of the relevance of content to all areas of study. Due to the heavy enrollment of beginning students in certain basic courses, the Committee on Measurement and Evaluation of the American Council on Education has recognized and voiced a need for establishing some basis by which students can be sectioned into smaller units.

In most colleges there are certain courses which almost all freshmen and sophomores are required to take because content and purposes are considered essential. The purpose of some courses is to provide important and basic general background which students might not acquire if left to their own initiating in selecting courses. In other courses the major purpose is to develop skills and acquire knowledge needed for subsequent courses. The result is that more students are enrolled in certain courses during the first two years than can readily be accommodated, thus, there is a need to establish some basis for sectioning students into smaller units (3).

If placement or sectioning of students is to be accomplished on the basis of homogeneity, evaluative techniques must be initiated by which abilities and backgrounds required for success in the course can be determined. The transition from high school to college may be more effectively made when reliable placement procedures are used in accelerating those students having attained some of the major objectives of the college program. According to Furst (15), one of the most urgently felt needs in higher education today is acceleration of the well-qualified student.

A perusal of recent research projects conducted in some areas of home economics clearly indicates a growing need in the field for the development of evaluation instruments which can be effectively used in placing beginning students in courses appropriate to their ability level. This study concerns the revision, development, and use of an

evaluation instrument for determining certain competencies of the beginning clothing student.

Statement of the Problem

Prior to 1959, all beginning home economics students at Oklahoma State University were required to enroll in the basic clothing course regardless of the major area of study chosen. Such a requirement proved highly inhibiting to those students having had considerable training and experience in clothing construction and selection in high school homemaking classes and in 4-H Club work. In 1959, an existing departmental pretest was revised by Walsh (29) in an attempt to provide an objective evaluation instrument that could be used in discriminating the experienced from the nonexperienced clothing student. The test revised by Walsh has been used by the Department of Clothing, Textiles, and Merchandising at Oklahoma State University, for grouping students enrolled in the basic clothing course into homogeneous sections on the basis of scores made on the pretest. Though no exemptions from the basic course were made, students earning the highest scores on the pretest were placed in a section where clothing construction was entirely omitted.

The clothing pretest developed by Walsh was revised in a study completed in 1961, by Witt (32). Pretest revisions made in the study by Witt, however, were never incorporated into the instrument used to section beginning clothing students. The clothing pretest currently in use in the Department of Clothing, Textiles, and Merchandising, therefore, has not undergone revision since its adoption more than four

years ago. Changes in the curriculum, course content and offerings, and changes and developments within the field of clothing have contributed to the present need for revision of the clothing pretest.

Need for the Study

Curriculum changes effective at the beginning of the fall semester, 1963, include elimination of the current basic clothing course required of all beginning students entering the College of Home Economics at Oklahoma State University. The basic clothing course will be replaced by Clothing, Textiles, and Merchandising 103, clothing construction. A recent addition to the clothing curriculum is Clothing, Textiles, and Merchandising 213 which relates to the social, psychological, and economic aspects of clothing. No construction is included in the course format. Upon completion of Clothing, Textiles, and Merchandising 103 and 213, students having selected Clothing, Textiles, and Merchandising as their major field of study will be enrolled in flat pattern design. The course in flat pattern design requires a thorough understanding of construction principles and considerable skill in applying those principles.

In view of the factors mentioned, interest has been expressed by the Clothing, Textiles, and Merchandising Department in the development of an objective paper and pencil evaluation instrument which can eventually be used as [?] a criteria by which students exhibiting a strong degree of proficiency in clothing may be exempted from Clothing Construction 103. Those students exhibiting outstanding ability in construction and related areas would be permitted to enroll in Clothing,

Textiles, and Merchandising 213 in which construction is omitted. Such students would need competencies in construction which would enable them to enroll in flat pattern design following completion of Clothing, Textiles, and Merchandising 213.

Pretesting has been recognized as one means by which beginning clothing students can be sectioned according to ability in the first clothing course. The same techniques may well be applied in exempting students who show exceptional abilities in knowledge and application of clothing construction from the beginning clothing construction course. Success in both situations will be dependent upon the validity of the pretesting instrument used.

The problem in this study was to revise the written clothing placement pretest currently being used at Oklahoma State University, Department of Clothing, Textiles, and Merchandising. The study was divided into the following sub-problems:

1. To examine the unrevised clothing pretest and to determine through usage the specific needs for revision.
2. To revise the pretest on the basis of data obtained from actual testing sessions.
3. To study the relationship between the student's performance on the revised pretest and other relevant criteria. (i.e., performance on the original pretest, reading skills, and final course grade.)
4. To examine the revised instrument and determine the need for further revision.

Assumptions

The following assumptions are basic to this study:

1. Education is a process through which the behavior of individuals is changed.
2. Evaluation is a process of determining the changes occurring in human behavior.
3. A variety of different evaluative techniques and devices are needed in appraising human behavior.

Definition of Terms

Clarification of terms used throughout the study follows:

Correlation is a mathematical interpretation used in determining the degree of relationship between two variables. A positive correlation indicates that the two variables are related to the extent that one variable tends to increase as the other variable increases. A negative correlation indicates an inverse relationship in which an increase in the value of one variable is paralleled by a decrease in the value of the other variable. A significant correlation in this study is one in which the test of the hypothesis that the population correlation coefficient is equal to zero leads to a rejection of that hypothesis. Correlation coefficients in this study were determined significant or not significant by Table A.13, "Significant Values of r," of the publication by Steel and Torrie (25).

Difficulty level of an individual test item refers to the percentage attempting who answer the item correctly.

Discriminating power is the ability of a test item to distinguish

between those pupils achieving well and those achieving poorly.

Original and unrevised pretest are used synonymously in reference to the clothing pretest used by the Department of Clothing, Textiles and Merchandising at Oklahoma State University.

Paper-and-pencil tests are generally objective instruments in which the subject responds by writing a response to a given question or statement.

Pretests are evaluative instruments used prior to instruction to determine the status of a student with regard to the extent of knowledge, aptitude, or achievement.

Recognition and practical test items are used interchangeably in the study to refer to test items in which the subject is required to select or identify from actual exhibits the correct use of certain principles.

Revised pretest is a term used in referring to the clothing pretest following the addition, rearrangement, and deletion of certain items.

Scope of the Study

The study is limited to the revision and development of the written clothing pretest currently used in the Department of Clothing, Textiles and Merchandising at Oklahoma State University. The function of the test will be to provide information which can be utilized in placing beginning clothing students in sections according to ability level. The test does not propose usefulness as an exemption instrument.

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1. To examine the unrevised clothing pretest and to determine through usage the specific needs for revision.
2. To revise the pretest on the basis of data obtained from actual testing sessions.
3. To study the relationship between the student's performance on the revised pretest and other relevant criteria. (i.e., performance on the original pretest, reading skills, and final course grade.)
4. To examine the revised instrument and determine the need for further revision.

Participants in the study were freshmen students enrolled at Oklahoma State University in the beginning clothing course during the fall semester, 1962, and spring semester, 1963. One hundred and eighty-one students took part in the fall semester, 1962, pilot study prior to revision of the pretest. Seventy-six students were included in the study following revision of the clothing pretest.

Procedures of the Study

The lack of an adequate and up-to-date device for evaluating the competencies of entering clothing students was recognized as a problem area by members of the Clothing, Textiles, and Merchandising staff. A study of the unrevised pretest and review of literature available on pretesting further revealed the need for the present study.

Permission and cooperation in conducting the study was obtained from the Department of Clothing, Textiles, and Merchandising at Oklahoma State University. The writer was employed during the fall semester, 1962,

and spring semester, 1963, as a graduate assistant instructing students in the beginning clothing courses. Hence, many opportunities were available for observing and working with the subjects included in the study.

During the fall semester, 1963, a pilot study was conducted in an attempt to obtain data which could be used as a guide in revising the original clothing pretest. Findings of the pilot study provided a basis upon which the present study was made. Conferences with staff members and an examination of the objectives for the curriculum revealed areas in which additions to the test were needed.

A study of test construction procedures was made. The clothing placement pretest was revised according to the findings of the pilot study, information obtained from staff members, and the results of the examination of curriculum objectives. Five coordinated written and practical questions were added to the revised pretest in an attempt to determine the beginning student's knowledge of certain fundamental clothing construction principles, and to appraise the student's ability in recognizing application of the same principles in actual usage.

The revised pretest was examined by staff members teaching beginning clothing. Deletions and further revisions of the pretest were made according to the suggestions and criticisms offered.

The revised clothing pretest was administered to seventy-six beginning clothing students during the spring semester, 1963. The pretests were scored, responses analyzed, and data statistically treated. Conclusions were drawn and recommendations for improving the pretest through continued research are suggested.

Chapter I has included a statement of the problem and a presentation of the need for the present study. Also presented in Chapter I

were assumptions, definition of terms, scope of the study, and an outline of procedures followed in the study. A review of literature relevant to the study is presented in Chapter II. The results and implications of the pilot study, procedures involved in the revision, and development and administration of the clothing placement pretest are described in Chapter III. The results of the test administration and statistical treatment of data are presented in Chapter IV, and the conclusions and recommendations are outlined in the final chapter.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Evaluation is intimately involved in all phases of planning and executing the school curriculum. Regardless of the simplicity or complexity of the overall aims and objectives of education, it is the process of evaluation which helps to assure that all activities are contributing to the attainment of preconceived goals. Evaluation does not occur in the absence of foresight and capable planning.

Educators are beginning to regard the evaluation process in its broadest sense. In this perspective, it is frequently viewed as a means by which the degree and quality of student learning can be improved through assessment and appraisal of the quality of instruction. Probably one of the most common educational objectives in American education today is the acquisition of information or knowledge (7). Knowledge in itself, however, is of little significance until it is utilized in formulating judgments and decisions. The frequent reference to evaluation as a goal implies the development of attitudes, knowledge, and abilities which will enable one to engage in the evaluating process (13).

Complexities encountered in the assessment of human intelligence,

personality, and achievement have led to the development of a variety of instruments and devices, each designed to determine some specific property of human behavior. It was not until after the completion of the Eight-Year Study over twenty years ago, that instruments were introduced for determining functional and relatively intangible outcomes of learning. Techniques and devices for measuring procedures involved in and products resulting from certain skill performances and other aspects of the total behavior of the individual were developed along with the paper-and-pencil evaluative tests (16).

The importance of evaluation and measurement has increased in significance for educators. Techniques no longer reflect only the developments in educational philosophy and psychology, but evaluation methods are increasingly being used to provide the evidence for outlining the future course that education will take.

Evaluation in Home Economics

Prior to 1930, the standardized tests available in home economics were almost entirely designed to measure factual knowledge. The trend acknowledging the measurement of changes in behavior and attitudes brought with it the development of new instruments for measuring such diverse things as sewing ability, quality of foods prepared by students, and attitudes toward homemaking activities. Since most of the instruments are either out of print, out of date, or are presently unavailable, educators in the field of home economics are forced to supplement the use of standardized tests with informal objective tests and other evaluation techniques.

Evaluation Techniques in Clothing

Interest in objective-type evaluation instruments for the field of clothing has been evident for many years. Scales for measuring hand and machine sewing were available as early as 1919, and were followed by the development of charts and score cards for diagnosing specific construction deficiencies (9, 27). Later developments in the area included the cooperative development of a series of tests suitable for the college level by the American Home Economics Association and the Educational Testing Service. Included in the series was a test in textiles and clothing (4).

Teachers in the field of clothing have often believed that the results from paper-and-pencil tests revealed only a part of the total accomplishment. In areas emphasizing knowledges and understandings, the results from written tests have not always been highly correlated with actual performance (16). For this reason, a recent trend in the area of clothing has been to utilize a performance test in supplementing other measures of achievement.

Performance tests are those tests requiring the use, and often the manipulation, of physical objects and the application of physical and motor skills in situations not limited to written and oral responses (16). Instruments and techniques used in determining performance have been classified by Gerberich (16) as object tests, performance measures, and product evaluations. A summary of the characteristics of each of the three types follows.

Object tests are often referred to as identification or recognition tests because the student is asked to identify or recognize some object

or specimen presented in actual form or in photographs, sketches, or other media. The visual, auditory, and touch senses may be employed in making the appropriate judgment. This form was employed in the study by Steelman (26) and in the present study.

Performance measurement is accomplished by observing the behavior of the subject as some task is undertaken. A check list, timing instrument, or other appropriate device is used in recording significant points of the performance.

Product evaluation is frequently employed to determine the characteristics of the completed product and the techniques used in its production. Quality scales, rating scales, score cards, and counting and measuring techniques are usually employed. Performance measurement and product evaluations are the forms most frequently employed in practical clothing tests.

The trend toward increased use of the performance test in clothing is clearly evident in the discussion of the studies which follow. Despite the increased use of performance instruments in the field of clothing, few studies are available which give support to the validity of the performance test. Gerberich comments on the use of the performance test by stating:

While performance and other types of manipulative tests have been widely used in certain educational fields, such as the industrial arts and home economics, the practical reliability of many of these devices has not been very satisfactory (16).

In speculating on the reason for the lack of reliability of the performance test, the same writer concludes that:

. . . a part of this difficulty arises from the fact that too many of the better-known paper-and-pencil testing techniques

have been uncritically borrowed and used without the necessary technical and administrative modifications required for effective testing in the specialized field (16).

Clothing Placement Devices Used in Other Institutions

The placing of students in the proper courses or sections in homogeneous groupings is clearly a problem relevant to the instruction of the beginning clothing course at college level in many institutions of higher learning. The search for criteria by which students can be grouped according to ability level has led to a consideration of achievement tests, ability, and other factors. Placement at too high a level is considered as undesirable as placement at too low a level.

Pretests are frequently used at the college level to discover the competencies which pupils already possess as a result of previous school and out-of-school experiences. According to Remmers and Gage (22), pretest results can be used to plan the emphasis in instruction and to show when certain parts of the course may be omitted. When well constructed, pretests may also serve to stimulate interest, indicate the kind of achievement that may be expected, and reveal areas of strength and weakness so that learning efforts can be appropriately directed.

Because of the variety of different learning experiences and curriculums possible in the beginning course in clothing and textiles, departments interested in establishing a placement criteria have developed their own clothing placement tests. A review of the development and use of placement tests in clothing and textiles, prior to this investigation follows.

Study at Iowa State College

Saddler (23) conducted an investigation at Iowa State College in 1945, which was directed toward the development of an instrument which could be used as a basis for predicting students' ability in the elementary clothing construction course at that institution. The instrument devised was composed of a paper-and-pencil and a practical section.

In an attempt to assess the value of previous experiences in clothing construction, Saddler constructed a chart whereby an experience score could be obtained for each student by giving numerical value and weights for each garment made in college, high school, at home, and whether the construction was done under supervision or alone. The coefficient of correlation between the experience scores and scores on the paper-and-pencil section of the test was .53. The correlation between the experience scores and the scores on the practical section of the test was .54. From the correlations computed, Saddler concluded that an experience score used with other factors could be of value in placing students in elementary clothing construction.

The result of the comparison between the simple regression and the multiple regression using the paper-and-pencil section and the practical section of the test, was highly significant. This led Saddler to conclude that better individual prediction could have been made by using the paper-and-pencil and practical sections of the test together rather than by using either section alone. It was suggested that a study be made of other factors which could be of value in predicting students' ability in the elementary clothing construction course (23).

Study at the University of Minnesota

Bray (8) reported a study made at the University of Minnesota in 1947. This investigator developed a pencil-and-paper test for use in the clothing department at Macdonald Institute in Guelph, Ontario, Canada. The test was composed of one hundred and fifty objective items, most of which were planned to test students' ability to apply knowledge in specific situations. The test was used as a pretest and as a retest in 1947. Revisions were made and the test administered again in 1948, at the beginning of the school year for the purpose of grouping students with similar abilities, and at the end of the year for measuring achievements. Bray concluded that the test was a valid device to use in classifying students in beginning clothing classes, and that the test was more discriminating when used as a pretest than as a retest. Furthermore, Bray stated that better results could be attained if some other device were used in addition to the pencil-and-paper test (8).

Study at Purdue University

Wright (33) undertook a study at Purdue University in 1949, in order to determine what effect previous clothing construction work had on students' achievement in a freshman clothing construction laboratory at the college level. Achievement was based on knowledge, skills, and attitudes, as measured by objective pretest-retest, actual construction processes, and use of a questionnaire and an attitude scale.

Reliability of the written pretest-retest was determined by the Spearman-Brown prophecy formula to be .91.

From the data obtained in the study, Wright drew the following

conclusions:

1. The correlation between course grades and previous experience indicates that previous experience is a factor in achievement.
2. The amount and type of previous experience in clothing construction will have an effect on student attitudes and achievement.
3. Homogeneous groupings of advanced, intermediate and beginning students will have differing attitudes in relation to the course (33).

Study at West Virginia University

Davis (12) conducted a study at West Virginia University in 1952, in order to determine the value of the Cooperative Test in Textiles and Clothing as a predictive and placement measure. It was assumed that the Cooperative Test in Textiles and Clothing and the Iowa State College test were valid, and that one could obtain some basis for evaluating the instrument as a placement and predictive device by correlating future grades with the placement test scores.

Data for the study were obtained from clothing placement test scores of freshmen during the period, 1948 to 1951, student profile sheets, and scholastic records of students enrolled in home economics. The study included information obtained from one hundred and thirty-three students. Correlations between placement test scores with ACE percentile rank, course grades and vocabulary were computed. From the data, Davis inferred that: (1) there appeared to be a noticeable tendency for the placement test score to parallel the percentile rank made on the ACE psychological examination; (2) there was apparently a greater relationship between the placement test and the ACE percentile rank than between the placement test and the grade received in clothing

and textile courses; (3) by studying the mean grades of students who were exempted from the elementary clothing course and those who were not exempt, the difference of one letter grade tended to indicate that the placement tests were valid ones for exempting students from elementary home economics.

On the basis of the findings of the study, Davis recommended that:

1. the Cooperative Test in Textiles and Clothing be continued as a placement device for students in clothing.
2. the clothing items and textiles items be scored separately to show in what areas or area the student is weak or strong.
3. students be exempt from elementary textiles on the basis of a high placement test score on the textiles section.
4. perhaps in the near future, students might be given credit hours for the courses from which they were exempt, making it possible for superior students to progress more rapidly (12).

Study at the University of Colorado

In 1954, West (31) investigated the influence of high school homemaking on achievement in the beginning clothing course at the University of Colorado. West also sought to determine if majors in home economics made higher grades than non-majors in the same course. The study included seven hundred and eleven students enrolled in the beginning clothing course from 1944 to 1953. The following characteristics of the sample which may have influenced achievement in college clothing were identified: over one-half were non-majors; almost one-half had no previous homemaking in high school; and graduates, majors, and non-majors had approximately the same amount of high school homemaking, but in each group about fifty per cent had none.

From the findings West drew the following conclusions:

1. High school homemaking is a factor in achievement in college clothing.

2. There seemed to be a definite relationship between the amount of high school homemaking and achievement in college clothing.
3. There was some indication that high school achievement, as shown by rank in the study, was as important a factor as number of years of high school homemaking on achievement in college clothing.
4. Majors did not make higher grades than non-majors in college clothing, but the graduates did make higher grades in college clothing.
5. The stability and consistency shown by the graduate group in every category analyzed indicated that there were factors other than high school scholastic achievement, achievement in high school homemaking and number of years of high school homemaking which influenced achievement in college clothing (31).

Study at Southern Illinois University

According to Collins (10), pretests had been given to beginning clothing students at Southern Illinois University for several years with somewhat unsatisfactory results. Dissatisfaction with the instruments used stemmed from: failure of the test to cover subject matter adequately; difficulty in interpreting and using the tests with ease; and the amount of time consumed in administering and grading the test. In 1955, a practical instrument was administered which required students to do actual construction work. Because of difficulty in scheduling, only sixty-six of the ninety students who registered for the clothing course took the two-hour examination. Under these circumstances, Collins believed that the test was of little value.

Collins proposed to formulate a clothing pretest which would cover the subject matter included in the beginning clothing course more adequately than had other instruments used previously. Efforts were made to improve the scoring procedures so that the test could be quickly and

easily scored, and deficiencies identified for the purpose of placing students with similar needs in the same section.

The pretest included a written and practical section. Although Collins did not administer the device, she concluded that it could be used in placing students in sections according to areas of deficiency, aiding teachers in planning course work based on student needs, and indicating to students taking the test the subject matter and skills they were expected to acquire in the beginning clothing course (10).

Study at New Mexico State University

The study completed by Hoskins (19) in 1959, represents the first recorded attempt to develop a clothing pretest which could be used at more than one institution. Five colleges and universities in New Mexico offering home economics in their curriculum were included in the study. Each school assisted in the study by formulating generalizations relating to clothing construction which were used as a guide in developing the test items. Test items were organized in three areas: principles of art as applied to the complete costume, principles of pre-construction processes, and principles of construction processes. Items were apportioned in relation to the amount of emphasis placed in each area.

The pretest was given to a group of high school girls who were comparable to the group for whom the instrument had been devised. The tests were scored, and means, standard deviations, and coefficients of correlation were computed. Hoskins believed that the test was valid and reliable. Furthermore, Hoskins suggested that the instrument be used for placement and possible exemption; for increasing student motivation; and for determining the amount and kind of emphasis to place

on course work. It was recommended that a practical test accompany the written pretest (19).

Study at South Dakota State College

Semeniuk (24) completed a study in 1961, in which an objective pretest was devised to be used in testing for individual and group achievement prior to the beginning clothing course at South Dakota State College. The instrument contained one hundred and sixteen multiple-choice and true-false items. Semeniuk administered the test to eighty-eight students at the beginning of the winter quarter, 1960. The data, including tabulation of scores, difficulty index, and coefficient of reliability, led Semeniuk to conclude that the pretest was valid to some degree in reflecting students' past clothing experiences and in predicting the subsequent performance in the beginning course.

From the information and data obtained in the study, Semeniuk suggested that: the pretest be given in its original form to incoming freshmen home economics students in order to determine individual and group level of achievement; test items be examined and the poorer ones revised in order to increase the discriminating value; and a practical test be given in combination with the pretest if the test results are to be used in sectioning students (24).

Clothing Placement Tests at Oklahoma State University

The first recorded study in clothing pretesting at Oklahoma State University was made in 1959, by Walsh (29). An outdated pretest which

had been constructed by a former faculty member was used as a guide in developing a new clothing pretest.

Test items were based on ten objectives taken from the Oklahoma Homemaking Education Resource Material for Clothing and Grooming, a guide used by teachers in planning the secondary school program. The pretest, labeled a diagnostic achievement test, was used for placement in the beginning course in Clothing, Textiles, and Merchandising at Oklahoma State University. Areas covered by individual test items included the study of art principles as they related to clothing construction; elementary knowledge of textiles; pattern selection, use, and adaptation to individual needs; care and use of the sewing machine; and knowledge of construction procedures and techniques.

Students in a graduate seminar assisted Walsh by making suggestions for improving the content and arrangement of test items. The test items were also evaluated by members of the Clothing, Textiles, and Merchandising faculty, and revisions and corrections were incorporated in the instrument.

Walsh did not administer the pretest, but concluded that the most effective way to insure having a better pretest was to use the instrument, study the results, and make improvements (29).

In 1961, Witt (32) conducted a study in which revisions were made to the Walsh pretest and a performance test developed. Both devices were designed to appraise the competencies in clothing of beginning freshmen in four areas: (1) knowledge of selection, construction, and care of clothing; (2) ability to apply principles in the selection and construction of clothing; (3) level of achievement in using manipulative

skills in the construction of clothing, and (4) level of achievement in using judgmental skills in the selection and construction of clothing.

Individual test items were based upon ten objectives common to the secondary clothing programs in Mississippi and Oklahoma, and to the beginning clothing courses at Mississippi State College for Women and Oklahoma State University. Practical and written instruments were administered to freshmen clothing students enrolled at both institutions during the school year, 1960-1961.

Reliability for the written pretest was .74, determined by a coefficient of internal consistency. Reliability of the performance test, determined by the split-half method, was questionable because of the use of subjective judgment. From the analysis of data, Witt drew the following conclusions:

1. Responses to the questionnaire-check and the wide range of scores on both written and practical test revealed that students entered college with varied clothing competencies.

2. Low correlations of scores between various competencies evaluated in the study seemed to indicate that either a high or low rating on one competency did not assure one of a comparable score on another competency.

3. There was a lack of consistency between the previous clothing experiences of students and the scores they made on the written and practical tests. Witt indicated that further investigation was needed before attempting to predict a student's performance on one competency from the score made on another related competency (32).

The increasing use of performance instruments in the field of

clothing pretesting led Gould (17) to investigate the relationship between student performance on written and practical tests. Gould hypothesized that a pretest could be developed which would differentiate between students with a high and low degree of skill in clothing construction.

A sub-hypothesis relevant to the study was that there would be no significant relationship between scores made by students on the performance pretest and on the paper-and-pencil pretest, indicating that success on one test could accurately predict success on the other.

Gould's study was limited to the development of a performance test which was to be used in conjunction with a paper-and-pencil instrument for placement in the basic clothing course at Oklahoma State University. The study also included a correlation of scores made on the performance test with scores made on the paper-and-pencil pretest.

Nine practical problems were devised, three of which were patterned after those of the Witt (32) study. Twenty-four students participated in a pilot study designed to determine the revisions needed, if any, in the original test. The revised test was given to seventy-seven students enrolled in four sections of the basic clothing course during the spring semester, 1963. Students in the four sections had been grouped according to scores made on a pencil-and-paper test prior to the beginning of the semester.

A coefficient of rank correlation of .70 was calculated, using the scores on the paper-and-pencil test as the independent variable and the scores on the performance test as the dependent variable. The correlation indicated that forty-nine per cent of the variability on

the performance test was associated with the paper and pencil test.

Furthermore, Gould found that fifty-three per cent of the students scored higher on the paper-and-pencil test than on the performance test, while forty-four per cent scored higher on the performance test than on the paper-and-pencil test. Three per cent of the students scored the same on both tests. Gould concluded from the correlation coefficient of .70 and from the preceding statistics that the scores on the two tests were related to some degree, but that a high score on one test did not insure a high score on the other test. Gould recommended that further studies be conducted to improve the performance test (17).

A study was conducted in 1963, by Steelman (26) in the Department of Foods, Nutrition and Institution Administration. A written and practical pretest based on the goals of the beginning food course at Oklahoma State University was constructed to determine students' ability to apply principles of food preparation; to recognize accepted procedures in the preparation and service of food; to use critical thinking and judgment in relation to different phases of foods; and to determine attitudes toward food. The written section of the pretest consisted of one hundred multiple-choice questions.

Steelman commented that laboratory tests were normally performance tests and were therefore subjective. Adjustments were made in the multiple-choice test form to be used in the practical section of the food pretest. Items were developed so that numbered alternatives to written questions or problems could be placed on tables in the laboratory in the form of foods, equipment, or photographs of procedures. Students selected the alternative believed to be most suitable for the

item and filled in the blank under the corresponding number on the answer sheet.

Forty-four questions or problems were included in the practical test. Reliability of the theory section of the pretest was found to be .83, while reliability of the laboratory section was .59. Seventy-seven per cent of the practical pretest items were discriminating, as compared to seventy-six per cent of the items on the written section of the test.

In commenting on the limitations of the practical section of the pretest, Steelman notes that one criticism of the test is that student's actual skills are not evaluated. The researcher believed that it was impossible for students to develop skills in the classroom laboratory. Steelman also believed, however, that it was possible for students to learn methods and procedures for developing skills, but that without practice outside the laboratory, one course in food preparation would not insure the student of skills.

Steeleman concluded by expressing the belief that students who were able to identify proper methods of procedure, a standard product, and the appropriate equipment for specific tasks possessed the necessary experiences to be exempted from the beginning food preparation course, provided the student could also make a grade of B or above on a written test (26).

Evidence from the preceding studies emphasizes the importance of continued research in the area of clothing pretesting. It is recognized that a variety of evaluation procedures and techniques are needed in assessing the competencies in clothing of beginning students. Thus,

continuing efforts to establish the validity of evaluative devices appear imperative.

CHAPTER III

METHOD OF PROCEDURE

The problem undertaken in this study was a revision of the written clothing placement pretest used in the Department of Clothing, Textiles, and Merchandising at Oklahoma State University. The four sub-problems identified in the study were: (1) an examination of the unrevised clothing pretest and identification of specific needs for revision; (2) the revision of the pretest on the basis of data obtained from administering the pretest; (3) a study of the relationship between the student's performance on the revised pretest and other relevant criteria, including performance on the original pretest, reading skills, and final course grade; and (4) a study of the revised instrument with emphasis on identifying areas requiring further revision. Chapter III describes the methods used in investigating the first two sub-problems. The study of the relationship between student performance on the pretest and other criteria, and a study of the data collected by use of the revised instrument are dealt with in the following chapter.

The Pilot Study

The study conducted by Walsh (29) in 1959, resulted in the development of the evaluation instrument which has been used in placing beginning students in homogeneous sections of the first clothing course at

Oklahoma State University. Although Walsh attempted to establish content validity of the test items by comparing each item with established objectives, authoritative opinion, and pertinent resource material, no attempt was made to test the instrument with a group representative of that for which it was designed. In concluding the study, Walsh indicated an awareness of the elements necessary for improvement of the instrument. She states:

The writer does not submit the pretest as a flawless instrument. There is much room for improvement. The most effective way to insure having a better test is to use the one now developed, study the results and offer criticisms and suggestions for improvements and then continue to use their successors (29).

The revisions of the Walsh pretest made by Witt (32) were not integrated into the instrument used to section beginning clothing students. One of the first steps taken in the Witt study, however, was to administer the revised pretest to freshmen clothing students at Mississippi State College for Women and at Oklahoma State University in order to identify those test items which were no longer discriminating. The item analysis revealed that many items were nondiscriminating at both institutions. The rank order of discrimination differed slightly (32).

A pilot study was planned for the fall semester, 1962. The investigation was essential in gathering first-hand information on the use of the unrevised pretest. No data from past pretesting sessions were available for analysis. Thus, it seemed essential to first identify specific needs for revision before altering the instrument.

The unrevised clothing pretest was administered to a group of one hundred and eighty-one first year clothing students during the fall semester, 1962, for the purpose of:

1. Obtaining responses, verbal and nonverbal, from students

taking the pretest in a controlled situation.

2. Collecting data which could be used in:
 - a. Examining the range of scores made by students in a controlled situation.
 - b. Analyzing the separate items of the test to determine each item's contribution to the ease or difficulty of the test.
 - c. Noting consistency or lack of consistency in the number of responses made to test items.
3. Noting possible irregularities in the method used in scoring the test.

The responses of the one hundred and eighty-one students participating in the pilot study were divided into two groups. Time did not permit an analysis of the responses of all students participating in the pilot study. Forty-nine students enrolled in the basic clothing course, which the writer was instructing, were selected as the primary subjects for the pilot study. Performance of the remainder of students on the pretest was not considered in the item analysis, but was included in the analysis of scores and scoring procedures.

The pretest was administered to the forty-nine students at the second class meeting of the fall semester, 1962. The purpose of the pretest was described as part of a study to assist the clothing department in the revision and development of effective pretests which could be used in placing beginning students in courses according to ability. It was clearly stated that performance on the pretest would not affect the grade or permanent record of any student. All students were encouraged to perform at their highest level.

A time block of one hour was allowed for the test. The time element and controlled testing environment were viewed important factors in the results obtained since no specified time allowance had previously been established for the pretest. Enrollment procedures made the administration of the pretest in a controlled situation impossible. Usually the test was taken by students either individually or in small groups, and with few restrictions imposed upon the amount of time that could be devoted to the pretest. The pretest had been administered by individuals having little or no training in either the clothing or testing fields.

One of the apparent shortcomings of the Walsh pretest was that no provision was made for scoring. As a result, the instrument has been scored in several ways since its adoption. In scoring the pilot study tests, the credit-for-correct response method was used since it represented the method accepted by staff members as producing the most valid results.

During the period in which the pretests were given to the one hundred and eighty-one students, two characteristics were observed: (1) Students worked from fifty to sixty minutes to complete the test. Less than ten per cent completed the pretest in fifty minutes. All were able to complete the pretest within sixty minutes. (2) The frequency with which students asked for interpretations of certain test items was tabulated. Seven test items brought a total of forty-six inquiries for interpretation.

Analysis of the pretest scores revealed a mean score of sixty-one and five-tenths per cent for all students participating in the pilot study.

Discrepancies in the use of the credit-for-correct response method of scoring were noted. Many questions required the student to respond by choosing an unspecified number of items that were correct. Frequently students checked all items, whether correct or incorrect, and received credit for the items.

In clarifying the lack of valid scoring procedures, a tabulation of excessive responses made by forty-nine students was made to point up the distortion resulting in scoring. Four test items requiring only one response from each student were given fifteen excessive responses. The excessive responses were considered correct in determining the student's score. The seriousness of the shortcoming in scoring is accentuated when it is remembered that students previously had been sectioned or grouped according to ability on the basis of scores on the pretest.

An item analysis was conducted in an attempt to determine the difficulty and discriminating power of each test item. Difficulty level refers to the per cent who correctly answer each test item. The ability of each test item to distinguish between the achievers and non-achievers is termed discriminating power (2).

Theoretically, a good test question will be answered correctly by more superior than average students. More average than poor students will make correct responses to the same item. When equal percentages of good and poor students answer a test item, it is considered non-discriminating. Using the responses made by the high and low twenty-seven per cent of forty-nine first year clothing students, difficulty of each of the ninety-one test items was computed using the formula suggested by Ahmann and Glock (2).

Thirty-nine and six-tenths per cent of the test items had a difficulty level between forty and seventy per cent. Twenty and eight-tenths per cent of the test items had a difficulty level above seventy per cent. Thirty-nine and six-tenths per cent of the items had a difficulty level below forty per cent. The recommendation is frequently made that only test items with mid-range levels of difficulty be included in objective achievement tests (2).

The difficulty level of each test item will influence how well the item functions in discriminating between poor and superior students. One authority considers any discriminating value above .40 to be good; values between .40 and .20 to be satisfactory; and values between .20 and zero to be poor (2). Using this criteria, eighteen and seven-tenths per cent of the unrevised pretest items had satisfactory discriminating power; one and one-tenth per cent of the items had good discriminating power; and eighty and two-tenths per cent had poor discriminating power.

Results of the item analysis and information obtained through administration of the pretest were recorded. Discriminating items were used as a basis for revising the pretest.

From data obtained in the pilot study, the following conclusions were drawn:

1. When administered under controlled conditions, the range and average scores on the pretest for one hundred and eighty-one beginning clothing students tended to be somewhat similar.
2. Certain test items appear to be lacking in clarity as evidenced by the number of verbal inquiries and nondiscriminating items.

3. Many items add nothing of significance to the test since they were either answered correctly or missed by a large percentage of both poor and superior students.
4. A reliable method of scoring would reduce the inconsistencies in the responses made to test items, and would likely provide a more accurate appraisal of what the students know.

Revision of the Pretest

The first step taken in revising the clothing pretest was to construct a table of specifications based on the objectives which were to be covered by the evaluation instrument. Behavioral outcomes and subject-matter areas were listed so that questions would be included from each area on the pretest. By using this method, it was possible to control the amount of emphasis placed on different areas of the test.

The test devised by Walsh (29) consisted of multiple-choice items with varying numbers of options. In some items more than one of the options for a given question was correct. The pilot study revealed only eighteen and seven-tenths per cent of the test items to have good discriminating power, thus indicating the need for a closer examination of the test form used.

Multiple-choice form is considered by Bean (5) to be "the most valuable tool in objective testing." One of the principle advantages of the multiple-choice type item is its flexibility which allows a wide variety of materials to be used in test form. The multiple-choice item can be used to measure the degree to which a pupil is able to recall specific information, as well as to determine the degree to which he can apply certain principles in a given situation (2).

Ahmann comments on the importance of the multiple-choice type test item by stating that:

If it were not for the fact that the multiple-choice test item is relatively difficult to build, it would probably have replaced most of the other types of objective test items. At the present it is the most important type of objective test item and will likely continue in this role (1).

Though multiple-choice test items are not the complete solution to the difficulties involved in testing, they offer many distinct advantages over other test forms. One of the limitations of the multiple-choice form which tends to restrict its use is the difficulty encountered in construction. Few test makers are aware of the important contribution the incorrect responses or distractors make to the test. Since one of the chief purposes of testing is to provide a basis for grouping students in keeping with their levels of comprehension, test items should be constructed in such a manner that those students with some knowledge of the material score higher than those who are naive. Students who thoroughly understand the essentials of the course should be able to earn significantly higher scores than those with only an average degree of achievement. Such a situation does not result if the student is able to select the correct answer through elimination of ridiculous or remote possibilities in the incorrect choices (30). Ahmann and Glock (2) also believe that many pupils arrive at the correct answers to multiple-choice items by the same process, without possessing the knowledge or understanding inherent in the test item.

A test proposed to discover how much a person knows and understands about certain ideas, procedures, and techniques should require the student to think and to reason in answering the questions. The value of

the multiple-choice type item in accomplishing this purpose is summarized by Weitzman, Ellis, and McNamara:

Tests, it should be obvious, may serve to inform us both as to the extent of the student's ignorance and also the nature of inaccuracies or misconceptions he has acquired. The student is forced to reveal these things only if careful planning goes into the construction of the less desirable choices in test items.

. . . the greatest amount of the time and effort devoted to the construction of multiple-choice tests should properly be with reference to the incorrect alternatives. Stated briefly, a good multiple choice test is one which contains the right "wrong" answers (30).

Weaknesses in the choice of distractors or wrong answers of the unrevised pretest were revealed when the pretest was administered to an adult male mathematics student. Through a process of reasoning, elimination of unlikely distractors, and guessing, the student with no background or training in clothing scored seventy-one per cent, which was considerably higher than the mean score of the one hundred and eighty-one pilot study subjects.

Dressel and Schmid (14) concluded after an investigation with variations of the multiple-choice test that modification of the conventional multiple-choice test item does bring about changes in performance. In summarizing the study, Dressel and Schmid concluded:

It seems that a great deal of liberty may be taken in modifying the multiple-choice item without impairing its efficiency as a measuring instrument, and with the possibility that the measuring efficiency may actually be improved (14).

An examination of various types of multiple-choice items led to the development of a variation of the multiple-choice form which was used in revising the written clothing pretest. The form consisted of a statement or premise followed by one or three distractors, of which

any one, or all three could be correct or incorrect. The first page of the pretest directed the student to "select the one answer which best completes the statement, or the one answer which is incorrect." The following examples also appeared on the sheet in clarifying the directions:

Items necessary for the seamstress include

- a. hammer
- b. nails
- c. scissors
- d. saw

Scissors, or item c, is obviously the correct answer. The student was instructed to darken the appropriate slot on the answer sheet. In further clarifying the directions, the following also appeared on the direction sheet:

The same question could also appear in the following form:

Items necessary for the seamstress include

- a. spoon
- b. scissors
- c. needles
- d. pins

Items b, c, and d are correct. Students were instructed to record a, or the one incorrect item as the answer.

The examples were simplified in order to acquaint students with the scoring procedures in the shortest possible time. Complete directions for scoring were given on the first page of each pretest. Students were not drilled on the method used, but were requested to read carefully the directions for responding to the test items.

Though the predominate purpose of the instrument was to ascertain the student's knowledge and understandings in the field of clothing, it was believed that the instrument could serve also as a learning experience by evoking thought. An attempt was made to include items which would

require thinking, reasoning, making comparisons, and mentally applying principles in a variety of situations. By employing a form which did not designate whether one look for correct or incorrect responses, the student was consequently forced to consider all distractors before a correct response could be made.

Scoring was facilitated by use of a separate answer sheet which was arranged in an order permitting the scoring to be easily and quickly completed by use of a perforated plastic plate. Four slots, labeled a, b, c, and d, were provided for each question. Responses were made by darkening with a pencil the one slot corresponding to the answer.

Research studies conducted at Oklahoma State University in the area of clothing pretesting by Witt (32), Walsh (29), and Gould (17), have implied that effective pretesting in the area of clothing can be accomplished more satisfactorily when a performance test is used along with a written device. The contention is frequently voiced that superior performance on a written clothing pretest does not assure either teacher or student of superior performance in the clothing laboratory. The expense of supplies, time involved in preparing the test, and lack of objectivity in scoring however, often prevent use of the performance test.

Though the three studies cited above have recommended use of a performance test, the staff of the Department of Clothing, Textiles, and Merchandising at Oklahoma State University, believe that a superior pencil and paper instrument can eventually be developed which will accomplish the same purposes proposed by the performance test. The instrument developed as a part of this study should be regarded merely as a point

of departure for other research in the pretesting area.

Addition to the Pretest

Five practical or recognition type questions were formulated and included in the clothing pretest in an attempt to determine whether there was a relation between students' knowledge of clothing principles and techniques, and their ability to recognize actual application of the identical principles and techniques.

Five different questions were selected from the written pretest for use in the practical section. The importance of the principle to the beginning clothing student, and the ease with which the principle in the written question could be exhibited in actual form were factors considered in selecting the five items. Questions included in the practical section of the pretest related to facing attachment and treatment, identification of basic fabric weaves, selection of interfacing, handling of a collar with interfacing, and appropriate pressing methods. Items selected from the written test were rephrased and adapted for use in the practical portion of the test. Exhibits were prepared for the five problems using half-size pattern sections, fabrics, and other material necessary in approximating an actual situation. Multiple-choice form, similar to that used in the written items, was used in the practical part of the pretest. Responses were made in the same manner as for the written questions.

Administration of the Pretest

The revised clothing pretest was administered to seventy-six

beginning clothing students during the spring semester, 1963. Due to the size of the group and space limitations, two separate testing sessions were held. Arrangements were made for students to take the test during a regularly scheduled two-hour-class period. The purpose of the pretesting session was outlined to students prior to the administration of the test. Students indicated interest and cooperation in the contribution they could make in improving the pretesting program.

Mimeographed copies of the written pretest, the five practical questions, and the answer sheets were distributed. Students were asked to read carefully the instructions for the pretest. No additional comment or explanation was necessary. Procedures for viewing the five practical exhibits were given. Groups of five students were permitted to examine the exhibits which were displayed on easels at the opposite end of the laboratory. Ten minutes were allowed for completing the five practical questions. A total of two hours was set aside for the administration of the pretest. The majority of the seventy-six students were able to complete both parts of the pretest in one and one-half hours.

The tests were scored and the results statistically treated. The following chapter presents the results of the analysis and treatment of the data.

CHAPTER IV

ANALYSIS OF DATA

In the absence of established norms, the results obtained from evaluation instruments are frequently lacking in meaning. For an individual's test score to hold meaning, a reference point against which the score can be compared must be established. Test norms, according to Ahmann and Glock (2), are indicative of average or common performance when established by the procedure of testing large groups representative of those for whom the instrument is designed. Test norms for the revised clothing pretest have not been established. Consideration should be given in determining local norms, however, if future use is to be made of the pretest in sectioning or placing beginning clothing students according to ability. Two authorities in educational evaluation (2) recommend the establishment of local norms which are revised continuously as new raw scores are available. Performance scores of the seventy-six beginning clothing students on the pretest should be supplemented with the results obtained from similar future pretesting sessions before reliable test norms can be determined.

Raw test scores made by the seventy-six first year clothing students were statistically treated so that a comparison could be made of performance on the original and the revised pretest. The original pretest contained ninety-one items, while the revised test was made up of

one hundred and ten items. Individual scores were converted to percentages using the highest possible score for each test as a basis for conversion.

The mean test score on the original pretest was sixty-four and seven-tenths per cent, which closely paralleled the mean test score of the pilot study group. The mean on the revised test was fifty-nine and four-tenths per cent, or five and three-tenths per cent lower than on the original pretest. Over seventy-five per cent of the test group scored higher on the original pretest than on the revised pretest. Twenty-three and seven-tenths per cent of the population involved in the study made higher scores on the revised test than on the original test. No individual was consistent in scoring the same on both tests, though some scores differed by as little as one-tenth per cent. There was no perfect score made on either test; while at the same time, no individual missed all of the test items on the two pretests. Scores made by the test group on both the original and the revised test are shown in Table I in the Appendix.

The lower mean test score on the revised pretest may be associated with the following factors:

Form of the Questions

An attempt was made to devise multiple-choice questions which would reduce the possibility of one's guessing the right answer and would, also require consideration of all four distractors before a correct response could be made.

The questions in the original pretest were multiple-choice type, generally having two to three distractors. A significant feature of the pretest was found through usage to be in the phrasing of questions in

a manner conducive to an individual's guessing or determining the correct response through elimination of distractors. In further substantiating the above feature of the instrument, the pretest was administered to an adult male mathematics student having no experience in clothing construction. By means of reasoning, elimination, and guessing, the individual's score on the original pretest was considerably higher than the mean score exhibited by seventy-six beginning clothing students.

Type of Questions

In the revised pretest, emphasis was placed on the selection and formulation of questions which would tend to stimulate thought rather than require a previously formed response.

Consistency in Scoring

Evidence obtained in the pilot study indicated that one of the deficiencies of the original pretest was inconsistency in scoring. The revised test scoring procedure eliminated multiple responses to a single item, thus establishing a quick and objective scoring procedure.

The five and three-tenths per cent difference in mean scores on the original and revised pretest does not seem important in view of the three changes outlined.

Correct responses made by the seventy-six clothing students on the five coordinated written and practical questions of the test were tabulated in an attempt to determine the relationship between the student's ability to recognize, in prepared samples and in written questions, certain basic clothing construction principles. The five practical questions included in the test involved principles and knowledge of clothing construction and selection appropriate at the beginning

clothing level. The five questions were selected on the basis of: the importance of the principle involved to the beginning clothing student, and the ease with which the principle could be carried out in actual exhibit form. Questions included in the practical section of the pretest related to the subject areas of (1) facing attachment and treatment, (2) identification of basic fabric weaves, (3) selection of interfacing, (4) handling of a collar with interfacing, and (5) pressing methods. Information compiled and exhibited in Table II in the Appendix represents an analysis of the correct responses made to both written and practical questions.

The five questions requiring students to recognize and identify written and practical application of clothing construction principles were included to determine the student's knowledge of construction and ability to recognize application of principles in actual usage. A frequent evaluation of some beginning clothing students at the college level has been that their knowledge of clothing construction does not include an understanding of basic principles necessary for applying construction techniques in a variety of situations.

Analysis of the responses made to written and practical questions by the seventy-six clothing students revealed a tendency toward more accuracy in recognizing construction principles exhibited in actual sample form than in written form. Two parts of item 102, (Table II, Appendix) requiring identification of basic fabric weaves were correctly responded to in written form by more students than the corresponding practical question on basic weaves requiring identification of actual fabric swatches. Seventy-eight and seven-tenths per cent of the test

group were able to identify correctly the proper facing attachment and treatment procedure in written form, while only fifty-three and four-tenths per cent were able to recognize the appropriate procedure from the corresponding practical exhibit. On four parts of the question relating to basic weaves, however, and on the questions relating to the selection of interfacing, handling of a collar with interfacing, and pressing methods, the group tended to be more alert in recognizing the principles involved from actual exhibits than in identifying the same construction principle in written question form.

Although the inclusion of a larger number of practical questions may have contributed to the validity of the test, it was believed that the responses of the group indicated a tendency for the beginning clothing students in the test group to possess recognizable knowledge of certain basic construction principles, but to be inadequate in identifying the same principles in written form. Such deficiencies in clothing construction may be attributed to numerous factors, such as the lack of training in clothing construction prior to college, and lack of emphasis upon fundamental principles of clothing construction at the high school level.

Following the pretesting sessions and tabulation of scores made by the seventy-six students, relationships in the performance on the pretest with other factors were noted. Similarity in the rank of individual scores on the original and revised test was observed, as well as a relation between the revised pretest score and reading skills, final course grade, and ability in identifying and recognizing principles in the practical section of the test. In order to determine the degree of

relationship between the variables, correlations were computed using Pearson's product moment formula.

In interpreting a correlation coefficient as a measure of the strength of relationship between two variables, Hoel (18) warns that the correlation coefficient is a mathematical interpretation, completely devoid of any cause or effect implications. He further emphasizes that where two variables tend to increase or decrease together, the progression does not imply that one has any direct or indirect effect on the other. Both variables may be influenced by other factors which tend to result in the appearance of a strong relationship.

Correlation of Rank on Original and Revised Clothing Pretest

Rank of students on the original pretest was correlated with rank on the revised instrument. The correlation was computed to determine if a relationship existed between the performance exhibited by students on the two tests. In computing the correlation, the rank difference formula suggested by Blair (6) was used. Seventy-one cases were included in the tabulation of all correlations in this study.

Original and revised test scores were ranked in ascending order, with the highest score assigned a rank of one. The difference in the paired ranks was found by subtracting the rank of the second variable from the rank of the first variable. The differences were squared and summed and the remainder of the formula procedures completed. The correlation between the rank on the original and revised test was +.629 (Table III, Appendix), considered by Steel and Torrie (25) to be significant for the size of the sample. Using the original test rank as the independent variable, the greatest positive deviation in rank was

forty-nine and five-tenths points, and the greatest negative deviation in rank was forty-one points. Although scores on the revised pretest were generally lower than on the original, the correlation tends to indicate some relation in performance rank on both tests. Further analysis reveals that forty-four and seven-tenths per cent of the students had higher rank scores on the revised test than on the unrevised test. None of the group had identical ranks on the two tests, though nineteen and seven-tenths per cent of the scores varied less than five points in rank. Although a significant positive correlation between the variables is evident, a high rank on the original test did not assure a student a position of similar rank on the revised instrument.

Correlation of Scores on Practical and Corresponding Written Pretest Questions

The scores made on the five practical items evaluating ability to recognize actual application of clothing construction principles and scores made on the five corresponding written items evaluating ability in identifying principles were treated statistically to ascertain any correlation existing between the two sets of scores.

A positive correlation of .293, as shown by data in Table IV, Appendix, was obtained between the scores made on the practical pretest and the corresponding written pretest. The correlation obtained tends to offer support to the previous analysis of the same section of the test in which student's inconsistencies in identifying and recognizing the same principle in different forms was noted. From results of the analysis and the relatively low correlation, one may assume that with the test group, there was little relationship between student's

knowledge and ability to recognize basic clothing construction principles. Other studies in various areas of home economics have confirmed a lack of close association between certain competencies. For example, Witt (32) concluded from a correlation of +.16 that there was little relationship between student's knowledge of clothing and ability to apply principles in actual situations. A low relationship between the student's knowledge of foods and nutrition and the student's competency in recognizing relationships between specific facts, principles, and generalizations was also noted in a study made by Cozine (11).

Correlations of Scores on Clothing Pretest with Scores on Nelson-Denny Reading Test

Scores made on the pretest were correlated with scores made by the test group on the Nelson-Denny Reading Test which was administered at the beginning of the school year by the College Testing Bureau, Oklahoma State University. The purpose of computing correlations between the pretest scores and vocabulary, comprehension, and total Nelson-Denny score was to determine if a relation existed between the student's performance on the pretest and reading skills. It was theorized that students with above average reading skills would perform better on the pretest than those students exhibiting poorer reading skills.

The Nelson-Denny Reading Test is designed to provide a measure of an individual's reading ability in terms of vocabulary, comprehension and reading rate (21). Though correlations were computed on individual vocabulary and comprehension scores, the total score which includes vocabulary, comprehension and reading rate is said to be the best single index of reading ability obtained through use of the Nelson-Denny

Reading Test.¹

The following correlations were computed using the pretest scores (Table V, Appendix) as one of the variables in each case: Nelson-Denny vocabulary score, +.31; Nelson-Denny comprehension score, +.20; and Nelson-Denny total, +.21. Low correlations between the pretest scores, comprehension and total reading scores tend to indicate that the relationship between the variables is small. The correlation of +.31 between pretest score and Nelson-Denny vocabulary score is, according to Steel and Torrie (25), considered significant for the number of cases. The stronger relationship existing between pretest score and vocabulary score may be attributed to the fact that terms common only to clothing construction were used frequently throughout the test. A student with a superficial background in the clothing area would normally be unable to recognize or understand the usage of such terms. In constructing the test, an attempt was made to utilize common terms thought to be in keeping with the language skills of beginning college students so that discriminations in performance would be on the basis of the individual's knowledge of clothing. Performance on the pretest would, however, be facilitated to some degree by a large workable vocabulary.

Correlation of Scores on Clothing Pretest with Final Course Grade

The clothing pretest was devised to determine the extent of the freshman girls' previous clothing experiences upon entering the beginning clothing course at college level. Though the device was not designed to predict student performance in the course, one might assume

¹Personal interview with Dr. Harry Brobst, Director of College Testing Bureau, Oklahoma State University. April 11, 1963

that a student with considerable clothing experience would receive higher marks than the student having little or no experience in clothing. Proceeding under the assumption that the pretest scores and final course grade were a measure of the student's knowledge of the field, pretest scores and final course grades were correlated. Letter grades were converted to numerical values. (i.e., A, 90; B, 80; C, 70; D, 60; F, 50) Tabulation yielded a correlation of +.44. Inconsistency in evaluating and assigning grades may have been evident since students were taught in four sections by three different instructors. Although the correlation indicates a positive relationship between the two variables, analysis of the data (Table V, Appendix) indicates that a high pretest score frequently does not assure one of high marks in the beginning clothing course.

Item Analysis

Test construction requires the formulation of numerous decisions, many of which may inject unnoticed irregularities into the instrument. Only through careful study and re-examination of the test after administration can one be assured of the success, or lack of success of earlier decisions. Establishing validity is essential in improving the value of any evaluation instrument.

Item analysis is one method used in determining the difficulty and discriminating power of each item of a test. Difficulty level refers to the percentage correctly answering each test item; while discriminating power is the ability of the test item to distinguish between those students who are achievers and those students who are non-achievers (2). The formulas suggested by Ahmann and Glock (2) were used

in the item analysis and in determining the difficulty level and discriminating power. The difficulty level of the test items is shown in Table VI in the Appendix. Forty-six and four-tenths per cent of the test items have a difficulty level between forty and seventy per cent. Twenty and nine-tenths per cent of the items have a difficulty level below forty per cent. Thirty-two and seven-tenths per cent of the items have a difficulty level above seventy per cent. Items with mid-range levels of difficulty, between forty and seventy per cent, are recommended for use in achievement tests (2).

Using the responses made by the upper and lower twenty-seven per cent of the students, the discriminating power of the one hundred and five test items was determined. Using the index of interpretation suggested by Ahmann and Glock (2), twenty-four and five-tenths per cent of the test items have good discriminating power; forty per cent have satisfactory discriminating power; and thirty-five and five-tenths per cent have poor discriminating power. The discrimination power and rating for the pretest items are shown in Table VII in the Appendix.

As helpful as item analysis methods may be in evaluating the individual test items, it is erroneous to believe that the findings yielded are completely accurate. It is difficult to identify the degree to which limiting factors surrounding the administration of every test influence item analysis data. The difficulty level and discriminating power of the pretest items was no doubt, influenced to some degree by the size and content of the sample used, the environment in which the test was given, and the physical make up of the test. Under different circumstances, the difficulty level and discriminating power of the same test would probably change.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study was concerned with the revision and development of the clothing pretest used by the Department of Clothing, Textiles and Merchandising at Oklahoma State University. The problem was divided into four sub-problems which were: (1) to examine the unrevised clothing pretest and to determine through usage the specific needs for revision, (2) to revise the pretest on the basis of data obtained from the pilot study, (3) to study the relationship between the student's performance on the revised pretest and other criteria, including performance on the original pretest, reading skills, and final course grade, (4) to examine the revised instrument and determine the need for further revision.

Assumptions basic to the study are that (1) education is a process through which the behavior of individuals is changed; (2) evaluation is a process of determining the changes occurring in human behavior; and (3) a variety of different evaluative techniques and devices are needed in appraising human behavior.

Members of the clothing, textiles, and merchandising staff were aware of the need for an adequate and up-to-date instrument for evaluating the competencies in clothing of beginning students. A review

of literature and study of the unrevised pretest revealed the need for the study. Permission for conducting the study was obtained from the Department of Clothing, Textiles, and Merchandising.

A pilot study was conducted at the beginning of the fall semester, 1962, in an attempt to obtain information to be used as a basis for revising the original pretest. One hundred and eighty-one first year clothing students participated in the pilot study. The responses of forty-nine students were considered in the item analysis of the unrevised pretest.

Results of the item analysis and information obtained through administration of the pretest were used as a basis for revising the pretest. The following conclusions were drawn from the findings of the pilot study: (1) When administered in a controlled environment, the range and average scores of the group tended to be similar, (2) Certain test items appear to lack clarity as evidenced by the number of verbal inquiries and nondiscriminating items, (3) Many items add nothing of importance to the test since they were either answered correctly or missed by large percentages of both poor and superior students, and (4) A reliable method of scoring would reduce the inconsistencies in the responses made to test items, and would provide a more accurate appraisal of the student's knowledge.

A study of test construction procedures was made and a variation of the multiple-choice form devised for use in revising the pretest. Revision was made according to findings of the pilot study, information obtained from staff members, and a study of departmental curriculum objectives,

Five practical or recognition-type questions were formulated and included in the pretest in an attempt to determine whether there was a relationship between student's knowledge of clothing principles and techniques, and their ability to recognize actual application of the same principles and techniques.

The revised pretest was examined by staff members teaching the beginning clothing courses. Deletions and further revisions of the pretest were made according to the suggestions and criticisms offered. The revised instrument was administered to seventy-six beginning clothing students.

Data obtained from administration of the revised instrument was used in correlating student performance on the revised instrument with (1) the rank on the unrevised pretest, (2) the scores made on the Nelson-Denny Reading Test and (3) the final course grade. Scores made by students on the practical and corresponding written pretest items were also correlated in an attempt to determine the relationship between the student's knowledge and ability to recognize application of clothing principles and techniques.

An item analysis of the revised clothing pretest was made in order to determine the need for further revision of the instrument.

Conclusions

The conclusions delineated from the analysis of the data are as follows:

1. Similarity in the mean scores made by beginning clothing students on the original pretest and on the revised instrument tend to

support the need for administering the pretest in a controlled environment. The practice of administering the pretest to individual students or to small groups of students at the time of enrollment is time consuming and undesirable.

2. The revised pretest appeared neither too difficult nor too easy for the beginning clothing students as indicated by the scores; there were no perfect scores and no zero scores.

3. Students showed more proficiency in recognizing and identifying principles of clothing construction when presented in actual exhibit form than they did in written questions appearing in the pretest. When scores on the written and practical test items were statistically treated, the correlation was .29. From the correlation one might conclude that there was little relationship between the student's knowledge of clothing construction principles and ability to recognize correct application of the principles in real situations.

4. Performance on the pretest was not strongly related to the students' reading skills as revealed by the correlation of .21 between pretest score and Nelson-Denny reading comprehension score, and correlation of .20 between the pretest score and the total Nelson-Denny reading score. However, a more significant relation was determined between pretest performance and vocabulary. The higher correlation between pretest performance and vocabulary may be attributed to the wide use of terms common to the area of clothing construction. It is likely that a student having only limited experience and training in the clothing area would not be able to determine the correct interpretation of the terms as they were used in the test. At the same time, a high vocabulary score did not assure students of a high score on the pretest.

5. A correlation of .44 was obtained for pretest scores and final course grade. Although the pretest was not designed to predict success (as indicated by final course grade) in the first clothing course, there tended to be some relationship between pretest scores and course grade.

6. Item analysis data revealed many of the test items to be out of the difficulty and discrimination range considered desirable for an objective evaluation instrument.

7. The multiple-choice form used in the pretest did not require additional explanation beyond that given on the instruction sheet of the pretest. There was however, a definite trend for more incorrect items to appear at the beginning of the pretest, and to lessen toward the end. An attempt was made to distribute test items throughout the instrument so that there was no clustering of easy or difficult items. The inclusion of several less difficult items at the beginning of the pretest might improve student understanding of the test form.

Recommendations

On the basis of the conclusions drawn in this study, the following recommendations appear justified:

1. The item analysis of the revised pretest revealed many of the test items to be nondiscriminating. It is therefore, suggested that the instrument be carefully revised before use in an attempt to replace nondiscriminating items with those that may differentiate the superior and poor students.

2. The addition of ten to fifteen practical type test items similar to the five included in the study is recommended in an attempt

to increase the validity of the pretest.

3. The use of a variety of evaluative instruments along with the written clothing pretest is suggested in order to facilitate the establishment of validity of the written device.

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TABLE I
 SCORES MADE BY SEVENTY-SIX STUDENTS ON ORIGINAL
 AND REVISED CLOTHING PRETESTS

Original Pretest* Raw Test Score	Per Cent	Revised Pretest** Raw Test Score	Per Cent
79	86.8	78	70.9
78	85.7	86	78.2
77	84.6	84	76.4
76	83.5	74	67.3
74	81.3	72	65.5
73	80.2	73	66.4
71	78.0	81	73.6
71	78.0	70	63.6
71	78.0	72	65.5
70	76.9	87	79.1
70	76.9	62	56.4
70	76.9	89	80.9
70	76.9	70	63.6
70	76.9	82	74.5
68	74.7	68	61.8
68	74.7	69	62.7
68	74.7	77	70.0
67	73.6	72	65.5
67	73.6	77	70.0
67	73.6	62	56.4
66	72.5	77	70.0
66	72.5	65	59.1
66	72.5	79	71.8
65	71.4	78	70.9
65	71.4	65	59.1
65	71.4	78	70.9
65	71.4	64	58.2
65	71.4	76	69.1
64	70.3	62	56.4
64	70.3	45	40.9
64	70.3	67	60.9
64	70.3	68	61.8
63	69.2	61	55.5
63	69.2	76	69.1
62	68.1	84	76.4
61	67.0	64	58.2
60	65.9	65	59.1
59	64.8	54	49.1
59	64.8	60	54.5
59	64.8	49	44.5
58	63.7	49	44.5

TABLE I (continued)

Original Pretest [*] Raw Test Score	Per Cent	Revised Pretest ^{**} Raw Test Score	Per Cent
58	63.7	66	60.0
58	63.7	51	46.4
58	63.7	62	56.4
58	63.7	54	49.1
57	62.6	59	53.6
57	62.6	65	59.1
57	62.6	64	58.2
57	62.6	56	50.9
56	61.5	68	61.8
56	61.5	55	50.0
54	59.3	54	49.1
54	59.3	56	50.9
54	59.3	69	62.7
53	58.2	65	59.1
51	56.0	56	50.9
50	54.9	60	54.5
50	54.9	53	48.2
50	55.0	65	59.1
49	53.9	47	42.7
49	53.9	66	60.0
49	53.9	75	68.2
49	53.9	56	50.9
48	52.8	51	46.4
47	51.7	60	54.5
47	51.7	58	52.7
46	50.6	77	70.0
45	49.5	48	43.6
45	49.5	44	40.0
44	48.4	73	66.4
43	47.3	50	45.5
42	46.2	64	58.2
41	45.1	57	51.8
40	44.0	55	50.0
36	39.6	58	52.7
22	24.2	55	50.0

* Highest possible score was ninety-one.

** Highest possible score was one hundred and ten.

TABLE II
ANALYSIS OF CORRECT RESPONSES MADE TO WRITTEN AND PRACTICAL
QUESTIONS BY SEVENTY-SIX CLOTHING STUDENTS

Item No.	Subject Area	Per Cent Correct Responses on Written	Per Cent Correct Responses on Practical
101.	Facing Attachment and Treatment	78.7	53.4
102.	Identification of Basic Weaves		
(a)	Plain	66.6	77.3
(b)	Twill	29.4	24.0
(c)	File	64.0	89.3
(d)	Plain	66.6	29.4
(e)	Satin	16.0	97.3
(f)	Twill	29.4	60.0
103.	Selection of Interfacing	48.0	66.6
104.	Handling of Collar with Interfacing	81.3	82.7
105.	Pressing Methods	46.6	88.0

TABLE III
 SCORES AND RANKS OF STUDENTS ON ORIGINAL
 AND REVISED CLOTHING PRETESTS

Original Test Score	Revised Test Score	Original Rank	Revised Rank	Difference
79	78	1.0	10.0	- 9.0
78	86	2.0	3.0	- 1.0
77	84	3.0	4.5	- 1.5
76	74	4.0	18.0	-14.0
74	72	5.0	22.0	-17.0
73	73	6.0	19.5	-13.5
71	81	8.0	7.0	+ 1.0
71	70	8.0	24.0	-16.0
71	72	8.0	22.0	-14.0
70	87	11.5	2.0	+ 9.5
70	62	11.5	43.5	-32.0
70	89	11.5	1.0	+10.5
70	82	11.5	6.0	+ 5.5
68	68	15.0	28.0	-13.0
68	69	15.0	25.5	-10.5
68	77	15.0	13.5	+ 1.5
67	72	18.0	22.0	- 4.0
67	77	18.0	13.5	+ 4.5
67	62	18.0	43.5	-25.5
66	77	21.0	13.5	+ 7.5
66	65	21.0	34.5	-13.5
66	79	21.0	8.0	+13.0
65	78	25.0	10.0	+15.0
65	65	25.0	34.5	- 9.5
65	78	25.0	10.0	+15.0
65	64	25.0	39.5	-14.5
65	76	25.0	16.0	+ 9.0
64	62	29.0	43.5	-14.5
64	45	29.0	70.0	-41.0
64	68	29.0	28.0	+ 1.0
63	61	31.0	46.0	-15.0
62	84	32.0	4.5	+27.5
61	64	33.0	39.5	- 6.5
60	65	34.0	34.5	- 0.5
59	54	36.0	60.0	-24.0
59	60	36.0	48.0	-12.0
59	49	36.0	66.5	-30.5
58	49	40.0	66.5	-26.5
58	66	40.0	30.5	+ 9.5
58	62	40.0	43.5	- 3.5

TABLE III (continued)

Original Test Score	Revised Test Score	Original Rank	Revised Rank	Difference
58	51	40.0	63.5	-23.5
58	54	40.0	60.0	-20.0
57	59	44.0	50.0	- 6.0
57	65	44.0	34.5	+ 9.5
57	64	44.0	39.5	+ 4.5
56	68	46.5	28.0	+18.5
56	55	46.5	57.5	-11.0
54	54	49.0	60.0	-11.0
54	56	49.0	55.0	- 6.0
54	69	49.0	25.5	+23.5
53	65	51.0	34.5	+16.5
51	56	52.0	55.0	- 3.0
50	60	54.0	48.0	+ 6.0
50	53	54.0	62.0	- 8.0
50	65	54.0	34.5	+19.5
49	47	57.5	69.0	-11.5
49	66	57.5	30.5	+27.0
49	75	57.5	17.0	+40.5
49	56	57.5	55.0	+ 2.5
48	51	60.0	63.5	- 3.5
47	60	61.5	48.0	+13.5
47	58	61.5	51.5	+10.0
46	77	63.0	13.5	+49.5
45	48	64.5	68.0	- 3.5
45	44	64.5	71.0	- 6.5
44	73	66.0	19.5	+46.5
43	50	67.0	65.0	+ 2.0
42	64	68.0	39.5	+28.5
41	57	69.0	53.0	+16.0
36	58	70.0	51.5	+18.5
22	55	71.0	57.5	+13.5

TABLE IV
WRITTEN AND CORRESPONDING PRACTICAL SCORES
MADE ON REVISED CLOTHING PRETEST

Written Score	Practical Score
6	10
7	10
5	10
5	7
6	8
7	6
6	8
6	7
6	8
7	7
7	8
9	8
5	9
2	5
4	7
6	6
5	6
3	7
6	7
6	7
7	7
3	7
7	8
3	7
7	9
3	6
8	5
9	7
4	1
3	6
7	5
8	10
5	5
4	5
5	5
6	6
5	5
3	3
4	7
7	7

TABLE IV (continued)

Written Score	Practical Score
4	6
2	7
3	6
4	9
5	6
9	7
7	5
4	4
4	6
7	6
5	6
7	6
7	6
4	5
7	7
7	3
5	7
5	9
5	7
5	8
5	7
5	7
8	9
2	7
2	3
5	8
4	6
4	6
4	6
5	6
6	4

TABLE V
 FINAL GRADE AND SCORES MADE BY SEVENTY-ONE STUDENTS
 ON REVISED PRETEST AND NELSON-DENNY READING TEST

Revised Pretest Score	Nelson Denny Vocabulary	Nelson Denny Comprehension	Nelson Denny Total	HE 114 Final Grade*
70.9	83	86	86	80
78.2	55	40	48	90
76.4	59	51	56	90
67.3	61	78	70	80
65.5	26	25	25	70
66.4	90	90	90	80
73.6	82	51	71	80
63.6	52	25	38	70
65.5	80	74	78	70
79.1	61	68	65	90
56.4	50	40	45	70
80.9	71	82	77	90
74.5	24	51	37	80
61.8	39	35	37	70
62.7	47	74	60	80
70.0	65	21	43	70
65.5	44	30	37	70
70.0	82	82	83	90
56.4	42	51	46	80
70.0	31	40	35	80
59.1	24	39	21	80
71.8	69	35	55	70
70.9	93	99	96	90
59.1	63	63	64	80
70.9	92	74	87	80
58.2	16	51	31	80
69.1	9	17	11	80
56.4	26	7	12	70
40.9	12	35	21	70
55.5	82	92	88	80
76.4	22	21	20	70
59.1	37	51	43	80
49.1	24	45	33	80
54.5	77	86	82	80
44.5	39	51	45	80
44.5	37	35	35	80
60.0	39	7	17	80
56.4	34	63	48	80

TABLE V (continued)

Revised Pretest Score	Nelson Denny Vocabulary	Nelson Denny Comprehension	Nelson Denny Total	HE 114 Final Grade*
49.1	24	25	23	70
53.6	52	35	43	70
59.1	12	51	29	90
58.2	22	17	18	70
61.8	18	25	20	50
50.0	52	63	57	70
49.1	69	82	76	80
50.9	18	17	16	60
59.1	69	78	74	90
50.9	80	78	80	70
54.5	44	78	61	80
48.2	80	68	76	80
42.7	14	5	7	50
60.0	50	11	26	80
68.2	14	14	12	80
50.9	22	5	9	70
46.4	67	78	73	70
54.5	28	63	45	70
52.7	26	35	30	60
70.0	18	7	9	70
43.6	50	51	51	70
66.4	26	51	38	80
45.5	77	45	65	70
58.2	57	86	72	70
51.8	9	4	5	60
52.7	24	78	51	80
50.0	71	68	71	70
61.8	65	82	74	50
58.2	39	68	53	70
62.7	28	57	42	70
59.1	77	51	68	70
28.0	7	13	38	50
14.0	7	8	17	70

* Legend: A - 90
 B - 80
 C - 70
 D - 60
 F - 50

TABLE VI
 DIFFICULTY LEVEL OF ITEMS USING RESPONSES
 OF SEVENTY-SIX STUDENTS

Item No.	Number Correct Responses	Difficulty Per Cent	Item No.	Number Correct Responses	Difficulty Per Cent
1	34	45	40	42	56
2	37	49	41	27	36
3	8	11	42	34	45
4	50	67	43	22	29
5	36	48	44	52	69
6	15	20	45	30	40
7	8	11	46	13	17
8	45	60	47	31	41
9	14	19	48	21	28
10	50	67	49	61	81
11	16	21	50	40	53
12	74	99	51	35	47
13	31	41	52	58	77
14	55	73	53	31	41
15	34	45	54	28	37
16	51	68	55	26	35
17	65	87	56	36	48
18	40	53	57	46	61
19	38	51	58	9	12
20	73	97	59	41	55
21	60	80	60	33	44
22	36	48	61	35	47
23	36	48	62	13	17
24	36	48	63	37	49
25	19	25	64	33	44
26	14	19	65	48	64
27	41	55	66	47	63
28	18	24	67	30	40
29	50	67	68	39	52
30	58	77	69	26	35
31	55	73	70	56	75
32	63	84	71	54	72
33	14	19	72	60	80
34	47	63	73	60	80
35	36	48	74	38	51
36	39	52	75	36	48
37	33	44	76	13	17
38	69	92	77	55	73
39	37	49	78	64	85

TABLE VI (continued)

Item No.	Number Correct Responses	Difficulty Per Cent	Item No.	Number Correct Responses	Difficulty Per Cent
79	23	31	95	63	84
80	37	49	96	59	79
81	58	77	97	57	76
82	60	80	98	59	79
83	46	61	99	69	92
84	10	13	100	58	77
85	39	52	101	43	57
86	64	85	102		
87	48	64	a	58	77
88	55	73	b	18	24
89	57	76	c	67	89
90	43	57	d	15	20
91	47	63	e	73	97
92	68	91	f	45	60
93	53	71	103	51	68
94	56	75	104	65	87
			105	69	92

TABLE VII
 DISCRIMINATING POWER OF ITEMS USING RESPONSES
 OF UPPER AND LOWER TWENTY-SEVEN PER CENT
 OF SEVENTY-SIX STUDENTS

Item No.	Discrimination Per Cent	Rating*	Item No.	Discrimination Per Cent	Rating*
1	5	P	40	50	G
2	50	G	41	65	G
3	5	P	42	45	G
4	35	S	43	0	P
5	45	G	44	35	S
6	0	P	45	10	P
7	5	P	46	-15	P
8	30	S	47	15	P
9	-30	P	48	30	S
10	10	P	49	5	P
11	15	P	50	30	S
12	5	P	51	30	S
13	10	P	52	30	S
14	50	G	53	25	S
15	30	S	54	45	G
16	50	G	55	40	S
17	5	P	56	30	S
18	25	S	57	40	S
19	45	G	58	5	P
20	10	P	59	20	S
21	10	P	60	20	S
22	50	G	61	30	S
23	20	S	62	25	S
24	10	P	63	35	S
25	-10	P	64	0	P
26	35	S	65	45	G
27	40	S	66	30	S
28	15	P	67	30	S
29	30	S	68	20	S
30	20	S	69	0	P
31	15	P	70	-25	P
32	0	P	71	15	P
33	15	P	72	0	P
34	15	P	73	-10	P
35	5	P	74	55	G
36	10	P	75	50	G
37	35	S	76	30	S
38	10	P	77	30	S
39	65	G	78	20	S

TABLE VII (continued)

Item No.	Discrimination Per Cent	Rating*	Item No.	Discrimination Per Cent	Rating*
79	25	S	95	55	G
80	65	G	96	60	G
81	45	G	97	60	G
82	40	S	98	35	S
83	30	S	99	25	S
84	10	P	100	10	P
85	20	P	101	65	G
86	30	S	102		
87	60	G	a	25	S
88	55	G	b	35	S
89	45	G	c	25	S
90	25	S	d	50	G
91	35	S	e	5	P
92	20	S	f	15	P
93	45	G	103	35	S
94	50	G	104	45	G
			105	30	S

*Rating Legend: G - Good
S - Satisfactory
P - Poor

VITA

Jane C. Berry

Candidate for the Degree of

Master of Science

Thesis: THE REVISION AND DEVELOPMENT OF A CLOTHING PRETEST FOR APPRAISING COMPETENCIES OF FIRST YEAR CLOTHING STUDENTS

Major Field: Clothing, Textiles, and Merchandising

Biographical:

Personal Data: Born in Troy, Texas, March 2, 1938; the daughter of James Edward and Mary Louise Cormany.

Education: Graduated from Troy High School in 1956; received Bachelor of Science degree with a major in Vocational Home Economics from Southwest Texas State College, 1959; completed requirements for the Master of Science degree in Clothing, Textiles, and Merchandising in August, 1963.

Professional Experience: Student counselor, San Marcos Academy, San Marcos, Texas, 1956-1959; Assistant Home Demonstration Agent, Montgomery County, Conroe, Texas, 1959-1960; Associate Home Demonstration Agent, Washington County, Bartlesville, Oklahoma, 1960-1962; Graduate Assistant, Department of Clothing, Textiles, and Merchandising, Oklahoma State University, 1962-1963; State Home Furnishings Specialist, Oklahoma Agricultural Extension Service, 1963.

Professional Organizations: American Home Economics Association, Alpha Chi, Kappa Delta Pi and Phi Kappa Phi.