THE DEVELOPMENT OF AN INSTRUMENT TO EVALUATE THE ABILITY OF COLLEGE
HOME ECONOMICS STUDENTS TO APPLY HOME MANAGEMENT GENERALIZATIONS
AND FACTS IN THE SOLUTION OF HOMEMAKING PROBLEMS

DISSERTATION

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By

ANNA MARGARET CAMERON, B.S., M.S.
The Ohio State University
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Approved by:

[Signature]
Adviser
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CHAPTER I

THE PLAN OF THE STUDY

What progress do college home economics students make toward the broad educational goals set up as over-all objectives of the curriculum? Too frequently institutions of higher learning and the departments within them set up comprehensive goals in terms of expected student achievement but devise no means of evaluating that achievement. The report of the Committee on Criteria for Evaluating College Programs of Home Economics points up the fact that plans for measuring student growth should accompany the planning of objectives.¹

The Setting of the Study

The present study is concerned with the measurement of one objective of a college home economics program, namely, the ability to think effectively on problems of the home and — more specifically — the ability to apply home management generalizations and basic facts which might be used in making a management decision. It is part of an evaluation program at the college level which was planned and is being carried out at the present time by the School of Home Economics of The Ohio State University.

One phase of this program is designed to sample the effectiveness of the curriculum as a whole in the development of undergraduate students. Objectives to be achieved through the entire curriculum were carefully formulated by the home economics faculty of that institution and are critically re-examined by them from time to time. According to the philosophy of that faculty, desired student development embodies the following characteristics:

1. Is well adjusted emotionally and socially.
2. Is effective in using both information and ideas.
3. Is successful in management of personal resources in terms of personal needs and desires and of group welfare.
4. Is aware of and participating in the solution of present-day social and economic problems of individuals and families.
5. Is effective in homemaking.
6. Is growing in cultural appreciation and participation.
7. Is oriented vocationally and capable of achieving a place in a vocation or avocation which is in line with interests and capacities.²

The faculty believed these objectives — with the exception of effectiveness in homemaking (Objective 5) — to be desirable goals of any college program and believed them all to be of great importance in the student's development.

Because of a strong conviction of the importance of these

curriculum goals, the faculty have used various techniques since the evaluation program was begun to sample different aspects of behavior which might be evidence of the achievement of these objectives. Progress toward certain goals could be adequately checked by instruments available from other fields, but several devices have been developed locally as a part of the department's research program to appraise growth toward others of these broad objectives. Several of these instruments have been constructed for the purpose of checking the student's development in effectiveness in homemaking (Objective 5), since promoting that development is the peculiar responsibility of the home economics department.

Before attempting to evaluate that or any other objective, however, an effort was first made to isolate the different behaviors involved in the objective. The following list presents some of the behaviors believed to be involved in the goal of effectiveness in homemaking:

1. Has a rich store of important information on which to draw.

2. Knows where to go for reliable information.

3. Has certain basic skills.

4. Has reasonable standards to guide her in choice-making.

5. Has sound values.

6. Can think effectively on problems of the home.³

³Ibid., p. 87.
The work of the evaluation program has been concentrated on behaviors other than the possession of information and skills, since these are continually being measured in all courses. To a lesser degree, courses also check on students' standards and on ability to locate needed information. More, of course, could be done in checking both of these behaviors. The values held by students also present an interesting problem for evaluation, and an inventory which samples some of these values has been developed. Of the instruments developed for use in the evaluation program, however, only one so far — an interpretation of data test — attempts to sample the student's ability to think effectively on homemaking problems. Moreover, this ability has not been included in regular programs of evaluation in courses — as have skills and acquisition of information — although in class discussions teachers may be informally appraising the student's ability to think in this respect. Too, many teachers have indicated a desire to know whether or not students can actually apply their learning in a real situation. Since less attention has been given heretofore to the measurement of this objective than to others, it is now being given special consideration in the current over-all evaluation program.

A classification of the types of thinking done by the


5"What Does It Say? — An Interpretation of Data Test" (School of Home Economics, The Ohio State University). (Mimeographed.)
effective homemaker would include abilities such as these:

1. Can set up effective plans
2. Can recognize logical arguments
3. Can interpret data
4. Can apply facts, principles and generalizations to new situations

This last ability — and particularly the specific ability of applying management generalizations and related facts — is a prime requisite for the attainment of several broad goals of the educational program for home economics students at The Ohio State University. For example, being effective in using both information and ideas (Objective 2) implies ability to apply principles in decision making. Likewise, making intelligent choices in the management of time, energy, money, and other resources and using these resources to achieve satisfying values are behaviors which are not just part of being successful in management of personal resources (Objective 3) alone but are linked with the application of management principles in general. Participation in the solution of present-day social and economic problems of individuals and families (Objective 4) also calls for this ability to apply information to new situations.

Hypothesis and Assumptions

The hypothesis to be tested by this study was that a valid
and reliable instrument could be developed to evaluate the ability of college home economics students to apply home management generalizations and pertinent facts in the solution of homemaking problems. It is apparent that growth in this ability is viewed as an important phase of the student's total development, since several goals of the home economics program at The Ohio State University place emphasis both upon management and upon effective thinking in relation to homemaking problems. If faculties of home economics departments are to be able to determine their success, or lack of it, in promoting growth in the ability to think effectively, they must have some means of appraising it. At the present time, however, there are very few instruments available for evaluating student progress in areas other than acquisition of information. It is only as appropriate devices for appraising such progress are constructed that departments of home economics can direct a concerted effort toward discovering the real ends achieved rather than working for hoped-for goals without any definite evidence of their attainment.

In testing this hypothesis, certain basic assumptions were accepted. First, it was assumed that developing the student's ability to apply principles as one aspect of thinking is an important goal of all college home economics departments. Since success in homemaking, as in other fields of endeavor, depends not only upon possessing needed information but also upon being able to use that information effectively, it is naturally expected that the
development of this ability would be a concern of all home economics departments. Teachers frequently express a desire to know whether or not students can really apply the information they possess and are constantly trying to get some evidence of application. However, they are handicapped in their attempts to do so because of the limited means available for evaluating such behavior.

Second, it was believed that this ability can be satisfactorily sampled by the use of a pencil-and-paper test. Evidence given for instruments constructed by Cozine, Alexander, Chadderdon, and others — discussed in the next section — helps to substantiate this belief.

Third, it was thought that to use the test with only one group of seniors — those enrolled in the home economics education curriculum — would be a satisfactory testing of the instrument because these students had nearly completed the home economics requirements in their curriculum, which has a broad program of work with courses in all areas of home economics. Of all home economics majors within one of the eleven different curricula, therefore, this group of home economics education students in particular had had courses in which the laboratory work in foods, clothing, and other areas had afforded the best opportunities to learn management information and how to apply it. Furthermore, this group represented over half of all senior students majoring in home economics.
Related Studies

There is no known instrument, other than the one developed in this study, for measuring ability to apply home management generalizations and pertinent facts. There is only one printed test in home management at the college level — the Cooperative Test in Home Management — which was developed as part of a pilot study in evaluation conducted by the Evaluation Committee of the American Home Economics Association. Very few of the items in this instrument test application. Those items which do so are on questions which ordinarily are discussed in college home management classes and therefore test the student's memory of facts and principles rather than her ability to apply them.

Even in other areas of home economics, there are very few tests for evaluating the ability of college students to apply information. Of the limited number available, the majority are in the traditional areas of foods and clothing. One of these was an instrument developed by Cozine. In a study of the foods and nutrition work at the seven state supported higher educational institutions in Missouri, she tested beginning and advanced students on their ability to apply principles of foods and nutrition. Her

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7 Evaluation Committee of the American Home Economics Association, Cooperative Test in Home Management, Form X (Princeton, New Jersey: Cooperative Test Division, Educational Testing Service, 1950). (Test is no longer available.)

instrument measures the student's ability to choose a conclusion to a problem-situation and to select acceptable reasons to support that conclusion. An important feature of her test is the inclusion of unacceptable reasons which, when checked by students, reveal different types of errors in thinking.

Coefficients of .78 for the group of forty-four advanced students and .32 for the sixty-six beginning students taking the test indicated satisfactory reliability. Face validity had been established by a jury of twelve faculty judges from the cooperating institutions. Correlations between scores on this test and on an "Information and Association Test" — set up to measure knowledge of foods and nutrition principles, and ability to associate specific facts with these principles — produced consistently low coefficients, indicating that the two tests were not measuring identical abilities.

Another test to measure the ability of college students to apply principles of nutrition was one constructed by Walsh. It consists of fourteen problem-situations and a graph to be interpreted. Ten of the fourteen problems test the student's ability to choose a correct answer to the problem and to support the choice with reasons. The test was administered to thirty-six college students of nutrition and to the same number of college students who

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had had no instruction in the subject. The latter group was used to discover how much, if any, knowledge of nutrition might have been acquired by these students through association with students of nutrition or by way of the radio, magazines, and newspapers. For the group of students who had had instruction in nutrition, the reliability of the test was .37, as determined by the product-moment method and corrected by the Spearman-Brown formula.

An information test was also given to the same group of seventy-two students. The reliability of this test was .94. The correlation between the scores on the two instruments, estimated by the Spearman-Rank method, was .35. This indicates that possession of facts does not necessarily also mean ability to apply them.

Several tests for use in the area of textiles and clothing at the college level have been developed. Stoflet designed a test to measure the ability of college students to choose the best type of costume detail for six figures showing variations of design expression and to support these choices with reasons. Reasons from which responses could be chosen represented both principles of line and unacceptable reasons commonly given by students to support choices made in regard to the use of line in relation to figure types. The test was administered to forty-seven students completing

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an elementary costume design and selection course at Iowa State College. The reliability coefficient obtained by correlating odd-numbered and even-numbered items, when corrected by the Spearman-Brown formula, was .283, which is too low to use for either group or individual prediction. In an item analysis to determine items on which there was a difference of more than 15 per cent between responses of the twenty high-scoring and twenty low-scoring students, it was found that many items in both the choices and reasons showed little or no discrimination.

Another instrument in this area is one constructed by Briles to apprise the ability of college students to apply costume-color generalizations to problems in elementary costume design courses. The instrument was composed of three sections, to measure each of the following abilities: section A, to recognize the expressiveness of colors; B, to apply generalizations relating to the harmony of colors; and C, to apply generalizations pertaining to color in choosing becoming dress colors for different persons.

The reliability reported for the entire test, as obtained from a product-moment correlation and corrected by the Spearman-Brown formula, was .614 when given as a pre-test to ninety-three students in elementary costume design courses at Iowa State College.

Using scores made by eighty-nine of the same students at the end of the course, the following reliability coefficients were obtained: .75 for section A; .019 for section B; and .317 for section C. A correlation coefficient of -.5156 was obtained between growth scores and scores obtained on the pre-test, indicating that the instrument apparently did not measure progress made in the course.

Baker devised a test to measure the ability of junior college students to apply generalizations to problems involving textile information. The test contains twenty-five textile problems in which the student is asked to check reasons to support an answer or decision, which in some problems is selected by the student and in others is given in the problem-situation. The test was administered to students in elementary clothing and textiles courses at Iowa State College.

Using as a criterion a subjective form of the test in which students wrote out answers, the validity of the objective test was determined by correlating scores from the two forms. For a group of twenty-two students who took the first thirteen problems on both forms of the test, the coefficient obtained for this section of the test was 1.002. The correlation for the last twelve problems, taken by eighteen students, was .731.

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For the total group of eighty students taking the objective form of the test, the product-moment reliability coefficient — corrected for attenuation — was .700.

Another instrument for evaluating ability of college students to apply generalizations in the area of clothing and textiles is one developed by Sanders. Using a college pre-test on the use of the sewing machine, she converted true-false, multiple-choice, and matching items into two equivalent multiple-choice tests, Form A and Form B, to test the ability of college freshmen to apply generalizations to problems involving the use of the sewing machine. Each form contained twenty-one right responses and fifty-two wrong answers. Some multiple-choice items were stated as solutions to problems while others were stated as possible reasons for a solution.

Both forms of the test were administered as part of the final examination given in several sections of a freshmen clothing course at Texas Technological College. Scores on odd-numbered and even-numbered items were correlated to secure the reliability coefficient; the Spearman-Brown formula was then applied. For seventy-four students taking Form A, the reliability reported was .52. A reliability coefficient of .50 was obtained for Form B, which was administered to sixty-three subjects.

Sara Ann Brown constructed tests to measure the ability of teachers to recognize and apply principles concerned with human growth and development of adolescents, namely: Test A—Recognition of Principles and Test B—The Case of Jacqueline Croner, which has both an essay and a short-answer form.14

From scores made by eighty-eight secondary school home economics teachers in West Virginia, the product-moment reliability coefficients obtained were .84 for Test A and .91 for Test B, short-answer form. No reliability figure was reported for Test B, essay form.

Inter-correlations of the three tests for the purpose of establishing validity were .95, .97, and .93. The second method of establishing validity was to correlate the test with interview-observation scores. These were derived by the investigator from an evaluation of evidence on the teacher's actual application of these principles as she taught adolescents. Evidence was obtained through a one-day observation of each teacher who had served as a subject in the testing of the instrument, and from one interview with each teacher's principal. The coefficients of correlation between the test scores and the interview-observation scores were as follows:

Test A and interview-observation scores .87
Test B, essay form, and interview-observation scores .90

Test B, short-answer form, and interview-observation scores 0.91

Brown's methods of validating her tests might be questioned in view of the fact that she used no outside criterion, although Horrocks and Troyer\textsuperscript{15} had previously developed similar tests to measure ability to apply knowledge of human growth and development. Furthermore, Test A might be considered an unsuitable criterion for use in validating Test B, since the first was designed to measure ability to recognize principles and the second, ability to apply principles.

Roberts constructed a test to measure the ability of home economics education majors to apply basic educational principles in teaching. The instrument consists of sixteen test-items, each of which contains a problem-situation of the type that might be considered in junior or senior high school home economics classes, with suggested solutions to the problems and reasons to support the solutions. The reasons used, some of which are relevant and some irrelevant, include twenty-four different basic educational principles.

The test was given to thirty-two home economics education majors in Georgia colleges. An analysis of the responses showed


that 100 per cent of the appropriate solutions to the sixteen problems were chosen by half of the thirty-two persons who took the test. All persons selected thirteen, or 81 per cent, or more of the appropriate solutions. Out of the thirty-five appropriate reasons which could have been selected, two persons selected all of them while all persons selected 57 per cent or more of the appropriate reasons. The selection of appropriate principles ranged from 100 per cent chosen by five persons to only 12 per cent chosen by one person. It is apparent that the test was too easy for the group to which it was given. No reliability figure was reported for this test.

Emphasis has also been given by home economists to the development of application tests at the high school level, and a number of such tests have been constructed for the evaluation of secondary school groups. Peterson developed a test to measure the ability of ninth-grade girls to apply generalizations in the area of child development. The instrument requires the student to choose a solution and supporting reasons in a series of problem-situations involving incidents which might arise in the care of young children.

The test was given to 122 ninth-grade girls in five Iowa high schools. Using Hoyt's method of determining reliability, a

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coefficient of .67 was obtained. This was considered sufficiently high to measure group accomplishment.

Alexander constructed a problem-solving inventory to appraise the ability of secondary school home economics students to apply principles and facts in the solution of problems in clothing selection, construction, and care. This instrument contains problem-situations for which the student chooses the best decision, or solution to each problem and selects reasons to support the solution. As in Cozine's test, statements which represent common errors in thinking of students when giving reasons for decisions are included in the test, as well as statements which represent a principle or an "understanding."

The test was used with first, second, and third year home economics students in the secondary schools of Missouri, and the reliability was determined by the Kuder-Richardson method. For the selection of decisions the reliability was very low for all groups. The coefficients obtained were:

For first year group  - .052
For second year group - .08
For third year group  - .063

The reliability coefficients for the reasons checked ranged from .55 for the third year group to .81 for the first year. In general,

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the reliability coefficients for the entire inventory were much higher, being .78, .80, and .82 for third, second, and first year students, respectively. This indicates sufficient reliability to make the inventory as a whole useful in determining group achievement.

Face validity was established by a group of judges consisting of a secondary school vocational home economics teacher, several home economics specialists in the field of clothing, and several college teachers who directed the training of students in the home economics education curriculum.

Chadderdon and co-workers developed two forms of a test to measure ability of high school students to apply generalizations in personal and family living, and another for junior and senior high school in the wise choice of foods for self and others. Each instrument contains a series of problem-situations with two or more possible solutions and reasons which may be selected to explain the solution chosen.

The reliability reported for the tests was .65 for the two separate forms of the test on personal and family problems and .68 for the foods test. Chadderdon believed that these correlations were high enough to make the tests of use in indicating group progress. Correlation of scores on these tests and on essay tests designed to measure the same abilities gave coefficients of .86 for

19 Hester Chadderdon et. al., Development of Paper-and-Pencil Tests to Evaluate the Ability to Apply Generalizations in Home Economics (Des Moines: Board for Vocational Education, State of Iowa, 1947).
the personal and family problems tests and .98 for the foods test. Such correlations would indicate that the essay and short-answer tests were measuring the same behaviors.

Arny, in her work in evaluation, also has given some emphasis to testing for application of information in home economics. In her recent book in this field, she gives some examples of the types of test items which are adapted to measuring application of principles, using illustrations from such areas as nutrition, family relationships, and applied art. These items aim to test the student's ability to choose satisfactory reasons to support yes or no decisions to questions based on problem-situations.

These studies seem to indicate that valid and reliable instruments for evaluating the student's ability to apply principles in different areas of home economics can be developed and used effectively for that purpose. They also indicate that more research needs to be done in developing evaluation procedures which could prove useful in appraising other aspects of application of information to homemaker's problems.

General Procedures Related to the Development of the Instrument

In testing the hypothesis, certain steps were followed in the construction of the test developed in order to make it as valid

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and reliable a measure as possible. The first step was the analysis of the objective to determine the specific behaviors involved in the process of applying principles. Then different types of home management generalizations or principles were formulated. These were checked by The Ohio State University instructors of core home economics courses, or those common to all curricula, in order to learn which generalizations these teachers considered important in their areas of subject matter and also which were used with students in the core courses taught. The generalizations were also submitted to a jury of home management specialists for their judgment as to the accuracy and importance of the generalizations.

After the formulation and checking of generalizations, the form of the test was decided upon and homemaking problem-situations for use in the test were selected. The next step was to formulate the statements for each problem-situation. Throughout these stages in the development of the instrument, it was submitted to various experts for their criticism.

A key for the test was developed from judges' classifications of statements. A small group of undergraduate home economics students served as subjects for the trial of the preliminary form of the instrument, and the final form was administered to sixty Ohio State University home economics education seniors who were to do their student teaching during the academic year, 1953-54. The reliability of the instrument was then determined, the internal
consistency was checked, and the findings from the test scores were analyzed.

Unfortunately, there was no satisfactory criterion available against which to validate the instrument. A student's application of management in a practical situation perhaps could be considered such a criterion, were it not for the fact that many factors besides actual ability influence one's application of management. It still seemed worth-while, however, to collect evidence regarding a student's ability to apply management in student teaching and in the home management house residence and to compare performance in the practical with that in the pencil-and-paper situation, fully recognizing that this comparison could not be considered a check on the validity of the instrument. Therefore, the writer made from two to four direct observations of approximately one-third of the subjects in student teaching. Further evidence was collected through interviews with supervising teachers, with the University supervisors of student teaching, and with the supervisors of the home management house residence. The evidence thus obtained for each student was evaluated, and subjects were placed into upper, middle, or lower groupings according to the individual's overt expression of management in practical situations. Comparisons were then made of the degree to which abilities, as represented by scores on a pencil-and-paper test, were related to abilities displayed in the two types of practical situation.
Limitations of the Study

In approaching this study, it was recognized that certain limitations presented difficulties which had to be met as satisfactorily as possible. First, sixty students was a small number to use in testing the instrument. However, among the curricula offered in the School of Home Economics, the largest student group is enrolled in preparation for teaching. Since the faculty of the home economics education division at The Ohio State University have been increasingly concerned about the ability of students to apply management in their teaching, this group appeared from these two standpoints to be a logical choice of subjects to use in the testing of the instrument.

The methods used in collecting evidence regarding student's application of management in practical situations presented limitations which could not be overlooked. Evidence secured through observations and interviews is subjective in nature and may reflect the personal bias of the observer or of the persons interviewed. In order to make the data collected under these circumstances as objective as possible, definite categories of management were used in recording the evidence secured. It was believed that a more adequate sampling of evidence would be secured through the use of both interviews and observations.

A further limitation of judging managerial ability by what was done in a student teaching situation was that the subjects did not have equal opportunity to show their ability. Some students,
for example, did all their teaching in units in which the class work centered largely around study and discussion; others, however, taught units including much laboratory work, which afforded greater opportunities for managing — and teaching the management of — material and human resources.

Student teachers did not have equal guidance in learning to use management in the classroom because supervising teachers themselves placed different degrees of emphasis upon this aspect of teaching. Consequently, some student teachers received greater help in the application of management than did others. Though an effort was made to avoid using evidence which directly reflected the supervising teacher's — rather than the student teacher's — managerial ability, it was impossible to screen out entirely those elements of management which were directly due to the differences in the influence of the supervising teachers.

After the hypothesis and assumptions basic to the study were set up, the general procedures outlined, and the limitations recognized, the next logical step was the development of the instrument. But this — as well as all other stages in the study — was dependent upon certain basic beliefs of the writer which will next be discussed.
Beliefs which were most basic to the study were those concerned with (1) the concept of evaluation which is most meaningful in modern education, (2) the importance of developing the student's ability to do critical thinking, and (3) the place of home management in the home economics curriculum. These beliefs are expressed in this chapter, and writings to support them are cited.

A Concept of Evaluation

Evaluation has been defined as merely the process of judging the effectiveness of one's work. Although attempting to judge the outcomes of educational efforts is certainly not new, as teachers have long been concerned with discovering the results accomplished through instruction, the evaluation of educational achievement today is significantly different from appraisals made by the conventional tests and examinations of the past. Since most of the early objective tests were designed chiefly to determine quantitative aspects of subject-matter achievement — with particular emphasis upon the acquisition of knowledge — the term "measurement" was aptly applied to the process by which such achievement was ascertained. During recent years, however, the term "evaluation"
has largely replaced "measurement" as a designation for the over-all process of educational appraisal. This shift in terminology can be explained by the fact that gradually educational philosophy began to embrace a more comprehensive concept of determining student achievement than was possible through the use of these traditional tests alone.

The work of Ralph Tyler and his evaluation staff in the Eight-Year Study made for the Progressive Education Association gave new direction to the whole problem of appraising educational accomplishment. Working in conjunction with teachers in the thirty schools which participated in the study, he and his committee developed and demonstrated procedures which could be used in evaluating student achievement and in identifying strengths and weaknesses of a school program.¹ Largely as a result of instruments and procedures devised and used — and beliefs held — in evaluating student progress in the thirty schools, the idea of testing for limited subject-matter achievement only has been superseded by a broader concept of evaluation. Although the latter concept includes the use of measurement, it goes beyond a concern for merely the quantitative aspects of education.

For one thing, evaluation is made in relation to the major objectives of a total educational program rather than in terms of

¹ Eugene R. Smith and Ralph W. Tyler, Appraising and Recording Student Progress (New York: Harper and Brothers, 1942).
unrelated subject-matter aspects. This impetus to evaluate in terms of all major objectives of the educational program indicates recognition of the complex nature of educational purposes. Since there are many outcomes other than acquisition of knowledge desired from learning experiences, it becomes necessary to appraise progress toward these other fundamental objectives. In Tyler's words:

An educational program is appraised by finding out how far the objectives of the program are actually being realized. Since the program seeks to bring about certain changes in the behavior of students, and since these are the fundamental educational objectives, then it follows that an evaluation of the educational program is the process for finding out to what degree these changes in the students are actually taking place.2

Among others, Lehman sees the need for this type of evaluation in the field of home economics. As she expresses it:

We commonly evaluate students in relation to their progress in a course, — the knowledge they have acquired while with us, the skills they have gained, perhaps something of their attitudes, appreciations, or interests. This is an important type of appraisal, and must be done. But is this not simply "looking at the trees and ignoring the forest?"

The whole is not merely the sum of its parts ....... The forest is more than an accumulation of single trees. It is instead as a whole what its soil and climate and other vegetation and animal life have made it. And the woodsman appraises it in terms of the soundness and health of its timber, its usefulness for a given purpose, its market value ....... The student on Commencement Day is more than a repository of unrelated facts or skills or ideas or attitudes or values which are specific to a given course or area of subject matter to which she has been briefly exposed during her four years in college.

2Ibid., p. 12.
She is, rather, a person — and the kind of person which her total life experiences, including of course the curriculum in its broadest sense, have made her. How nearly is she the person we hoped the home economics curriculum would help her to become? To attempt evaluation in this respect is to try for the "long look," or a look at the forest itself.

To attempt such a look is in effect saying that the success of a curriculum is discovered only as one evaluates the product of that curriculum — the student in school, the graduate at home or in the professions — and this in terms of the broad goals of the curriculum.3

These comments make it clear that unless an attempt is made to evaluate accomplishment in relation to major purposes or objectives there can be no assurance concerning the success of an educational program. This success is reflected in the degree to which there is changed student behavior. This point of view was clearly stated by Tyler and his evaluation staff:

In developing the program, the Evaluation Staff accepted certain basic assumptions . . . . In the first place, it was assumed that education is a process which seeks to change the behavior patterns of human beings. It is obvious that we expect students to change in some respects as they go through an educational program. An educated man is different from one who has no education, and presumably this difference is due to the educational experience. It is also generally recognized that these changes brought about by education are modifications in the ways in which the educated man reacts, that is, changes in his ways of behaving. Generally, as a result of education we expect students to recall and to use ideas which they did not have before, to develop various skills, as in reading and writing, which they did not previously possess, to improve their ways of thinking, to modify their reactions to esthetic experiences as in the arts, and so on. It seems safe to say on the basis of our present conception of learning, that education, when it is effective, changes the behavior patterns of human beings.4

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3 Ruth T. Lehman, "Shall We Look at the Woods as Well as at Trees When We Evaluate?" (Article accepted for publication by the Journal of Home Economics), pp. 1-2. (Typewritten)
4 Smith and Tyler, op. cit., p. 11.
Since the primary purpose of education is thus to effect these modifications in behavior patterns, it can be seen that these constitute the real objectives of the school, in relation to which educational accomplishment must be determined. Evaluation, therefore, is concerned with appraising a wide range of behavior changes which may be evidenced in improvement in ability to do constructive thinking, in kind of attitudes and values held, in work habits established, skills acquired, appreciations developed, interests stimulated, and knowledge possessed. The specific behaviors selected by the school as expected educational outcomes may depend upon the values held as part of the school's philosophy; evaluation, then, pertains to these underlying values. As Fleck has said, "Any educational venture should be concerned with the controlling values that direct it."

As a basis for forming value-judgments concerning these complex human behaviors which are expected educational outcomes, a variety of techniques and procedures needs to be employed in sampling this behavior. These may range from pencil-and-paper tests to more informal types of appraisal, such as observation, self-evaluation, teachers' estimates, questionnaires, and inventories. Any objective will be most adequately evaluated when a number of different methods of appraisal are employed so that a wide range of evidence concerning student progress can be secured.

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If chosen with respect to appropriateness for the particular group of students and for the objective in question, there are many techniques which will prove useful in furnishing information which is significant in an evaluation program.

Student participation in planning means of evaluating growth — as well as actual self-evaluation — should be provided for, since such participation will not only promote the development of self-direction in students but can also furnish much worth-while information to the collection of evidence concerning changes in students' behavior. This information accumulated from various sources — when viewed in its entirety — can contribute to a meaningful picture of the student's total development, including the manner in which his behavior patterns are related in this development.

It is this organization of behavior patterns which needs to be perceived in judging student accomplishment. Viewing separate aspects of behavior in isolation, without regard for the way in which they are inter-related in a person's total development, gives a distorted picture of the individual. Tyler cautions against this when he states:

... the recognition that an educational program seeks to change the student's information, skills, ways of thinking, attitudes, and interests, may result in an evaluation program which appraises the development of each of these aspects of behavior separately, and makes no effort to relate them. We must not forget that the human being reacts in a fairly unified fashion; hence, in any given situation information is not usually separated from skills, from ways of thinking,
or from attitudes, interests, and appreciations. For example, a student who encounters an important social-civic problem is expected to draw upon his information, to use such skill as he has in locating additional facts, to think through the problem critically, to make choices of courses of action in terms of fundamental values and attitudes, and to be continually interested in better solutions to such problems. This clearly involves the relationship of various behavior patterns and their better integration.®

Since the concern in education, then, is for the pattern of the student's total development resulting from growth toward fundamental educational objectives, it is imperative that purposeful attention be given — both in teaching and in evaluation — to all these important objectives. It is reasonable to assume that when appraisal takes into consideration only one or two objectives, undue attention will be focused upon these in relation to other goals to be attained. If students know that they will be evaluated only in relation to the achievement of certain objectives — such as the development of technical skills or the acquisition of information — these will be the areas upon which they will concentrate their study. Teachers, likewise, have a tendency to direct their efforts toward those more tangible objectives which can be the most readily measured.

The value and necessity of being able to secure some evidence that progress is being made by students toward goals outlined is revealed through these statements in a recent report of the Association for Higher Education:

6Smith and Tyler, op. cit., p. 13.
Evaluation is essential to effective teaching; it cannot be separated from the total educational process. A program of evaluation has a dynamic effect upon an educational program. It makes its major contribution by giving the teacher a keener perception of the complex nature of the process of learning; it develops critical insight and instructional skills; it stimulates teachers to make changes in organization and method; it develops increased understanding of objectives.

This influence of evaluation in improving teaching and learning emphasizes the need for educational appraisal to be sufficiently comprehensive to encompass all major objectives of the curriculum and to be appropriate for evaluating the diverse behavior included in these objectives. It is only when this is true that the evaluation program can furnish concrete evidence as to the validity of the hypotheses upon which the school operates. As these hypotheses are tested and are found to be valid or not valid, they are either retained as a basis on which to build the school's curricular program or they are rejected in favor of other hypotheses.

Evaluative procedures are, therefore, the means of securing information about the results of education so that improvement can be facilitated. This improvement will be reflected in changes in objectives, in teaching, in the use of methods and materials, and in student behavior. With regard to the way in which evaluation fits into the total educational pattern, Bloom has said:

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If progress is to be made in the field of education, teachers must see their job clearly. They must know their own purposes and goals, they must know when they achieve these goals, and they must know where and why they fail. To do this, they must set up their objectives, measure initial status of students with respect to these objectives, teach, measure final status of students, analyze results to determine success and failure; then they must repeat the cycle over and over again, revising objectives, revising instructional procedures, revising measurement devices — providing a continuous program of educational achievement.8

Thus, it can be understood that evaluation — to be effective — must be concerned with changes in student behavior and in the organization of behavior patterns, discovered through the use of a wide variety of suitable techniques and procedures. Too, evaluation must include appraisal of progress toward all major objectives of the educational program, with full consideration for the underlying values upon which these objectives are based; and it must be a continuous and integral part of the teaching-learning process, leading to an improved educational program.

Importance of the Ability to Do Critical Thinking as an Educational Objective

One of the most important goals of the educational process is the development of the ability to do sound thinking. The President's Commission on Higher Education has listed this ability as one of the basic outcomes desired of a college education. The fundamental nature of this objective for all education can be judged

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from the following statement by the Commission:

Ability to think and to reason, within the limits set by one's mental capacity, should be the distinguishing mark of an educated person. . . . Development of the reasoning faculty, of the habit of critical appraisal, should be the constant and pervasive aim of all education, in every field and at every level. 9

The significance of this objective for all fields is also emphasized by Wrightstone's statement that "an objective to which almost any subject area subscribes is development of powers of critical thinking." 10

Certainly the area of home economics recognizes the development of the student's ability to do effective thinking as a primary goal of home economics instruction. The Committee on Criteria for Evaluating College Programs in Home Economics lists progress in "acquiring the desire, habits, and skills of thinking critically and constructively" and "using knowledge in solving problems" as behavior generally accepted by home economics departments as showing desirable results of educative experience. 11 Fleck, likewise, stresses the importance in the home economics program of objectives pertaining to thinking when she states that "the ability to think


11Committee on Criteria for Evaluating College Programs in Home Economics, op. cit., p. 17.
critically is fundamental in the total development of home economics students.\textsuperscript{12}

The home economics student, as any other, must be prepared to make prudent decisions regarding problems encountered in relation to personal living, intelligent citizenship, and social responsibility. In addition, she needs to be capable of being a successful homemaker. This involves making and carrying out plans for her work as housekeeper, consumer buyer, dietitian and cook, clothing expert, and coordinator of all family activities. These varied facets of the homemaking role call for skill in different aspects of critical thinking.

Such aspects of thinking have been classified in various ways. One such classification groups the more or less homogenous types of behavior involved in thinking into four large groups, namely: (1) the ability to get, select and organize ideas and information; (2) the ability to interpret data; (3) the ability to apply principles, generalizations, and facts to new problems; and (4) abilities associated with evaluating arguments and understanding the nature of proof.\textsuperscript{13}

While the process of clear thinking has been analyzed into these various abilities, it must be recognized that these may

\textsuperscript{12} Fleck, op. cit., p. 34.
overlap each other. Thus, reflective thinking in relation to any particular problem may involve a number of different abilities.

Thinking abilities are likewise affected by emotions and attitudes which sometimes block effective thinking. This is particularly true in regard to attitudes toward school work. Unfavorable attitudes toward teachers or the subject under consideration — and toward examinations, especially — may keep the student from being logical in his thinking.

To be considered also is the fact that, in many courses, the student's disposition to think is not stimulated. Too often it is the mere memorization and recall of facts which are required, with little regard for their use. In an early study of the relation between recall and the higher mental processes, Tyler noted that college students were chiefly concerned with the memorization of facts. In regard to this, he comments:

Interviews with college students indicate that more than 60 per cent of the students in college believe that the chief duty of college students is to memorize the information which their instructors consider important. Emphasis given to recall of facts in typical college examinations is one of the chief reasons for the existence of this belief.\(^\text{14}\)

The argument is sometimes presented that, since facts are necessary for any kind of reasoning or thinking, skill in ability to acquire facts is closely related to the development of ability

to think effectively. It has also been assumed that teaching methods which stress the acquisition of information produce the ability to think. Such assumptions, however, are contrary to fact. Although the possession of knowledge is certainly a necessary prerequisite to being able to use such knowledge, the mastery of facts gives no assurance that there will be an accompanying skill in being able to analyze and synthesize ideas into a useful application to a real situation. This point is emphasized by Williamson and Lyle:

Information is necessary to understanding but mere knowledge of certain facts does not insure understanding, since understanding depends on recognition of the full meaning of the facts and of their application to a variety of situations.¹⁵

Glaser also notes that possession of information is not proof of corresponding ability to relate that information to problem-solving. As he expresses it:

One's ability to apply knowledge to the solution of given problems is not in direct proportion to one's knowledge of facts in the field pertaining to those problems. Knowledge may sometimes be a result of superficial reading or rote memory; some persons with a good deal of factual knowledge in the field do not feel a sufficient stimulus for thought and thus do not undertake directive thinking and some persons are able to apply effectively a relatively limited knowledge of facts.¹⁶


There have been a number of studies which furnish evidence to support these judgments concerning the relation between the two types of abilities. One such study was made by Tyler at The Ohio State University. He developed examinations requiring various kinds of intellectual behavior and then compared students' recall of information taught in college courses with their success in carrying on higher mental processes. The results of this study showed that many students, in a variety of subjects, developed a high degree of ability in mere recall without acquiring equal facility in applying principles and drawing inferences from data. Low correlations between recall and the latter two abilities were consistent in the different courses. For example, the coefficient of correlation between scores on tests requiring recall and requiring students to draw inferences from new data was .31 for one group of sixty-two home economics students and .37 for another group of seventy-three students.17

Another investigation which bears out the fact that possession of knowledge is no indication of ability to use it is one in which Bloom and Broder studied the problem-solving processes of college students. In analyzing the variations in characteristics between students who could successfully solve the problems presented to them and students who could not, these research workers concluded

that the major difference between the two groups was in the extent to which students in each could bring their relevant knowledge to bear on the problems. Often the unsuccessful students had all the information needed for the solution of the problems but were unable to apply this knowledge. Another difference between the two groups was in attitude toward the solution of problems. The unsuccessful students were inclined to feel that reasoning is of little or no value in problem-solving. Consequently, they tended to "give up" without trying to carry through a chain of reasoning in working the problem. 18

Such studies indicate that, if education is to promote the development of the ability and disposition to do constructive thinking, this objective must be clearly recognized by teachers and provision made through instruction for inducing such behavior. That point of view is also expressed by Heil and others:

Important objectives must be "taught for" directly — they are not by-products of instruction. To insure a maximum amount of achievement in any important objective, it is also imperative that a continuous cycle of teaching-evaluation-teaching occur. Only in this way can a significant improvement in the students' understanding take place. 19

Furst is likewise of the opinion that the development of the ability to do clear thinking must be given direct attention in


the educational program. He writes:

. . . the cultivation of thinking abilities also seems to be facilitated by instruction which encourages the learner to perceive relations among ideas, apply facts previously learned, recognize implicit assumptions, and so on. The point of view taken here is that even though superior scholastic aptitude may enable students to accomplish various intellectual exercises without too much formal instruction in a given field, it is unlikely that students will reach the higher levels of performance in a subject field without the acquisition of certain specialized knowledge and instruction aimed at the cultivation of thinking skills.20

Evidence which suggests that not all types of instruction are equally satisfactory for promoting the development of the ability to think critically is furnished through a study made by Bloom. Using recordings of class events, he thus helped college students to recall thoughts which had occurred to them during lectures and discussions in these classes. From the findings, he concluded that the lecture is a successful method of securing students' attention to the information being presented but that the discussion is better for stimulating the problem-solving types of thought. Bloom summarizes his study by stating:

All this suggests that if the objective of education is the development of knowledge about a topic or field, the lecture is a far more efficient method of communicating such knowledge and of securing the attention of students to these ideas than is the discussion. However, if the objective is the development of abilities and skills which are problem-solving in nature, the least efficient discussion is superior to most . . . lectures.21

This study supports the opinions cited that the development of ability to do constructive thinking must be given special attention in the educational program. Such attention should aid students in learning to use thinking skills to solve real problems. Unless information acquired can be related to experiences in living, there has been no real understanding developed. Yet it is the development of such understanding, resulting from the ability to think critically, which is the major goal of education.

The Place of Home Management in the Home Economics Curriculum

Certainly one of the most important objectives — if not the major objective — of any home economics program is the development of the student's ability to become an effective homemaker. Although being successful in this role requires many different kinds of knowledge and skill, perhaps the final test of the homemaker's effectiveness lies in her ability to help her family — as individuals and as a group — to achieve a satisfying way of life with whatever resources, both human and material, are available for accomplishing this. This process of effectively using these human and material resources to achieve goals is called management.

Management, therefore, is one of the most vital aspects of homemaking, since it is a means of enriching personal and family living by enabling individuals and families to reach the goals which are of importance to them. In order to reach these goals,
wise decisions must be made in regard to the use of both material and human resources. Thus, the task of management is one of making decisions concerning the utilization of such resources as time, energy, abilities, interests, information, money, and materials. Since the supply of these resources is limited, judgment must be exercised in using them if, through their use, desired goals are to be attained.

Following certain definite steps which are typical of the managerial process will aid one in making the best use of these limited resources. These steps are:

1. Making a plan based on goal values sought.
2. Putting the plan into action.
3. Keeping records of the plan's usefulness.
4. Evaluating the action in terms of the goal values realized.
5. Making a new plan based on the evaluation of the previous plan.22

The application of these steps of the managerial process can aid both individuals and groups to use their resources more effectively and can thus contribute substantially toward the attainment of more satisfying living. In following these steps it must be remembered that any plan for the use of a particular resource — or an evaluation of the success of such a plan — needs to be made with full

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consideration given to the fact that an expenditure of one resource will undoubtedly affect the use of another.

Thus, decisions made in one area of management may closely affect or possibly determine those made in other areas. The homemaker in one family, for example, may choose to use her time and abilities in home production, thus reducing actual money expenditures but limiting the amount of time which she has available for other family and outside activities. For the homemaker who is employed and has little time to spend in household activities, however, the resource of money can perhaps substitute for the time which might otherwise be devoted to producing goods and services. In either case, the decision as to the use of a particular resource affects other decisions which must be made. This inter-related aspect of management is well explained by Gross and Crandall:

Decisions in family or group living deal not only with the use of resources individually but with the inter-relationship of these uses. One resource must be balanced against another. The exigencies of the period, whether of the nation or of the family, affect the balance; but somewhere a balance must be struck.23

The way in which a family or individual chooses to balance resources in order to secure maximum satisfaction will depend largely upon the particular values which are cherished. The values held, in turn, determine the goals which are being sought. Goodyear and Klohr clearly describe the place of values in management in

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these statements:

Management today, whether carried on in personal and family living or in business and industry, is directed ultimately to more significant ends than the efficient performance of specific tasks, for management deals with the process of realizing goal values. Goals vary from individual to individual, from family to family, and from industry to industry, depending upon the values each holds and the resources available for their achievement. Creative management puts routine tasks in their place by providing for the achievement of goals through the intelligent, responsible use of human and material resources. It places emphasis on values that provide for optimum self-development and that promote satisfactory human relations. Management is "good" and effective only as it (1) enables individuals and groups to realize values that they consider worth-while and (2) gives continuing direction to socially significant activities.

Management, therefore, becomes a process operating on two distinct but related levels, one providing for the efficient use of human and material resources in specific routine activities, and the other directed toward the realization of more satisfying ways of living through the achievement of long-term goals based on human-centered values.24

These long-term goals of the family may change at different stages of the family cycle, but the means of attaining these goals—the management of resources—continues throughout, since decisions in regard to the use of these various resources must constantly be made by every individual, in every home, and in every area of homemaking. In foods, clothing, home furnishing, child development and in other areas of home life, the homemaker will inevitably face problems and conflicts arising in relation to this process of choosing goals and using resources so as to achieve these goals.

24 Goodyear and Klohr, op. cit., p. 16.

24 Goodyear and Klohr, op. cit., p. 16.
The fact that homemakers do face many problems of management — some of which they are not able to solve satisfactorily — was revealed in a study made by Hillman. Of one hundred-fifty young farm wives interviewed, the investigator reported that "... 21 per cent of all women in the study indicated that their lack of knowledge in certain home management practices and techniques was a factor which was affecting the happiness and unity of their homes." Although the management practices employed within the other families studied did not create such serious problems, an additional 65 per cent indicated that they, also, felt the need for more training in home management.

Hillier's study of the problems and satisfactions of young homemakers who had graduated from college with a degree in home economics likewise focuses attention on the fact that management problems are of major importance in the home. She reports that:

In the early period of marriage, especially the first year, management and housing problems were of greatest concern. However, all of the problems checked by homemakers were found, when analyzed, to be basically those of management and relationships.

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25 Christine Hillman, "Some Economic and Personal Problems of 150 Young Farm Couples" (Paper read at the meeting of the Extension Section, Association of Land Grant Colleges and Universities, Columbus, Ohio, November 9, 1953), p. 5.

26 Ibid.

It can be seen from these studies that management permeates all aspects of homemaking; therefore, any education which is designed to prepare women for this phase of living needs to place much emphasis upon the managerial aspect of the homemaking role. It would appear that, in both college and high school, management should be integrated with every area of home economics subject matter if the student is to learn how to apply management principles and related facts in all areas. A home management course can present these general principles and facts and can offer some opportunity for their application, but it can not provide experiences in applying these principles in all phases of home economics. In order for students to have such essential experiences, therefore, management must be incorporated throughout the curriculum if it is to furnish adequate preparation for the role of homemaking.

This idea of teaching management in all courses receives support from current concern for a family-centered program. McGinnis, who has been one of the outstanding advocates of such a program states:

Every aspect of home economics in a family centered program needs to be taught in relation to cost. Each laboratory lesson, each purchase made by the student, each plan made for a family, has cost as one aspect of the problem. Otherwise, the teaching is completely unrealistic in relation to what the student faces when she becomes a homemaker. To be able to live as well as possible and find fun and satisfaction in it, whatever the economic level of the family is a great blessing.

Family centered teaching today needs to be geared to the problem of time — in every class, every unit, each lesson, each choice made.
To understand one's own fatigue limits and the signs of fatigue in children and adults is essential in a family centered program.

A family centered program in home economics then, wherever it is taught, is one related to the realities of family living, including all the stages through which each family goes. . . . Each aspect of family life and homemaking is taught in relation to cost in terms of personal or family goals in money, time, energy, and fatigue.28

As she outlines what a family centered program means, it becomes apparent that management is a salient feature of such a program. Opportunities for teaching good management of human and material resources can be found within all areas of home economics, at both the college and high school level. The allocation of money, the wise use of time and energy, the problem of using the human resources of interests and abilities to advantage are all related to the various areas of home economics.

The economic level of families inevitably influences choices made in all phases of homemaking and therefore needs to be given much consideration in teaching. In foods courses and units, the selection of food and meal planning should be taught not only in relation to nutritional needs but in relation to cost in accordance with the family's budget. Feeding the family as well as possible nutritionally and satisfying family preferences in meals is essential for both low and high income groups, but the specific foods chosen in each may — of necessity — differ according to the

amount of money available. Decisions made in regard to clothing the family will likewise depend to some extent upon money income, and this fact should be brought out in any teaching which concerns clothing choices. The wisdom of buying or constructing garments, the quality of fabrics and the care they will require, the influence of fashion upon cost of clothing, and the fair apportioning of the clothing budget among various family members should all be studied in the light of different income levels of families.

The type of housing, furnishings, and equipment which it may be wise — or even possible — for a family to purchase is likewise largely determined by the amount of money which the family has. Therefore, any college or high school instruction which does not deal realistically with the cost of buying and caring for such goods will not aid students to solve money management problems which may be encountered later in home life.

It must be remembered, however, that in teaching, emphasis should be given to the fact that there are many factors besides the money involved which need to be considered in connection with purchasing. As Goodyear and Klohr state, "Initial cost in time, energy, and money, use and care involved, and satisfactions to be gained are all part of determining wise choices at the market." 29

Classes need to stress time and energy saving not only in relation to the selection of products but in connection with methods

used in various "doing" processes, such as in food preparation and serving, clothing construction, laundering, and in care and use of home furnishings. The efficient use and storage of equipment and materials for these processes so as to simplify work and shorten time needed for an operation are also basic aspects of management which should not be disregarded in classroom teaching.

In connection with every aspect of homemaking, students should become aware of the need to weigh alternative choices in terms of the balance of resources available to individuals and families, including economic resources, time available, the abundance of strength and health of family members, and the satisfactions to be secured from each choice made. In regard to this weighing of choices, students should be led to realize that the goals of individuals and families must be the basis for making decisions in all phases of personal and family living. The fact that these goals vary greatly because of different values held should also be given recognition.

Because of these differences in values and in goals desired in living, there can be no fixed and absolute standards which should be accepted by all. Classroom teaching, therefore, must avoid the implication that there are "right" standards in any area of homemaking, whether it be food production and service, clothing, home furnishings, or child development. Too often standards taught in college, and sometimes in high school classes, are impractical for
use in many home situations, yet the student receives the impres­sion that these are the "correct" and, therefore, the only accept­able standards. Students need to learn that reasonable, intelligent standards are those which are set in terms of one's own goals and needs and which are flexible enough to be changed when the cause for change arises without any resulting feelings of guilt on the part of the homemaker.

Students should become aware that plans, too, must be flex­ible if they are to serve their purpose, but that planning is essential for effective management in all areas. Teachers must be concerned, therefore, with helping students to develop ability in planning as well as in "doing," since such an ability does not emerge spontaneously nor does it result from following teacher-made plans. Active student participation in planning objectives to be achieved, units to be studied, work to be accomplished, time to be spent on activities, and responsibilities to be shared gives the student confidence in her own ability to make satisfactory plans and to think through problems.

In all classes, students ought to be taught to evaluate their own plans, their own work, their standards, their choices — not merely in terms of the opinions of others but in respect to the progress made possible toward ultimate goals being sought. Classes which stimulate students to clarify their own goals for personal and family living and which teach how to make discriminating choices
in ways of using resources to achieve these goals have contributed
to the teaching of management for effective living.

Such an emphasis on management at all levels is important
in both high school and college. Fortunately, there is some evi­
dence which indicates that management — in both theory and prac­
tice — is being increasingly recognized in high schools. The
greater compartmentalization of home economics subject matter at
the college level may in part explain the fact that the teaching of
management throughout the curriculum has received less attention
there than in high school classes. But it is apparent that the
secondary school home economics teacher must be doubly concerned
with teaching management in all areas of homemaking, because home
economics education at that level has as its main purpose aiding
students to develop attitudes and abilities that will enable them
to be successful in family living.

Leaders in the field of home economics are expressing their
conviction that if the secondary school home economics program is
to fulfill its purpose, it must assist students in defining their
values, in setting goals in accord with these values, and in learn­
ing to use human and material resources to reach these goals. With
reference to this responsibility, Schooler declares:

Homemaking education in elementary and secondary
schools should deal with the students' present and
future home life. It should help them to understand
the values of home and family life and to master
essential managerial and other homemaking skills.
Opportunities for teaching management are found everywhere, all of the time, in elementary and secondary education.\textsuperscript{30}

She further points up the need for homemaking classes to provide learning experiences in planning, choosing, and doing in all areas of homemaking so that these students will learn how to use effectively their time, energy, abilities, money, and materials in ways that will contribute to the attainment of goals.

Price, in reporting a study of the management needs and interests of girls in the secondary school, likewise calls attention to the high school student's need for both home and classroom experiences in management in order that she may develop the competence so needed for both her present and future responsibilities. Suggesting ways in which these experiences can be gained within the home economics curriculum and pointing out the understandings which may accrue from them, she concludes:

We shall not expect our students to become good managers over night, nor in a single unit, nor even in a year of school work. But we shall need to emphasize management in all areas and at each grade level until these practices become a part of living. . . . We shall hope that as she learns (1) that there is no one method of doing any task, and (2) that one must continually be searching for a better way, for more suitable tools, and for ways of leaving out unimportant details, she will see her homemaking tasks as a challenge to her ingenuity and not as a drudgery which must be endured.

We shall want her to learn that management is not a goal in and of itself — that we manage our resources to achieve those things we consider important in living.

As teachers we shall hope to demonstrate our own ability to manage our resources, to achieve the values we consider most important, thus showing by example as well as by words that management pays in helping one to achieve what one most desires.\footnote{Hazel H. Price, "Where Can I Find the Time?" \textit{Forecast}, LXX (February, 1954), 74.}

As Price has noted, home economics teachers themselves must be skillful in using management and must be cognizant of its benefits if they are to be able to teach secondary school students how to become good managers. But secondary school teachers will be efficient in teaching management only to the degree to which they, in turn, have learned through the college curriculum how to employ management as an effective integrating process, both in the classroom and in the home.

The findings from the studies cited and the thoughts expressed by leaders in the field of home economics all make it apparent that emphasis on the development of managerial abilities deserves a prominent place in the home economics curriculum, at both the college and secondary level; too, management must be interwoven with every subject area taught in this field if students are to learn how to use management in satisfactorily solving personal and family problems.

As is true for other objectives, however, teaching alone is not enough. Knowledge of results accomplished through instruction is essential if the teacher is to know where and how to
increase the effectiveness of her teaching. Such knowledge can come only from adequate, appropriate, and purposeful evaluation.

The steps followed in developing an instrument for sampling certain aspects of ability to apply broad facts and generalizations in management situations are described in the chapter following.
CHAPTER III
THE DEVELOPMENT OF THE INSTRUMENT

Since the hypothesis which served as a basis for this study was that a valid and reliable instrument could be developed for measuring the ability of college home economics students to apply management generalizations in the solution of homemaking problems, a major concern centered in the development of such an instrument and in the use of procedures which would help to insure its validity and reliability.

Analysis of the Objective

The first step in the development of the instrument was to analyze the objective in terms of the behavior involved in the application of home management generalizations. It was believed that the behaviors which Smith and Tyler list as being involved in applying social facts and generalizations to social problems are much the same as those used in applying management generalizations and related facts.¹ These behaviors, adapted from those listed by Smith and Tyler, are:

1. The ability to see logical relations between generalizations and pertinent facts on the one hand and the factors involved in a problem on the other; that is, to see whether a

¹Eugene R. Smith and Ralph W. Tyler, Appraising and Recording Student Progress (New York: Harper and Brothers, 1942), pp. 197-98.
statement supports, contradicts, or is irrelevant to (neither supports nor contradicts) a given decision or conclusion.

2. The ability to evaluate arguments presented in connection with a problem, and to discriminate between statements of facts, statements of opinion, and misconceptions.

3. The ability to judge the consistency of a course of action with relation to goals; that is, to judge the appropriateness of the course of action for attaining goals.

Smith and Tyler point out that the two major types of situations in which individuals use these abilities are (1) when one evaluates a proposed solution to a problem and (2) when one proposes a solution and tries to support it. The test developed in this study appraises the students' ability to see logical relations in regard to solutions which have been proposed for various homemaking problems.

The Formulation and Checking of Generalizations

The next step was to formulate a list of fundamental home management generalizations which would be applicable in the different areas of homemaking and with which senior home economics students at The Ohio State University would have had an opportunity to become acquainted.

Since home management generalizations belong within the broad category of social science generalizations, Tyler's point of view in regard to the latter seems pertinent. In developing tests of ability to apply social facts and generalizations to social problems, he and his Evaluation Staff noted that "... the majority of

2Ibid., p. 198.
useful and significant social science generalizations were not verifiable in the same sense as are the majority of scientific principles. Consequently, they decided to accept as a social science generalization or principle "any generalization which could be applied to a range of specific situations for the purpose of explanation or prediction, whether or not this generalization was applicable over an indefinitely wide range of such situations or was universally true, precise, or verifiable.

In this study, too, the term generalization was thought of as a general fact or concept which is useful in predicting what will happen in a given situation, or in explaining what has happened, or — also — which is basic for wise decision making or for judging the decisions of others. For example, a generalization which might be said to predict or explain is this one: "Positive attitudes toward family members tend to build up their confidence and self-assurance and to encourage them to act in the desired manner." However, since the human element is always involved in home management — as in any social science — it was recognized that such generalizations can not be used for making precise predictions or explanations as can generalizations in the physical sciences.

Many of the generalizations formulated are those which may be considered basic for wise decision making or for judging the decisions of others. Such generalizations are likely to express a

3 Ibid., p. 171.
4 Ibid.
belief or a point of view, as "Good management of resources is judged as much or more by satisfaction — or psychic income — enjoyed by the family as by possessions on hand or money saved." Another generalization of this type is one stating that "appreciation of all family members is essential to harmonious group relationships and an individual sense of security."

Sixty generalizations were formulated from concepts emphasized in the following major college texts in home management:


Irma H. Gross and Mary E. Lewis, *Home Management: with Special Reference to the College Home Management House*, (1940).


One bulletin was used, also. This was:


Contained in the list of generalizations developed are some dealing with the broad aspects of management — such as the place of values and goals in management, the significance of relationships,
and planning and evaluating — as well as generalizations dealing specifically with certain resources as time, energy, and money.

Generalizations were grouped under the categories of "broad generalizations" and "specific generalizations," according to the classification which seemed most appropriate for each generalization. For example, the generalization stating that "human centered values underlie wise home management decisions" is of a general nature, so this was grouped with generalizations dealing with the broader aspects of management. A more specific generalization — and therefore so classified — is one which states that "maintaining correct posture when working helps to prevent unnecessary fatigue." Exhibit I in Appendix A contains the sixty generalizations formulated.

Since it was desired that the generalizations selected be applicable in the different areas of home making and be those which students had had the opportunity to learn, it was necessary to determine which generalizations these were. It was expected that every home economics major at The Ohio State University would have had a chance to become acquainted with some of these generalizations in the core of courses from the different areas of home economics required in the student's curriculum. These courses were as follows:

H.E. 405 - Elements of Family Living

H.E. 430 - Introduction to Clothing and Textiles

H.E. 440 - Introduction to Nutrition and Foods
H.E. 450 - The House
H.E. 506 - Household Equipment
H.E. 512 - Home Furnishing
H.E. 559 - Household Buying
H.E. 560 - Home Management
H.E. 561 - Introduction to Child Development

Home Economics 560 deals directly with all aspects of management, including the use of all types of resources available to families. Other courses, to some extent, have management incorporated with the subject matter. Attention is given in Home Economics 405 to decision-making in relation to problems of home life, with emphasis on the way in which the use of resources may contribute to individual and family well-being. A number of core courses give special consideration to the management of money and materials in buying and caring for a particular commodity, as clothing and textiles, food, housing, equipment, and furnishings (H.E. 430, 440, 450, 506, 512). A study of the market and how it affects the selection and use of resources in families is included in Household Buying. Time and energy management are also stressed, both in Household Equipment and in Home Management. Relationships in family life are emphasized too, particularly in Elements of Family Living and in Introduction to Child Development. Therefore, one would expect that through these courses students would have a variety of opportunities to acquire management information and to learn to apply it. The extent to which this would be true would depend upon the
emphasis placed upon management in these courses.

One teacher for each of these nine core home economics courses was asked to check: (1) which generalization she believed to be important in her area of home economics and (2) all those which involved concepts that she made some use of with students in the core home economics course which she taught. In some cases, the checking for a course represented a composite of opinions of the several instructors who taught different sections of the same core course. In others, the checking was done by one person who was either the only teacher of the course or the person who most often taught that particular course. The check form used by the core teachers and the summary of the checking are included in Appendix A.

Every generalization in the list of sixty was considered important in the area for which checked by at least four — but not always the same four — of the nine teachers participating in this part of the study. Thirty of the generalizations were used in at least four of the different core courses, and all but three generalizations were made use of in at least two core courses. These three generalizations, therefore, were not used in the test. Included in the final form of the test were five generalizations made use of in only two core courses. However, since these generalizations were emphasized and so frequently used in the courses for which checked (Household Equipment and Home Management), students had had many opportunities to become acquainted with the generalizations and their applications; therefore, students could be expected to be
able to apply these generalizations in a comparatively new home-making situation.

On the whole, the generalizations most used in core courses were those concerned with values and goals, relationships, and the adaptation of management procedures to specific situations. The generalizations dealing with energy and work habits were used in the fewest core courses, their use being concentrated in the equipment and management courses. Fewer generalizations were made use of in core courses than were checked as important in the respective core areas. This fact may indicate that some of the generalizations were considered important only at a level beyond that of the core course, or it may mean that certain generalizations, although considered important in a first course in the area, were not used with students.

According to Garrett, "the validity of a test score . . . depends directly upon the care with which the items in the test have been chosen." For this reason, a sound procedure in test construction is to secure the judgment of competent persons in regard to the suitability of material selected for the purposes of the test. Therefore, a jury of fifteen home management specialists from a number of states in different parts of the country were asked to check the statements for accuracy and for their importance in management. Eleven of these persons responded. All jury members were

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either college classroom teachers of home management or heads of college departments in this area. Seven of the jury taught undergraduate courses in home management. Only three persons were authors, or co-authors, of books from which information for the management generalizations was secured.

Since one of the jurors — instead of following the complete instructions — checked only the broad generalizations, these were checked for accuracy by eleven persons while the specific generalizations were checked by ten. The jury check form used was very similar to that used by core teachers. Exhibit III in Appendix A contains the summary of the jury's checking.

If eighty per cent of the jurors agreed upon the accuracy of a generalization, it was considered usable without any revision. Therefore, any broad generalization on which nine or more persons agreed and any specific generalization on which eight or more agreed was used without any revision except minor changes in wording. In several cases in which statements were marked inaccurate, the jury members indicated that they agreed with the general concepts involved and would consider the statements accurate if more precise wording were used to clarify the meaning. In two cases, certain jury members thought that the meaning of the generalizations should be modified so that they would be less inclusive. Therefore, using the jury's suggestions for re-wording, these six generalizations were revised and retained in the group. Eliminated from the list
were six statements which some believed should not be included because of the number of variables affecting the specific points in question.

Ten jury members checked the importance of the broad generalizations, and eight checked the specific generalizations. All broad generalizations were considered of most importance by at least fifty per cent — or five — of the jury members checking them. Only three broad generalizations were considered of little importance. Since one of these was eliminated from the final list because of inaccuracy, there were only two broad generalizations retained which were marked by anyone as of little importance, and this rating was by one jury member only. One of these two generalizations was marked as of most importance by five jurors, and eight jurors classed the other generalization as of most importance.

There were only five specific generalizations not considered of most importance by at least fifty per cent — or four — of the jurors checking them. Of these, all but one were eliminated because they were also considered inaccurate. Since this one generalization was considered of most importance by only three — or less than fifty per cent — of the jury and was considered of little importance by two of the jury, this generalization was likewise deleted from the list.

Jurors were given an opportunity to add to the list other generalizations which they believed involved basic and important ideas in management. Only one was added; however, this was not used
since the idea expressed therein was already contained in another generalization. Therefore, the final list included fifty-three statements which the jury of home management specialists classed as basic and important statements of management. This list, containing the revised generalizations and the list of those eliminated are included in Appendix A.

The Selection of Problem-Situations

The basis for the selection of problem-situations was that they should involve important and realistic home problems which would be new and interesting to students and to which the generalizations formulated could be applied. Although it was not intended that every problem would contain only factors representing one specific core area in the curriculum, an effort was made to develop a group of problems using management aspects which could be related to a number of core areas. Thus, the problems developed made use of situations from such areas as housing, equipment, clothing and textiles, consumer buying, and family relationships.

In addition to ideas drawn from the investigator's own experience and observation, information obtained from unpublished materials and from homemakers was considered in formulating the problem-situations. Written accounts of the homemaking problems of eighty-three young married graduates of The Ohio State University School of Home Economics were carefully studied in order to determine problems of home management which they regarded as of major
importance. Case studies of family life were also used as background reading prior to setting up the problem-situations. A group of case studies of actual families, once submitted by students as part of their class requirements in one of the core courses, gave clues concerning the management problems in families which had been established for a period of years. These case studies, which had not been used in class discussion, were made available to the writer. Another group of such studies read was "Case Studies in Home Management," by Ruth M. Lindquist and Lucy A. Studley. This is a collection of case studies of family life compiled for use in a course in home management.

No problem was used verbatim from these sources. Rather, a knowledge was obtained of the real management problems which homemakers encounter. Ideas were then adapted from these problems, since many of those reported by the homemakers were too long for use in the test and contained factors that were not related to the management problems involved.

Although the problem-situations in the test embody general questions, some of which may have been discussed in the home economics courses which students cooperating in the study had taken, each problem had enough specific factors incorporated in it to make a "new" situation. For example, the problem on housing in Situation I pertains to a decision not merely between renting or buying, but a

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7Problems studied were those collected by Hillier in her investigation of the problems, satisfactions, and goals of married home economics graduates.
decision as to whether a family with young children and with no permanent location and no savings should rent an apartment or buy a house, should live in the city or in a small town. Therefore, in taking the test, the student had to do the type of thinking required to make an application of facts and generalizations in the light of the specific factors in the situation rather than to recall from memory an application learned in the classroom.

The Form of the Instrument Set Up

The instrument developed was designed to measure two different aspects of student achievement, namely: the ability to see logical relations in applying management generalizations and basic facts, and knowledge of these generalizations and facts. A measurement of the student's knowledge of management should indicate the degree to which she possesses the information needed for making practical applications in new situations.

A preliminary form of the instrument was first set up containing eight problem-situations, with twenty-five statements each. From this the final form — containing six quite different problem-situations with fourteen items per problem — was developed. (See Appendix B for this form and the key.) Each problem-situation closes with an underlined decision, which represents either a proposed solution to a family's problem or a conclusion or evaluation regarding the way in which problems were met. Since the wisdom of a management decision is dependent on family goals and hence there can be
no "right" or "wrong" decision to a problem, it was thought best to have students make judgments in relation to already determined solutions rather than to set up situations in which students must attempt to choose solutions to problems. Therefore, each problem-situation is followed by a group of fourteen statements to which students are asked to react. These statements make use of management principles and generalizations and factual information pertinent to management. Fifty-six statements make use of the latter type of information, while twenty-eight items represent management generalizations.

Much of the factual information germane to management decisions was obtained from home management textbooks listed earlier in this chapter. Other books and publications used were:


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*These references are fully documented in the Bibliography.*
Ideas for these statements were also drawn from the writer's own general knowledge and experience in various areas. For example, observations made through personal experience — supported by information from reference books — served as a basis for the false statement that "less variation is found in clothing prices than in almost any other group of commodities the family buys" (Item 41, Problem III). An item which represents a management generalization is the following: "Adjusting the heights of work surfaces to promote good posture reduces the energy necessary to perform an activity" (Item 33, Problem III). All information used from the various sources was adapted into statements suitable for the purposes of the test.

The instrument constructed has two separate steps, each of which was planned so as to give evidence of the specific behavior to be evaluated in connection with the objectives.

In Step I — which measures one aspect of application of generalizations — the student is asked first to accept as true all statements following each problem and then to decide which of these logically support or logically contradict the underlined decision or do neither. Such identification involves seeing the logical relation between a specific statement on the one hand and the decision and factors involved in a situation on the other. The student must also be able to discern whether a statement is relevant or irrelevant to the given decision.

Step II of the instrument measures the student's knowledge
of important facts and management generalizations and also her ability to discriminate which statements can be accepted as true or as false. Therefore, in this step the student is asked to judge which statements would in general be regarded as true or as false and which are almost equally likely to be either true or false.

In other words, in Step I the student is simply being tested on her ability to make deductions and see logical relations; in Step II, on the other hand, factual knowledge is being sampled.

The Instrument Submitted to Experts for Criticism

The judgment of competent persons on the test form itself was sought as another important step in producing a valid instrument. After the first problem-situation with accompanying statements was developed, it was submitted to four persons in home economics education at the college level in order to obtain their opinions in regard to the form and clarity of the test-situations and the directions for taking the test. This one test situation was then administered to a group of graduate students in an evaluation class in home economics education at The Ohio State University in the summer quarter, 1953, to secure their further criticism and suggestions.

When five problem-situations with statements had been set up, these were subjected to the appraisal of four college instructors — one of whom was a specialist in home management — in order again to obtain criticism in regard to the test form in general and to get
the home management specialist's opinion concerning the management factors presented. In the light of the criticisms of the above three groups, the method of classifying statements was slightly changed and the directions for taking the test were re-worded.

Preliminary Trial of the Instrument

The preliminary form of the test containing eight problem-situations, each with twenty-five accompanying statements, was administered to fourteen students in an undergraduate home economics course at The Ohio State University in the summer quarter, 1953, in order to determine:

1. Time needed by students for classifying statements given with the different problems.
2. Statements which were not clearly understood by students.
3. Students' reactions to the format of the test and the answer sheet.
4. Range of scores on different problem-situations.

Of the fourteen students taking the test, three were seniors, six were juniors, one was a sophomore, three were special students, and one was a graduate student. The variation in class rank helped to show the relative difficulty of the different test-situations and their suitability for use with both beginning and advanced groups. This information was used in setting up the final form of the test, since it was expected that — when refined — it would eventually be given to freshmen as well as to seniors. It would have been better to have used more students, but — because of small undergraduate enrollment in summer school — a larger group who had had the
opportunity to learn management facts and principles and their application was not available. Nevertheless, this limited pre-testing did furnish information which was helpful in improving the test.

As a result of the trial of the instrument, the following decisions regarding it were made:

1. To use six problem-situations, with fourteen statements each.

2. To allow ninety minutes for taking the test.

3. To set up the test in elite type, since the smaller type used in the preliminary form was found to cause eye-strain.

4. To change the format of the answer sheet to facilitate marking.

5. To re-word the several statements which were not clear to all students.

6. To eliminate from consideration problem-situations which appeared to be too easy.

The Key Derived from Agreement of Judges

If a test is to be valid, it is essential that the key used in scoring be one with which competent people agree. Therefore, six persons were asked to serve as judges to set up keys for the preliminary test form containing the original eight problem-situations — plus two others — with twenty-five statements per problem. Four of the judges were associated with home economics departments in state universities, one with the U. S. Office of Education, and one was a former district supervisor of secondary school home economics. Represented in this group were persons with knowledge and
experience in evaluation and in management, as well as in regular classroom teaching of undergraduate students.

The judges in actuality took the test, classifying the statements according to the directions given students for Steps I and II. They were told, however, that they need not mark statements about which they were doubtful; therefore, not all statements were classified by all judges. The degree of agreement on the total of 250 statements is indicated below:

<table>
<thead>
<tr>
<th>Number Agreeing</th>
<th>Number of Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step I</td>
</tr>
<tr>
<td>Six jury members (100%)</td>
<td>78</td>
</tr>
<tr>
<td>Five jury members (83%)</td>
<td>59</td>
</tr>
<tr>
<td>Four jury members (67%)</td>
<td>70</td>
</tr>
</tbody>
</table>

Thus, there was agreement of four or more jury members on 207 statements in Step I, or on 82 per cent of all statements in the preliminary form of the test. On Step II, four or more jury members agreed upon the classification of 195 statements (seventy-eight per cent of all statements). There was a total of 155 statements (or sixty-two per cent) on which four or more judges agreed upon the classification in both steps of the test.

In setting up the final form of the test, no statement was retained unless four of the six judges had agreed upon the choice of response in both Steps I and II, with the exception — in Step II — of statements involving management facts and generalizations. Since only one member of the jury was a full-time specialist
in home management, her classification as true or false of any of the twenty-eight statements representing management generalizations was accepted and used even when fewer than three other judges agreed with her marking.

It was decided to have an equal distribution among "support," "contradict," and "neither support nor contradict" statements and among "true," "false," and "either true or false" statements. In this way, a student's score would not be either raised or lowered merely because of the inclusion in the test of a larger percentage of the type of items which she found to be easiest or most difficult to classify. However, in order to secure such a distribution of statements within the problems selected for the final form of the test, it was necessary to re-word thirty-three of the original statements. In some cases this was done so as to change the original classification; in others, the re-wording was to make the meaning of the statement more emphatic. These statements were then classified by five judges, four of whom were members of the original jury. The writer served as the fifth judge. Of this group of statements, none was used unless at least three out of five judges agreed upon classification. Following is the agreement of the jury upon these statements:

<table>
<thead>
<tr>
<th>Number Agreeing</th>
<th>Number of Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step I</td>
</tr>
<tr>
<td>Five jury members (100%)</td>
<td>10</td>
</tr>
<tr>
<td>Four jury members (80%)</td>
<td>7</td>
</tr>
<tr>
<td>Three jury members (60%)</td>
<td>13</td>
</tr>
</tbody>
</table>
Thus, three or more jury members agreed upon ninety-one per cent of the statements in Step I, and the same agreement was secured in Step II. On the two steps of the test, there were twenty-seven statements (or eighty-two per cent) on which three or more jury members agreed.

Selection of Problems and Statements for the Final Form of the Instrument

The following factors were considered in selecting the problems and statements for the final form of the test:

1. The types of management factors involved in the problem-situation.
2. The variety of situations included.
3. The length of the problem-situations.
4. The range of scores made on the problem by the fourteen students taking the preliminary form of the test.
5. Statements containing generalizations considered important and used by core teachers.
6. Jury agreement on classification of statements.
7. Balance of "supports," "contradicts," and "neither supports nor contradicts" statements and "true," "false," and "almost equally likely to be either true or false" statements.
8. Judges' comments.

Problem-situations were selected so that different aspects of management would be represented in the test. Thus, the final group of problems involved decisions concerning the use of both material and human resources, including such management factors as
money and other material resources, time, energy, health, abilities, psychological needs, relationships, goals, and the balancing of resources. Some problems were set up to emphasize only one or two of these factors while others were planned so as to include various aspects of management. Money management in relation to family goals was the main factor in one problem (Problem I). Although money management was also included in several other problems, it was in combination with and subordinated to a number of other factors, namely; health and psychological needs (Problem II); time, energy, and work habits (Problem III); and energy, health, time, and relationships (Problem IV). One problem (Problem V) dealt chiefly with relationships and individual ability and development, whereas another (Problem VI) was a short case study combining all the factors included in the other problems.

Both Hillier's\(^9\) and Pfeiffer's\(^10\) studies of the actual problems of homemakers revealed that certain areas and factors in home life — such as housing and location of home, employment of the wife or mother, money management, time management, consumer buying, health, and relationships in management — present problems of paramount concern to many families. Therefore, it seemed desirable to include such factors in the problem-situations.

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\(^9\)Hil\(l\)ier, op. cit., pp. 64–79.

Problems were chosen with consideration for both the way in which the length of the test and the specific problems might affect student interest and attitude, as well as for the time needed for administering the instrument. According to Gronbach, a test that is too long may actually have lowered reliability because of student fatigue and boredom. Furthermore, such a test is not practical from the standpoint of administration. Therefore, long problems were balanced by short problems so that the total time needed by anyone for the test would not exceed ninety minutes.

The range of scores made on a problem in the trial of the preliminary instrument was also considered, since this indicated to some extent the degree to which the problem could differentiate different levels of student ability. Problems with the most limited range of scores were not used in the final form of the test.

After the problem-situations and statements were developed, each test-situation was analyzed to determine the reading level in order to prevent the use of any problems which might not be readily understood by students because of vocabulary or sentence length. This was done by using the Dale-Chall word list and readability formula. No test-situation had a reading level beyond the twelfth grade, which ordinarily would not be considered too difficult for

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12 Edgar Dale and Jeanne S. Chall, A Formula for Predicting Readability (Columbus: Bureau of Educational Research, The Ohio State University).
college seniors. A check on the words which are not on the Dale-Chall word list, and which consequently were largely responsible for some of the passages being at the twelfth grade reading level, indicated — however — that these words would be quite familiar to home economics students. Such words as decisions, resources, property, nursery, homemaker, and energy — for example — are all understood by college home economics students. Therefore, it seems safe to say that the reading material of the test-situations could be easily comprehended by the students for whom the test was intended.

Care was taken also to use those generalizations which core teachers considered important and which they made use of in classes, since a test can measure growth or progress of students only when based upon material with which the student has had some opportunity to become familiar. Similarly, statements having the best jury agreement on classification were chosen in preference to others, with the number of statements used equally distributed among the three classifications in each step of the test.

In selecting both statements and problems, the comments of the judges were considered. Their opinions as to which problems they liked best from the standpoint of the management factors involved were weighed along with other factors in choosing the six problem-situations.

The final form of the test uses six of the original problem-situations, with fourteen statements per problem. Of the eighty-four
statements included in the instrument, seventy-one were from among those classified by six jury members; thirteen of the statements used were from the group of thirty-three re-worded items marked by the jury of five members. Of the group of seventy-one statements used, there was agreement of eighty per cent or more of the jury on seventy-six per cent of these items in Step I and on sixty-nine per cent in Step II. The same jury agreement was secured — in Step I — on sixty-nine per cent of the thirteen statements and on fifty-eight per cent of these statements in Step II. In all, seventy-five per cent of the statements used in Step I had the agreement of at least eighty per cent of the jury members in regard to correct classification of responses. In Step II, sixty-nine per cent of the statements were agreed upon by eighty per cent — or more — of the jury.

Twenty-eight generalizations were used, each of which was represented by one statement in the test. Included in the list are generalizations concerning values, goals, individual development, and relationships involved in family life and the way in which management procedures are related to these. Other generalizations pertain directly or indirectly to the management of money and other resources, while still others deal with energy and work habits and planning in relation to the use of resources. A list of the generalizations used is included here.
Generalizations Used in the Instrument

1. The most successful management results when cooperative group relations make it possible for all affected by the process to have a representative share in each part of it, according to their understanding and ability.

2. Human centered values underlie wise home management decisions.

3. Consideration of basic physiological and psychological needs of both children and adults is essential if management is to promote the optimum development and happiness of family members.

4. Sacrificing efficiency in the use of time, energy, or money is at times necessary in order to obtain fundamental satisfactions and promote individual development and group welfare.

5. Good management involves the ability to intelligently adjust plans while they are in the process of being carried out.

6. Successful management calls for adaptation to specific situations in individual families because of the differences in their composition, values, resources and environment.

7. The intelligent use of resources is measured by the satisfactions obtained by those concerned and by the effect upon development of the individual and upon social welfare.

8. Management which is realistic involves the acceptance of all limitations in resources, both human and material.

9. Proper channeling of the more plentiful resources may compensate for limitations in other areas.

10. Shared participation in activities as a family group strengthens bonds of affection and builds family unity.

11. Successful relationships within the family involve recognition and appreciation of individual differences in abilities, interests, and attitudes.
12. The cultivation of some individual differences will enhance character and personality and improve family life.

13. Wise management of one's own personal resources promotes individual happiness and success and may contribute to group well-being.

14. A sound, long-time financial plan for the family may provide for savings, investments, and insurance to take care of future periods of increased expenses or decreased income.

15. The real value of money income depends upon its current purchasing power, as the amount of economic goods which can be bought with a given money income varies from time to time.

16. Community goods and services add to the real income of the family.

17. Good management of resources is judged as much or more by satisfaction — or psychic income — enjoyed by the family as by possessions on hand or money saved.

18. Budgeting money income for moderately long periods at a time makes it possible to distribute large purchases over a number of years and thus more evenly apportion expenditures for each year.

19. The demand upon the family's income varies at different stages in the life cycle, with the greatest demand coming during the later school years.

20. Using credit for consumer goods may be a sound procedure when, by doing so, the family's welfare is not jeopardized by restricting power to purchase essential goods and services.

21. Buying habits and consumer demands influence the prices, kinds, and qualities of goods and services available for purchase.

22. Taking advantage of the optimum buying time in relation to business cycle, season, and special sales helps to save money or to secure other special satisfactions in goods purchased.
23. The decision between producing at home or purchasing goods depends upon the satisfaction secured from each type of goods and the balance between money resources and time, energy and ability resources.

24. Alternating types of work may reduce fatigue by requiring the use of different groups of muscles.

25. The development of skill and a feeling of accomplishment in work done may increase work output and reduce fatigue.

26. The individual, the type of work being done, and the amount of fatigue produced may determine the length and frequency of the rest periods needed in order for the worker to maintain his efficiency.

27. Adjusting the length of equipment handles and heights of work surfaces to promote good posture reduces the energy necessary to perform a given activity.

28. Functional storage space is adequate in amount, is of a suitable width, depth, and height for the articles to be stored, and is located to permit their storage at or near the place where they are first used or where most frequently used.

Statements were arranged throughout the test in such a manner that both odd-numbered and even-numbered items contained twenty-eight statements in each of the three classifications of responses in Step I and in Step II. This was done so that any differences in scores for the two halves of the test would not be due to the presence in one half of a greater number of the type of statements which were either easiest or most difficult for students to classify. Such differences in scores would have affected the reliability figure obtained.
Summary

To summarize, the following steps were taken to promote face validity of the test:

1. The home management generalizations were checked by core teachers for their importance in different areas of home economics and their use with students in core courses.

2. The importance and accuracy of the generalizations were checked by authorities in the field.

3. The problem-situations were developed from the actual problems of homemakers.

4. The proposed form of the test was submitted to competent persons for criticism.

5. A preliminary form of the instrument was administered to a student group to determine needed revisions.

6. The key for the test was checked against judges' classifications of statements.

In an effort to make the test reliable, the following were done:

1. Through the use of a preliminary form of the instrument, an attempt was made to eliminate ambiguous items and any mechanical factors causing confusion.

2. The test was geared to the level of the group by eliminating from the final form of the instrument problem-situations which were apparently too easy.

3. The readability of the test was analyzed to be sure that it was not above the reading level of the group.

4. A key for scoring was used.

Thus it can be seen that in the construction of the instrument much attention was given to both content and form of presentation in order to insure as high a degree of validity and reliability as possible.
After the instrument was developed, it was tested by administering it to virtually the entire group of seniors in home economics education. The results of this administration will be discussed in Chapter IV.
CHAPTER IV

RESULTS OF THE STUDY

The final form of the instrument was given in the fall quarter of 1953 to sixty senior students in the division of home economics education. This group included all but six of the sixty-six students who completed their student teaching during the regular academic year, 1953-54.

Administration of the Test

Students were tested on a volunteer basis and — with the exception of those who were currently doing their student teaching — were given a choice between two scheduled periods as to when they desired to take the test. The girls enrolled in student teaching at the time were given the test during their regular two-hour weekly seminar in the course. All were assured that the test would in no way affect grades in student teaching or in any other course.

In giving the test, directions were read and carefully explained to students in an effort to insure their comprehension of the task at hand. An example was used to show how to classify statements and how to mark the answer sheet. The test was scored by giving one point for each item marked in agreement with the key in each of the two steps of the test. This made a possible score of 84 for each step.
Analysis of Responses

The sixty test scores obtained in this study were analyzed to determine the "goodness" of the test. A good measuring instrument, and one which is to be useful for distinguishing various levels of ability within a group, must produce a wide range of scores, a mean score which indicates an appropriate level of difficulty for the group taking the test, and a fairly large standard deviation.

As can be seen from the range of scores given in Table 1, the test showed greater differences in ability of students to recognize the logical relation between statements and a problem-situation than in possession of information. In Part I — that is, Step I of the test — scores ranged from 34 to 86 per cent of the total statements, whereas in Part II (Step II) the lowest scoring student selected the right answers for slightly more than one-half of the items while the highest one marked only 79 per cent of the correct responses.

The difference of less than two points in mean scores for Parts I and II would suggest that — on the average — the difficulty of the two sections of the test was approximately the same. But the differences in standard deviations indicate that the total group of items in Part I of the test apparently can distinguish various levels of performance much better than can Part II. Although one might expect to find among students somewhat greater differences in ability to apply information than in possession of it — since the latter is more often emphasized in many learning
<table>
<thead>
<tr>
<th>Kinds of Items</th>
<th>Number of Items</th>
<th>Range of Scores</th>
<th>Mean Raw Score</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Raw Scores</td>
<td>Percentage Scores</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>All Items</td>
<td>84</td>
<td>29</td>
<td>72</td>
<td>34</td>
</tr>
<tr>
<td>&quot;Supports&quot;</td>
<td>28</td>
<td>6</td>
<td>28</td>
<td>21</td>
</tr>
<tr>
<td>&quot;Contradicts&quot;</td>
<td>28</td>
<td>3</td>
<td>28</td>
<td>11</td>
</tr>
<tr>
<td>&quot;Neither supports nor contradicts&quot;</td>
<td>28</td>
<td>4</td>
<td>25</td>
<td>14</td>
</tr>
<tr>
<td>Generalizations</td>
<td>28</td>
<td>12</td>
<td>23</td>
<td>43</td>
</tr>
<tr>
<td>All Items</td>
<td>84</td>
<td>43</td>
<td>66</td>
<td>51</td>
</tr>
<tr>
<td>&quot;True-false&quot;</td>
<td>56</td>
<td>26</td>
<td>51</td>
<td>46</td>
</tr>
<tr>
<td>&quot;Almost equally likely to be either true or false&quot;</td>
<td>28</td>
<td>7</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td>Generalizations</td>
<td>28</td>
<td>15</td>
<td>24</td>
<td>53</td>
</tr>
</tbody>
</table>
situations — a greater spread of scores than was obtained in Part II would be desirable.

A comparison of the statistics given for statements as classified in Part I shows two important facts about this part of the test. First, although mean scores were very similar for all types of statements included, those statements which "contradicted" conclusions to the problems gave the best spread of scores — a range of 89 per cent and a standard deviation of 6.7 points. Second, those statements which represented management generalizations gave the least spread — a range of only 39 per cent and a standard deviation of 2.4 points.

In Part II it is evident that statements classified as "would be almost equally likely to be either true or false" were more difficult for students to recognize than true-false items, since the percentage scores of the former ranged from 25 to 93 as compared with 46 to 91 for the latter. Students had a better knowledge of generalizations than of other information contained in statements, as can be noted from the higher mean for the group of generalizations. Too, students were slightly better able to recognize the truth or falsity of generalizations than they were to see how such generalizations were related to a decision.

The mean scores for different problems — given in Table 2 — show that the order of increasing difficulty of problems in Part I was V, III, II, VI, IV, and I. Problem I also had a greater deviation in range of scores than did the other problems. In Part II,
TABLE 2
SCORES MADE IN PARTS I AND II ON DIFFERENT PROBLEM-SITUATIONS

<table>
<thead>
<tr>
<th>Problems</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part I</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Range in raw scores</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Low</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>High</td>
<td>14</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Range in percentage scores</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>21</td>
<td>29</td>
<td>36</td>
<td>14</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>High</td>
<td>100</td>
<td>93</td>
<td>93</td>
<td>93</td>
<td>93</td>
<td>100</td>
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<tr>
<td>Mean raw score</td>
<td>7.9</td>
<td>9.1</td>
<td>9.4</td>
<td>8.8</td>
<td>10.3</td>
<td>8.9</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>2.9</td>
<td>2.1</td>
<td>1.8</td>
<td>2.6</td>
<td>1.9</td>
<td>2.7</td>
</tr>
<tr>
<td>Percentage mean</td>
<td>56</td>
<td>65</td>
<td>67</td>
<td>63</td>
<td>74</td>
<td>64</td>
</tr>
<tr>
<td><strong>Part II</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range in raw scores</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>High</td>
<td>11</td>
<td>13</td>
<td>12</td>
<td>14</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Range in percentage scores</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>21</td>
<td>36</td>
<td>36</td>
<td>29</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>High</td>
<td>79</td>
<td>93</td>
<td>86</td>
<td>100</td>
<td>93</td>
<td>93</td>
</tr>
<tr>
<td>Mean raw score</td>
<td>8.3</td>
<td>9.0</td>
<td>9.2</td>
<td>9.9</td>
<td>9.3</td>
<td>10.2</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>1.7</td>
<td>1.8</td>
<td>1.5</td>
<td>2.0</td>
<td>1.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Percentage mean</td>
<td>59</td>
<td>64</td>
<td>66</td>
<td>71</td>
<td>66</td>
<td>73</td>
</tr>
</tbody>
</table>
problem VI was apparently the easiest for students, with IV, V, III, II, and I following in that order of difficulty. It is apparent that problems could not be arranged in order of difficulty since this order varied in the two parts of the instrument.

Item Discrimination

One characteristic of a test which influences the reliability is the discriminating power of the items, or the degree to which each item on a test differentiates between high-scoring and low-scoring students. One of the procedures commonly used in finding the discrimination of test items is to divide the group of test scores into thirds, or quarters, and then to find the per cent of persons in the highest and lowest group passing each item. If the lowest third or fourth does as well on an item or better than the highest group, then the item and the total test are not measuring the same process.\(^1\) Items are often considered discriminating when they are passed by 15 per cent or more of the upper group than of the lower group, although the percentage difference considered acceptable is arbitrarily chosen.

The discriminating power of items in the test under consideration is indicated in Table 3 for the high and low fourths of the students. It is at once evident that Part I, which calls for logical thinking, discriminated between extreme groups better than Part II,

which tested for information. In Part I, fifty-four items — or 64 per cent — showed a difference of 20 per cent or more between the upper and lower groups. In fact, twenty-two statements (26 per cent) showed a difference of 60 per cent or over. On the other hand, thirty items (36 per cent) showed less than a 20 per cent discrimination. Of these, there were nine statements on which the two groups made equal scores, and eleven which were "reversals," or statements on which the lower group of students had a higher percentage of correct responses than the upper group.

**TABLE 3**

**NUMBER AND PER CENT OF ALL ITEMS IN PARTS I AND II OF TEST AT DIFFERENT LEVELS OF DISCRIMINATION**

<table>
<thead>
<tr>
<th>Percentage Level of Discrimination</th>
<th>Part I</th>
<th>Part II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Items</td>
<td>Per cent of Items</td>
</tr>
<tr>
<td>80 - 100</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>60 - 79</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>40 - 59</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>20 - 39</td>
<td>22</td>
<td>26</td>
</tr>
<tr>
<td>Below 20</td>
<td>30</td>
<td>36</td>
</tr>
</tbody>
</table>

In Part II, thirty-five items (or 42 per cent) showed a difference of 20 per cent or more in the scores of the two groups, with only nine of these items showing a difference of 40 per cent.
or more. Of the forty-nine non-discriminating statements (below the 20 per cent level), there were thirteen items on which the low-scoring students did better than the high-scoring group. Such findings are not surprising, for the limited range of scores on Part II suggests that the items would not show good discrimination in this part of the test.

Since students had marked the smallest percentage of correct responses on items classified as "neither supports nor contradicts" and "almost equally likely to be either true or false," it was thought that many of the non-discriminating items might be in these two classifications. An examination of the items showed that 57 per cent of the statements which showed less than a 20 per cent discrimination in Part I were those classified as "neither supports nor contradicts," and seven of the eleven reversals were in this group. In Part II, however, only 31 per cent of the items with poor discriminating qualities were classified as "almost equally likely to be either true or false," while 69 per cent of such items were true-false statements. In both parts of the test, other factors appear to have been chiefly responsible for the poor discrimination of some items.

One of these was the relative difficulty of the management generalizations, which made up 37 per cent of the non-discriminating statements in Part II (Table 4). These generalizations were ones which students were expected to know. A check on the number of students in the two groups marking these items correctly indicated
that students apparently did know most of these generalizations — in fact, both groups knew them well and consequently these items showed little discrimination. Five of these statements were passed by 100 per cent of the students in both the upper and lower fourths of the total group. Another six such statements were passed by twenty-eight or more students out of the thirty in the two groups. In other words, many of these statements based on management generalizations were too easy for the group taking the test.

TABLE 4
NUMBER AND PER CENT OF ALL NON-DISCRIMINATING ITEMS IN DIFFERENT CLASSIFICATIONS IN PARTS I AND II

<table>
<thead>
<tr>
<th>Group of Items</th>
<th>Number of Non-Discriminating Items</th>
<th>Per cent of All Non-Discriminating Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part I</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Supports&quot;</td>
<td>10</td>
<td>33</td>
</tr>
<tr>
<td>&quot;Contradicts&quot;</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>&quot;Neither supports nor contradicts&quot;</td>
<td>17</td>
<td>57</td>
</tr>
<tr>
<td>Generalizations</td>
<td>17</td>
<td>57</td>
</tr>
<tr>
<td><strong>Part II</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>True–false</td>
<td>34</td>
<td>69</td>
</tr>
<tr>
<td>&quot;Almost equally likely to be either true or false&quot;</td>
<td>15</td>
<td>31</td>
</tr>
<tr>
<td>Generalisations</td>
<td>18</td>
<td>37</td>
</tr>
</tbody>
</table>
A second factor was jury disagreement on some of the items. From Table 5 it can be seen that one-third of the non-discriminating items in Part I of the test were those on which there was less than an 80 per cent jury agreement as to correct response. This low jury agreement also may have accounted for six of the eleven reversals in Part I, or statements which were passed by a larger percentage of the low-scoring than of the high-scoring students.

In Part II, approximately one-fourth of those items with poor discriminating qualities likewise had the lowest jury agreement. But on the other hand, almost 50 per cent of the items in this section of the test had 100 per cent agreement of judges. Therefore, other reasons were undoubtedly responsible for the poor discriminating power of many of the statements.

TABLE 5

PER CENT OF JURY AGREEMENT ON ITEMS WHICH DID NOT DISCRIMINATE AT 20 PER CENT LEVEL IN PARTS I AND II

<table>
<thead>
<tr>
<th>Per cent of Agreement</th>
<th>Part I</th>
<th>Part II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of</td>
<td>Per cent of</td>
</tr>
<tr>
<td></td>
<td>Items</td>
<td>20 Items</td>
</tr>
<tr>
<td>100</td>
<td>13</td>
<td>43</td>
</tr>
<tr>
<td>80 - 83</td>
<td>7</td>
<td>24</td>
</tr>
<tr>
<td>60 - 67</td>
<td>10</td>
<td>33</td>
</tr>
</tbody>
</table>
If test items are too hard for the persons taking the test, or if asking for information which they do not possess, there is likely to be much guessing on responses and consequently such items will show little discrimination between the high-scoring and low-scoring groups. Therefore, the non-discriminating statements in each problem in Part II were further studied to see whether or not the type of information called for might have been that with which students were unfamiliar. In general, however, this did not appear to be the case. Problem II, containing facts about social security, and Problem IV, on teacher-retirement, had fewer non-discriminating items in Part II than any of the other problems, with six and four such items respectively; yet students were probably no more familiar with this type of information than with that contained in the other problems. Furthermore, two of the items which showed no discrimination in Problem II were generalisations which were passed by all students in both the upper and lower group; another item — also a management generalisation — was marked correctly by all but one student in each group. Therefore, it is apparent that these items were too easy — rather than too hard — for students.

There were, however, a few items which appeared to be too hard for students, judging from the fact that only one or two students in either group marked these items in agreement with the key. Such an item was number 40, in Problem III: "The decision between making or buying goods depends chiefly upon the balance between
money and time." Most students apparently forgot to consider the fact that ability and satisfaction to be secured are equally important factors to be considered in deciding whether to make or buy goods. At any rate, only two of the upper group of students marked this item as "almost equally likely to be either true or false," and no students in the lower group marked that response. However, it must be recognized that judges, too, did not all agree with that marking; in fact, only four of the six judges had agreed upon that classification for the item.

The wording of some statements may have caused their lack of discrimination. Such a statement is number 77 -- "It is unlikely that the woman who really enjoys homemaking will be happy in any outside employment." Only eight of the high-scoring but nine of the low-scoring students marked this statement "almost equally likely to be either true or false," the answer which was agreed upon by four of the six judges. The difference in marking is understandable, however, since the word unlikely makes it possible to interpret the statement as one which "would, in general, be regarded as true." A more definite wording for this statement would be simply "A woman who really enjoys homemaking will be unhappy in outside employment."

Statement 99, which was also a reversal, might be placed in the same category. This item reads: "Very few high schools that offer technical subjects have any choice of offerings in general education." Ten students in the lowest scoring group but only six
in the highest group marked the item false in accordance with the agreement of the six judges. The words *very few* and *choice* are indefinite and therefore may have been interpreted differently by different students. Too, it is possible that undergraduate students do not have a clear understanding of the term *general education.* On the other hand, students may have thought of high schools that offer technical subjects as those classed as technical or vocational schools and may not have known what range of subjects such schools do offer. In revising the test, it would be best to eliminate this statement.

Statement 63 could likewise be improved by a change of wording. Instead of reading "A student from a small school is likely to have a difficult time adjusting to the environment of a large high school," it would be better to omit the word *likely* and have the item read thus: "A student from a small high school will have a difficult time adjusting to the environment of a large high school." The change of wording would strengthen the classification of the statement as "almost equally likely to be either true or false." The item as it was caused no disagreement among jury members, but only eight of the upper group of students and seven of the lower group responded correctly to the item.

Several statements which were not ambiguously worded nevertheless apparently conveyed some meaning to some of the high-scoring students which did not occur to the low-scoring group. Statement 36,
for example, which states that "planning expenditures over a period of years makes it possible to more evenly apportion expenditures for each year," does not seem to have any "double meaning" or to be a "catch" question; in fact, all jury members agreed that this item "would, in general, be regarded as true." But — although there was a high percentage of correct responses in both upper and lower groups — the item was a reversal, with fourteen of the lower group passing it as compared to thirteen of the higher group. Cautious students may have over-emphasized in their thinking the fact that planning expenditures over a period of years does not always make it possible to more evenly apportion expenditures for each year.

Another such statement is number 45: "The size or amount of income is the chief factor which determines what can be accomplished with it." This item was passed by eleven students in the lower fourth but by only eight students in the upper fourth of the group, although all judges had agreed that the item "would, in general, be regarded as true."

It is possible that students let personal attitudes — rather than objective thinking — influence their marking of some statements. For example, the marking of a statement such as number 76 (Part II) — "A woman who works at two jobs will fail to do justice to either" — might be influenced by one's personal feelings in regard to the matter of women working. Another statement about which the student's thinking could also have been so affected is item 1: "Even though a family has not saved, buying a home will make the
family handle what money it has more wisely." An attitude of "wishing will make it so" — prompted by a belief in the desirability of home owning — possibly convinced some students that buying a home will make a family manage money more carefully, although five out of six jurors agreed that that is not necessarily so (Part II). There seems to be no other plausible explanation as to why only seven students in the upper fourth of the group — and eight in the lower fourth — marked the item "almost equally likely to be either true or false."

Although long statements may have poorer discriminating powers than short statements because of the difficulty which students may experience in grasping the meaning of the former, the length of the statements did not appear to be a factor in the discriminating qualities of items in the test constructed. There were very few of the longest statements among those which did not show at least a 20 per cent discrimination. In fact, the majority of statements which did not discriminate well were those of twenty or fewer words.

Altogether, there were twenty-two items which showed less than a 20 per cent discrimination in both parts of the test. For most of these items, the logical explanation for their lack of discrimination is found in reasons already discussed — low jury agreement on the key, the fact that statements were particularly easy for students to recognize or to apply, subjective attitudes which may have influenced the student's response, or poor wording of the statement. For instance, item 53 — "Family capital can help to take
care of periods when peak loads in expenditures appear" — had only 67 per cent jury agreement in Part I that the statement should be marked "supports," and only seven of the fifteen highest scoring students marked the statement that way while eight of the low-scoring students responded in agreement with the key. This item likewise did not show good discrimination in Part II, but for a different reason. Here, there was 100 per cent agreement of judges concerning the truth of the item, and all but one student out of thirty in the upper and lower groups recognized the truth of the statement.

Reliability

The reliability for each step of the test was determined by the product-moment method, using scores made by the group of sixty home economics education students. The coefficient of reliability for Part I was .772. When the Spearman-Brown formula was applied to determine the reliability of the whole test, a correlation of .871 was obtained. According to Remmers and Gage, a reliability of .85 is needed in order for a test to be useful for the purpose of individual prediction although a correlation of .50 is sufficient for measuring group accomplishment. Therefore, the coefficient obtained for Part I indicates that this part of the test could satisfactorily be used for measuring individual achievement in seeing the logical relation between home management information and factors involved in

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a situation containing management problems.

In Part II, however, the reliability coefficient was .299 and, stepped up by the Spearman-Brown formula, .461. An explanation for such low reliability might be found in the fact that on this part of the test there was a limited range of scores which — according to Greene — results in the correlation being reduced below its true value. It was thought also that — since students had the most difficulty in identifying responses classified as "almost equally likely to be either true or false" — the twenty-eight items in that classification lowered the reliability of Part II. For this reason, the reliability was computed for the true-false items alone, and the coefficient obtained was .469. When corrected by the Spearman-Brown formula, the correlation was .639. This reliability is high enough that the true-false items could be used to measure group accomplishment in knowledge of management generalizations and facts.

No doubt the major factor in the low reliability of the entire group of items in Part II was the high percentage of items which did not show satisfactory discrimination between the high-scoring and low-scoring students. Suggestions have already been given in the section on item discrimination for the revision and elimination of items which did not show good discrimination.

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Correlation of Parts of Test with Each Other and with Percentile Rankings on the Ohio State Psychological Examination

In order to determine the relationship existing between students' abilities as measured by Part I of the test and knowledge of management generalizations and facts as measured by Part II, correlations were computed and a coefficient of .468 was obtained. Although this does not indicate a high relationship, it does show that to a certain extent the two parts of the test may be measuring the same type of behavior. However, if directions for Part I of the test are followed, then it cannot be measuring knowledge of management generalizations and pertinent facts because all items must be accepted as true in order to respond correctly in this section.

Scores from each step of the test were correlated with students' percentile rankings on the Ohio State Psychological Examination in order to be sure that the variation in performance on the test was not due simply to differences in general ability related to success in academic work. For Part I, a correlation of .41 was obtained and for Part II, .45. These correlations indicate that the two parts of the test may be measuring such ability to a limited extent, and this is to be expected. However, the correlations are low enough that it is apparent that some factors other than such ability are chiefly those which are being tested.
Students' Application of Management in Practical Situations

In addition to taking certain steps to insure face validity, a usual procedure in test construction is also to validate the test by correlating the results of testing with some other criterion of the behavior which the instrument is intended to measure. Frequently, the criterion used is another test whose validity has previously been established. In some instances, however, there is no other test measuring the same behavior, as is true in the case of the test developed in this study. In such cases, actual performance in some practical situation calling for the behavior tested is often used as a criterion.

Theoretically, then, a practical situation requiring the application of management should be a suitable criterion against which to validate a test designed to measure aspects of ability to apply management. But actually, it was recognized that the application of management in a practical situation is dependent upon more than one's ability to apply management generalizations; one may be able to apply management but -- for various reasons -- may not do so. Perhaps one may not have sufficient motivation, or may not believe in the importance of management, or may simply revert to previous practices. Furthermore, the possibilities for collecting evidence in practical situations may have many limitations. For one thing, it is ordinarily very difficult to secure an adequate sampling of a subject's behavior and to obtain one which is free from the bias of
the person collecting evidence. Therefore, practical performance can not necessarily be considered an adequate criterion.

Nevertheless, it seemed worth-while in this study to try to determine whether the test forecast in any respect how successfully subjects tested would manage resources when placed in new, practical situations in student teaching and in the home management house. Therefore, a limited amount of evidence concerning performance in these two practical situations was collected through direct observations of student teaching and through interviews, both with the supervising teachers and with the University supervisors of student teaching and with those in charge of the home management house. As it was not practicable to observe students in the home management house situation, all information concerning performance there was collected at the final evaluation conferences — which the writer was permitted to attend — between the instructor of the course and the two graduate assistants who lived on either side of the duplex home management house.

It was recognized at the outset that there were a number of limitations involved in the methods employed for collecting evidence in the two situations. For one thing, the number of observations which could be made of each student teacher was so few that an adequate sampling of the student's behavior during the five and one-half weeks period was not possible. Too, observations in some cases may have been made only on the days when the student did her best — or poorest — teaching. Furthermore, the influence of the
supervising teacher was undoubtedly a factor in the student teacher's management.

Collecting evidence through interviews likewise had disadvantages. Although the persons who had the best opportunity to observe the student teacher's management were the supervising teacher and the University supervisor, they had other aspects of teaching ability to keep in mind and for this reason may have overlooked many important points of management.

Although both instructors and supervisors were asked to observe students for specific evidences of managerial ability and to keep incidents concerning such ability in mind, neither of the two groups was asked to keep daily records of the evidence which they planned to report in the interviews. Some supervising teachers, however, did keep records and some did not. In the latter case, therefore, some important incidents reflecting student teachers' managerial abilities may have been forgotten, since interviews were held at the end of the five and one-half weeks student teaching period. The same is true of the conferences in which the home management house instructor and the graduate assistants evaluated the student's contribution in that situation. In these conferences, too, many incidents which had occurred were not brought out because the instructor and the graduate assistant had discussed them together previously. Therefore, the evidence secured through these conferences likewise represented a very inadequate sampling of the student's behavior.
In spite of these limitations involved in collecting evidence, it still seemed desirable to secure such evidence as could be collected and to compare the student's performance in the theoretical with that in the practical situations. Therefore, the writer observed twenty-one student teachers who had taken the test. Time did not permit observing the entire group of sixty subjects. Interviews were also held concerning the work of these subjects in student teaching and in the home management house.

Each student teacher was observed near the beginning of the student teaching period and again in the last half of the period so that differences in managerial ability exhibited would not be due simply to differences in the length of time students had taught. Five student teachers were observed during two class periods, eleven for three periods, and five were observed during four classes.

Incidents showing good management, in which the student teacher applied her knowledge of management and used resources well, and incidents in which the student teacher failed to do so, were both recorded. Positive aspects of a student's management were recorded in one column and negative aspects in another, under divisions indicating the type of resource concerned, namely: time, energy, money, and other resources. Since human relationships are so much involved in management, and therefore can not be disregarded in any consideration of management, relationships was also used as a division under which to record incidents.

Under each division, all incidents related to a certain
phase of managing that resource were classified under a general head-
ing, as "Aided students in becoming self-directing by helping them
to develop ability to plan" or — on the negative side — "did not
help students to develop ability to plan and to think through prob-
lems." The evidence collected through interviews with those in
charge of student teaching and of the home management house was re-
corded in the same manner. Information secured from supervising
teachers and from supervisors of student teaching was combined in
order to eliminate repetition of incidents and over-emphasis upon
certain aspects of management.

Each student was then given a score on her managerial ability
in the practical situations. For the purpose of convenience and
accuracy in scoring, a check sheet containing all the general types
of managerial ability under which incidents were classified was
used for recording the number of class periods in which each type of
ability was observed or the number of interviews in which evidence
of it was reported. Not every incident representing a type of abil-
ity was recorded, therefore. For example, several incidents — all
showing that a student teacher "was aware of pupils' poor management
of resources" — may have occurred during one class period, but this
ability was recorded on the check sheet only once for that period.
It was thought that the consistency with which a student managed re-
sources from day to day was the feature most indicative of her real
managerial skill.
Separate sub-scores were obtained for observations and for interviews by arbitrarily giving a point value of 5 for each time a classification was checked in the positive column and -5 for each time checked in the negative column. Positive and negative points were added, thus giving each student three sub-scores: one for evidence collected at conferences between the home management house instructor and graduate assistants who supervised home management house activities; one based on information collected in interviews with supervising teachers and with University supervisors of student teaching; and one for the observations of student teachers. Each sub-score for observations was divided by the number of times that student was observed so that total scores would not be too heavily weighted by the investigator's interpretation of the student's management. The three sub-scores were then added to give one score on practical management for each student. The evidence collected for one student and the scoring of this evidence on the check sheet is included in Appendix C.

The practical management scores for the twenty-one students ranged from +70 to -35. On the basis of the range of scores, three groupings — indicating differences in ability to apply management in the practical situations used in this study — were made: an upper group, with scores ranging from +46 to +70, inclusive; a middle group, with scores from +17 to +28; and a lower group, with scores from 0 to -35. Large natural breaks in scores formed the basis for the groups. Four students were placed in the upper group,
nine in the middle, and eight in the lower grouping.

The scores on each step of the test were likewise divided into three groups — upper, middle, and lower — of twenty scores each, since there was no sharp break in scores to indicate different levels of ability or knowledge. Comparisons were then made between scores obtained in the two different types of situations — the practical and the pencil-and-paper situation.

How did students' performance in the pencil-and-paper situation compare with that in the practical situations? From the scatter diagram in Figure 1 it can be seen that in this group — and it must be recognized that it was small — students who did best on the test in recognizing the extent to which statements logically supported a conclusion were as likely to do very poorly as very well in a practical situation. Those who did least well on the test were not superior in a practical situation. Figure 2 indicates that there was less relationship between scores on the information part of the test and on the practical situations than between Part I and the latter.

One might wonder why — of the students who showed one type of ability in applying management in a pencil-and-paper situation — some were also well able to apply management in practical situations while other students did not demonstrate this ability. However, other factors besides the student's actual knowledge of management and ability no doubt entered into her application of management in student teaching and in the home management house. Student number 5,
Fig. 1 — Scatter diagram of group placement of twenty-one students on Part I of test and on practical management.
Fig. 2 -- Scatter diagram of group placement of twenty-one students on Part II of test and on practical management.
for example, made a percentage score of 76 on Part I of the test and
70 on Part II; but in student teaching she was so self-conscious
that she did not want either the supervising teacher or the University
supervisor to watch her teach, and much of the time she talked in
such a low voice that she could not be heard by the students in her
class. Furthermore, she was constantly tired and apparently had
little energy to devote to the use of good management procedures.
In the home management house, she did only the minimum of work re-
quired.

Student number 16 likewise may have had the actual ability
and knowledge needed to apply management procedures, but she did not
do so in the practical situations in which she was observed. On the
test she had made a score of 81 per cent on Part I and 73 on Part II;
in student teaching, however, she did not seem to be motivated to
make the best use of her resources. Much of her time and energy in
her free periods was spent on her own personal interests, and during
classes she showed little interest in helping students to make good
use of their time and abilities. Although she did better work in
the home management house than in student teaching, it was thought
that there, too, she did not show enough initiative in planning her
work.

It can be seen that in cases such as these two, the test may
have been a fair measure of the student's potential ability to apply
management in a practical situation; but the test does not measure
one's interest in making use of that ability or alertness to manage-
ment situations or other factors which affect one's actual performance.

Summary of the Validity and Reliability of the Instrument with Recommendations for Improving Them

The hypothesis upon which this study was based is that a valid and reliable instrument could be developed to evaluate the ability of college home economics students to apply home management generalizations and facts in the solution of homemaking problems. Part I of the instrument constructed was designed to measure one aspect of this ability, namely, the ability to see logical relations between home management generalizations and pertinent facts on the one hand and the decision to a problem-situation and the factors involved in the situation on the other.

In constructing the instrument, care was taken to follow procedures which would help to insure validity and reliability. However, it is recognized that face validity of the instrument was not completely established since there was some jury disagreement on the key. Only 75 per cent of the items in Part I had the agreement of at least 80 per cent of the jury members as to the correct response to the items. Of these items, less than two-thirds had 100 per cent jury agreement.

A reliability coefficient of .871 for Part I indicates that this section of the instrument can satisfactorily be used for measuring individual achievement in the behavior being evaluated. But even this fairly high reliability could be improved. These findings,
then, tend to partially support the hypothesis.

Part II — on information — is less valid and reliable than Part I. High validity could not be claimed for this section, since only 69 per cent of the statements had the agreement of 80 per cent or more of the jury on the key. Too, the reliability for all items in Part II was quite low — only .461, which is not even sufficiently high for measuring group accomplishment. The reliability for true-false items only was somewhat more satisfactory, being .639, but this is still too low for measuring individual achievement in the objective.

It is evident, then, that the instrument needs further refinement. Therefore, some recommendations for improving the present form of the instrument and suggestions to be considered in the development of other instruments to evaluate the ability to apply generalizations follow:

1. The items should be made more discriminating. Undoubtedly this would be the first step to take in increasing the reliability of the present test. Statements which did not satisfactorily distinguish between high-scoring and low-scoring students should be revised or — in some cases — replaced by other items. Items which were too easy — that is, passed by almost all students in both the upper and lower group — should be replaced by more difficult items. Some items which were ambiguous could be improved by re-wording them.
2. The test should be lengthened.

Since the reliability of a test can usually be increased by the addition of more test items of a quality equal to those already used, it would be desirable to add more problem-situations and statements to the test. In order to have a reliability of .85, which is considered necessary in order for a test to satisfactorily measure individual achievement, Part II of the instrument would need to be approximately seven times longer. A test that length, however, would be impractical from the standpoint of time needed for administration and no doubt would not accomplish the purpose of raising the reliability, since the factors of fatigue and loss of interest would no doubt be introduced. But two problem-situations with statements could probably be added without the introduction of such factors. These problem-situations should be selected so as to bring in those areas of home economics and management factors -- for example, time management -- which are not particularly emphasized in the present test. This would give a more representative test content.

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3 The formula used to give a reliability of .85 was that given by Charles W. Odell in An Introduction to Educational Statistics (New York: Prentice-Hall, Inc., 1946), p. 153. It is as follows:

\[ n = \frac{r_n (1 - r_{II})}{r_{II} (1 - r_n)} \]

\( n \) stands for the number of times the test is to be lengthened, \( r_n \) represents the desired coefficient for a longer test, and \( r_{II} \) is the reliability obtained for the original test.
3. Only statements with high jury agreement on the key should be used.

Items should be revised and improved until a very high agreement of judges could be secured on all statements. In fact, it would be best to use only those items on which there was 100 per cent agreement of judges. It would also be desirable to get more than six judges to classify the items. Having agreement upon the key by a large number of competent judges helps to insure the objectivity of the test and consequently increases the validity.

4. Each generalization should be used more than once in the instrument.

This would give a more adequate sample of the student's performance in applying generalizations, and therefore the test would be a more reliable measure of the ability to apply generalizations.

5. The instrument should be given to a large group of subjects in testing it.

For the present test, this group should include students in all curricula and freshmen as well as seniors. Having a group with a wide range of knowledge and of ability in applying generalizations would help to determine the difficulty of the different test-situations and to establish the reliability of the test.

Use of the Instrument

While the instrument developed in this study can be used to sample the student's ability to see logical relationships, this is—of course—only one aspect of the application of principles. Therefore, the results on the test would be much more meaningful if
they could be used in conjunction with several other kinds of evidence of application ability. For example, students might well be asked to write their solution to a management situation, supporting it with their reasons. Or, they might instead choose from several solutions and supporting reasons provided them in objective form. In either case, responses could be analyzed as to types of errors in thinking and students thus be helped to improve in the thinking process.

Observation of students in practical laboratory situations again would be a valuable type of evidence of ability to apply management principles. A check list for this purpose would be useful in the hands of both laboratory teachers and the students themselves. If it seemed desirable to discover also whether all possessed the basic facts and principles important to effective management, the information test might perhaps better be given as a separate test.

Such a program of evaluation would sample several important aspects of ability to apply what is known in management: ability to see logical relationships, ability to make wise decisions and support them with sound reasoning, and ability to put knowledge into actual practice as well as to verbalize. Evaluating these several aspects of the ability to apply management would give a more complete picture of the student's skill in this respect than would the evaluation of any single aspect alone.

A program of evaluation such as the one here visualized should prove useful not only to The Ohio State University School of
Home Economics but also to other home economics departments having comparable goals. If an important curriculum goal is the development of the student's ability to apply information, then it is essential that accomplishment in that goal be evaluated.

Such evaluation can furnish a basis for improving instruction. When teachers are aware of a student's actual skill in applying principles — and are concerned about this ability — both content and method of instruction are more likely to be modified. Too, a knowledge of results accomplished may stimulate the interest of the teaching staff in securing a variety of evidence concerning students' application abilities. Such a knowledge could likewise lead to a change in the teaching materials used to promote the development of the ability to apply what has been learned.

When both instruction and evaluation are concerned with the application of facts and generalizations, students also are more likely to be interested in this phase of learning. Thus, the use of techniques for evaluating ability to apply information can be an effective means of motivating learning in this objective. Too, the continued use of a variety of methods for appraising application abilities can show progress made by students in these abilities.

Determining student growth toward important objectives is essential in order to have a satisfactory basis for individual guidance. The status of a student's ability must be known if she is to be aided to develop to the full extent of her innate capacity,
and promoting such development in all aspects of ability to think effectively on problems of the home is a major responsibility of the home economics department.
APPENDIX A
EXHIBIT I

CORE TEACHER CHECK FORM
FOR HOME MANAGEMENT GENERALIZATIONS

On the following pages is a list of home management principles and generalizations. As herein used, home management is defined as the use of material and human resources to promote the optimum satisfaction and development of the family, as individuals and as a group; the activities involved are planning, guiding, and carrying out decisions and evaluating the results in terms of ultimate family goals. The term generalization refers to a general fact or concept which is useful in predicting what will happen in a given situation, or in explaining what has happened, or which is basic for wise decision making or for judging the decisions of others.

These are not principles and generalizations specifically for use in a home management course. They are intended as basic statements of management which presumably can be applied in the various areas of home economics—child and family, clothing, food, housing, and home management. It is recognized, however, that some principles and generalizations are more applicable in certain areas than are others.

Attention is particularly drawn to the above fact because one sometimes thinks of management as being taught in a home management course only. But it is constantly being taught in all home economics courses as decision making, involving the factors of time, energy, money, abilities, and human relations.

As you read the generalizations, therefore, will you please:

(1) Check (✓) in the first column all generalizations which you believe are important in the area of home economics in which you teach.

(2) Mark an x in the second column for each generalization which involves a concept that you make some use of with students in the core home economics course(s) which you teach.
1. The most successful management results when cooperative group relations make it possible for all affected by the process to have a representative share in each part of it, according to their understanding and ability.

2. Human centered values underlie wise home management decisions.

3. Consideration of basic physiological and psychological needs of both children and adults is essential if management is to promote the optimum development and happiness of family members.

4. The changing goals of individuals and families, as each enters new stages in their life cycles, determine decisions concerning the use of material and human resources.

5. Decisions made in one area of management may affect or determine those which are made in other areas as each aspect of managing relates to the whole situation.

6. Sacrificing efficiency in management is at times necessary in order to obtain fundamental satisfactions and promote individual development and group welfare.

7. Good management involves the ability to intelligently adjust plans while they are in the process of being carried out.

8. Successful management decisions and procedures call for adaptation to specific situations in individual families because of the differences in their composition, values, resources and environment.
9. Enrichment of personalities and contributions to community betterment are made possible only when management activities are so planned and carried out that a sufficient reserve in time, energy and money is left for these purposes.

10. Wise guidance of family activities — including health, educational, religious and social activities as well as work and finances — promotes the development of the family as individual members and as a unit.

11. Individual traits and attitudes largely determine the kind of group relations within the home, and consequently, the success of management.

12. Unfavorable criticism of family members will be more readily accepted by them if the criticism is objective and is accompanied also by some favorable comment or praise.

13. The intelligent use of resources is measured by the satisfactions obtained by those concerned and by the effect upon development of the individual and upon social welfare.

14. Management which is realistic involves the acceptance of all limitations in resources, both human and material.

15. Proper channeling of the more pleantiful resources may compensate for limitations in other areas.

16. A knowledge of good standards aids in improving management only when these standards are accepted by the individual or group concerned.
17. Intelligent management of resources and evaluation in terms of ultimate goals result in a greater return for a given expenditure of time, energy, or money.

Specific:

1. The human element in management makes it necessary to allow for differences in degrees of excellence of performance from time to time.

2. Shared participation in activities as a family group strengthens bonds of affection and builds family unity.

3. Appreciation of all family members is essential to harmonious group relationships and an individual sense of security.

4. Positive attitudes toward family members tend to build up their confidence and self-assurance and to encourage them to act in the desired manner.

5. Successful relationships within the family involve recognition and appreciation of individual differences in abilities, interests, and attitudes.

6. The cultivation of individual differences will enhance character and personality and improve family life.

7. Giving the individual the opportunity to progress to decisions and tasks which require increasing maturity, responsibility, and skill aid him in developing self-direction.
8. Wise management of one's own personal resources promotes individual happiness and success and may contribute to group well-being.

9. A sound, long-time financial plan for the family may provide for savings, investments, and insurance to take care of future periods of increased expenses or decreased income.

10. The true value of money income depends upon its current purchasing power, as the amount of economic goods which can be bought with a given money income varies from time to time.

11. The necessity to produce goods and services sufficient to obtain an adequate standard of living leaves the homemaker with a small money income little choice in decisions concerning the use of time and energy.

12. Community goods and services add to the real income of the family.

13. Good management of resources is judged as much by satisfaction - or psychic income - enjoyed by the family as by possessions on hand or money saved.

14. Greater satisfaction results if spending is wisely proportioned between durable and non-durable goods.

15. Budgeting money income for moderately long periods at a time makes it possible to distribute large purchases over a number of years and thus more evenly apportion expenditures for each year.
16. The demand upon the family's income varies at different stages in the life cycle, with the greatest demand coming during the later school years.

17. Using credit for consumer goods may be a sound procedure when, by doing so, the family's welfare is not jeopardized by restricting power to purchase essential goods and services.

18. Savings make it possible to choose a time for spending when the greatest returns may be obtained from a given amount of money.

19. The amount of savings needed varies from family to family in accordance with different patterns of spending and differences in size and regularity of income.

20. Buying habits and consumer demands may increase the price and determine the kinds and qualities of goods and services made available for purchase.

21. Careful evaluation of information from salespersons and in advertising, labels, and guarantees makes possible more intelligent buying.

22. Taking advantage of the optimum buying time in relation to business cycle, season, and special sales helps to save money or to secure other special satisfactions in goods purchased.

23. Wise selection considers future demands on time, energy, and money, specific needs, and the satisfaction to be derived from possession and use of the article.

24. The selection of goods to satisfy wants over a long period of time requires that
24. The buyer knows his wants and needs, the quality of goods that will satisfy them, the prices he can afford to pay, and the specific commodities which possess the desired qualities.

25. The decision between producing at home and purchasing goods depends upon the satisfaction secured from each type of goods and the balance between money resources and time, energy and ability resources.

26. Careful usage of materials and equipment helps to prolong their life and efficiency and frees economic resources for other expenditures, but wise management weighs the benefits derived from such conservation in relation to the time and energy expended.

27. Capacity for work output varies among individuals; and each individual, likewise, differs in this capacity from time to time.

28. As a warming up period is necessary before the greatest work output occurs, frequent shifts in task mean loss of speed and efficiency and are, therefore, desirable only when the worker is aware of a reduced output.

29. Decreased work output is due to fatigue and boredom on the job and to miscellaneous psychological and physiological factors, either on or off the job.

30. The development of fatigue increases the amount of energy expended in doing a task.

31. Increasing the speed of performance of an activity increases the energy expenditure.
32. Alternating types of work may reduce fatigue by requiring the use of different groups of muscles.

33. The development of skill and a feeling of accomplishment in work done may increase work output and reduce fatigue.

34. Using the forearm muscles for light work instead of finger or shoulder muscles helps to prevent fatigue.

35. The individual, the type of work being done, and the amount of fatigue produced may determine the length and frequency of the rest periods needed in order for the worker to maintain his efficiency.

36. Combining motions by pre-positioning tools and materials and using both hands simultaneously (whenever possible) in a continuous rhythmic movement make for efficient, time-saving performance of work.

37. Maintaining correct posture when moving heavy loads prevents unnecessary fatigue.

38. Keeping the body working with gravity lowers the energy expenditure by reducing muscular tension.

39. Working within an area which forms a comfortable reach described by the arc of the hands prevents fatigue due to stretching.

40. Arranging the height of work surfaces and chairs to permit alternate sitting or standing, as the worker chooses, promotes good posture and reduces the amount of fatigue.

41. Adjusting the length of equipment handles and heights of work surfaces to promote good posture reduces the energy necessary to perform a given activity.
42. The size and shape of the working area largely determine the possibility for an arrangement of equipment, storage, and work surfaces which permits a step-saving sequence of motions.

43. Functional storage space is adequate in amount, is of a suitable width, depth, and height for the articles to be stored, and is located to permit their storage at or near the place where they are first used or where most frequently used.
EXHIBIT II

SUMMARY OF CORE TEACHERS' CHECKING OF GENERALIZATIONS FOR IMPORTANCE IN AREAS OF HOME ECONOMICS AND FOR CONCEPTS MADE USE OF WITH STUDENTS IN CORE HOME ECONOMICS COURSES

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<th>Number of Core Teachers Checking Generalizations as Involving Concepts Made Use of with Students in Core Courses Taught</th>
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**EXHIBIT III**

**SUMMARY OF JURY'S CHECKING OF GENERALIZATIONS FOR ACCURACY AND IMPORTANCE IN MANAGEMENT**

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EXHIBIT IV

GENERALIZATIONS ELIMINATED AS A RESULT OF THE
HOME MANAGEMENT SPECIALISTS' CHECKING

Eliminated because considered inaccurate

Broad generalizations:

Enrichment of personalities and contributions to community betterment are made possible only when management activities are so planned and carried out that a sufficient reserve in time, energy and money is left for these purposes.

Unfavorable criticism of family members will be more readily accepted by them if the criticism is objective and is accompanied also by some favorable comment or praise.

Specific generalizations:

The necessity to produce goods and services sufficient to obtain an adequate standard of living leaves the homemaker with a small money income little choice in decisions concerning the use of time and energy.

Greater satisfaction results if spending is wisely proportioned between durable and non-durable goods.

As a warming up period is necessary before the greatest work output occurs, frequent shifts in task mean loss of speed and efficiency and are, therefore, desirable only when the worker is aware of a reduced output.

Using the forearm muscles for light work instead of finger or shoulder muscles helps to prevent fatigue.

Eliminated because not considered of most importance

Specific generalizations:

Increasing the speed of performance of any activity increases the energy expenditure.
EXHIBIT V

FINAL LIST OF FIFTY-THREE BASIC AND IMPORTANT HOME MANAGEMENT GENERALIZATIONS

Broad generalizations

The most successful management results when cooperative group relations make it possible for all affected by the process to have a representative share in each part of it, according to their understanding and ability.

Human centered values underlie wise home management decisions.

Consideration of basic physiological and psychological needs of both children and adults is essential if management is to promote the optimum development and happiness of family members.

The changing goals of individuals and families, at different stages of their life cycles, determine decisions concerning the use of material and human resources.*

Decisions made in one area of management may affect or determine those which are made in other areas as each aspect of managing relates to the whole situation.

Sacrificing efficiency in the use of time, energy, or money is at times necessary in order to obtain fundamental satisfactions and promote individual development and group welfare.*

Good management involves the ability to intelligently adjust plans while they are in the process of being carried out.

Successful management calls for adaptation to specific situations in individual families because of the differences in their composition, values, resources and environment.*

Wise guidance of family activities - including health, educational, religious, social activities, work and finances - promotes the development of the family as individual members and as a unit.*

The interaction of individual traits and attitudes largely determines the kind of group relations within the home and, contingently, the success of management.*
EXHIBIT V (CONTINUED)

Broad generalizations

The intelligent use of resources is measured by the satisfactions obtained by those concerned and by the effect upon development of the individual and upon social welfare.

Management which is realistic involves the acceptance of all limitations in resources, both human and material.

Proper channeling of the more plentiful resources may compensate for limitations in other areas.

A knowledge of good standards aids in improving management only when these standards are accepted by the individual or group concerned.

Intelligent management of resources and evaluation in terms of ultimate goals results in a greater return for a given expenditure of time, energy, or money.

Specific generalizations

The human element in management makes it necessary to allow for differences in degrees of excellence of performance from time to time.

Shared participation in activities as a family group strengthens bonds of affection and builds family unity.

Appreciation of all family members is essential to harmonious group relationships and an individual sense of security.

Positive attitudes toward family members tend to build up their confidence and self-assurance and to encourage them to act in the desired manner.

Successful relationships within the family involve recognition and appreciation of individual differences in abilities, interests, and attitudes.

The cultivation of some individual differences will enhance character and personality and improve family life.*
Specific generalizations

Giving the individual the opportunity to progress to decisions and tasks which require increasing maturity, responsibility, and skill aid him in developing self-direction.

Wise management of one’s own personal resources promotes individual happiness and success and may contribute to group well-being.

A sound, long-time financial plan for the family may provide for savings, investments, and insurance to take care of future periods of increased expenses or decreased income.

The real value of money income depends upon its current purchasing power, as the amount of economic goods which can be bought with a given money income varies from time to time.*

Community goods and services add to the real income of the family.

Good management of resources is judged as much or more by satisfaction — or psychic income — enjoyed by the family as by possessions on hand or money saved.*

Budgeting money income for moderately long periods at a time makes it possible to distribute large purchases over a number of years and thus more evenly apportion expenditures for each year.

The demand upon the family’s income varies at different stages in the life cycle, with the greatest demand coming during the later school years.

Using credit for consumer goods may be a sound procedure when, by doing so, the family’s welfare is not jeopardized by restricting power to purchase essential goods and services.

Savings make it possible to choose a time for spending when the greatest returns may be obtained from a given amount of money.

The amount of savings needed varies from family to family in accordance with different patterns of spending and differences in size and regularity of income.

Buying habits and consumer demands influence the prices, kinds, and qualities of goods and services available for purchase.*
Specific generalizations

Careful evaluation of information from salespersons and in advertising, labels, and guarantees makes possible more intelligent buying.

Taking advantage of the optimum buying time in relation to business cycle, season, and special sales helps to save money or to secure other special satisfactions in goods purchased.

Wise selection considers future demands on time, energy, and money, specific needs, and the satisfaction to be derived from possession and use of the article.

The selection of goods to satisfy wants over a long period of time requires that the buyer know his wants and needs, the quality of goods that will satisfy them, the prices he can afford to pay, and the specific commodities which possess the desired qualities.

The decision between producing at home or purchasing goods depends upon the satisfaction secured from each type of goods and the balance between money resources and time, energy and ability resources.

Careful usage of materials and equipment helps to prolong their life and efficiency and frees economic resources for other expenditures, but wise management weighs the benefits derived from such conservation in relation to the time and energy expended.

Capacity for work output varies among individuals; and each individual, likewise, differs in this capacity from time to time.

Decreased work output is often due to fatigue and boredom on the job and to other physiological and psychological factors, either on or off the job.*

The development of fatigue increases the amount of energy expended in doing a task.

Alternating types of work may reduce fatigue by requiring the use of different groups of muscles.
Specific generalizations

The development of skill and a feeling of accomplishment in work done may increase work output and reduce fatigue.

The individual, the type of work being done, and the amount of fatigue produced may determine the length and frequency of the rest periods needed in order for the worker to maintain his efficiency.

Combining motions by pre-positioning tools and materials and using both hands simultaneously (whenever possible) in a continuous rhythmic movement make for efficient, time-saving performance of work.

Maintaining correct posture when working helps to prevent unnecessary fatigue.*

Keeping the body working with gravity lowers the energy expenditure by reducing muscular tension.

Working within an area which forms a comfortable reach described by the arc of the hands prevents fatigue due to stretching.

Arranging the height of work surfaces and chairs to permit alternate sitting or standing, as the worker chooses, promotes good posture and reduces the amount of fatigue.

Adjusting the length of equipment handles and heights of work surfaces to promote good posture reduces the energy necessary to perform a given activity.

The size and shape of the working area are factors in determining the possibility for an arrangement of equipment, storage, and work surfaces which permits a step-saving sequence of motions.*

Functional storage space is adequate in amount, is of a suitable width, depth, and height for the articles to be stored, and is located to permit their storage at or near the place where they are first used or where most frequently used.

*Wording changed from original as a result of jury reaction.
EXHIBIT VI
HOW FAMILIES MAKE DECISIONS

This test contains situations in which people have made decisions regarding problems of family life. After each situation, you will find reasons which the family may have considered in coming to a decision. You are asked to classify these reasons according to (1) their relation to the decision and (2) their truth or falsity. You may disagree with some of these decisions. However, do not let that influence your answer, for the soundness of the decision has no bearing upon the correct classification of the statement.

STEP I. In this step, you must accept all statements which are given as true. Now, read the first situation carefully. Then, as you read each statement which follows, if you believe that — for the specific situation described — the reason

Logically supports the underlined decision, mark S of the number corresponding to the statement.

Logically contradicts the underlined decision, mark C.

Neither supports nor contradicts the underlined decision, mark N.

On the separate answer sheet, blacken the letter which corresponds to the classification chosen. Example: S C N T F E

STEP II. Now, you are to react to the truth of each statement, without reference to this specific situation. If you believe that the statement

Would, in general, be regarded as true, mark T.

Would, in general, be regarded as false, mark F.

Would be almost equally likely to be either true or false, mark E.

EXAMPLE. The Old-Timer has noticed that the caterpillars are very wooly this fall and that the squirrels are storing away lots of nuts. He has decided that we are going to have a "hard" winter.

1. Quite accurate weather predictions can be made by observing the fur bearing animals. (S - F)

2. A very hot summer is likely to follow an extremely cold winter. (N - E)

3. Experts at the U. S. weather bureau will not make weather predictions for more than 30 days in advance. (C - T)

Do Step I and Step II for each situation as you have done the first one. It should take you about 90 minutes to complete the test, although there is no time limit for it. Be sure to mark all statements in both steps, even though you are not entirely sure of the correct classification.
I. THE WILSONS

Mr. Wilson, a purchasing agent for a large manufacturing firm, has just been transferred to a newly opened branch of the firm in a city of 300,000. He and his wife, Wilson are trying to solve the housing problem for their family, which consists of themselves and their two children, ages 6 and 3. They have long wanted a home of their own and hope that they may now achieve it. On investigation, they find that both rental and sale properties in the city are high. They have narrowed their choice down to two. They can rent a heated, unfurnished apartment in a good section of the city for $95 a month; or they can buy a fairly new 15,000 house which is a little smaller than they would like but which has a nice yard and is in a good location in a small town fifteen miles from the city. They have no money saved but can borrow the $6,000 for the down payment — at very low interest — from Mr. Wilson's grandmother and get the rest as a loan from the bank at 6 per cent interest. Mr. Wilson knows that there is always the possibility that he will be transferred, as this is the second move he has made in four years. The Wilsons decide to buy the house.

1. Even though a family has not saved, buying a home will make the family handle what money it has more wisely.

2. Apartment buildings are seldom adequately heated.

3. A property investment is safeguarded by buying in an area where property values are likely to rise.

4. Freedom of mobility is one of the things a family pays for with its rent check.

5. It is not easy to find a house to buy in a small town.

6. It is financially unwise for a family to buy a house that costs more than one and half times their annual income.

7. City people are, by nature, more unfriendly than those in a small town.

8. The greater the amount of community goods and services available to a family, the greater will be its potential real income.

9. Many families find satisfaction in having something tangible for the money spent for housing.

10. Children are not welcomed by apartment landlords.

11. The use of credit is seldom a sound procedure because it invariably encourages families to spend beyond their income.

12. There is little risk in buying, for if a family is transferred later, its house can be sold at a profit.

13. Small town schools offer fewer specialized services, such as guidance specialists and remedial classes, than do city schools.

14. The cost of building a house is determined more by the material used in construction than by the cost of labor.
IT. THE FOLEYS

The Foleys, a childless elderly couple -- both of whom are in failing health -- are trying to make a decision concerning their future sources of income so that they will be reasonably assured of some means of support. For a number of years, they have realized a small income of approximately 120 per month from the rental of four bedrooms in their home, but they are obliged to give up this source of income because of their increasing inability to care for the room. Mr. Foley is 75 and Mrs. Foley is 60. They are eligible for old-age assistance under the State-Federal public assistance program which in their state would pay them each 55 per month, plus possible additional amount as needed for medical expenses. In order to receive such aid, however, they would have to give the state a lien on their real property which they could continue to use as a homestead. This lien could not be enforced during the lifetime of either spouse. (After their deaths, the property would belong to the state.) The only real property owned by the couple in their home, an eight-room house with an estimated sale value of $7,000 and a monthly rental value of $30 to $50. After considering the three sources of income available -- that is, from sale or rental of the house or the old-age assistance -- the Foleys decide to give the state a lien on the home and apply for the old-age assistance.

15. Recipients of old-age assistance under a State-Federal program have no recourse to any authority if the payment is decreased or stopped.

16. Some states refuse to give aid to persons who have legally responsible relatives who could help them.

17. With the present market for houses, an eight-room house would bring as much as $7,000.

18. Differences in the resources of families call for decisions and procedures that are adapted to the individual family.

19. Individuals and families must recognize and accept limitations in resources if they are to make and carry out realistic decisions in regard to life.

20. 55 per month per person is insufficient for an adequate minimum standard of living, even when shelter is provided.

21. A community looks down upon its members who accept any form of public assistance.

22. If a family has any kind of plan for savings, investments, or insurance, it's periods of increased expenses or decreased income can be taken care of.

23. Old-age assistance in the form of money paid directly to recipients enables them to maintain their self-respect.

24. Any form of public aid given to individuals or groups stifles their individual initiative.

25. The intelligent use of resources is measured by the satisfactions obtained by those concerned and by the effect upon development of the individual and upon social welfare.

26. Any couple who has had only themselves to support should have been able to provide for their own security in old age.

27. Applicants for old-age assistance must give up any small cash reserves on hand before they can receive the State-Federal aid.

28. The basic physiological needs of elderly people is the most important factor to be considered in making decisions intended to promote their optimum development and happiness.
III. Mrs. Donato

A homemaker who has no outside employment had to choose between making or buying a wool gabardine dress which she wanted to be attractive and yet as inexpensive as possible. She considered three possibilities:

(1) Buying a ready made garment, at a price range of from $25 to $50

(2) Making the garment from either of two pieces of gabardine available in a local department store -- the store's best quality at $8 per yard or a cheaper quality at $6 per yard.

(3) Waiting until the end of the season and purchasing the garment on sale, if possible.

After thinking it over, she made a dress -- using the $6 wool gabardine -- which satisfactorily met her own standards of appearance, workmanship, and economy in clothing. Factors which she considered in deciding whether to make or buy the garment and in her evaluation of results are as follows:

A. Sewing equipment (all purchased within the last five years; condition, good.)
   1. Electric sewing machine
   1. Ironing board
   1. Steam iron
   1. Pinking shears, new
   1. Skirt marker
   1. Dress form
   1. Drop leaf table (used for cutting) - 40" x 5½"; 29" high
   1. Shelving (for storage of supplies and materials) - 32" x 12" x 11"
   1. Combination sewing room and den, adjoining kitchen

B. Yearly wardrobe allotment (for self and husband) - 8200

C. Cost of making garment - $16.10
   Material (2½ yds.) - $15.00
   Pattern - .50
   Thread - .10
   Seam binding - .15
   Zipper - .35

D. Work schedule when sewing - first day
   6:30 - 8:30 - Prepare breakfast; wash dishes and do other housework
   8:30 - 11:30 - Sort out pieces of pattern to be used; lay on material
   11:30 - 1:30 - Prepare lunch; wash dishes; start dinner preparation
   1:30 - 5:00 - Cutting garment (1st 2½ hrs); marking (1 hr.)
   5:00 - 6:30 - Prepare and serve dinner; wash dishes
   6:30 - 10:00 - Pin and baste garment

   Second, third, and fourth days - similar schedule, except for change in sewing done

E. Hours spent in making garment - 39
   Hours per week ordinarily spent on housework - 35
   Hours per week usually spent in community or outside activities - 4

The homemaker decided (1) that making the garment was the most economical from a monetary standpoint and (2) that she had used her time and energy efficiently.

29. Buying on sales means money saved or other special satisfactions secured in goods purchased.
30. It does not pay for a person to spend her time sewing unless she uses the best quality of material.

31. One saves money in the long run by buying clothes of better than average quality, even though the price is a little higher.

32. A fifteen minute rest period in the middle of the afternoon will keep a seamstress from becoming fatigued.

33. Adjusting the heights of work surfaces to promote good posture reduces the energy necessary to perform an activity.

34. From the standpoint of using time efficiently, the home production of garments cannot be justified unless the desired size, quality, or style of garment is unavailable in the market.

35. A more extensive use of one resource can often compensate for limitations of another resource.

36. Planning expenditures over a period of years makes it possible to more evenly apportion expenditures for each year.

37. Consumers wants and demands have very little influence on the types and prices of products placed on the market.

38. One requirement for functional storage space is that it be at or near the place where the articles to be stored are first used.

39. Staying at one task or type of work until it is done is the most efficient way to use one's energy.

40. The decision between making or buying goods depends chiefly upon the balance between money and time.

41. Loss variation is found in clothing prices than in almost any other group of commodities the family buys.

42. A feeling of satisfaction in work done tends to increase work output and reduce fatigue.
IV. Mrs. Rosé

Mrs. Rosé, a widow who owns no property, has taught school for 30 years in her home state and could now collect her retirement allotment of $120 per month if she wishes to retire from teaching in that state. (According to law, however, she would be permitted another ten years.) As she has a 15 year old son and a 13 year old daughter to support, she knows she will have to secure some other employment. She is trying to decide whether to stay in her present locality and obtain some other type of work, even though it would probably mean accepting a position which would pay not more than $2000 (for 12 months), or to go to another state where she could accept a teaching position and collect her retirement money also. She has learned through a teachers agency that she could get $2000 to $2500 (for 9 months) for teaching in the elementary schools in an industrial city about 600 miles from her present home. (Her last teaching position in her home state paid her $3250.) She has figured that if she accepts a position in the industrial city she could put into savings a certain amount of money monthly but cannot see how she would be able to do that on a lower salary. She is also concerned about opportunities for the children to continue their education after high school. The State University is located in the city in which she new lives. The city to which she is contemplating moving has only a small, privately endowed college with high tuition fees. Therefore decided to accept a teaching position in the industrial city in another state.

13. The consumer is at a disadvantage when money income is low and prices are high.
14. The community which pays its teachers well is a desirable place in which to live.
15. The size or amount of income is the chief factor which determines what can be accomplished with it.
16. Elementary school teachers are underpaid in all parts of the country.
17. An increase in money income of a family automatically results in an increase in psychic income.
18. Normally, the greatest demand upon the family income is over before the college stage of the family life cycle.
19. Older people do not make friends in a new location.
20. Twice the children are handicapped in their educational and social adjustment by changing schools from one state to another.
21. Most private colleges are poorly equipped and staffed.
22. The person who has taught school for any length of time will be dissatisfied in another occupation.
23. Family capital can help to take care of periods when peak loads in expenditures appear.
24. The shortage of elementary teachers in many areas has tended to raise salaries.
25. People are happier when they stay in the locality in which they have been born and reared.
26. The person who owns no property is free to move from one place to another as he chooses.
V. THE BARTLETTs

Robert Bartlett, a 16 year old who is ready for his junior year in high school, wishes to attend a large high school offering vocational subjects. The school is in the city ten miles from his home. The small school which he has attended for the past two years offers only academic subjects, in which he has done below average work. He also had some difficulty with the teachers and believes that they are antagonistic toward him. The city high school has an excellent reputation and has won wide acclaim for its athletic program in which Robert wishes to have the opportunity to participate, as he is particularly interested in sports and has always excelled in them. As his residence is in a school district which has no high school, the transfer could be arranged without any tuition charge. Transportation on a school bus from the adjoining district would be available, as the Bartletts live only one-half mile from the district line. If Robert attends this school, however, it will be impossible for him to arrive home as early as when he attended the small school nearer home; in fact, it will probably be an hour to an hour and a half later than formerly and, if he should participate in any kind of sports after school, it would be even later. There would be a corresponding reduction in the amount of time he could spend helping his father in their grocery store in the afternoon; therefore, Mr. Bartlett is doubtful about letting Robert change schools. (Their business does not warrant hiring another salesperson as the extra help is needed for only a couple of hours in the late afternoon.) Furthermore, Mr. Bartlett wonders whether or not it would be wise to send Robert to a city high school as the two older boys in the family both attended the small school near them and were quite successful there. Mrs. Bartlett has suggested that she could help in the store until Robert gets home, even though it would make dinner later in the evening. She believes that she could plan the rest of her work so that working in the store a few hours each day would not interfere markedly with other housekeeping activities, although it would mean that at times she would have to do some of her work - as ironing and sewing - in the evening. After consideration of the problem, the parents decide to let Robert attend the city school.

57. Frequently, as good an education can be obtained in a small high school as in a large one.

58. Promoting the development of a child's own individual traits and abilities can enrich his personality and improve family life.

59. Very few high schools that offer technical subjects have any choice of offerings in general education.

60. Boys seldom get along as well with women teachers as with men teachers.

61. The child who experiences very strong parental disapproval for undesirable behavior will learn to conform to what is expected of him in the future.

62. Unsatisfactory relations with teachers are seldom the cause of a student's poor work in school.

63. A student from a small school is likely to have a difficult time adjusting to the environment of a large high school.

64. Adolescent boys do not try to work up to their ability.

65. An efficient way of using a particular resource in one area of family life sometimes has to be given up to obtain more basic satisfactions.

66. Children seldom forgive parents for refusing to grant much desired requests.

67. A late dinner spoils the family's evening for recreation or work which may have been planned.
68. Showing favoritism to one child by allowing him special privileges not accorded other children in the family is sometimes harmful not only to his personality development but also to that of the other children.

69. Most homemakers prefer to do their mending in the evening rather than in the afternoon,

70. Parents should recognize and appreciate individual differences among their children.
VI. THE TAYLORS

The Taylor family consists of Mr. and Mrs. Taylor, who have been married for 11 years, and their five year old daughter, Nancy.

Mrs. Taylor, who is 32, worked as a beauty operator before her marriage but is now a full-time homemaker. She is fond of homemaking and endeavors to make life for her family as happy and as comfortable as possible. Her chief outside interest is her church, which the family attends regularly. She teaches a Sunday School class, and both she and her husband are interested in doing their share to support all the organizations and activities of their church. Although in good health otherwise, Mrs. Taylor has a slight heart ailment which requires that she avoid over-exertion.

Mr. Taylor (age 35) is a machinist at a manufacturing company. He likes his work there but wishes that it would pay better so that he could give his family more of the comforts of life. (His wage is $2.00 per hour for forty hour week.) He bowls on one of the company's league teams and also belongs to two fraternal organizations, although he rarely attends any of the meetings. His main interest is his home and family.

Nancy, although quite self-assured at home, is very shy with strangers. She has always been a nervous, excitable child. A recent operation on her right eye corrected a defect in focusing which she had had since birth. Both parents feel that the operation was worth every cent of the $300 it cost, but they are finding it difficult to pay for it along with their other expenses.

The Taylors own their five room home, located just inside the city limits of Batesville (population 3,800). The house is small but conveniently arranged and well-equipped. At the present time the family is buying a new electric refrigerator and a television set on monthly installments.

The TV set provides most of the family recreation in the evenings, but on week-ends the Taylors frequently visit relatives or friends or entertain them in their home. The whole family enjoys taking Sunday trips; therefore, in summer and in early fall the family usually takes a picnic dinner and goes for a long drive on Sunday, visiting points of interest in their state or in nearby states.

Mr. Taylor considers taking care of the furnace, the car, and the yard and garden his responsibilities. He does not help with the housework, with the exception of drying dishes occasionally, but is very particular about the appearance of the house. Mrs. Taylor likes to have her housework meet her husband's approval, although at times she feels that this takes a great deal of effort. The washing and ironing present the biggest difficulties. Mr. Taylor had planned to buy his wife an automatic washer and an ironer (by monthly installments), but she thinks that they should pay for the operation before they purchase any more equipment. Mrs. Taylor's food preservation, from their own produce, supplies the family with all the canned vegetables and jellies and jams which they can use during the year.

Like all families, the Taylors have their problems, and their biggest one at present is paying off the debt incurred for Nancy's operation. Mrs. Taylor would like to go back to work for a year or two in one of Batesville's beauty shops — where she could earn $35 per week — in order to get the debt paid off as quickly as possible. If she should do this, Nancy would be sent to a day nursery where she would be cared for five days a week for $10.00. Mrs. Taylor plans to continue doing all her own housework if she accepts the job as she thinks that in this way they could not only pay off the debt within that time, but could purchase the equipment (washing machine and ironer) as well. She has planned that she will do the washing and ironing on her day
off and can do much of the housework (such as cleaning) in the evening. Special tasks, as canning and jolly-making, would have to be done on Sunday. Mr. Taylor is not sure that he wants his wife to go back to work, as he feels that doing two jobs may be too hard on her. In the light of the entire situation, however, Mrs. Taylor believes that a satisfactory solution to their problem is for her (1) to accept employment and (2) to manage the housework as she has planned.

71. If a mother of a family plans to work at any time, the best time for her to do so will be while the children are pre-school age.

72. The child is the one who suffers most when the mother is employed.

73. Frequently, the wisest decisions concerning the use of resources must be based upon non-human values.

74. Having to change plans that have been made interferes with good management.

75. People who have heart ailments of any kind are physically unable to work at any but sedentary occupations.

76. A woman who works at two jobs will fail to do justice to either.

77. It is unlikely that the woman who really enjoys homemaking will be happy in any outside employment.

78. The social status of a family is sometimes improved through increased economic status.

79. Men are opposed to their wives working outside the home.

80. The possessions which a family owns — or can obtain — is an adequate basis for judging their management of resources.

81. Labor-saving equipment in the home lessens the burden of housekeeping.

82. Having time for recreation and family group activities, as well as for work, plays a part in strengthening bonds of affection.

83. Wise management of one's own personal resources can bring happiness to one's family as well as to one's self.

84. It is best for one person in the family to take responsibility for making the important decisions.
# EXHIBIT VII

**KEY FOR THE INSTRUMENT**

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*In this key, the word *either* is used to stand for the "almost equally likely to be either true or false" classification and the word *neither* for the "neither supports nor contradicts" classification.*
EXHIBIT VIII

SCORES MADE ON TEST BY SIXTY SENIORS

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*Symbols used to represent different parts of test and types of statements:

I - Step I
II - Step II
G - Management generalizations
S - "Supports" statements
C - "Contradicts" statements
N - "Neither supports nor contradicts" statements
T-F - True—false statements
E - "Almost equally likely to be either true or false" statements
### EXHIBIT IX

**OHIO STATE PSYCHOLOGICAL EXAMINATION**

**PERCENTILE RANKINGS OF SIXTY SENIORS**

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*No percentile ranking available.*
EXHIBIT X

EVIDENCES OF GOOD AND POOR MANAGEMENT FOR ONE STUDENT

A. As Revealed in Conferences with Home Management House Supervisors

RELATIONSHIPS:

Recognized the value of cooperative group relationships.

1. Was excellent about cooperating with the group.

TIME:

Showed good time management in planning and doing work.

1. Planned her work and always had it done on time.

2. Prepared meal in 15 minutes because of planning and preparing foods ahead of time — managed time this way in order to have time to work on chair she was upholstering.
OTHER RESOURCES:

**Showed ability to adjust plans.**

1. Was able to adjust menus when unexpected guests came for meals — added extra food when needed.

**Showed initiative in her work.**

1. Was alert to what needed to be done around house — did not hesitate to go ahead and do task.
B. As Revealed through Observations of Student Teacher

Class: Freshmen in Home Economics I. One 60 minute period.

Lesson: Demonstration on preparing fruits for meals: fruit cup; stewed apricots; apple compote; broiled grapefruit; broiled peach. (In connection with study of first meal pattern from state course of study. Beginning of first foods unit for class. First demonstration for student teacher.)

RELATIONSHIPS:

Accepted all students.

1. Even when student teacher disagreed with students' responses, she did it in a pleasant manner.

TIME:

Showed evidence of having used own time to advantage in preparing lesson.

1. Had all foods and equipment needed for demonstration collected, organized, and ready to use at beginning of period.

Time wasted due to poor instructions to students.

1. Since student teacher told girls that they were to go to the kitchen and bring their chairs, girls got up and started carrying chairs with them to the kitchen. Then the student teacher explained, "Oh, no, not these chairs. I mean the ones in the kitchen." Then girls had to push chairs back under table.
Failed to take advantage of opportunities to teach something about cost and economy in food preparation.

1. When water around apple was boiling hard, student teacher turned gas down, commenting that the apple was just supposed to simmer—not boil. She did not mention fact that gas is wasted when water is boiling more than necessary.

2. In commenting on size of serving of apricots she had dished up, said that dish was a little too full to look nice for a serving. Entirely overlooked item of cost in relation to size of servings.

OTHER RESOURCES:

Had managed some personal resources well for lesson.

1. Had on clean, neat white uniform (an hair net).

Class: Freshmen in Home Economics I. One 60 minute period.

Lesson: Preparing second meal in foods unit. (Two students prepared simple breakfast for group of four or five. Used fruit, cereal or breadstuff, and beverage meal pattern from state course of study.)
RELATIONSHIPS:

Showed a positive attitude toward all students.

1. Helped all groups cheerfully. Was very pleasant to students, even when pointing out mistakes they had made.

TIME:

Tried to help all students make good use of their time.

1. Had work (on meals being prepared) planned for students not cooking. (These students were to know standards for foods in meals, figure cost of meals from chart showing current prices, and evaluate meal after they were served.)

Used own time to good advantage, both in preparation for lesson and during lesson.

1. Took time at beginning of period to explain instructions to group not cooking so they would get started on assignment.

2. Had all foods needed by class on hand at beginning of period. Had foods for each group on tray in each unit kitchen. (Accepted pattern of laboratory management at this school.)

3. Divided her time between groups not cooking and those who were cooking.
OTHER RESOURCES:

Made use of available facilities.

1. Had instructions on blackboard for groups who were not working in laboratory.

To some extent, was aware of students' good or poor management.

1. Noted on rating sheet points concerning way in which each group worked in laboratory.

2. Called students' attention to fact that cups and saucers should be on right side of plate instead of on left side. (Called their attention to this before students who were being served at this table came to table.)

Showed good management of own resources.

1. Had on hair net and clean, neat white uniform.

Class: Freshmen in Home Economics I. One 60 minute period.

Lesson: Class evaluation of laboratory periods on previous two days.

RELATIONSHIPS:

Showed a positive attitude toward students.

1. Encouraged student responses. Was very pleasant to all students.

Did not help students to become aware of mistakes at time when it would have been most valuable for them to learn about them.

1. For the most part, noted students' errors on paper but did not show them then how to correct mistakes. (Was saving this for evaluation of lesson on following day.)
Recognized students' need for a feeling of achievement.

1. Encouraged students to bring out good points of meal preparation and laboratory work before bringing out mistakes.

2. Complimented students on fact that they worked quietly and were through before bell rang.

TIME:

Tried to help students learn how to save time.

1. Brought out fact that water will boil quicker when covered; suggested to students that they should use lids on saucepans.

ENERGY:

Was aware of fact that students wasted energy.

Tried to help them learn how to save energy.

1. Pointed out to groups that they could have saved steps in table setting and clearing by using a tray.

Failed to recognize time limitation at end of period.

1. Kept on discussing table settings until bell rang. Then had to clear table (used to demonstrate points about table setting) and get students to move four other tables (moved together for discussion) back to original places. Was still doing this when next class came in, thus causing confusion.
ENERGY (CONTINUED):

2. Brought out fact that one group wasted steps by putting cups and saucers on table, then removed them to work space when pouring cocoa.

3. Pointed out to groups that steps can be saved in dishwashing by having draining pan on side near storage for dishes and silver.

3. Observed that students had pan on stove when putting water in it and kept walking back and forth from sink to stove to fill pan. Suggested that they should fill pan at sink.

MONEY:

Tried to make students aware of food costs and ways to save money in food buying.

1. When student mentioned that grocery stores sell cinnamon and sugar mixed together (and packaged in a shaker), student teacher brought out fact that it is cheaper to mix them at home and that you can put the mixture in a salt shaker, if you like.
OTHER RESOURCES:

Was aware of students' poor or poor use of equipment. (Pointed out and discussed use of following in laboratory:

1. Fruit knife
2. Kitchen shears
3. Pot holders
4. Sink strainer
5. Tongs
6. Paring knife and butcher knife
C. As Revealed through Interviews with Supervisors of Student Teaching

RELATIONSHIPS:

Showed a positive attitude toward students.
Accepted all students.

1. When picking students for "two for the money" contest on beverages, chose one student who was very quiet and usually not responsive. When asked by supervising teacher why this girl was picked, student teacher said she had chosen girl because she was unresponsive and because student teacher sensed that girl did not "approve" of her. Thought it would encourage girl to take more interest in class work and to like student teacher better.

TIME:

Used her time to good advantage in preparing for lessons. Made good use of time in class.

1. Lessons always showed evidence of careful planning.

2. Had all supplies and equipment needed for laboratory work and for demonstrations on hand at beginning of period.

Did not always make best use of time in class.

1. In checking menus planned, spent too much time with one group; other group started working on English because of having to wait so long for help.
3. Took time to pick out fruits used in meals in person instead of just leaving order list at grocery store.

4. Talked to manager of store, to checkout girl, and to delivery boy to impress upon them fact that groceries must be delivered on time.

5. Brought her alarm clock so students would know time in laboratory when department clock was not working.

6. Checked on laboratory housekeepers to be sure that they had seen to it that kitchens were left in order.

7. Divided time between laboratory group and those not cooking in order to help both.

**MONEY:**

**Tried to keep costs of foods low.**

1. Encouraged girls to order only what was needed for meals.

2. Noted on record of meal that group had food left over.

3. In discussion on buying fruits, brought out relation of price to season.

2. When organizing girls' questions on beverages by writing them on blackboard, repeated same question under each of the three beverages instead of organizing in terms of points common to group, as "How prepared?"

In some ways, overlooked opportunity to keep down costs.

1. Students had ordered cream for cereal and student teacher was going to get it for them until supervising teacher pointed out fact that students did not use cream on cereal at home.
OTHER RESOURCES:

Helped girls to develop their own ability to plan and to do. Recognized students' errors. Helped students to progress.

1. Helped students plan time, procedures, and other aspects of foods laboratory lesson on board before students started to work in laboratory so they would know how to work out their plans for laboratory.

2. When student had planned to have prepared cereal and sliced bananas, student teacher asked her what it was she had wanted to get out of foods unit. Girl remembered that she had wanted to "learn something." Student teacher's question had made her see that she would not be learning anything new, so she changed fruit and cereal.

3. Had "two for money" contest on beverages as basis for planning with girls what they needed to know and wanted to learn in beverage unit.

4. Was aware of way in which girls worked in laboratory. Saw poor habits. Gave suggestions to girls as to how to improve working methods.

Overlooked opportunities to teach students how to use resources.

1. Used equipment correctly during demonstrations but did not point out to students why she was using this particular piece of equipment in that way.
OTHER RESOURCES (CONTINUED)

5. Suggested to students that they not use any of same foods in second meal as in first so would learn something new.

6. Had good class participation. Brought almost all of students into discussions.

Made good use of available resources.

1. Always had standards to use in judging food products on board during laboratory lesson in food preparation.

2. Showed film strip on fruits; had samples of fruits to show when discussing buying of fruits. When discussing cereals, brought different grains from elevator for students to see.

3. Made good use of mimeograph to prepare materials for class.
### Exhibit XI

**Check Sheet of Management Abilities for Scoring Evidence**

<table>
<thead>
<tr>
<th>Student No.</th>
</tr>
</thead>
</table>

#### Relationships:

<table>
<thead>
<tr>
<th></th>
<th>A* P**</th>
<th>N**</th>
<th>B* P</th>
<th>N</th>
<th>C* P</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Showed a positive attitude; accepted all students</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Recognized student’s need for sense of achievement</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cooperative; recognized value of cooperative group relationships</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was accepted by students; secured cooperation and respect of group</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Accepted criticism well</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Furthered good human relationships in other ways</td>
<td>1</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

#### Time:

<table>
<thead>
<tr>
<th></th>
<th>A* P**</th>
<th>N**</th>
<th>B* P</th>
<th>N</th>
<th>C* P</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Made good use of own time in planning or preparing work; made good use of own time doing work</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helped students to make good use of time</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Recognized time limitations; planned and/or did work accordingly, considering important factors</td>
<td>1</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
**EXHIBIT XI (CONTINUED)**

<table>
<thead>
<tr>
<th>ENERGY:</th>
<th>A</th>
<th>N</th>
<th>B</th>
<th>N</th>
<th>C</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognized importance of conserving energy; conserved own energy</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Was aware of students not conserving energy; helped them to improve in this respect</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>MONEY:</th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Was aware of money values and thriftiness in relation to purchase and/or use of materials</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Helped students to become aware of money values and thriftiness in relation to purchase and/or use of materials</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>OTHER RESOURCES:</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognized value of management</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Showed ability to plan and organize and/or to carry out plans</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Did adequate and effective planning on own and/or with students</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Showed ability to adjust plans and work as needed</td>
<td></td>
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</tr>
<tr>
<td>Accepted responsibility; did work well</td>
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<td></td>
</tr>
</tbody>
</table>
**EXHIBIT XI (CONTINUED)**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th></th>
<th>B</th>
<th></th>
<th>C</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P</td>
<td>N</td>
<td>P</td>
<td>N</td>
<td>P</td>
<td>N</td>
</tr>
<tr>
<td>Showed initiative in work</td>
<td></td>
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<tr>
<td>Showed good management of personal and/or other resources</td>
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</tr>
<tr>
<td>Made use of available facilities and resources</td>
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</tr>
<tr>
<td>Was aware of students' good or poor use of resources; Helped students learn how to use resources wisely</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Gave clear, adequate directions for work</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Recognized and provided for students' needs</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Aided students in becoming self-directing by helping them to develop ability to plan, to think, to do</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Helped all students to get maximum benefit from lesson</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Enlisted student cooperation in care of room, equipment, and supplies</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Total score value</td>
<td>+20</td>
<td>0</td>
<td>75</td>
<td>-20</td>
<td>30</td>
<td>-15</td>
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<tr>
<td>Difference between P &amp; N</td>
<td>+20</td>
<td></td>
<td>18.33</td>
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<td>+15</td>
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</table>

Score: +53.3

*A - Scoring of evidence revealed in conferences with home management house supervisors
B - Scoring of evidence revealed through observations of student teacher.
C - Scoring of evidence revealed through interviews with supervisors of students teaching.

**P - Positive aspects of evidence.
N - Negative aspects of evidence.
EXHIBIT XII

SCORES ON PRACTICAL MANAGEMENT GIVEN TWENTY-ONE STUDENTS ON THE BASIS OF OBSERVATIONS AND INTERVIEWS

<table>
<thead>
<tr>
<th>Student</th>
<th>Practical Management Score</th>
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<tbody>
<tr>
<td>22</td>
<td>70</td>
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<tr>
<td>47 Upper</td>
<td>53.3</td>
</tr>
<tr>
<td>7 Group</td>
<td>47.5</td>
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<tr>
<td>45</td>
<td>46.3</td>
</tr>
<tr>
<td>39</td>
<td>28.3</td>
</tr>
<tr>
<td>27</td>
<td>27.5</td>
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<tr>
<td>25</td>
<td>27.5</td>
</tr>
<tr>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>56 Middle</td>
<td>22.5</td>
</tr>
<tr>
<td>59 Group</td>
<td>22</td>
</tr>
<tr>
<td>24</td>
<td>20</td>
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<tr>
<td>26</td>
<td>16.6</td>
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<tr>
<td>50</td>
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<td>19</td>
<td>0</td>
</tr>
<tr>
<td>53</td>
<td>- 10</td>
</tr>
<tr>
<td>34 Lower</td>
<td>- 15</td>
</tr>
<tr>
<td>15 Group</td>
<td>- 22.5</td>
</tr>
<tr>
<td>16</td>
<td>- 25</td>
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<tr>
<td>60</td>
<td>- 28.3</td>
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<tr>
<td>3</td>
<td>- 35</td>
</tr>
<tr>
<td>5</td>
<td>- 35</td>
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</tbody>
</table>
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"What Does It Say? - An Interpretation of Data Test." Columbus: School of Home Economics, The Ohio State University, 1953. ( Mimeographed).


AUTOBIOGRAPHY

I, Anna Margaret Cameron, was born in Ford County, Illinois where I attended the public schools and was graduated from Paxton Community High School. In 1937 I received the Bachelor of Science degree in home economics from Indiana University. During the following thirteen years I taught home economics in the secondary schools of Indiana, Illinois, and Colorado.

In 1950 I was awarded a Master of Science degree from Indiana University. During the 1950-51 academic year I was a supervising teacher in home economics in the University High School at Illinois State Normal University. From 1951 until 1954 I held a graduate assistantship in the School of Home Economics at The Ohio State University while doing advanced study for my degree.