DEVELOPMENT OF A SCALE TO MEASURE ATTITUDES TOWARD INSTITUTIONAL FOOD

by

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Diploma in Home Science
University of Otago
New Zealand, 1947

A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Institutional Management

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1966

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INTRODUCTION

Attitudes toward food, both general and specific, play a significant part in the acceptance of food. They reflect past experiences and cultural background and are a form of individual self expression. Other factors in food acceptance are physiological conditions and sensory reactions.

Development of attitudes is a complex, continuous process. Attitudes may be considered a response pattern, closely associated with beliefs and emotions that determine reaction and behavior toward particular circumstances. Relationships between direction, intensity, and complexity of attitudes determine extent and quality of future experiences.

In an international report on food practices, Burgess and Dean (1962) focused attention on the importance of understanding psychological factors in maintaining and improving nutritional standards. The problem in developing countries may be a combination of inadequate food supplies and resistance to changes in social and eating habits. In countries with an abundance of food, a need exists for a continuing educational system to enable people to select properly from an increasing variety of foods. Some current research programs designed to solve problems of dietary deficiencies or excesses have been based on exploratory studies of the social psychology of food habits.

Food acceptance should be of primary concern to food service administrators responsible for menu planning and

preparation and service of food within budgetary limitations. Awareness of factors that account for differences in food acceptance is reflected in numerous food preference surveys reported in the literature. Measurement of food attitudes is a step toward a definite model of the dual process of providing the desired and needed food service and finding creative ways to help consumers meet changes in social and food habits. The purpose of this study was to develop a device for measuring student attitudes toward institutional food served in a residence hall dining room.

REVIEW OF LITERATURE

Food Habits

The study of food habits represents a medium for interdisciplinary research involving behavioral sciences and nutrition. Achievements in the science of food habits were discussed in a selected bibliography by Mead (1964, p. 7). Critical evaluation of research programs from 1940 to 1960 showed an absence of coordinated planning. Precise nutritional assays were carried out without systematic study of the environmental situation and relevent human behavior. Food habits were described as "good" or "bad", depending on nutritional status of the population. Anthropologists, psychologists and sociologists viewed any particular food habit as an integral part of the total living pattern. Difficulties were encountered by field workers in recording information

on food patterns. Need was apparent for specialists in social sciences and nutrition working as a team or preferably one investigator competent in both areas.

Definition of Food Habits. Mead (1964, p. 4) traced the organization in 1940 and 1949, respectively, of national and international agencies concerned with scientific study of changes in food habits. Reporting an international conference on malnutrition and the social and psychological problems of changing food habits, Burgess and Dean (1962, p. 9) stated, "The ways in which individuals or groups select, consume and utilize the available supplies of food constitute their food habits; they include systems of food production, storage, processing, distribution and consumption." The conference was directed toward increasing knowledge of cultural, social and economic factors underlying existing food habits.

Food Habit Elements. According to Peryam (1963) elements in food habits were defined as: food types, number and proportion; methods of preparation and storage; methods of serving and combinations of foods; daily patterns; identity of those who make the final selection; effect of religious practices, taboos, and value factors. Stefanik and Trulson (1962) emphasized need for considering agricultural resources, purchasing ability, spacing and pattern of meals, speed of eating, and frequency of food item consumption within the framework of technical and cultural advances. Food habits of an individual, contended Babcock (1961), were established

early and in some cases were resistant to change. Early eating experiences were found to be important in determining rigidity or flexibility of food habits. Differences in facts and attitudinal values attached to food by individuals and groups should be respected by dietitians.

Methods of Studying Food Habits. Techniques for the study of food habits listed by Litman et al. (1964) were: detailed records of food intake, group and individual meal patterns, observations of group and individual behavior, questionnaires and personal interviews, analysis of traditional proverbs, rituals and folklore, and evaluation of types of advertising and directed efforts to modify food habits. In France the beginning of historical study of folk ideas about cooking processes was reported by Burgess and Dean (1962, p. 180). Since collection of information was expensive, the authors (1962, p. 132) proposed studying market research surveys based on representative samples, as a source of reliable data.

Development of a method of notation, similar to music or mathematics, was suggested for describing and defining dietary patterns (Burgess and Dean, 1962, p. 184). Symbols specifying amounts of liquid and solid, consistency, contrasts in texture and varieties of flavor in a diet experienced by a consumer group would permit comparisons and experimental projections. Stefanik and Trulson (1962) agreed that coded interview methods of obtaining qualitative food intake

records would be less time-consuming and more economical for dietary assessments.

Food Habits Research Personnel. In collecting data, nutritionists, dietitians, health educators and social scientists were involved in ascertaining not only the food habits, but also the reasons behind a specific set of food habits (Burgess and Dean, 1962, p. 45). Results obtained by different types of investigators showed need for unbiased observations of cultural and social associations and differences. Ability to classify ideas about food, such as functions and changing fashions, was considered important in understanding the food situation in general. Research workers studying the practices of a different culture or sub-culture may make unconscious assumptions distorted by their own background culture. Although an investigator working in a familiar culture knows the language and terms, difficulties have been experienced in some projects because of this familiarity. Burgess and Dean (1962, p. 185) reported that in England women were often more willing to discuss cultural and social aspects of food with an English-speaking foreigner than with English interviewers.

Pilgrim (1961) believed that regulation of food habits in the interests of health, nutrition, and cultural coherence will require a very active and vigorous approach. A comprehensive program of systematic research, training of development personnel and defining of responsibilities and

priorities would accomplish more than short nutritional campaigns.

Food Acceptance

Factors Affecting Food Acceptance. Pilgrim (1957) depicted a model of the components of food acceptance encompassing physiology (internal), sensation and attitudes (external). Each of these three major components contributed to perception and final acceptance of food. Mutual interactions were known to operate but had not been delineated. Both food and non-food factors affecting perception might be of recent origin or could be long established and deeply ingrained. Relative intensity along several dimensions should be investigated in order to predict food choices and to understand why these selections are made.

The term food acceptance was "simply a question of which foods will be eaten" according to Vawter and Konishi (1958). Contributing factors that determine an individual's particular food likes and dislikes may be of biochemical, physiological, social and educational origin. Other factors may reflect mental state, sex, age, religion, economic status of family, area and size of community.

Methods of Studying Food Acceptance. Methods for investigating acceptance behavior were presented by Pilgrim (1957) in three classes: (1) attitude studies, using written or oral techniques to record general surveys or specific cases, reflecting attitudes already established; (2) sensory tests

based on selective actions and affective reactions; and (3) actual food consumption records obtained either under field or experimentally controlled conditions. Perception of food was in some instances altered and directed by attitudes, illustrated by the example, "the idea of eating snails is so repulsive to some people that they refuse to try them"; that is, refuse to sample a food that never actually has been sensed (Pilgrim, 1957).

Potential contributions of applied psychology to research in food acceptance were given by Harper (1962) as,

1. Psychologists could help to determine the detailed characteristics of food habits in different parts of the world.
2. They might usefully collect information about what is liked and what is disliked, relating this to sensory, perceptual, physiochemical and cultural data.
3. They might explore the possibility of stimulating interest in a wide variety of unfamiliar foods that may be available but not eaten.

Three main dimensions are involved in food acceptance research: sensory-descriptive, instrumental-objective and emotional. Influences comprising factors known to affect perception and judgement were added by Harper (1962) as a fourth category. These factors are individual differences, effects of special knowledge and experience, serial influence and systematic biases, sensory interaction, group differences and social influences. The concept of reference groups in relation to choice of foods was considered relevant. Either real or imaginary persons may form the

reference groups, exhibiting goals and values esteemed by the individual member. Harper (1962) concluded with the statement, "Convincing methods of representing and handling these psychological facts, including the role of multiple causation in food assessment and food acceptance, will when systematically developed play an important part in the education of future food scientists."

Acceptability of 170 food items was measured during a 28 day period by Vawter and Konishi (1958) during observations of free choice consumption of food by 100 soldiers. Favorable acceptance of food items (meat, fish, poultry, eggs, cereals, vegetables and fruits) was in close agreement with findings of questionnaire type surveys. Results showed higher acceptance and greater consumption of milk, and lower acceptance of ice cream than expected from reported surveys. Menu composition was important; acceptability of some foods was dependent on choices offered.

In a study by food psychologists at the Quartermaster Food and Container Institute for the United States Armed Forces, Peryam (1963) reported some achievement in introducing unusual foods. Acceptance of fried grasshoppers was gained by techniques that included monetary rewards, humor and a friendly approach. In an atmosphere of minimum pressure, non-commissioned officers induced favorable action. Nearly all subjects were persuaded to eat at least one grasshopper, although no subject reported a liking for them.

Acceptance of unfamiliar or novel foods required specific investigation and education pertinent to the situation.

Food Frequency

Effect of Frequency on Food Acceptance. A study by Siegal and Pilgrim (1958) determined effect of repetitive alternate daily menus served 79 volunteer men students, 17 to 35 years of age, for 22 days. Subjects rated foods on a nine point palatability scale initially and at intervals during the experiment. Palatability ratings declined steadily and follow-up measurements showed only random differences. The study revealed general agreement with stated hypotheses:

1. Monotony in eating is some positive function of the number of times an item of food has been consumed totally or in part.
2. In time monotony in eating dissipates very slowly or not at all.
3. A high initial level of acceptance slows the growth of monotony in eating.
4. The growth of monotony in eating is in large part affected by personality.
5. Monotony in eating is overtly expressed in the symptoms of lowered acceptance of food.

Schutz and Pilgrim (1958) reported a field study that corroborated the preceding hypotheses of food monotony. During an active program in a cold environment, 86 men were sustained for 35 days on an austere diet of four daily menus embodying 41 foods. Consumption of each food item at each meal was measured and per cent consumption was calculated.

A food preference questionnaire administered on the tenth and thirty-seventh days of the experiment supported a tentative theory: that food monotony overtly expressed as lowered consumption and preference was primarily a function of repetition, modified by initial palatability of the food and difference in type of food, such as meat or fruit. Interviews with a randomly selected sample of subjects provided information about changes in attitudes toward foods served. A coded interview method of assessing number, kind, frequency and amount of food and food groups was proposed by Stefanik and Trulson (1962) for determining frequency intakes in large group studies.

In an exploratory study of factors in food monotony, Kamen and Peryam (1961) compared food acceptance and consumption of three groups of volunteers. Each group of 24 subjects was randomly assigned to four sub-groups of six men each. Variables included length of menu cycle and effect of participation in control of monotony. A three day cycle menu, self-planned, was as satisfactory as a six day cycle menu pre-planned by experts. Both appeared superior to a three day cycle menu pre-planned by outside experts. The study revealed that volunteer subjects, treated courteously and promised a reward for participation, developed favorable attitudes toward food and were willing and able to plan their own diets. Kamen and Peryam (1961) proposed self-planning of menus as a method of increasing satisfaction with food. Relative absence of monotony effects implied that the diet

was not restricted enough to adversely influence consumption and preference.

Food Preferences

In discussing evaluations of sensory appeal of foods, Amerine et al. (1965, p. 399) noted the necessity for distinguishing between studies of consumer acceptance and preferences of food. Choice of particular foods is implied by food preferences.

Factors Affecting Food Preferences. Reactions to food are difficult to measure, describe and classify (Amerine et al., p. 399). Food preferences may be influenced by prejudice, religious principles, group conformance, status values attached to food by individuals, snobbery and quality of food. On occasions preferences may appear to be illogical. Cultural, family association and emotional factors, and the symbolic meanings of foods at different age levels were believed by Pumpian - Mindlin (1954) to create definite preferences either for specific foods or for certain ways of preparation.

Food Preference Studies. Formal study of consumer preferences is a recent activity undertaken by government agencies, private firms and educational and research organizations. Food preferences are expressed as degrees of like or dislike of foods listed on a food inventory. Hamburger (1958) indicated that food preference studies established a basis for predicting food acceptance.

Military Personnel. Food preferences on a questionnaire were found to predict consumption with pleasure, noted Pilgrim (1957). Surveys conducted at the Quartermaster Food and Container Institute with military personnel demonstrated the effects of environment and learning on food preferences. For some foods, age, educational level and experience prior to age 16 years contributed to food preferences.

Hospital Patients. Acceptance or rejection of food by hospital patients, reported McCune (1962), was based on preference for grade of ingredients, appearance, taste and texture, influenced by age, background, experience, education, attitudes and emotions. McCune (1962) stated that, "on the subject of acceptance of food or quality of food, the patient considers himself an expert." Emotionally conditioned quality standards of patients may conflict with intellectually developed standards of quality held by dietitians. Food preference studies provided information for menus that should meet patient preferences. Dietitians' attitudes may prevent them from understanding preferences of patients. In order to increase patient satisfaction with food and to reduce plate waste, McCune advocated use of a tasting table in the dining room to display and evaluate food products. This procedure created opportunities for dietitians to educate customers and to discover quality of food acceptable to both.

College and University Students. Consideration of preferences should lead to improved food acceptance and consumption according to Lamb et al. (1954). Any "captive" group paying for meals should be given opportunity to express preferences. Dietitians are responsible for informing and educating "captive" groups on aspects of food service operations pertaining to menus and foods offered.

Analysis of food preferences and eating habits of 170 women students living in a residence hall at Texas Technological College indicated that foods checked as liked and disliked were typical of students and the population in general. Foods checked as disliked correlated with those seldom eaten, revealing desirability of a specially planned educational program to promote student food and nutrition knowledge. Reasons for between-meal-eating were: to satisfy hunger, to be sociable, to substitute for a meal missed, to relieve boredom, at the urging of friends, from habit and because of no resistance to food.

Colleges and universities are accountable for educating the whole person in classrooms, chapel, on playing fields and in living facilities (Minah, 1965). As proper habits are important to health and performance of students, dining hall operations and atmosphere should develop positive attitudes toward food, advance the goal of good nutrition and contribute to intellectual development. Nugent (1965) pointed out that a university food service department has responsibility for bridging the gap between catering exclusively to

student preferences and expanding those preferences. Freshman students may arrive at universities knowing only the food customs of their own family and with preconceived ideas about institutional food. These opinions may be negative or indifferent. The problem of satisfying nutritional needs, tastes, habits and encouraging students to try a variety of new dishes should be a challenge to the food service administrator. The trial and error method was used with some success by Nugent (1965) in arousing nonadventurous students to accept unfamiliar food. When new foods were featured on the menu signs were posted in the dining hall. Reactions of students were noted and suggestions were incorporated in the program. Stiebling (1964) favored utilizing advancing knowledge of nutrition to enable young people to modify food choices and improve food habits.

Application of Research Findings

Dietitians, restaurant managers and food technologists are all concerned with decisions based on the relative acceptability of foods according to Kamen (1962). Differences in outlook have created conflicting evaluations of acceptance data. Food service operators have opportunity to notice reactions of customers; food technologists are interested mainly in the qualities of food products. Kamen (1962) observed that users of food acceptance research should strive for continuous analysis, review and understanding of

the various frames of reference held by person-orientated and product-orientated groups.

Attributes of the food products and the consumer were set forth by Amerine et al. (1965, p. 403). Those listed for the food product were: availability, utility, convenience, price, uniformity and dependability, stability and storage requirements, safety and nutritional value and sensory properties (appearance, aroma, taste, texture, consistency, temperature, pain). Attributes of the customer were: regional preferences, nationality and race, age and sex, religion, education and socio-economics, psychological motivation (symbolism of food, advertising) and physiological motivation (thirst, hunger, deficiencies, pathological conditions). Modern technological advances have changed traditional methods of preparation, production, storage and distribution of foods. New developments have created a pattern of complexity in food acceptance research. Progress has accelerated need for representative sampling of consumer opinion, as well as continual study of changes in food habits. Proper consideration of the consumer and his point of view are necessary in effective acceptance studies because no matter how appealing and nutritious, foods may be rejected.

Food Attitudes

Knowledge and attitudes that relate to food and use of foods, noted Babcock (1961) are vital to communications between dietitians and consumers. Learning to handle food is

a skill and an art, formerly concerned with obtaining, preparing and preserving food, now embodying handling of food for ease, sociability and health. Differences between people should be respected but not exploited. Attention to age appropriate food habits should be combined with considerations of nutrient appropriate factors. Babcock (1961) commented that such foods as hot dogs may have social value for adolescent groups, that far outstrips nutrient value.

In order to predict and direct changes in food preferences, Pilgrim (1961) believed a study of attitudes would be important to know why certain foods are preferred. Acceptance or rejection may depend on personal or individual attitudes toward food. Group or cultural attitudes were cited as other intangible factors that may contribute to variation in food consumption and preferences. Two ways of discovering attitudes in food preferences are use of attitude scales designed for the particular problem and use of motivational studies. Essence of motivational research is a lengthy conversation around the topic being investigated, with the investigator asking no direct questions but always encouraging expression of personal views about the topic (Pilgrim, 1961). The depth interview, using a free and flexible conversation between interviewer and respondent, reveals urgency or apathy of attitudes and patterns of which they are a part (Anonymous, 1964). Attitude surveys by either method may be complicated because many people may not be able, or wish to describe attitudes toward food.

Children's Attitudes Toward Food. Breckenridge (1959) studied the effect of camp experiences on food preferences of 51 children. Food preference scores obtained from a 25 item questionnaire, including food groups and specific foods, at the beginning, were compared with results obtained after five weeks. Responses of like, dislike and indifference recorded at the end of the interval, indicated no specific group changes and only minor individual changes in preferences for food on the questionnaire. When the children's preferences were compared with preferences as perceived by their parents, Breckenridge (1959) ascertained a significant difference for foods thought to be liked and foods to which the children were indifferent. Similar scores for foods and food groups disliked by the children were obtained from the children and their parents. Food attitudes of children may be an outward expression of hidden feelings about self or interpersonal relationships with friends, parents and other adults in the eating situation. Breckenridge (1959) concluded, "An understanding of food preferences and prejudices and of their dynamics can be of value both to those who plan and supervise the feeding of children and to those who are engaged in promoting sound food habits through nutrition education."

Measurement of Attitudes

Attitude scales, used in the measurement of attitudes, have proved to be useful in a variety of studies (Edwards,

1957, p. 1). When a research worker finds that there is no scale suitable for his purpose it becomes necessary for him to construct his own attitude scales.

Attitudes Defined. Edwards (1957, p. 2) defined an attitude as "the degree of positive or negative affect associated with some psychological object." Psychological objects may be any symbol, phrase, slogan, person, institution, ideal or idea. Examples of activities may be a particular job, political party, national and regional groups and labor unions. A particular food may be an example of a psychological object. Attitudes were defined by Krech et al. (1962) as an "enduring system of positive or negative evaluations, emotional feelings, and pro or con action tendencies with respect to a social object." Responses of the individual to a selection of items on an attitude scale are used to measure the degree of difference in attitudes.

Attitude Statements. Attitude scales provide a means of assessing the degree of affect that individuals may associate with a psychological object. A well constructed attitude scale may be used for a relatively quick and convenient measure of attitudes of large groups of people, reported Edwards (1957, p. 9). The first step in constructing an attitude scale is to obtain statements that will represent the universe of interest about a particular psychological object. As attitudes range by degrees from strongly favorable through neutral to strongly antagonistic, selection of statements must cover all areas of interest. Sources of

items may be interviews with individuals, newspaper editorials and articles. Informal criteria for editing statements for an attitude scale were summarized by Edwards (1957, p. 13) as,

1. Avoid statements that refer to the past rather than to the present.
2. Avoid statements that are factual or capable of being interpreted as factual.
3. Avoid statements that may be interpreted in more than one way.
4. Avoid statements that are irrelevant to the psychological object under consideration.
5. Avoid statements that are likely to be endorsed by almost everyone or by almost no one.
6. Select statements that are believed to cover the entire range of the affective scale of interest.
7. Keep the language of the statements simple, clear and direct.
8. Statements should be short, rarely exceeding 20 words.
9. Each statement should contain only one complete thought.
10. Statements containing universals such as all, always, none, and never often introduce ambiguity and should be avoided.
11. Words such as only, just, merely, and others of a similar nature should be used with care and moderation in writing statements.
12. Whenever possible, statements should be in the form of simple sentences rather than in the form of compound or complex sentences.
13. Avoid the use of words that may not be understood by those who are to be given the completed scale.
14. Avoid the use of double negatives.

Scale Values for the Statements. When a number of statements about a psychological object have been collected and edited, one of two general methods may be used in development of attitude scales. In the first method, described by Edwards (1957, p. 19), the statements are presented to individuals who make specified judgements on the statements. The judges may indicate whether they agree or disagree with the statements or they may arrange the statements in order from least favorable to most favorable. Scale values are obtained from prescribed formula, alloted to the items and the scale correlated for reliability either internally or by test-retest methods.

The second general method for development of attitude scales is the response method of summated ratings and scalogram analysis. Edwards (1957, p. 147) set forth the response method of summated ratings. Weights for response categories are obtained from the normal deviate weights based on the proportion of subjects falling in each category of response. A variation of this method, developed by Likert, was reported less time-consuming than the more complicated normal deviate system of weights and produced comparable results. The Likert technique requires a set of statements with approximately the same number of favorable and unfavorable statements. Subjects are asked to mark one of five possible responses: strongly agree, agree, uncertain, disagree or strongly disagree. The responses have weights, arbitrarily assigned, of 4, 3, 2, 1 and 0 for the favorable

statements and 0, 1, 2, 3 and 4 for the unfavorable statements. An individual's total score is obtained by adding the ratings for individual responses. High scores on the attitude scales may be used to classify individuals with a favorable attitude toward the object. A low score indicates an unfavorable attitude toward the object.

Analysis of items to be included in a summated-rating scale provides an estimate of ability of individual statements to differentiate between subjects with varying attitudes toward the psychological object. A positive statement may be judged satisfactory if an agree response will be given by subjects with more favorable attitudes and a disagree response will be given by subjects with less favorable attitudes, that is with the higher summated scores. Edwards (1957, p. 152) reported the calculation of "t" values for evaluating the difference in the mean response to an attitude statement by a high group and a low group, these groups consisting of a per cent of the subjects from each end of the frequency distribution of total scores. The value of "t" was stated to be a measure of the extent to which a given statement differentiates between the high and low group. A "t" value of 1.75 or greater was regarded as indicating that the average response of the two groups differed significantly, provided each group contained more than 25 subjects. Evaluation of individual items by the "t" test or by using the difference between the means of the high

and low groups on individual statements was recommended as a basis for rejecting items.

Final selection of statements to form a scale should include approximately half favorable statements and half unfavorable. Reliability of the scores may be tested by obtaining a split-half reliability coefficient between odd and even numbered items. The reliability coefficients typically reported for scales constructed by the method of summated ratings were above 0.85, according to Edwards (1957, p. 156).

Interpretation of Attitude Scores. Interpretation of attitude scores on a summated-rating scale depended on reference to distribution of total scores of a particular defined group (Edwards, p. 158). The range of scores, mean and standard deviation provided points for comparison with other tests. The author assumed that the mean represented the typical or average attitude score of the group. Scores that were higher than the mean may be interpreted as more favorable than the average score for the group and scores that were lower may be described as less favorable than the average score obtained on the test.

PROCEDURE

Preliminary Interviews

To obtain statements for development of an attitude scale for measuring student attitudes toward institutional food, an interview schedule (Form 1, Appendix) was designed

and administered to a selection of students. Subjects interviewed were 20 students chosen from a population of 120 women living in a residence hall at Kansas State University. The sample was randomly selected within requirements that ten freshmen and ten upperclass students form the group. Students were invited to participate in the study (Form 2, Appendix); however, as four freshmen students were unable to participate in the study, four alternates were selected to replace them.

The semi-structured interview consisted of biographical data, information about family eating practices and experiences, and questions about exposure to institutional food. The interviewer endeavoured to maintain an alert, friendly, patient and non-authoritative manner, without arguing, giving advice or influencing responses. Interviews were conducted to allow the introduction of new ideas not anticipated by the interviewer. Students were assured that the information would remain confidential.

Food Questionnaire

A food questionnaire was constructed of 19 statements obtained from informal editing of responses received in the interviews. Items on the questionnaire, checked for clarity by members of the writer's thesis advisory committee, consisted of ten favorable statements and nine unfavorable statements about institutional food served in the dining hall. The food questionnaire (Form 3, Appendix) was

presented to 214 upperclass students, the total population of another women's residence hall at Kansas State University. Cooperation of the residence hall director, assistant directors and student house council was enlisted, and provided a convenient and accurate method for managing the survey. Representatives of the house council distributed questionnaires to each section of students and collected the completed papers within five days. The number of completed questionnaires returned was 188, or 88 per cent.

Statistical Analysis. The Likert method of attitude scale construction using the relatively simple assignment of integral weights for the response categories was used for scoring the items. For favorable statements on the questionnaire the strongly agree response had a weight of 4, the agree response a weight of 3, the uncertain response a weight of 2, the disagree response a weight of 1 and the strongly disagree response a weight of 0. Weights were reversed for unfavorable responses with the strongly disagree response given a weight of 4 and the strongly agree response given 0. Scores were totaled for each subject and distribution of scores for 188 subjects was tabulated. Calculation of "t" values for evaluation of the difference in the mean response to each attitude statement by a high group (27 per cent) and a low group (27 per cent) was used for rejecting items.

Final selection of 17 items including nine favorable and eight unfavorable statements for a rating scale to

measure student attitudes toward institutional food was produced showing weights assigned to each category of response (Form 4, Appendix). Revised computation of summated scores, calculation of the mean, and standard deviation from the mean was obtained. A split-half reliability coefficient between nine odd and eight even numbered statements was determined.

RESULTS AND DISCUSSION

Selection of Statements

Results from the first nine questions on the interview schedule were tabulated. This information was not used for the current study, but some interesting details were revealed.

Characteristics of the Interview Group. Semi-structured interviews with 20 women, ten freshmen and ten upperclass students, yielded distribution of sample by home state. Sixty-five per cent of the group lived in Kansas and thirty-five per cent were from other states; Alaska, California, New Jersey, Pennsylvannia, South Dakota, Texas and Wisconsin (Table 1, Appendix). Twelve university curriculums were represented, with 35 per cent of respondents enrolled in the College of Home Economics (Table 2, Appendix). Ages of the students ranged from 18 years to 22 years (Table 3, Appendix). Student classifications were listed (Table 4, Appendix). Number of semesters spent in a residence hall at Kansas State University ranged from one to eight, and 50 per cent had

resided in a hall for four or more semesters (Table 5, Appendix).

Family Eating Practices. Eighty-five per cent of the group agreed that mother, in cooperation with family members, made decisions about planning and serving meals in the family home; 15 per cent indicated mother alone made the decisions (Table 6, Appendix). Fifty per cent of the students reported they were allowed to select their own food and 30 per cent were expected to eat everything (Table 7, Appendix). Frequency of serving new foods or combinations of foods were estimated at once a month by 50 per cent; on the other hand ten per cent each answered "only occasionally" or "seldom" to this question (Table 8, Appendix). Number of meals eaten in the residence hall during the previous week ranged from six to 20, out of a possible total of 20 meals served to students (Table 9, Appendix).

The final section of questions on the interview led to expressions about institutional food served in the dining hall. Investigation disclosed that 40 per cent of the group, including both those who made favorable and unfavorable statements about institutional food, were concerned about "starchy" foods. Further questioning of respondents exposed incorrect knowledge and a variety of attitudinal values attached to different types of "starchy" foods. The interview provided an opportunity for discussion and exchange of ideas between investigator and students. Areas of agreement and the nature of disagreements were recognized.

Of the 19 statements selected for the questionnaire, ten were favorable and nine were unfavorable. These statements about institutional food served in a residence hall dining room comprised the food questionnaire completed by 188 women residents, or 88 per cent. The apparent high return could be attributed in part to continued efforts by the investigator to create a friendly atmosphere before distributing the questionnaires. Administration of a food questionnaire (for measuring student attitudes toward institutional food) is a two-way transaction or interaction between administrator and students.

Likert Technique for Construction of Attitude Scales

Weights Assigned to Responses. Student responses to statements on the food questionnaire were weighted according to the Likert method of assigning weights to response categories. Edwards (1957, p. 151) noted that the relatively simple assignment of integral weights correlated 0.99 with the more complicated normal deviate system of weights. For favorable statements, strongly agree response A was given a weight of 4, agree response B was given 3, uncertain response C was given 2, disagree response D was given 1 and strongly disagree response E was given 0. For unfavorable statements, strongly agree response A was given a weight of 0, agree response B was given 1, uncertain response C was given 2, disagree response D was given 3 and strongly disagree response

E was given 4. A summated score for each of the 188 subjects was obtained and the distribution of scores prepared.

Item Analysis. From the frequency distribution of summated scores 27 per cent of the highest scores were designated the high group and 27 per cent with the lowest scores were designated the low group. Average response scores for each item were computed for the two groups. The difference between average scores was used as a basis for evaluation. Items appearing fifth and thirteenth on the food questionnaire (Form 3, Appendix) indicated differences in the reverse direction and were rejected.

Of the remaining 17 statements, the "t" values for items numbered 1, 4, 5, 8 and 15 were found to be greater than 2.0 ($p > 0.05$).

Table 10. Average score for each item on Attitude Scale (Form 4, Appendix).

Item	Low group	High group	Difference
1	1.5	3.0	1.5
2	1.0	2.6	1.6
3	1.0	3.0	2.0
4	2.0	3.0	1.0
5	2.3	3.0	.7
6	1.3	3.0	1.7
7	1.5	3.3	1.8
8	1.8	3.2	1.4
9	.7	2.4	1.7
10	1.0	2.5	1.5
11	1.5	3.4	1.9
12	.7	2.5	1.8
13	.4	2.0	1.6
14	1.5	3.0	1.5
15	2.0	3.0	1.0
16	1.3	3.0	1.7
17	1.0	3.0	2.0

Edwards (1957, p. 153) contended that any "t" value equal or greater than 1.75 indicated that average response scores of the high and low groups differed significantly, provided the groups contained at least 25 subjects in each. In this study each group consisted of 50 subjects. On the basis of these results all the remaining seventeen statements were retained to form the attitude scale. The number of statements in the scale could be reduced by using the amount of difference between average scores obtained by the high group and the low group or by finding the "t" values for all statements, ranking them in order, and choosing the desired number of items with the highest values.

Attitude Scales

The final selection of statements indicated weights assigned for each category of response (Form 4, Appendix). Revised computation of summated scores (Table 11, Appendix) produced a range of total scores for 188 subjects from 9 to 57. The mean and median were 36.0 and standard deviation was 10.0. An interval of one standard deviation on either side of the mean contained 68.6 per cent of the total frequency.

Distribution of scores, percentile values and cumulative per cent of subjects (Table 12, Appendix), provide a basis for future comparisons. Individual scores on a summated-rating scale may only be interpreted within the distribution of scores of the total group. In this study individual

scores may be considered relative to the group range from 9 to 57. Comparison of the mean attitude scores of two or more groups may be achieved with the method of summated-rating scales. Data obtained from attitude scales may be used to measure mean change in attitude scores.

Reliability. The reliability coefficient based on split-half, nine odd numbered items and eight numbered items, uncorrected for length was 0.83. Estimate of reliability coefficient of the total scale, corrected for length was 0.907. The corrected reliability coefficient of the attitude scale developed in the study indicates a high degree of reliability and compares favorably to reliability coefficients for summated rating scales reported in the literature (Edwards, 1957, p. 161).

SUMMARY

An instrument was developed to measure student attitudes toward institutional food served in a residence hall dining room. A food questionnaire comprising 19 statements, was presented to the total population of women students living in one residence hall at Kansas State University. Statements for the questionnaire were elicited from preliminary interviews conducted with 20 women students living in another residence hall. The interview group was composed of ten freshmen and ten upperclass students. The semi-structured interview resulted in biographical data, information about family eating practices, experiences and opinions about

institutional food served in the dining hall. Out of 214 food questionnaires distributed, 188 or 88 per cent were returned.

The Likert method of attitude scale construction using the relatively simple assignment of integral weights for the response categories was used for scoring items on the questionnaire. For favorable statements the strongly agree response had a weight of 4, the agree response a weight of 3, the uncertain response a weight of 2, the disagree response a weight of 1 and the strongly disagree response a weight of 0. Weights were reversed for unfavorable responses with the strongly disagree response given a weight of 4 and the strongly agree response given 0. Analysis of item scores obtained by a high group (27 per cent) and a low group (27 per cent) provided a basis for rejecting two statements.

Final selection of 17 items, including nine favorable and eight unfavorable statements formed a rating scale to measure student attitudes toward institutional food served in the residence hall dining room. Revised summated scores for 188 subjects ranged from 9 to 57 out of a possible total score of 68. The mean and median were 36 and standard deviation was 10. Reliability coefficient based on split-half, nine odd numbered items and eight even numbered items, uncorrected for length was 0.83. The corrected reliability coefficient, 0.907 for the attitude scale developed in this study indicated a high degree of reliability and compared

favorably with reliability coefficients for the Likert method of summated rating scales reported in the literature.

CONCLUSIONS

Quantitative findings in this study, with respect to the instrument developed for measuring student attitudes toward institutional food indicate: (1) items do meet the requirements for a Likert-type scale, and (2) split-half reliability coefficient between odd-even statements is sufficiently high to compare favorably with those usually reported for these attitude scales.

RECOMMENDATIONS

The study implied that measurement of student attitudes toward institutional food might contribute to,

1. A continuing program that, combined with food preference check lists, might identify areas needing emphasis in an orientation program.
2. Recognition of individuals with highly favorable attitudes who could assume leadership in such a program.
3. A study of differences in attitudes between men and women students toward institutional food.
4. Linear studies of trends in food attitudes of students.

ACKNOWLEDGEMENTS

Sincere appreciation is expressed to Mrs. Marjorie M. Hemphill, Assistant Professor of Institutional Management, for her guidance, constructive criticism and help in the preparation of this thesis. Grateful acknowledgement is made to Mrs. Grace M. Shugart, Head, Department of Institutional Management, for her interest and encouragement in the work; to Mrs. Merna M. Zeigler, Associate Professor of Institutional Management, for her gracious part in acting on the committee; and to Dr. Don Trumbo, Professor, Department of Psychology, for his valuable and generous assistance in planning the study.

Thanks are due to Miss Jean Riggs, Director, Residence Hall Food Services, and to the participating students for their cooperation in the study.

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APPENDIX

Form 1. Interview Schedule

FOOD HABITS SURVEY

Please answer the following questions. There are no right or wrong answers. Each individual response has value.

1. Home state?_____ 2. University Curriculum?_____

3. Age?____ 4. University class? Fr.___So.___Jr.___Sr.___Grad.___

5. Number of semesters spent in a residence hall? 1___2___3___4___ 5___ or ?___

IN YOUR OWN FAMILY:

6. Who made the decisions about planning and serving meals?

Mother alone____ Mother in cooperation with family members____ Other____

7. Which of these practices was followed?

I was forced to eat everything served____ I was expected to eat everything that was good for me____ I was allowed to select my own food____

I was encouraged to select my own food____ Other____

8. How often were new foods or new combinations of foods served?

Once a week____ Once a month____ Regularly____ Never____ Other___

IN THE RESIDENCE HALL:

9. How many meals did you eat in the dining hall last week? (Check meal ticket)____

10. What do you think about the food served in the dining hall?_____

_____

11. What would you say are the reasons for this statement? Why do you feel this way?_____

_____

12. How strongly do you feel about this statement (above)?

Strongly agree____ Agree____ Uncertain____ Disagree____ Strongly disagree____

THANK YOU!

Form 2. Letter to student inviting participation in study.

KANSAS STATE UNIVERSITY
Manhattan, Kansas

March 8, 1966

Dear

I am undertaking research in food acceptance to get information for a thesis on the eating behavior of women students as it affects menu planning. This is a request for you to take part in a survey of food habits. You are one of 20 students, 10 upperclasswomen and 10 underclasswomen selected from the residents of Van Zile Hall.

Would you be available for a 5 to 10 minute personal interview with me in the library at Van Zile during March 10, 11 or 12 from 1:00-7:00 p.m.? Your cooperation in this research will be appreciated and all responses will be treated as confidential. If you are able to take part in the survey would you complete the enclosed reply form, please.

Yours sincerely,

(Mrs.) Dorothy P. Birt
Graduate Student
Department of Institutional Management

REPLY:

Dorothy P. Birt
Dietitian's Box
Van Zile Hall

I am available for an interview on March_____ at_____p.m.

Signature_____

Room Number_____

Form 3. Food Questionnaire

KANSAS STATE UNIVERSITY

Dear May 1966

I am undertaking research in food acceptance to get information for a thesis on the eating behavior of women students as it affects menu planning. This is a request for you to complete this questionnaire and return to me.

Yours sincerely,

Dorothy P. Birt
Graduate Student
Department of Institutional Management

- -

FOOD QUESTIONNAIRE

Please evaluate each statement and indicate your opinion by circling the letter in the margin as follows:

A = Strongly agree
B = Agree
C = Uncertain
D = Disagree
E = Strongly disagree

A B C D E Considering the large quantities of food served in the dining hall, I think the quality of the food is usually good.

A B C D E The meals served in the dining hall please most of the girls most of the time.

A B C D E In the dining hall I feel like part of an assembly line instead of an individual.

A B C D E There are times when a food new to me looks like it might be good, but I don't want to take a chance on it.

A B C D E I feel the food served is good except there is some room for improvement.

A B C D E I am not interested in trying new foods.

A B C D E The dining hall appears to be a distressing hurry-hurry nourishment station.

Code A = Strongly agree
B = Agree
C = Uncertain
D = Disagree
E = Strongly disagree

A B C D E It seems to me that the food is meant to test our stomachs.

A B C D E I appreciate the opportunity to be introduced to new foods and new combinations of foods.

A B C D E I am happy to eat all the meals served in the dining hall.

A B C D E I feel that the food service in the residence hall is really trying to make meal hours an important part of University life.

A B C D E I think the meals served are usually 'very poor' or not very good.

A B C D E More and more I am learning not to complain about food served at home.

A B C D E Compared with other institutional food I have eaten at high school and camps, this runs a close race to being the most similar to home cooking.

A B C D E I feel that some of the conglomerations of ingredients put together are far out of place.

A B C D E I get a chance to select well balanced meals with a good variety of food.

A B C D E It bothers me to be served unusual food.

A B C D E In general I am pleased with the food served in the dining hall.

A B C D E I really enjoy the new eating experiences provided by residence hall food service.

Form 4. Scale to measure attitudes toward institutional food.

Final selection of statements showing weight for each category response in parenthesis.

A = Strongly agree
B = Agree
C = Uncertain
D = Disagree
E = Strongly disagree

1. A(4) B(3) C(2) D(1) E(0) Considering the large quantities of food served in the dining hall, I think the quality of the food is usually good.

2. A(4) B(3) C(2) D(1) E(0) The meals served in the dining hall please most of the girls most of the time.

3. A(0) B(1) C(2) D(3) E(4) In the dining hall I feel like part of an assembly line instead of an individual.

4. A(0) B(1) C(2) D(3) E(4) There are times when a food new to me looks like it might be good, but I don't want to take a chance on it.

5. A(0) B(1) C(2) D(3) E(4) I am not interested in trying new foods.

6. A(0) B(1) C(2) D(3) E(4) The dining hall appears to be a distressing hurry-hurry nourishment station.

7. A(0) B(1) C(2) D(3) E(4) It seems to me that the food is meant to test our stomachs.

8. A(4) B(3) C(2) D(1) E(0) I appreciate the opportunity to be introduced to new foods and new combinations of foods.

9. A(4) B(3) C(2) D(1) E(0) I am happy to eat all the meals served in the dining hall.

10. A(4) B(3) C(2) D(1) E(0) I feel that the food service in the residence hall is really trying to make meal hours an important part of University life.

11. A(0) B(1) C(2) D(3) E(4) I think the meals served are usually 'very poor' or not very good.

12. A(4) B(3) C(2) D(1) E(0) Compared with other institutional food I have eaten at high school and camps, this runs a close race to being the most similar to home cooking.

Form 4. (cont.)

13.	A(0) B(1) C(2) D(3) E(4)	I feel that some of the conglomerations of ingredients put together are far out of place.
14.	A(4) B(3) C(2) D(1) E(0)	I get a chance to select well balanced meals with a good variety of food.
15.	A(0) B(1) C(2) D(3) E(4)	It bothers me to be served unusual food.
16.	A(4) B(3) C(2) D(1) E(0)	In general I am pleased with the food served in the dining hall.
17.	A(4) B(3) C(2) D(1) E(0)	I really enjoy the new eating experiences provided by the residence hall food service.

Table 1. Distribution of students by home state.

State	No. of students n = 20	Per cent
Alaska	1	5
California	1	5
Kansas, Rural	8	40
Kansas, Urban	5	25
New Jersey	1	5
Pennsylvania	1	5
South Dakota	1	5
Texas	1	5
Wisconsin	1	5

Table 2. Distribution of students by University Curriculum.

Curriculum	No. of students n = 20	Per cent
Arts and Science	2	10
Animal Husbandry	1	5
Business Administration	1	5
Home Economics	7	35
Horticulture	1	5
Mathematics	1	5
Physical Therapy	1	5
Political Science	1	5
Secondary Education, History	2	10
Secondary Education, Spanish	1	5
Veterinary Medicine	1	5
Zoology	1	5

Table 3. Distribution of students by age.

Age	No. of students n = 20	Per cent
18 years	5	25
19 years	5	25
20 years	5	25
21 years	3	15
22 years	2	10

Table 4. University class.

Class	No. of students n = 20	Per cent
Freshman	5	25
Sophomore	5	25
Junior	7	35
Senior	2	10
Graduate	1	5

Table 5. Semesters spent in a residence hall at Kansas State University.

No. of Semesters	No. of students n = 20	Per cent
One	3	15
Two	3	15
Three	4	20
Four	5	25
Five	1	5
Six	3	15
Eight	1	5

Table 6. Person who made the decisions about planning and serving meals in the family. (Size of family ranged from 3 to 9 persons.)

Identity	No. of students n = 20	Per cent
Mother alone	3	15
Mother in cooperation with family members	17	85

Table 7. Family eating practices.

Practice	No. of students n = 20	Per cent
Forced to eat everything by mother	1	5
Forced to eat everything by father	1	5
Expected to eat everything	6	30
Encouraged to select own food	1	5
Allowed to select own food	10	50
Special likes catered for by mother	1	5

Table 8. Frequency of serving new foods in family and dining out.

Frequency of serving new foods	No. of students n = 20	Per cent
Once a week	1	5
Once in two weeks	1	5
Once a month	10	50
Regularly	4	20
Occasionally	2	10
Seldom	2	10
Frequency of dining out	**No. of students n = 20**	**Per cent**
Three times a week in summer	1	5
Daily at school	1	5
Once a month	3	15
Every two weeks	4	20
Regularly (about six times a year)	6	30
Rarely	2	10

Table 9. Meals eaten in residence hall, in the previous week. (Possible total = 20.)

No. of meals	No. of students n = 20	Per cent
6 meals	1	5
7	1	5
10	2	10
11	1	5
13	2	10
16	1	5
17	4	20
18	4	20
19	2	10
20	2	10

Table 11. Item scores and summated odd, even and total scores for total sample. (n = 188)

Rank	Statements																	Total		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Odd	Even	Score
1	1	0	1	2	0	0	2	0	0	1	0	1	0	0	1	0	0	5	4	9
2	1	1	1	2	1	0	2	1	0	1	0	0	0	0	1	0	0	6	5	11
3	1	0	1	1	1	0	3	0	0	2	1	1	0	1	1	0	1	9	5	14
4	1	0	0	2	1	1	0	1	1	1	1	1	0	0	1	1	2	7	7	14
5	0	0	1	3	3	0	1	2	0	0	1	0	1	0	3	0	0	10	5	15
6	0	1	2	1	3	0	1	2	0	0	1	0	1	0	1	0	2	11	4	15
7	1	0	2	1	3	1	0	3	1	0	0	0	0	1	3	0	0	10	6	16
8	0	1	0	2	3	0	0	0	1	1	1	0	0	3	2	1	1	8	8	16
9	0	0	0	1	3	3	3	1	0	1	0	0	0	1	2	1	2	10	7	17
10	0	1	2	1	3	1	0	0	1	1	1	0	2	3	0	1	1	10	7	17
11	1	0	1	2	2	1	1	2	0	2	1	1	0	1	2	1	1	9	10	19
12	3	1	2	1	2	1	2	1	0	1	1	1	0	1	0	1	1	11	8	19
13	1	2	1	3	4	2	0	2	1	0	1	0	0	1	1	1	1	10	11	21
14	1	1	1	1	1	2	2	0	2	0	3	0	1	2	2	1	1	14	7	21
15	1	1	2	3	4	2	0	0	0	1	1	4	0	1	3	0	0	11	10	21
16	2	1	1	2	1	1	3	2	0	1	1	0	0	3	1	1	1	10	11	21
17	1	1	0	2	4	1	3	3	0	0	3	0	1	0	3	0	0	15	7	22
18	3	1	1	1	1	1	3	2	1	0	1	0	0	4	1	1	1	12	10	22
19	2	0	1	2	2	1	3	2	1	2	1	1	0	1	2	1	1	13	10	23
20	1	0	1	2	2	2	1	1	1	3	1	3	0	1	1	1	2	10	13	23
21	0	1	2	4	4	2	0	3	1	1	1	0	1	1	3	0	0	12	12	24
22	1	0	0	4	3	1	0	4	1	1	0	0	0	4	2	1	2	9	15	24
23	2	0	1	1	3	1	0	3	1	0	3	0	1	2	3	3	0	14	10	24
24	2	3	1	0	1	0	0	2	1	2	1	2	0	1	3	3	2	11	14	25
25	1	1	3	3	2	3	1	2	0	1	1	0	0	3	2	1	1	11	14	25
26	3	3	2	0	0	1	3	1	1	3	3	0	2	2	1	3	2	17	9	26
27	2	0	3	1	4	2	1	3	1	1	2	2	0	1	0	1	1	14	12	26
28	1	1	1	0	0	3	3	1	1	4	3	0	0	3	1	3	1	11	15	26
29	0	1	0	3	3	1	2	3	0	1	1	1	1	3	2	1	3	12	14	26
30	2	1	1	3	3	1	1	1	1	1	1	2	0	2	3	2	1	13	13	26

Table 11. (Cont.)

Rank	Statements																	Total		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Odd	Even	Score
31	2	1	2	3	3	1	1	2	1	1	2	1	0	1	2	2	1	14	12	26
32	1	1	2	3	3	1	1	2	1	0	3	0	2	2	3	0	1	17	9	26
33	2	0	1	3	4	1	0	3	1	0	3	0	1	2	3	3	0	15	12	27
34	1	1	0	3	4	2	2	3	0	2	3	0	0	2	2	0	2	14	13	27
35	2	2	1	3	3	2	1	2	1	1	2	2	0	3	1	1	1	11	16	27
36	2	1	2	3	3	2	1	1	1	1	2	0	0	2	3	2	1	15	12	27
37	3	2	0	1	3	0	0	3	2	1	2	1	0	2	3	2	2	15	12	27
38	1	1	1	2	0	3	3	1	1	4	3	0	0	3	1	2	1	11	16	27
39	3	3	1	1	1	0	2	2	2	1	2	1	1	1	2	3	2	16	12	28
40	2	2	0	3	3	1	3	3	0	1	3	1	0	1	3	3	1	13	15	28
41	1	1	1	3	3	3	2	3	1	1	1	0	0	3	3	1	1	13	15	28
42	2	3	0	2	3	0	3	1	1	1	2	0	1	3	2	2	1	14	14	28
43	3	1	1	1	3	1	1	3	0	1	2	1	0	3	3	2	2	15	13	28
44	3	1	2	3	1	3	1	1	1	2	2	1	1	3	1	2	1	13	16	29
45	2	1	1	3	2	3	3	2	1	0	2	1	1	3	2	1	1	15	14	29
46	3	0	2	2	4	0	3	4	0	0	2	0	1	3	2	2	1	18	11	29
47	2	1	1	3	2	3	3	2	1	0	2	1	1	3	2	1	1	15	14	29
48	3	3	1	1	1	2	2	0	1	2	3	4	1	1	0	3	1	13	16	29
49	2	1	1	3	3	1	3	3	0	1	3	1	0	1	3	3	1	16	14	30
50	1	1	3	3	3	2	3	1	1	2	1	1	0	3	1	1	1	17	13	30
51	2	2	0	3	3	1	3	3	0	1	3	1	0	1	3	3	1	15	15	30
52	3	1	0	1	2	1	3	3	1	2	3	1	1	1	2	3	2	17	13	30
53	1	1	2	3	3	3	3	2	1	1	2	2	1	1	2	1	1	16	14	30
54	3	2	1	2	3	1	1	3	0	1	2	2	0	3	3	2	2	15	15	30
55	2	2	1	3	3	2	1	2	1	2	2	2	0	2	3	2	1	13	17	30
56	2	1	1	3	3	1	3	3	0	1	3	1	0	1	3	3	1	16	14	30
57	2	1	2	3	3	1	2	3	0	2	1	2	1	3	2	1	3	14	16	30
58	2	1	2	3	3	1	2	2	2	2	2	2	0	1	2	2	1	16	14	30
59	2	3	1	2	3	1	3	1	1	1	2	0	1	3	2	2	2	17	13	30
60	1	1	3	3	3	3	2	3	1	1	2	1	1	0	3	1	1	17	13	30

Table 11. (Cont.)

Rank	Statements																	Total		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Odd	Even	Score
61	1	1	3	3	4	4	4	3	1	0	1	0	1	0	1	3	1	17	14	31
62	1	1	2	3	4	2	2	3	0	2	2	1	1	2	3	2	0	15	16	31
63	3	2	1	1	3	1	3	1	1	1	3	2	1	2	1	3	2	18	13	31
64	3	2	0	3	3	1	3	3	0	1	3	1	0	1	3	3	1	16	15	31
65	1	1	0	3	4	2	2	3	0	2	3	2	0	2	2	2	2	14	17	31
66	2	0	2	4	3	3	0	3	1	2	2	2	0	0	3	2	2	15	16	31
67	2	1	3	3	3	3	2	3	1	1	2	1	0	1	2	2	1	16	15	31
68	3	1	1	3	3	1	3	3	1	1	3	1	0	1	3	2	1	18	13	31
69	2	2	2	3	3	1	3	3	0	1	3	1	0	1	3	3	1	17	15	32
70	3	3	3	1	1	3	3	1	0	3	3	0	0	3	1	3	1	15	17	32
71	2	1	3	3	3	3	2	3	2	1	2	1	1	0	3	1	1	19	13	32
72	2	2	2	2	2	2	0	2	4	0	4	2	1	0	2	2	3	20	12	32
73	1	2	1	3	3	2	3	3	1	2	3	0	0	3	3	1	3	18	16	32
74	1	1	4	3	2	3	3	2	3	1	1	2	1	1	3	1	2	19	14	33
75	1	1	3	3	3	3	2	3	1	3	1	1	1	0	3	1	3	18	15	33
76	2	2	0	1	3	3	1	3	1	3	3	1	1	2	3	3	1	15	18	33
77	3	3	3	1	2	1	3	3	1	1	4	2	0	1	2	2	1	19	14	33
78	2	1	1	3	2	1	2	2	1	3	2	3	0	3	2	3	2	14	19	33
79	3	2	1	3	1	2	2	2	0	2	2	2	1	3	2	3	2	14	19	33
80	1	2	1	3	3	2	3	1	2	3	0	1	3	3	2	2	1	16	17	33
81	4	2	2	1	1	2	3	2	2	2	3	1	1	2	2	2	2	20	14	34
82	1	2	3	3	3	3	3	3	1	3	1	1	1	1	3	1	1	17	17	34
83	1	2	1	3	3	2	3	3	1	2	3	0	0	3	3	1	3	18	16	34
84	1	2	3	3	3	3	3	3	1	3	1	1	1	1	3	1	1	17	17	34
85	2	2	0	3	3	3	2	1	1	3	2	0	0	3	3	3	3	16	18	34
86	3	1	0	1	3	0	4	3	2	0	4	1	1	3	3	3	2	22	12	34
87	1	1	3	3	4	3	2	4	1	2	1	0	1	1	4	0	3	20	14	34
88	3	1	3	3	1	3	2	0	2	2	3	0	0	3	3	3	2	19	15	34
89	3	2	2	3	1	1	2	3	1	2	3	1	1	2	3	2	2	18	16	34
90	3	1	0	3	3	1	1	3	1	1	3	1	3	2	3	3	2	19	15	34

Table 11. (Cont.)

Rank	Statements																	Total		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Odd	Even	Score
91	3	3	0	3	3	1	3	1	1	1	3	1	1	3	3	3	2	19	16	35
92	1	1	3	3	3	3	3	2	1	2	3	1	2	3	2	2	1	19	17	36
93	2	2	3	1	1	2	2	2	1	3	3	3	2	2	2	3	2	18	18	36
94	2	1	0	3	3	2	3	2	1	3	3	2	1	3	3	2	2	18	18	36
95	2	1	0	3	3	2	3	2	1	3	3	2	1	3	3	2	2	18	18	36
96	1	0	3	3	4	4	2	3	0	3	2	1	1	2	3	1	3	19	17	36
97	1	1	3	4	4	4	4	4	0	3	1	0	0	3	3	1	1	17	20	37
98	1	0	3	3	4	4	0	4	1	3	2	1	0	1	4	1	4	19	18	37
99	1	0	2	1	4	4	2	3	1	3	2	3	1	1	4	2	3	20	17	37
100	2	1	1	3	3	3	3	3	1	3	2	3	1	3	3	1	1	17	20	37
101	3	2	1	2	3	1	2	3	1	2	3	1	2	3	3	3	3	21	17	38
102	3	3	3	1	3	3	4	2	0	1	3	3	1	1	2	3	2	21	17	38
103	2	2	3	4	4	3	2	2	0	3	3	0	1	2	3	2	2	20	18	38
104	2	1	2	3	3	2	3	2	1	3	3	2	1	3	3	2	2	20	18	38
105	3	2	3	1	4	3	2	3	1	1	3	2	1	1	3	3	3	23	16	39
106	3	3	0	3	1	3	3	1	3	3	3	3	1	3	1	3	2	17	22	39
107	3	1	3	1	1	3	3	2	2	2	3	3	3	2	2	3	2	22	17	39
108	1	1	3	3	3	3	3	3	1	3	3	1	1	3	3	1	3	22	18	40
109	3	2	0	3	3	1	3	3	1	1	3	3	1	4	3	3	3	20	20	40
110	3	2	3	2	3	3	3	2	2	2	3	2	1	2	2	3	2	22	18	40
111	3	2	3	3	3	2	3	3	2	2	2	2	1	3	3	2	2	22	19	41
112	3	2	1	3	3	3	3	3	1	2	3	1	1	3	3	3	2	21	20	41
113	2	2	4	4	4	3	2	2	0	2	3	1	0	3	2	3	4	21	20	41
114	3	2	3	3	2	4	4	2	2	2	3	1	1	2	2	2	3	23	18	41
115	3	2	0	4	4	1	3	4	3	1	3	2	0	2	3	3	3	22	19	41
116	4	4	1	2	3	3	3	3	1	2	3	1	1	3	2	3	2	20	21	41
117	3	2	3	2	3	3	3	3	1	2	3	1	2	3	3	3	2	23	19	42
118	3	3	1	0	4	2	2	4	4	2	3	2	0	3	3	3	3	23	19	42
119	3	1	2	3	4	3	2	3	2	3	3	2	1	2	3	3	2	22	20	42
120	3	3	3	3	3	3	3	2	1	3	3	0	1	1	3	3	1	24	18	42

Table 11. (Cont.)

Rank	Statements																	Total		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Odd	Even	Score
121	3	3	2	1	3	2	3	3	2	2	3	2	2	2	3	3	3	24	18	42
122	2	3	2	1	4	2	2	4	4	2	3	2	1	3	2	3	3	23	20	43
123	3	3	4	1	1	3	3	3	3	2	3	4	0	3	1	2	4	22	21	43
124	3	2	3	3	2	3	2	3	2	2	3	1	2	3	3	3	3	23	20	43
125	3	2	1	4	4	3	3	4	2	2	3	1	1	2	3	3	2	22	21	43
126	3	1	4	4	3	3	3	3	1	3	4	1	0	2	3	3	2	23	20	43
127	3	2	1	3	4	3	2	4	1	0	3	2	3	3	4	3	2	23	20	43
128	3	1	3	3	3	3	4	2	1	2	3	1	2	3	3	3	2	25	18	43
129	3	3	3	3	3	3	3	3	1	2	3	1	1	2	3	3	3	23	20	43
130	3	2	3	3	2	3	3	2	2	3	3	1	3	3	2	3	2	23	20	43
131	2	3	4	4	3	3	3	3	2	3	3	2	0	2	3	2	2	22	22	44
132	3	3	2	2	3	3	3	2	3	3	3	3	2	3	2	3	2	22	22	44
133	3	2	3	1	3	3	4	2	2	3	4	2	0	3	2	3	2	23	21	44
134	3	2	1	3	4	3	3	3	2	1	3	2	3	3	3	3	2	24	20	44
135	3	3	2	2	3	3	3	2	3	3	3	3	1	3	2	3	2	22	22	44
136	3	2	1	3	3	3	4	3	1	2	3	3	3	1	3	3	3	24	20	44
137	3	3	4	0	1	4	3	3	3	2	3	4	0	3	1	3	4	22	22	44
138	3	2	3	3	3	3	2	3	2	3	3	2	1	3	3	3	2	23	22	41
139	3	3	2	2	3	3	3	2	3	3	3	3	2	3	2	3	2	22	22	44
140	3	2	3	3	3	3	3	3	2	2	3	1	2	3	3	3	3	25	20	45
141	3	3	3	3	3	4	3	1	2	3	1	2	3	3	3	3	2	24	21	45
142	3	2	3	3	3	4	1	3	1	2	4	3	3	3	3	3	3	24	23	45
143	3	2	4	4	3	3	3	3	2	3	3	2	0	3	3	2	2	23	22	45
144	2	3	4	4	3	3	3	3	2	3	3	2	0	3	3	2	2	22	23	45
145	3	2	3	3	3	3	3	3	2	3	3	2	1	3	3	3	2	23	22	45
146	2	3	3	3	3	2	3	3	3	3	3	2	2	2	3	3	2	24	21	45
147	3	3	3	3	3	3	3	3	2	3	3	3	1	1	3	3	2	23	22	45
148	3	2	1	1	3	2	3	4	3	4	3	2	3	4	3	3	3	25	21	46
149	3	2	4	3	3	3	3	3	1	3	3	3	1	3	3	3	2	23	23	46
150	3	2	3	3	4	3	3	3	2	1	3	2	3	3	3	3	2	26	20	46

Table 11. (Cont.)

Rank	Statements																	Total		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Odd	Even	Score
151	3	2	3	3	2	2	3	3	2	2	4	3	3	3	3	3	2	25	21	46
152	3	2	1	3	3	1	3	4	3	3	4	1	3	3	4	3	2	26	20	46
153	3	3	4	1	1	4	3	3	3	2	3	4	0	3	1	4	4	22	24	46
154	4	3	2	4	4	3	4	3	3	1	3	1	1	2	3	3	2	26	20	46
155	3	2	3	1	1	3	4	4	3	2	4	1	3	3	3	3	3	27	19	46
156	3	3	2	3	3	3	4	3	1	3	3	3	3	1	3	3	3	25	22	47
157	3	3	2	3	3	3	3	3	3	3	2	3	2	3	2	3	3	23	24	47
158	3	2	3	2	3	3	4	3	3	3	4	2	2	3	2	3	2	26	21	47
159	3	1	4	3	4	3	3	4	3	2	3	1	3	1	3	3	3	29	18	47
160	3	3	3	3	4	3	4	3	1	2	3	1	2	3	3	3	3	26	21	47
161	3	2	3	3	3	2	2	3	2	3	3	3	3	4	3	3	2	24	23	47
162	3	2	3	4	4	4	4	4	1	1	4	1	2	3	3	3	3	27	21	48
163	3	1	3	4	4	3	4	3	1	2	3	1	1	4	4	3	4	27	21	48
164	4	3	3	3	3	3	3	3	2	2	3	2	2	3	3	3	3	26	22	48
165	3	4	3	1	0	4	4	1	4	4	4	3	3	4	0	4	2	23	26	49
166	3	2	3	3	2	3	3	3	2	3	3	3	3	3	3	4	4	26	23	49
167	4	3	3	3	4	3	3	3	2	3	3	2	2	2	3	3	3	27	22	49
168	3	2	3	3	4	3	3	4	3	2	3	3	2	3	3	3	3	27	22	49
169	2	3	3	2	3	3	3	3	2	3	3	3	4	2	4	3	3	25	24	49
170	1	3	3	4	3	3	3	4	3	2	3	3	3	3	3	3	2	24	25	49
171	3	3	4	4	4	3	3	3	2	3	4	2	2	2	3	3	3	29	22	51
172	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	27	24	51
173	3	2	3	3	3	4	3	3	3	3	3	3	3	3	3	3	3	28	23	51
174	3	2	1	3	4	3	3	3	3	2	4	3	3	3	3	3	3	27	24	51
175	3	2	2	3	4	1	4	3	3	2	3	4	3	4	4	4	3	29	23	52
176	3	3	3	3	4	3	4	3	3	1	4	3	2	3	4	3	3	26	26	52
177	3	2	3	4	4	3	4	3	2	2	3	2	2	4	4	3	4	29	23	52
178	3	3	4	4	3	0	4	4	3	3	4	3	3	3	3	3	3	30	23	53
179	3	2	3	2	4	4	4	4	1	3	4	2	2	4	4	3	4	29	24	53
180	3	3	3	3	3	4	2	3	4	4	3	4	1	3	3	4	3	25	28	53

Table 11. (Concl.)

Rank	Statements																	Total		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Odd	Even	Score
181	3	3	3	3	4	3	4	3	3	2	4	3	2	3	4	3	4	31	23	54
182	4	3	3	3	3	3	4	4	3	2	4	3	2	3	3	4	3	29	25	54
183	3	3	3	3	4	1	4	3	3	2	3	4	3	4	4	4	3	30	24	54
184	4	3	2	3	4	1	3	4	3	2	4	4	2	4	4	4	4	30	25	55
185	3	4	1	4	4	3	4	4	1	4	4	3	1	3	4	4	4	26	29	55
186	3	3	3	3	4	4	4	4	1	3	4	2	2	4	4	3	4	29	26	55
187	3	3	2	1	4	3	4	4	4	2	4	4	2	4	4	4	4	32	24	56
188	3	2	3	1	4	4	4	4	2	3	4	4	3	4	4	4	4	31	26	57

Table 12. Distribution of scores and percentile value.

Score	No. of students	Per cent	Cumulative per cent
0 - 8	0	0	0
9 - 11	2	1	1
12 - 14	2	1	2
15 - 17	6	3	5
18 - 20	2	1	6
21 - 23	8	4	10
24 - 27	18	10	20
28 - 30	22	12	32
31 - 33	20	11	43
34 - 37	20	11	54
38 - 40	10	5	59
41 - 43	20	11	70
44 - 47	31	16	86
48 - 50	9	5	91
51 - 53	10	5	96
54 - 57	8	4	100
58 - 68	0	0	
	188	100	100

DEVELOPMENT OF A SCALE TO MEASURE ATTITUDES TOWARD INSTITUTIONAL FOOD

by

DOROTHY PHYLLIS BIRT

Diploma in Home Science
University of Otago
New Zealand, 1947

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Institutional Management

KANSAS STATE UNIVERSITY
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1966

ABSTRACT

The purpose of this investigation was to develop a scale for measuring student attitudes toward institutional food served in a residence hall dining room. A food questionnaire, comprising 19 statements, was presented to the total population of women students (214), living in one residence hall at Kansas State University. Statements for the questionnaire were elicited from preliminary interviews conducted with 20 women students living in another residence hall. The interview group was composed of ten freshmen and ten upperclass students. The semi-structured interview resulted in biographical data, information about family eating practices and opinions about institutional food served in the dining hall. Out of 214 questionnaires distributed, 188 or 88 per cent were returned.

The Likert method of attitude scale construction using the relatively simple assignment of integral weights for the response categories was used for scoring items on the questionnaire. A total score was obtained for each subject by adding the scores for individual responses. Analysis of item scores obtained by a high group (27 per cent) and a low group (27 per cent) provided a basis for rejection of two statements.

Final selection of 17 items, including nine favorable and eight unfavorable statements formed an attitude scale to measure student attitudes toward institutional food

served in the residence hall dining room. Revised summated scores for 188 subjects ranged from a score of 9 to a score of 57 out of a possible total score of 68. The mean and the median were 36 and standard deviation was 10.

The corrected reliability coefficient, 0.907 for the attitude scale developed in the study, indicated a high degree of reliability and compared favorably with reliability coefficients for the Likert method of summated-rating scales reported in the literature.