

FOOD PREFERENCES OF UNIVERSITY STUDENTS

by

ANN ELAINE BARLOW

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INTRODUCTION

Food acceptance is a major problem of food service administrators. An important predictor of acceptance is food preference, which accounts for 40 to 50 per cent of the variation in food consumption.

Residence hall dietitians are responsible not only for the service of high quality, palatable, attractive food at an economical price, but also for its acceptance. A variety of foods is necessary to keep menus from being monotonous, to assure the inclusion of required nutrients, and to broaden students' food experiences. Available information concerning food preferences should be utilized, in order to understand the problems involved in developing in students proper food habits, intelligent menu item acceptance, and adequate food consumption. Food waste and profit loss, always of concern, also may be minimized by reduction of unpopular menu items.

One of the major objectives of the residence hall food service at Kansas State University is to contribute to the physiological, social, and educational well-being of the student through the service of attractive, well-prepared, nutritious food. In order to achieve this goal, the food service staff must be aware of the factors influencing the food preferences of university students. Too often the menu planners' own food likes and dislikes are assumed to be those of the consumers.

The importance of attitudes in food selection long had been recognized by persons preparing and serving food. As a result, investigations have been undertaken to determine exactly what people like to eat. The majority of these studies have been limited to children or to men and

women as separate groups. Little research on the comparison of men's and women's food preferences has been done. Few investigations have been made to determine if a difference exists between size of home community and food preferences. The students living in residence halls at Kansas State University were assumed to be of predominantly rural backgrounds. Observation led to the belief that these students had different menu patterns than those from large cities. The need for research to verify or disprove these conceptions was evident.

Therefore, the purpose of this investigation was to study the relationship of size of the home community and the sex of the student to the food preferences of a selected group of college men and women living in residence halls at Kansas State University. This information will be helpful in planning menus for the different types of residence hall food services on the campus.

REVIEW OF LITERATURE

Changes in Food Habits

Food habits are changing along with other elements in society. According to McCann and Trulson (1957) major changes in the American diet were a decrease in consumption of total calories and a decided decrease in carbohydrates, especially from grain and cereal sources. Fat consumption increased, particularly in the use of hydrogenated fats. People consumed a greater variety of foods than in the past due to increased mobility and urbanization, improved economic status and educational attainments, and improved methods of production, preservation, transportation, and storage of food. A change in the practices of food

consumption was noted by Trulson (1959). She found a marked reduction in the use of cereals and potatoes; sugar consumption remained fairly stable from 1933 to 1959. The consumption of margarine, oils, and hydrogenated shortenings increased; whereas butter consumption decreased.

The Meaning and Influence of Food

In order to fully comprehend the importance of food preferences, factors governing food attitudes and the significance of food in an individual's life should be understood. Food is a source of nourishment to the body, but improper intake and utilization may be the result of unhealthy attitudes and experiences. An inheritance from savage ancestry was believed by Townsend (1928) to determine food preferences exhibited today. That men hungered for food was largely biological in nature according to Wallen (1943), but that men had definite preferences was due to more than biological fact.

Mead (1953) and Blumenthal (1956) both agreed that food was the focus of emotional associations and usually had a symbolic reference. Food might be a channel for interpersonal relations and, therefore, be used for the communication of love, discrimination, or disapproval. Fathauer (1960) stated that,

If we wish to understand fully the dietary culture of any group, we must study the patterning of meals and the meaning of each meal in the life of the people. The patterns of choosing, preparing, and consuming food must be fitted into the total pattern of the culture.

Prestige, position, sex, and personality of the eater was indicated by Rossi and Gottlieb (1961) to be symbolized by food. Moore (1957) and Rossi and Gottlieb (1961) were in accord with the assumption that foods in society were attributed with certain expressive sexual qualities, such

as calling meats masculine and vegetables and fruits feminine. They considered food and eating as symbols of interpersonal acceptance, friendliness, socialbility, or warmth.

Factors Determining Food Acceptance

Numerous factors that may determine the basis of individual food likes and dislikes are biochemical, physiological, social, cultural, and educational origin, mental state, sex, age, religion, economic status of the area, and size of the home community where the individual resides. Food consumption, contended Vaughan (1940), depended upon necessity, habit, taste, and convenience. Remington (1936) and Wallen (1945) both agreed that food habits were acquired in childhood due to family practices and attitudes, and that, although the progress would be slow, these habits could be changed. Remington (1936) proposed that these food habits could be altered with the influence of religion, geographical location, climate, commerce, technological change, and advertising.

Psychological conditions under which food was eaten, pointed out Howe (1946), played an important role in food acceptance. Dickins (1946) stated that family food likes were the result of food availability, geographical conditions, climate, and technological development. The following factors were believed by Eppright (1947) to be important in food acceptance: metabolic rates, individual variation in the sense of taste, establishment of sound eating habits, and social elements influencing the choice of food. Memories and associations, heredity, mental state, racial background, geographical and economic conditions, and technological advances also were of significance.

Pumpian-Mindlin (1954) concluded that emotional, cultural, familial

conditions, and the symbolic meanings of foods determined food likes. Adequate food consumption and greater food acceptance was thought by Lamb, Adams, and Godfrey (1954) to result from consideration of food preferences. The main elements in food selection ascertained by Hamburger (1958) were: (1) the homeostatic nutritional tendencies of the human organism, (2) the components of taste and palatability, (3) the influence of early childhood experience, and (4) the importance of associational and symbolic meanings of food to the individual. Trends in food taste were considered by Groth (1961) of value in gaining food acceptance in college food services. From his investigation Pilgrim (1961) found that preferences were influenced by age, size of town, region of origin, and education. Although sex was not studied he surmised its importance in food likes and dislikes.

After a review of the literature, Wallen (1943) concluded that studies were lacking in the area of food habits, especially those relevant to the psychological problems involved. He maintained that little research had been conducted to determine actually what foods are liked or disliked by adults, and what relation these preferences have to social and cultural backgrounds. A study of the differences in food attitudes between the sexes, relating the study to the different social roles and individual backgrounds was suggested by Pumpian-Mindlin (1954). Rossi and Gottlieb (1961) stated that while some research has been conducted with the physical components and the psycho-physical attributes of food, more attention should be directed toward the social-psychological aspects. They proposed that desirability or food preference could well be an important part of the social-psychological aspects of food.

Food Preference Surveys

Surveys are one means of determining food preferences. Check lists and interviews have been successfully administered throughout the United States to families, students, hospital patients, men, women, and children.

Food Preferences in Texas, New York, Montana, and Kansas. In a study of 63 Texas families, Drake and Lamb (1944) found that meat had the highest consumption rate, and dried beans, salads, and citrus fruits also were favored; fish was the least liked food. Young, Waldner, and Berresford (1956) disclosed from an investigation of Rochester and Syracuse, New York homemakers, that the most commonly disliked class of foods was vegetables, followed by non-beef meat items, organ meats, and seafood.

Clow (1956) reported that, during 1946-47, questionnaires were distributed to 772 females and 228 males in Montana. Of the dairy products, milk, ice cream, and American cheese were liked by 70 per cent of the subjects; whereas buttermilk and canned milk were disliked. Margarine was less popular than butter. White bread was well accepted, but hominy and brown rice were unpopular. Disliked meats were lamb, mutton, organ meats, tongue, and dried beef. Fifty per cent of the respondents liked chocolate and peanut butter. White potatoes were liked by 88 per cent of the Montana residents, although only 52 per cent liked sweet potatoes. The least preferred fruit was avocado; figs, apricots, pears, and apples also were ranked low.

A food preference survey of hospital patients by McCune (1962) in Kansas revealed that foods popular enough to be served daily were orange juice, peaches, and potatoes. She suggested that cream soups, with the exception of tomato and potato soup, ground lamb, pork stew, sweetbreads,

codfish, crabmeat, lobster, cheese fondue, creamed fish and eggs, rabbit, summer and acorn squash, parsnips, rutabagas, okra, and tomato aspic salad be completely eliminated from the menu.

Men's Food Preferences. Research in men's food preferences has been limited mostly to investigations by the Quartermasters Corps of the U. S. Armed Forces. The results of these extensive studies may be generalized to the entire American population according to Pilgrim (1961). Vawter and Konishi (1958) observed the ad libitum consumption of food by soldiers for a period of 28 days. They found that milk, meats, breakfast cereals, and desserts were well accepted by the men; whereas leafy green and yellow vegetables and salads were rejected by 50 per cent of the subjects. In a survey of the U. S. Armed Forces, Peryam, Polemis, Kamen, Eindhoven, and Pilgrim (1960) reported that when food classes were ranked in order of preference, bread ranked first, followed by desserts, beverages, fruits, potatoes and starches, main dishes, cereals, salads, accessory foods, and soups; vegetables ranked last. Grilled steak, ice cream, french fried potatoes, and hot biscuits were among the best liked items of soldiers according to Pilgrim (1961). Milk was placed at the top of the list in a class by itself. Unpopular items were mashed turnips, broccoli, asparagus, iced coffee, cauliflower, and other vegetables. Pilgrim suggested that it was characteristic of the American male to like his foods plain and simple.

Women's Food Preferences. A number of investigations of the dietary intake of women were reported, but those pertaining to food preferences were limited. In a study based on plate waste at Texas State College for Women, Eppright (1945) reported that vegetables were more unpopular than fruits. Rutabagas, asparagus, egg plant, turnip and mustard greens were

most often refused. Disliked protein items were haddock, mackerel, highly seasoned sausage, creamed ham, and eggs in any form. Unpopular desserts included bread pudding, rice pudding, and boiled custard. In a study of dietary habits of university women, Young (1946) concluded that there was a low consumption of eggs, whole grain cereals, and raw vegetables. The intake of cooked vegetables, raw fruit, and potatoes was good.

Scouler and Foster (1946) established that the milk intake of college women was high, and the consumption of cereals was low. In a dietary investigation of 16 college women living in co-operative houses, Lamb and McPherson (1948) found that the consumption of milk, fruits, tomatoes, fat, and sugar were high; whereas potato, meat, and cereals were low. Nygreen (1954), in an attempt to determine the adequacy of food served at the women's residence halls at the University of Washington, reported that the most popular menu items were bread, milk, breakfast entrees, salads, desserts, and breakfast fruits. Cereal, vegetables, and potatoes were ranked last. The food preferences of 170 college women were investigated by Lamb, Adams, and Godfrey (1954). Most vegetables and cereals, butter-milk, and soft-cooked eggs were disliked; whole milk, meats, pies, citrus fruits, and cakes were well liked. Tea was the preferred beverage over coffee. They believed these women's likes and dislikes to be typical of persons everywhere.

Children's Food Preferences. Several studies were conducted to determine children's food preferences. These investigations are important because adults' food habits and attitudes may be initiated during childhood. In the ranking of 25 foods by nursery school children, Vance (1932) reported that vegetables had the lowest ranking. Meats, apples, and

sandwiches, fish, eggs, and toast were ranked highest by the children. Carrots, asparagus, cauliflower, broccoli, onions, and kohlrabi were liked least.

McCarthy (1935) found that 48 children between the ages of two and seven and one-half years had a definite preference for fruits, meats, desserts, and dairy foods; whereas cereals, eggs, and vegetables were the least liked foods. In a study of nursery school children, vegetables were the least liked food item; fish, fowl, meats, dairy products, and desserts (custards, puddings, and gelatins) were well liked according to Lamb and Ling (1946). In analyzing the results of a plate waste study of 28 fourth grade students, Hunt, Patton, and Carver (1958) concluded that children were unfamiliar with asparagus, beet greens, broccoli, Brussels sprouts, rutabaga, squash, and wax beans. Bryan and Lowenberg (1958) pointed out that food preferences of the pre-school child affected food consumption and were significant in social development.

Food Habits of Animals. Little research has been done on the food preferences of animals. Stefansson (1920) reported that food prejudice was stronger in an older dog. The prejudice of the female against a new food was stronger than that of the male. He concluded that conservatism was a sex character of the female. No difference in appetite attributable to sex differences was found in a study by Scott and Quint (1946) on the dietary preferences of rats.

The Effect of Sex on Food Preferences. Numerous investigations to determine if sex differences occur in food preferences have been attempted, but results appeared to be inconclusive and contradictory. An exception might be fruits and vegetables, which seem to be more

acceptable to females than to males. Factors affecting the amount and kind of food eaten by nursery school children were investigated by Dunshee (1931). She found no reliable sex differences in the amount of food eaten. Milk appeared to be the most preferred food, and vegetables most often were disliked.

The trays of 785 boys and 880 girls in a college cafeteria were observed by Latzke (1934). Milk showed the most striking difference in the food choices; it was selected more frequently by men than by women. Breakfast cereals were chosen more frequently by men than by women, although the variety chosen by men was more limited. The number of students choosing desserts was high, women selecting them more frequently than men. Tussing (1939) was in agreement with Hall and Hall (1939) concerning the strong food aversions exhibited by women. He specified raisin and mincemeat pies, milk, poached eggs, rice, coconut cake, tuna fish, grouse, quail, figs, avocados, rice pudding, and creamed cabbage as sex differentiated foods.

When taste preferences of males and females of three age groups, using pineapple juice of five degrees of sweetness, were studied by Laird and Breen (1939), reliable sex differences were discovered. Men preferred a sweet juice, whereas women liked a tart flavor. After observing the trays of 2,531 women and 833 men, Lautz, Carter, and Ferguson (1940) detected a definite tendency for men to select larger amounts of meat, sea food, eggs, and milk than women.

A check list of 143 foods was given to 545 college students. Using total test scores, Wallen (1934) found that a significant sex difference existed among the low status groups, but not among the high status groups.

When the disliked foods for males and females of each status group were tested, a reliable difference for ten of these comparisons between high status groups was found. These foods were coffee, scotch broth, caviar, clams, hominy, spaghetti, artichoke, tomatoes, cantaloupe, and watermelon. In only two of these comparisons (clams and artichokes) were more males found to dislike the food than females. Fifteen food items showed significant differences in the low status groups, with a greater percentage of females than males disliking the foods. The food items were cream of mushroom soup, cream of asparagus soup, green pea soup, bass, clams, lobster, pigeon, quail, venison, rabbit, limburgger cheese, dasheens, kale, parsnips, and avocado.

Wallen concluded that (1) considerable uniformity existed between the sexes in food preferences, (2) significant sex differences existed for a small proportion of food items, and (3) females had more food aversions than males. He maintained that the differences found could be accounted for by the assumption that social pressures forced males to repeat experiences with disliked foods, whereas females were permitted to retain their habits of rejection. The continuing tendency to expect similar behavior from males and females in situations of fear, disgust, and annoyance, would probably cause differences in food dislikes to become even smaller in the future than at present.

Sex differences for milk, fruits, vegetables, cereal, and margarine were found by Leverton (1944). Using a check list of 175 foods, Eppright (1945) studied food attitudes of five age groups, with each group including males and females. She reported that percentages of familiar foods liked were higher for the male than for the female members of the group. The most unpopular food groups were green and yellow vegetables

and dairy products.

Differences in food preferences with age, sex, place of residence and possibly national origin were observed by Eppright (1950). She indicated that vegetables showed the greatest variation in food acceptability. In studying the effects of sex on food preferences, Eppright found women had a higher preference for vegetables and fruits than did men. The differences were most significant for carrots, cauliflower, lentils, peas, spinach, turnips, avocado, grapefruit, and bananas. Men showed a higher acceptance for milk, eggs, American cheese, and cereals; whereas women accepted to a higher degree cottage cheese, cookies, herbs, margarine, pecans, pickles, relishes, and other food accompaniments. No sex differences were established for the acceptance of meat. Dr. Eppright found that a greater variety of foods were known by men than by women, and there was no significant difference between men and women regarding the amount and number of food dislikes.

Food preferences of 1,882 urban and rural Nebraska boys and girls were studied by Leverton and Coggs (1951). The most popular food items of the boys were white potatoes, whole milk, and eggs; whereas the girls checked most frequently apples, oranges, raw tomatoes, lettuce, and green peas. A greater proportion of boys than girls checked as "unwilling to eat" greens, soybeans, cottage cheese, cooked cabbage, and tomatoes; and more girls than boys checked buttermilk, turnips, and tongue. Girls were more willing to eat a variety of foods than were boys. These findings were contrary to those of Stefansson, Tussing, Hall and Hall, and Wallen. Sidwell and Eppright (1953) obtained a seven day dietary from 1,188 children whose ages ranged from six to 20 years. A difference in consumption

was derived for milk, eggs, bread, and cereals. Boys consumed more eggs, bread, and cereals but drank less milk than girls.

Bransby and Osborne (1953) investigated the food preferences of 125 men and 178 women, 62 years of age and over. The study revealed that the consumption of particular foods varied with such social and economic factors as age, sex, state of health, social status and income, and whether married or living alone. When considering the factor of sex, more bread, cereals, potatoes, root vegetables, cheese, bacon, soups, gravies, sugar, and preserves were consumed by the men than by the women; the women ate more fruit.

A seven day dietary study of 418 native born and reared Montana students was conducted by Odland, Page, and Guild (1955). They found the consumption of males exceeded that of females from 16 to over 100 per cent for all food groups. A significant sex difference was reported in the consumption of some individual items. Males consumed more milk, fats and oils, breakfast cereals, jams, jellies, sirups, green and yellow vegetables, eggs, and potatoes than females; whereas females ate more candy, fruits, and beverages.

Potgieter and Morse (1955) observed from the food intake records of 1,242 Connecticut school children, that the diets of boys showed more deficiencies than those of girls. Foods most often lacking were green and yellow vegetables and foods high in ascorbic acid. A sex difference in the consumption of milk, cereals, and protein foods, with boys consuming twice as much of these items per week than girls, was reported by Warnick, Bring, and Woods (1955). There was no significant sex difference revealed for fruits and vegetables, which was in contrast to

the belief that girls ate fruits and vegetables more readily than boys. Smith, Powell, and Ross (1955) obtained a reliable difference in the food preferences of boys and girls for eight foods. Cottage cheese and chili were liked better by the girls than by the boys, and potato soup, kidneys, brains, beer, buttermilk, and mush were more popular with the boys than with the girls. These authors were in accord with Stefansson, Hall and Hall, Tussing and Wallen that females exhibited more food aversions than males. In their study of food consumption of 21 nursery school children in Georgia, Mirone, Torrance, and Roughton (1956) found that desserts were the most preferred food items, whereas vegetables were least liked. The girls drank more milk than the boys. They concluded that sex, day of the week, and week order had no significant effect on the amount of food consumed during the noon meal.

The nutritive intake of 48 men and women in an institution for the aged was investigated. Women were found as a group to have lower nutritive intakes than men, according to Tucker, Brine, and Wallace (1958). The authors contended that this might have been due either to the fact that a woman's consumption rate was lower than a man's or because of greater differences in food habits.

Kennedy (1958) studied the food preferences of college women and compared her results with those obtained by the Quartermasters Corps for men of pre-army age. She found that some differences occurred in the rating of vegetables, meat (particularly organ meats and lamb), fish, and cheese. These foods were rated higher by women than by men.

Breckenridge (1959) ascertained no significant sex differences in a study of 51 five to 11 year olds at Merrill-Palmer Camp. Cooked vegetables of all kinds comprised the greatest number of dislikes. In a study of

children's food acceptance, Skeel (1960) found that milk and vegetables were preferred to main dishes, bread, and butter, desserts, and salads. Girls consumed a slightly smaller proportion of their lunch than did boys.

Significant sex differences in the food preferences of 120 college students were reported by Schuck (1961). She found that men were more willing to eat vegetables, meats, and cooked cereals, but the situation was reversed for fruits. Acceptance for ready-to-serve cereals was approximately the same for both sexes. Whole milk had a slightly higher acceptance by men than by women, but over twice as many men as women were willing to drink buttermilk often.

Comparison of Food Preferences of Rural and Urban People. Several studies determined differences in food preferences of rural and urban people, but little research has been done comparing food preferences and size of home community. The most extensive investigation in this area was made by the Quartermasters Corps. A study comparing the food preferences of nursery school children with those of rural children revealed that the greatest differences occurred with spinach, asparagus, and apricots. These foods were liked better by the urban children than by the rural children, according to Vance (1933).

Kuschke (1946) found from an analysis of the food consumption records of 896 rural and 721 urban people that milk, eggs, and beef were frequently used; veal, organ meats, dried peas, and beans were least used. Citrus fruits were the most popular of the fruit group. Favorite vegetables were potatoes, lettuce, and tomatoes. Butter was the most universally used food with only two per cent reporting any use of margarine. Cake was the most popular dessert, followed by pie and ice cream. Coffee had the highest consumption for beverages. When the effects of place of

residence were studied, Eppright (1950) pointed out that urban people had a higher preference for vegetables and cheese; whereas people of the open country had a definite preference for meats, fruit, eggs, and deserts. She indicated that a larger proportion of open country residents than rural and urban residents were unfamiliar with foods, and that food dislikes occurred more often among urban and rural people than open country residents. Dr. Eppright defined urban as those areas of more than 2,500 people, rural as all areas in non urban populated places and open country as the residual areas.

Some differences between urban and rural children were noted by Leverton and Coggs (1951). Foods checked as "willing to eat often" by urban children were yellow cheese, cantaloupe, and peanut butter, but rural children preferred white potatoes, raw tomatoes, lettuce, and green peas. Urban children checked more foods as "unwilling to eat" and were familiar with a greater number of foods than rural children.

Abbott, Townsend, and French (1952) found in a food preference survey of urban and rural males of two age groups, that there were only slight differences in food preferences between urban and rural men. The study revealed a trend which suggested as men grow older their food preferences became wider and more varied.

Sidwell and Eppright (1953) reported that urban children consumed more milk, fruits (other than citrus), sweet rolls and coffee cake than the rural children who ate a higher percentage of eggs and breakfast cereals. The diets of 777 rural children, concluded Potgieter and Morse (1955), were slightly higher nutritionally than those of 465 city children, particularly in the fruit and vegetable groups.

After interviewing 339 women, Burrill and Alsup (1955) reported that the factors of age and place of residence were both important in determining the choice of foods made. More adequate diets were chosen by women living in open country than women living either in urban communities or in small towns.

A large difference in dietary levels still was evident, although city-farm differences in food consumption patterns have decreased over the past several decades, according to Clark (1958). In general, farm diets furnished larger amounts of all nutrients except vitamin A and ascorbic acid. From a fat consumption survey of 100 households in Alabama, Stitt (1958) found that a larger percentage of rural households used butter, drippings, fat back, and lard than urban households. More urban than rural households used margarine and oil. There was no significant difference in the use of foods high in fat between rural and urban homes.

After regarding size of town in food preferences, Pilgrim (1961) concluded that there were few consistent trends, although three food classes (beverages, main dishes, and vegetables) showed important variation. Of the sub-classes, condiments decreased in preference with the increase of the size of town, whereas black olives showed the opposite effect. When the food acceptance of town and farm residents was compared, Schuck (1961) observed that a higher percentage of students from urban homes than rural homes were more "willing to eat often" most of the foods listed.

Food Preference Rating

Tussing (1939) believed that in order to make a trustworthy

investigation of the variations due to sex, subjects of both sexes should be secured who were near the same age, who had the same social status, and who had been subjected to similar training and social surroundings. Although the complete fulfillment of these conditions was unlikely undergraduate students of a co-educational institution were probably the nearest approach to the ideal requirements.

Peryam and Pilgrim (1957) claimed that the hedonic scale was reliable under constant test conditions and had been used with a number of variations with apparently no major effect on the results. Pilgrim (1961) reported that food consumption correlated between 0.5 and 0.7 with food preference. He presented evidence indicating that rating scales might be handled readily by the average person. Pilgrim maintained that this technique provided the most economical and reliable way of obtaining information about food preferences.

PROCEDURE

To determine food likes and dislikes, a check list of food items (Form 1, Appendix) was developed and presented to selected students residing in one men's and four women's residence halls on the Kansas State University campus. The students chosen to participate in this survey were selected by means of a table of random numbers. The sample was composed of 240 (one out of every five) men and women. Alternates also were chosen by the same method to allow for the possibility that some of the selected students would not be willing to participate in the survey. The size of the sample was determined by the Department of Statistics at Kansas State University and was believed to be large enough

to be reliable and representative of the student population.

The check list consisted of 70 food items and biographical information about the student. Two open-end questions were given at the end of the check lists to allow the students to state any specific likes or dislikes not mentioned in the list. This information was not analyzed and was to be used for reference by dietitians in the residence hall food service. The hedonic rating scale was used for eliciting responses for the various food items. The categories chosen were: "like very much", "like", "neither like nor dislike", "dislike", "dislike very much", and a category for "never eaten". The residents were instructed on the use of the rating scale and, to insure freedom in response to the check list, were assured that the information would remain confidential. The food items chosen for this study were selected from a list of foods by Hall and Hall (1939). The number of food items was limited to 70 to prevent the lack of interest often encountered with extensive check lists. Food items were selected either because they were commonly served in the residence halls, because they were never served in the residence halls, or because they had been expressed as disliked on the part of either students or dietitians during informal interviews.

In a preliminary test, the check lists were presented to several students not involved in the survey to determine clarity of instructions. The actual study was conducted during the spring of 1962. Every effort was made to present the lists at a time when the students were not involved in extensive examinations schedules or other activities. Each check list was accompanied by a letter (Form 2, Appendix) to the student explaining the purposes of the survey and the use that would be made of

the information. The co-operation of the residence hall directors was secured in encouraging the students to complete and return the lists. The writer or her representative presented the check lists to the students selected for the study at each of the residence halls on the same day and collected them four days later.

Out of 240 check lists distributed, 215, or 89 per cent, were returned. Only two of the check lists were not usable. One was incomplete, and the second was discarded because the respondent was from a foreign country. The check lists were coded and the results of the lists were tabulated and recorded on I.B.M. cards. The data were analyzed using chi square by the Statistical Laboratory at Kansas State University.

RESULTS AND DISCUSSION

Characteristics of Sample

Sex and Age. Of 213 students returning completed check lists, 120 were females and 93 were males. Ages ranged from 17 to 26. Ninety-seven per cent were in the age group of 17 to 22 (Table 1, Appendix).

Students' Classification and Semesters of Residence. Freshmen comprised 48 per cent of the sample, whereas 25 per cent were sophomores. Fifteen per cent of the respondents were juniors, with the remaining 12 per cent being seniors or graduate students. One semester of residence hall living was checked by nine per cent of the sample, two semesters were indicated by 53 per cent, three semesters by five per cent, and four semesters by 28 per cent. Five per cent had resided in the halls for five or more semesters (Table 2, Appendix).

Area of Home Residence. Eighty-three per cent of the respondents

lived in Kansas, and 17 per cent were from outside the state. Areas represented by the sample were the Southwest, Great Plains, Midwest, Southeast, and the South, North, and East Central United States (Table 3, Appendix). States indicated were New York, New Jersey, Virginia, Louisiana, Oklahoma, and Indiana. Others were Nebraska, Missouri, Minnesota, Illinois, California, and Washington, D. C. Missouri had the greatest number of out of state students, followed by New York.

Size of Home Community. Residence in cities of 100,000 or over was checked by 27 per cent of the sample; whereas 18 per cent lived in cities of 10,000 to 100,000, and 16 per cent indicated their homes were cities of 2,500 to 10,000. Fourteen per cent of the respondents were from towns of 2,500 and with 25 per cent living in rural communities (Table 3, Appendix).

Relationship of Sex to Food Preferences

Significant sex differences (Table 4) were obtained for 26 foods out of the 70 listed. Nineteen foods appeared to be liked better by females than males, whereas men seemed to like two foods more than did women. Women had aversions for two food items, but men had none.

Table 4. Relationship of sex and size of home community to food preferences.

Food	: Degree of Significance	
	: Sex	: Home Community
White bread	ns	ns
Whole wheat bread	ns	ns
Hominy	ns	ns
Rice	ns	ns
Spaghetti	ns	ns

Table 4. (cont.)

Food	Degree of Significance	
	Sex	Home Community
Butter	ns	ns
Margarine	*	ns
Buttermilk	ns	ns
Chocolate milk	ns	ns
Ice cream	ns	ns
Sour cream	*	ns
Eggs	ns	ns
American cheese	ns	ns
Cottage cheese	***	ns
Roquefort cheese	*	ns
Clams	ns	ns
Crab	ns	*
Oysters	ns	ns
Scallops	ns	ns
Shrimp	ns	ns
Fish	ns	ns
Trout	**	ns
Salmon	*	ns
Tuna	***	ns
Apricots	**	ns
Avocados	**	ns
Cantaloupe	ns	ns
Cranberries	**	ns
Dates	*	ns
Figs	**	ns
Grapefruit	ns	ns
Olives	***	ns
Persimmons	ns	ns
Pomegranates	ns	ns
Artichokes	*	*
Asparagus	ns	ns
Lima beans	*	ns
Green beans	***	ns
Broccoli	***	ns
Cabbage	***	ns
Cauliflower	***	ns
Celery	***	ns
Green pepper	**	ns
Egg plant	ns	ns
Mushrooms	ns	ns
Okra	ns	ns
Onions	ns	ns
Peas	**	ns
Sweet potatoes	ns	ns
White potatoes	ns	ns

Table 4 (concl.).

Food	Degree of Significance	
	Sex	Home Community
Spinach	ns	ns
Swiss chard	ns	ns
Bacon	ns	ns
Beef	ns	ns
Chicken	***	ns
Ham	ns	ns
Lamb	ns	ns
Liver	ns	ns
Heart	ns	ns
Tongue	*	ns
Pork	ns	ns
Turkey	ns	*
Veal	ns	ns
Chocolate	*	ns
Coconut	ns	ns
Fruit jams & jellies	*	ns
Molasses	ns	ns
Nuts	ns	ns
Peanut butter	ns	ns
Pimento	ns	ns

ns Not significant.

* Significant at the five per cent level.

** Significant at the one per cent level.

*** Significant at the one-tenth per cent level.

Breads and Cereals. Reliable sex differences were not found for white bread, whole wheat bread, hominy, rice, or spaghetti (Table 4). These findings were in contrast to those of Wallen (1943), Sidwell and Eppright (1953), and Bransby and Osborne (1953).

Dairy Products and Eggs. No differences in food preferences of men and women were apparent for butter, buttermilk, chocolate milk, ice cream, eggs, or American cheese. A significant sex difference ($P < .05$) in food likes and dislikes was discovered for margarine, sour cream, and Roquefort cheese. Females had a stronger preference for sour cream

than did males. A very highly significant difference ($P < .001$) was found for males' and females' preferences for cottage cheese (Table 4). Women appeared to like margarine, Roquefort cheese, and cottage cheese more than did men.

Fish and Seafoods. No differences in the likes and dislikes of males and females were discovered for clams, crab, oysters, scallops, shrimp, or fish. A very highly significant difference ($P < .001$) in men's and women's preferences was obtained for tuna. Trout had a highly significant sex difference ($P < .01$) in food preferences, and a significant sex difference ($P < .05$) was established for salmon (Table 4). Females seemed to like tuna and salmon more than did males, but trout appeared to be preferred more by males.

Fruits. Analysis of preferences for cantaloupe, grapefruit, persimmons, and pomegranates revealed no important sex differences. A significant difference ($P < .05$) in men's and women's likes and dislikes was reached for dates; whereas apricots, avocados, cranberries, and figs had a highly significant sex difference ($P < .01$). A very highly significant difference ($P < .001$) was demonstrated by males' and females' for olives (Table 4). Females showed a stronger aversion for cranberries than did males. Women appeared to like apricots, olives, and dates more than did men. Figs and avocados seemed to be disliked more by women than by men.

Vegetables. Asparagus, egg plant, mushrooms, okra, onions, sweet potatoes, white potatoes, spinach, and Swiss chard exhibited no significant differences for sex. A significant difference ($P < .05$) in the preferences of men and women was found for artichokes and lima beans.

A highly significant sex difference ($P < .01$) was discovered for green pepper and peas. Differences in likes and dislikes of males and females for green beans, broccoli, cabbage, cauliflower, and celery were very highly significant ($P < .001$) (Table 4). Females preferred broccoli, cabbage, and cauliflower more than did males. Lima beans, green beans, celery, peas, and green pepper seemed to be liked better by females than by males.

Women students appeared to dislike artichokes more than did men.

Meats and Poultry. No differences in food preferences were established for bacon, beef, ham, lamb, liver, heart, pork, turkey, or veal. Significant sex differences ($P < .05$) in preference were found for tongue, and females had a stronger aversion for this food than did males. A very highly significant difference ($P < .001$) in the food preferences of men and women for chicken was demonstrated (Table 4). Females appeared to like chicken more than did males.

Food Accompaniments. For coconut, molasses, nuts, peanut butter, and pimento no significant differences in food preferences were obtained. A significant sex difference ($P < .05$) in preferences was demonstrated by males and females for chocolate, fruit jams, and jellies (Table 4). Chocolate appeared to be preferred by women, whereas fruit jams and jellies seemed to be better liked by men.

Relationship of Size of Home Community to Food Preferences

Significant differences for this factor were established for only three food items. A significant difference ($P < .05$) in size of home community for food preferences was obtained for crab, artichokes, and turkey. Crab was preferred by students residing in cities of 100,000 or over and in rural areas, but was liked to a lesser extent by respondents in the

remaining cities and towns. Artichokes were liked by residents of cities of 100,000 or over and by those in rural communities. A strong aversion for this food was shown by students from cities of 2,500 to 10,000. Turkey was most popular with those from cities of 100,000 or over, 10,000 to 100,000, and 2,500 to 10,000. This food was unpopular with students from towns of 2,500 and rural areas (Table 4).

Per Cent Ranking of Foods

In order to rank the foods according to popularity, certain categories as defined on the check list were combined; and the per cent of students in the new categories for each food was calculated. "Like very much" and "like" were combined into "liked", "dislike" and "dislike very much" into "disliked", "neither like nor dislike" retained as "neither liked nor disliked" (Table 5, Appendix). Meats and poultry were the most popular food class. No distinct food groups were apparent as "disliked", which was contrary to findings in the literature. "Disliked" foods with high rankings were buttermilk, okra, egg plant, tongue, heart, sour cream, and hominy. Accessory foods and the lesser known vegetables and fruits held the highest positions in the "neither liked nor disliked" category.

Seventy-nine per cent of the respondents indicated beef, bacon, ham, turkey, chicken, and veal as favorites; whereas tongue and heart were disliked by 45 per cent. Liver was liked by 53 per cent of the men and women, but was not popular with 35 per cent. The above meat and poultry items were available in the residence halls with the exception of heart and tongue. The result of combining the categories of "like" and "neither like nor dislike" was that possibly one-half of the students might choose heart or tongue if these meats were served in the residence halls.

This investigation disclosed that lamb was liked by 67 per cent of the sample and was disliked by only 12 per cent.

Trout and shrimp were popular with 85 per cent of the respondents and fish was liked by 80 per cent. Oysters and clams were highly disliked, but still oysters were liked by 41 per cent of the students and clams by 33 per cent. Crab was preferred by 53 per cent of the men and women. Shrimp, oysters, and crab were available occasionally to the women, but clams were not served in any of the residence halls.

Of the dairy foods ninety-six per cent of the sample listed ice cream as a favorite food; 77 per cent of the people disliked buttermilk. American cheese and chocolate milk were liked by more than 75 per cent of the students. Neither buttermilk nor chocolate milk were included on the menus. Butter was preferred by 85 per cent of the respondents, whereas margarine was liked by 54 per cent.

No great difference was found in the popularity of white bread and whole wheat bread; both were liked by more than 76 per cent of the men and women. Spaghetti and rice were liked by more than 50 per cent of the sample and hominy was disliked by 46 per cent. The unpopularity of hominy was in agreement with the literature. Peanut butter was popular with 69 per cent of the respondents, with only 13 per cent disliking it.

The favorite vegetable was white potatoes, which was liked by 86 per cent of the students. In comparison sweet potatoes were popular with 71 per cent of the students. Sweet potatoes were seldom served in the halls, but white potatoes occurred in the menus nearly every day. Green beans, celery, and peas were liked by more than 78 per cent of the men and women. Lima beans and asparagus were liked by at least 46 per cent of the students. Nuts were disliked by only five per cent of the men and women,

coconut by 16 per cent, green pepper by 27 per cent, and pimento by 26 per cent. The data revealed that cranberries, spinach, dates, mushrooms, onions, and olives were popular with at least 48 per cent of those sampled, and that cranberries, onions, and olives were liked by 60 per cent of the people.

Assumptions Versus Findings

Fish, assumed to be tolerated by students only on Friday, was found to be popular with a great majority of the respondents. Lamb, celery, lima beans, asparagus, spinach, mushrooms, onions, cranberries, dates, and olives had been thought to be disliked by students; whereas results of this study indicated these foods were liked by approximately half of the students. The high rating of celery was of special interest, since it had been considered unpopular, particularly with men.

Nuts, coconut, green pepper, and pimento were used to a limited degree in the menus as a result of dislikes either by dietitians or students. The findings of this investigation showed these foods to be disliked by only a small per cent of the students.

"Never Eaten" Foods

Tabulation of the "never eaten" category from the check lists resulted in these findings: (1) ten per cent of the students, ten women and 12 men, had eaten all of the food items, (2) 54 per cent of the foods had never been tried by at least one student, and (3) men were familiar with 56 per cent of the food items, whereas women had tried 44 per cent.

When the food items were ranked according to per cent "never eaten" (Table 6, Appendix), Swiss chard ranked highest at 63 per cent, followed

by artichokes at 59 per cent, pomegranates at 56 per cent, clams at 52 per cent, and crab at 51 per cent. Unfamiliar foods appeared to be the less well known vegetables and fruits, and sea foods.

Slight differences were observed when comparing the foods "never eaten" by males and females. For women, Swiss chard at 66 per cent had the highest ranking, followed by clams at 62 per cent, crab at 60 per cent, and artichokes at 55 per cent; but artichokes and pomegranates at 65 per cent held the highest ranking for the men, followed by Swiss chard at 59 per cent, and persimmons at 47 per cent.

All fish items with the exception of shrimp, tuna, and salmon were ranked lower by men than by women. Males seemed to be more familiar with Swiss chard, clams, crab, scallops, tongue, heart, oysters, and lamb than did women. Females appeared to have a greater familiarity with artichokes, pomegranates, okra, avocados, pimento, and hominy than did men.

Favorite and Disliked Foods

The favorite and most disliked foods, obtained from the open-end questions, were tabulated (Table 7, Appendix). The responses were too varied and of insufficient numbers to be analyzed. Repetition of foods from the check lists was found, but some indication of the popularity of foods not included in the lists was given.

Of the beverages, iced tea and hot chocolate were listed as favorites by two students and coffee was disliked by one person. In the bread and cereal group, bread had the highest number liking it, followed by yeast rolls and pancakes; whereas hominy and rice were unpopular with the greatest number of students.

Cottage cheese was liked by eight respondents and milk by seven men

and women. Eggs were not liked by 16 students and buttermilk by 11. Of the fish group, shrimp was popular with 24 men and women and oysters were unpopular with eight. Ice cream was favored by 21 respondents, pie by 18, and cake by ten, but still were indicated as disliked by seven women.

The general category of fruit was listed by 18 students as their favorite food; strawberries and peaches also had a high number of "like" responses. Avocados were disliked by 12 women; rhubarb and cranberries were in disfavor with five respondents. Beef, steak, chicken had the greatest number of popular responses of the meat and poultry group; whereas liver, tongue, and weiners were unpopular with some students.

Potatoes were preferred by 37 men and women, but 23 people liked corn; whereas spinach was disliked by 35 students, broccoli by 19, and asparagus by 16. In the miscellaneous group, pizza and hamburgers had the highest number of "like" responses; whereas olives, mushrooms, and coconut had the most "dislikes".

SUMMARY

A check list of food items was developed and presented during the spring of 1962 to 240 selected students living in residence halls on the Kansas State University campus. The check lists consisted of 70 food items, biographical information about the student, and two open-end questions. The hedonic rating scale was used for eliciting responses for the various food items. The foods were chosen from a list by Hall and Hall (1939), but were limited to 70 to prevent the lack of interest often encountered with extensive check lists. Out of 240 check lists distributed 89 per cent were returned. The lists were tabulated and analyzed using chi square by the Statistical Laboratory at Kansas State University.

The sample was composed of 120 females and 93 males, with all academic classifications represented. The average age of the students was between 18 and 20. Semesters of living in residence halls ranged from one semester to five or more. Eighty-three per cent of the respondents lived in Kansas and 17 per cent were from out of state. Students' home communities ranged in size from rural areas to cities of 100,000 or over.

Significant differences were obtained for 26 foods out of the 70 listed, when the relationship of sex to food preferences was studied. Of the dairy products, women had a stronger preference for sour cream and seemed to like margarine, Roquefort cheese, and cottage cheese more than did men. In the fish and seafood group, tuna and salmon appeared to be liked more by females, whereas trout seemed to be preferred more by males.

Analysis of preferences for fruits revealed that women appeared to like apricots, olives, and dates more than did men. Females had a strong aversion for cranberries and seemed to dislike figs and avocados more than did males. In the vegetable group broccoli, cabbage, and cauliflower were preferred more by females than by males. Lima beans, green beans, celery, peas, and green pepper seemed to be liked better by women than by men and females appeared to dislike artichokes more than did males.

No differences in food preferences were established for nine meat and poultry items. Women were found to have a stronger aversion for tongue than did men, but females seemed to like chicken more than did males. Of the food accompaniments, only chocolate, fruit jams and jellies had significant differences in preferences. Chocolate seemed to be preferred by women, whereas fruit jams and jellies appeared to be better liked by men.

When size of home community was related to food preferences, significant differences were found for only three food items. Crab and artichokes were preferred by students residing in cities of 100,000 or over and in rural areas. Turkey was most popular with students from cities, and was disliked by those from towns of 2,500 and rural areas.

Meats and poultry were found to be the most popular food class when foods were ranked according to per cent "liked", "disliked", and "neither liked nor disliked". No distinct food groups were apparent as "disliked". "Disliked" foods were buttermilk, okra, egg plant, tongue, heart, sour cream, and hominy. Accessory foods and the lesser known vegetables and fruits were high in the "neither liked nor disliked" category.

Seventy-nine per cent of the respondents liked beef, bacon, ham, turkey, chicken, and veal; but tongue and heart were disliked by 45 per cent. Liver was popular with 53 per cent of the men and women and lamb was liked by 67 per cent. Trout, shrimp, and fish were liked by at least 80 per cent of the sample and crab by 50 per cent; oysters and clams were highly disliked.

Ninety-six per cent of the sample liked ice cream and 75 per cent of the students liked American cheese and chocolate milk; 77 per cent of the people disliked buttermilk. Butter was preferred by 85 per cent of the respondents, whereas margarine was popular with 54 per cent.

White bread and whole wheat bread were of about equal popularity. Spaghetti and rice were liked by more than 50 per cent of the sample and hominy was disliked by 46 per cent. White potatoes were popular with 86 per cent of the students and sweet potatoes with 71 per cent.

Green beans, celery, and peas were liked by more than 78 per cent of the men and women, and lima beans and asparagus were preferred by 46 per

cent. Cranberries, spinach, dates, mushrooms, onions, and olives were liked by at least 48 per cent of those sampled. Nuts were disliked only by five per cent of the men and women, coconut by 16 per cent, green pepper by 27 per cent, and pimento by 26 per cent.

Ten per cent of the students were found to be familiar with all 70 foods listed. Men were familiar with 56 per cent of the food items, whereas women had tried 44 per cent. Fifty-four per cent of the foods had never been tried by at least one student. Slight differences were observed when comparing foods "never eaten" by males and females. Males seemed to be more familiar with Swiss chard, clams, crab, scallops, tongue, heart, oysters, and lamb than did women. Females appeared to have a greater familiarity with artichokes, pomegranates, okra, avocados, pimento, and hominy than did men.

Some foods indicated as "liked" by students, but not found in the check lists were: iced tea, hot chocolate, yeast rolls, pancakes, pie, and cake. Others liked were fruit, peaches, strawberries, steak, corn, pizza, and hamburgers; whereas rhubarb and weiners were listed as disliked.

CONCLUSIONS

Based on the findings of this study the following inferences were made.

1. Sex appeared to have some influence on the food preferences of students in the Kansas State University residence halls, whereas size of home community seemed to have little effect.
2. Assumptions as to the "likes" and "dislikes" of students are not always based on fact.

3. Certain foods might be served more frequently in the Kansas State University residence halls food service than were offered during the current year.
4. An educational program might be instigated in the Kansas State University residence halls to introduce students to a greater variety of foods.

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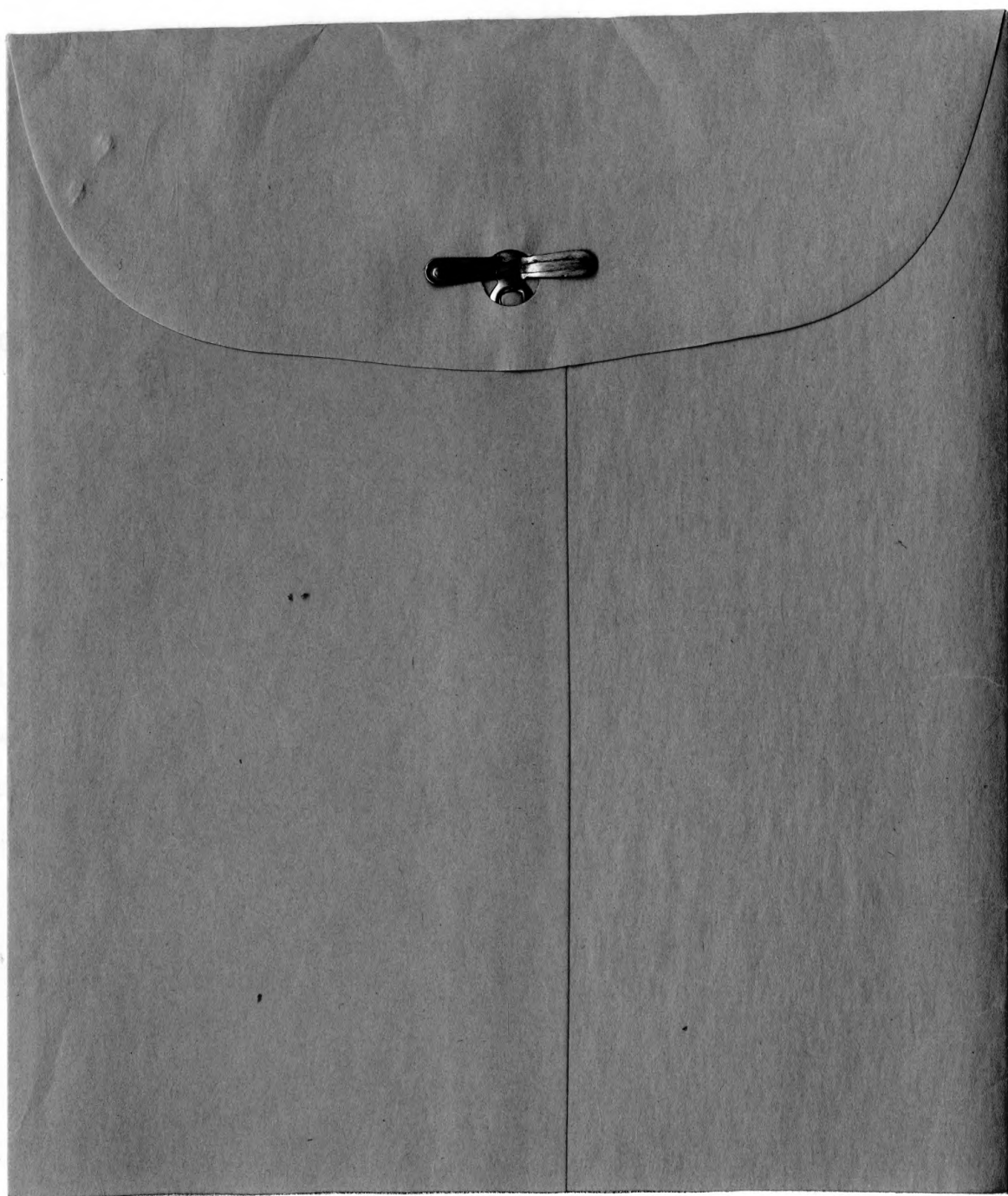
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APPENDIX



Form 1. Food preference check list.

KANSAS STATE UNIVERSITY

Food Preference Check List

The food service at Kansas State University wishes to serve you, the student, as effectively as possible. In order to plan menus that you will enjoy, it is necessary to determine what foods you like to eat. Will you please fill out this check list; all information will remain confidential.

Information about you.

Name _____

Classification: Fr. ____ Soph. ____ Jr. ____ Sr. ____.

No. of semesters living in residence halls: 1 ____ 2 ____ 3 ____ 4 ____
5 ____ 6 ____ 7 ____ 8 ____

Residence Hall: Boyd ____ Van Zile ____ Waltheim ____

West Stadium ____ Men's ____

Male ____ or Female ____ . Age ____ . Is your home in Kansas: Yes ____ No ____ .

If not, indicate home state _____ .

How large is your home town: City of 100,000 or over ____

City of 10,000 to 100,000 ____

City of 2,500 to 10,000 ____

Town of less than 2,500 ____

Rural ____

Food Preference Check List

For each food listed in the following pages, check the reply which tells how much you like or dislike that food. If you are not familiar enough with a food to know whether you like or dislike it, check the column, "Never eaten", at the left of the food item. Check only one reply for each food.

Never eaten		Like very much	Like	Neither like nor dislike	Dislike	Dislike very much
	1. Bread, white					
	2. Bread, whole wheat					
	3. Hominy					
	4. Rice					
	5. Spaghetti					
	6. Butter					
	7. Margarine					
	8. Buttermilk					
	9. Chocolate milk					
	10. Ice cream					
	11. Sour cream					
	12. Eggs					
	13. American cheese					
	14. Cottage cheese					

Never eaten		Like very much	Like	Neither like nor dislike	Dislike	Dislike very much
	15. Roquefort Cheese					
	16. Clams					
	17. Crab					
	18. Oysters					
	19. Scallops					
	20. Shrimp					
	21. Fish					
	22. Trout					
	23. Tuna					
	24. Salmon					
	25. Apricots					
	26. Avocados					
	27. Cantaloupe					
	28. Cranberries					
	29. Dates					
	30. Figs					
	31. Grapefruit					
	32. Olives					

Never eaten		Like very much	Like	Neither like nor dislike	Dislike	Dislike very much
	33. Persimmons					
	34. Pomegranates					
	35. Artichokes					
	36. Asparagus					
	37. Beans, lima					
	38. Beans, green					
	39. Broccoli					
	40. Cabbage					
	41. Cauliflower					
	42. Celery					
	43. Green pepper					
	44. Egg plant					
	45. Mushrooms					
	46. Okra					
	47. Onions					
	48. Peas					
	49. Potatoes, sweet					

Never eaten		Like very much	Like	Neither like nor dislike	Dislike	Dislike very much
	50. Potatoes, white					
	51. Spinach					
	52. Swiss chard					
	53. Bacon					
	54. Beef					
	55. Chicken					
	56. Ham					
	57. Lamb					
	58. Liver					
	59. Heart					
	60. Tongue					
	61. Pork					
	62. Turkey					
	63. Veal					
	64. Chocolate					
	65. Coconut					
	66. Fruit jams and jellies					

Never eaten		Like very much	Like	Neither like nor dislike	Dislike	Dislike very much
	67. Molasses					
	68. Nuts					
	69. Peanut butter					
	70. Pimento					

List three foods that you like very much.

1. _____.

2. _____.

3. _____.

List three foods that you dislike very much.

1. _____.

2. _____.

3. _____.

Form 2. Letter to student explaining purposes of check list.

March, 1962

Dear Student:

You have been selected, by random sampling, to participate in a survey on food preferences of men and women living in residence halls at Kansas State University. The data collected will be used as research for a master's thesis and will be held confidential.

The purposes of this survey are to determine if there are significant differences in (1) preference of men and women for selected foods and (2) preferences of students from communities or cities of different sizes. The results of the survey will be available to those planning menus for the residence hall food service.

Your cooperation in completing this check list is very much appreciated.

Sincerely,

Ann Barlow
Graduate Assistant
Department of Institutional
Management

Table 1. Sex and age.

		No. of students	Per cent
Sex	Male	93	44
	Female	120	56
Age	17	1	.5
	18	70	34
	19	61	30
	20	33	16
	21	22	11
	22	13	6
	23	2	1
	24	2	1
	25	-	-
	26	1	.5

Table 2. Classification and semesters of residence.

		No. of students	Per cent
Classification			
	Freshmen	102	48
	Sophomores	54	25
	Juniors	32	15
	Seniors	23	11
	Graduate	1	1
Semesters of Residence			
	1	19	9
	2	112	53
	3	10	5
	4	59	28
	5	4	2
	6	5	2
	7	2	.5
	8	2	.5

Table 3. Area of residence and size of home community.

	No. of students	: Per cent
Area of Residence		
Kansas	177	83
Rocky Mountains	--	--
Northwest	--	--
Southwest	3	1
South Central	3	1
Great Plains	15	7
North Central	2	1
Midwest	3	1
Southeast	2	1
East Central	8	4
New England	--	--
Size of Home Community		
City of 100,000 or over	58	27
City of 10,000 to 100,000	39	18
City of 2,500 to 10,000	35	16
Town of less than 2,500	28	14
Rural	53	25

Table 5. Per cent ranking of foods.

Rank :	Food	: Like :	Food	: Neither Like : : Nor Dislike :	Food	: Dislike :
1	Beef	99.51	Pimento	40.78	Buttermilk	76.84
2	Ice cream	95.61	Avocados	32.52	Okra	53.91
3	Bacon	93.66	Swiss chard	32.43	Egg plant	52.03
4	Ham	93.10	Molasses	31.63	Tongue	51.90
5	Turkey	88.78	Pomegranates	31.11	Sour cream	50.76
6	Chicken	85.85	Artichokes	27.91	Hominy	46.28
7	White potatoes	85.85	Persimmons	27.62	Heart	45.56
8	Butter	85.37	Roquefort cheese	27.01	Artichokes	45.35
9	Trout	84.62	Clams	27.00	Persimmons	41.90
10	Shrimp	84.50	Dates	26.11	Oysters	41.38
11	Chocolate	83.90	Figs	25.64	Clams	40.00
12	Fruit jams & jellies	83.41	Margarine	25.37	Avocados	39.26
13	Pork	83.33	Rice	25.12	Asparagus	38.42
14	Nuts	83.33	Scallops	22.58	Swiss chard	37.84
15	Cantaloupe	83.25	Green pepper	21.67	Cauliflower	35.47
16	Green beans	82.93	Hominy	21.28	Liver	35.12
17	American cheese	81.37	Egg plant	20.95	Roquefort cheese	32.76
18	Spaghetti	81.28	Lamb	20.33	Mushrooms	31.91
19	White bread	80.88	Sour cream	20.30	Figs	29.23
20	Celery	80.00	Coconut	20.10	Spinach	28.43
21	Fish	79.80	Onions	20.10	Crab	27.72
22	Veal	79.40	Mushrooms	19.68	Cabbage	27.32
23	Peas	77.94	Heart	19.53	Broccoli	27.09
24	Grapefruit	77.56	Cranberries	19.51	Green peppper	26.60
25	Apricots	76.59	Lima beans	19.51	Pimento	25.70
26	Whole wheat bread	76.35	Broccoli	19.21	Lima beans	24.88
27	Chocolate milk	75.49	Whole wheat bread	19.21	Olives	24.88
28	Eggs	75.49	Crab	18.81	Rice	24.63
29	Tuna	75.00	Peanut butter	18.63	Pomegranates	24.44
30	Cottage cheese	73.04	Oysters	17.82	Dates	24.14
31	Salmon	72.06	White bread	17.65	Cranberries	20.98
32	Sweet potatoes	71.22	Cabbage	17.56	Margarine	20.98
33	Peanut butter	68.63	Grapefruit	16.59	Scallops	20.97
34	Lamb	67.03	Okra	16.52	Sweet potatoes	17.56
35	Onions	65.20	Eggs	16.18	Cottage cheese	16.18
36	Coconut	64.22	Tuna	16.18	Coconut	15.69
37	Olives	63.18	Celery	16.10	Molasses	14.80
38	Cranberries	59.51	Fruit jams & jellies	16.10	Onions	14.71
39	Spinach	59.31	Cauliflower	15.76	Salmon	13.24
40	Scallops	56.45	Asparagus	15.76	Peanut butter	12.75
41	Lima beans	55.61	Salmon	14.71	Lamb	12.64
42	Cabbage	55.12	Veal	14.57	Apricots	12.20
43	Broccoli	53.69	Chocolate milk	14.22	Peas	10.78
44	Margarine	53.66	Tongue	13.92	Chocolate milk	10.29
45	Molasses	53.57	American cheese	13.73	Tuna	08.82
46	Crab	53.47	Spaghetti	13.30	Eggs	07.33

Table 5. (concl.).

Rank :	Food	: Like :	Food	: Neither Like : : Nor Dislike :	Food	: Dislike :
47	Liver	53.17	Fish	13.30	Shrimp	08.00
48	Green pepper	51.72	Spinach	12.25	Green beans	07.32
49	Rice	50.25	White potatoes	12.20	Fish	06.90
50	Dates	49.75	Olives	11.94	Veal	06.03
51	Cauliflower	48.77	Nuts	11.76	Cantaloupe	05.91
52	Mushrooms	48.40	Liver	11.71	Pork	05.88
53	Asparagus	45.81	Buttermilk	11.58	Grapefruit	05.85
54	Figs	45.13	Peas	11.27	Spaghetti	05.42
55	Pomegranates	44.44	Apricots	11.22	American cheese	04.90
56	Oysters	40.80	Sweet potatoes	11.22	Nuts	04.90
57	Roquefort cheese	40.23	Chocolate	11.22	Chocolate	04.88
58	Heart	34.91	Trout	10.99	Whole wheat bread	04.43
59	Tongue	34.18	Cantaloupe	10.84	Trout	04.40
60	Pimento	33.52	Cottage cheese	10.78	Butter	04.39
61	Clams	33.00	Pork	10.78	Chicken	04.39
62	Hominy	32.45	Butter	10.24	Celery	03.90
63	Persimmons	30.48	Green beans	09.76	Turkey	03.90
64	Swiss chard	29.73	Chicken	09.76	Ham	03.45
65	Okra	29.57	Shrimp	07.50	Bacon	02.44
66	Sour cream	28.94	Turkey	07.32	White potatoes	01.95
67	Avocados	28.22	Ice cream	04.39	White bread	01.47
68	Egg plant	27.03	Bacon	03.90	Fruit jams & jellies	00.49
69	Artichokes	26.74	Ham	03.45	Beef	00.00
70	Buttermilk	11.58	Beef	00.49	Ice Cream	00.00

Table 6. Per cent of foods checked as "never eaten".

Food item	: : : Females	: : : Males	: : : Males and Females
Swiss chard	66	59	63
Artichokes	55	65	59
Pomegranates	49	65	56
Clams	62	40	52
Crab	60	40	51
Persimmons	48	47	47
Okra	42	45	43
Scallops	41	37	39
Egg plant	26	27	26
Tongue	26	17	22
Avocados	13	27	19
Heart	19	13	16
Roquefort cheese	16	15	15
Oysters	19	10	15
Pimento	7	18	11
Lamb	13	9	11
Trout	12	9	10
Mushrooms	8	9	8
Hominy	3	13	8
Buttermilk	8	5	7
Figs	8	2	5
Sour cream	3	5	4
Molasses	3	4	4
Veal	3	2	3
Shrimp	2	2	2
Olives	2	1	1
Cantaloupe	1	1	.9
Cauliflower	1	1	.9
Green pepper	1	1	.9
White bread	1	-	.5
Whole wheat bread	1	-	.5
American cheese	1	-	.5
Tuna	-	1	.5
Salmon	-	1	.5
Dates	1	-	.5
Asparagus	1	-	.5
Broccoli	1	-	.5
Spinach	1	-	.5

Table 7. Favorite and disliked foods.

Food	No. of Women		No. of Men	
	Like	Dislike	Like	Dislike
Beverages				
Iced tea	1	-	-	-
Hot chocolate	-	-	1	-
Coffee	-	1	-	-
Bread & Cereals				
Bread	4	-	2	-
Yeast rolls	3	-	2	-
Pancakes	3	-	-	-
Waffles	1	1	2	-
Noodles	1	1	1	1
Rice	1	6	1	1
Hominy	-	15	-	5
Dairy Products & Eggs				
Cottage cheese	7	6	1	4
Milk	4	1	3	-
Eggs	3	11	2	5
Cheese	3	1	-	-
Dairy products	-	-	2	-
Sour cream	-	1	1	2
Roquefort cheese	-	2	1	-
Buttermilk	-	8	-	3
Swiss cheese	-	1	-	-
Margarine	-	-	-	3
Sour milk	-	-	-	1
Fish				
Shrimp	14	2	10	1
Fish	7	4	8	1
Oysters	3	5	-	3
Perch	1	-	-	-
Scallops	1	3	-	1
Lobster	1	-	1	-
Catfish	-	-	2	-
Sardines	-	2	-	-
Salmon	-	1	-	-
Crab	-	-	-	2
Tuna	-	-	-	1
Clams	-	-	-	1
Desserts				
Ice cream	10	1	11	-
Pie	6	4	12	-
Cake	5	2	5	-
Brownies	3	-	-	-
Gingerbread	2	-	-	-
Sherbet	1	-	-	-
Plum pudding	-	1	-	-
Doughnuts	-	-	2	-

Table 7. (cont.)

Food	: No. of Women		: No. of Men	
	: Like	: Dislike	: Like	: Dislike
Desserts (cont.)				
Strawberry shortcake	-	-	1	-
Cherries Jubilee	-	-	1	-
Pudding	-	-	2	-
Fruits				
Fruit	11	1	7	-
Strawberries	9	-	1	-
Peaches	5	-	-	-
Bananas	3	1	-	-
Oranges	2	-	1	-
Cantaloupe	2	1	1	-
Avocado	2	12	-	-
Rhubarb	1	4	1	1
Cherries	1	-	-	-
Berries	1	-	-	-
Apricots	1	-	2	-
Pineapple	1	1	1	1
Dates	1	4	-	-
Pears	-	1	-	-
Cranberries	-	4	1	1
Apples	-	1	2	-
Watermelon	-	-	1	1
Citrus fruits	-	-	1	1
Melon	-	-	1	-
Applesauce	-	-	1	-
Raisins	-	1	-	1
Persimmons	-	1	-	-
Figs	-	2	-	-
Grapefruit	-	1	-	-
Spiced fruits	-	-	-	1
Meats and Poultry				
Steak	29	-	26	-
Chicken	28	-	11	1
Beef	24	-	32	-
Meat	7	-	2	-
Ham	6	2	9	1
Pork	6	3	3	2
Turkey	4	-	7	2
Liver	4	25	1	17
Lamb	2	2	6	-
Bacon	2	1	3	1
Veal	2	2	4	2
Heart	1	1	1	3
Brisket	1	4	-	-
Tongue	-	4	1	5
Poultry	-	-	1	-

Table 7. (cont.)

Food	: No. of Women		: No. of Men	
	: Like	: Dislike	: Like	: Dislike
Meats (cont.)				
Brains	-	2	-	1
Wieners	-	4	-	2
Organ meats	-	2	-	1
Minute steaks	-	1	-	-
Polish sausage	-	-	-	2
Rabbit	-	-	-	1
Ground meat	-	-	-	2
Miscellaneous				
Pizza	12	1	-	1
Hamburgers	7	-	5	-
Chocolate	6	1	-	-
Potato salad	2	-	-	-
Olives	2	8	-	3
Mushrooms	2	6	-	5
Jello salad	2	-	1	-
Vegetable salad	2	1	2	1
Stew	2	-	-	-
Spaghetti	2	2	4	1
Onion rings	2	-	-	-
Macaroni & cheese	1	-	2	1
Tacos	1	-	-	-
Cheeseburgers	1	-	1	-
Gornmeal	1	-	-	-
Meat loaf	1	-	-	-
Peanut butter	1	3	1	1
Cole slaw	1	-	-	-
Egg omelet	-	1	-	-
Sandwiches	-	-	2	-
Potato chips	-	-	1	-
French fried potatoes	-	-	1	-
Chinese food	-	2	1	2
Honey	-	-	1	-
Soup	-	2	-	2
Tapioca	-	-	-	1
Dressing	-	-	-	1
Italian food	-	-	1	-
Salad dressing	-	2	-	1
Ravioli	-	-	1	1
Potato pancakes	-	-	2	-
Sauerbraten	-	-	1	-
Coconut	-	6	-	4
Hash	-	1	-	1
Pimento	-	4	-	2
Nuts	-	1	-	-
Salmon loaf	-	1	-	-

Table 7 (concl.).

Food	No. of Women		No. of Men	
	Like	Dislike	Like	Dislike
Miscellaneous (cont.)				
Chili	-	-	-	1
Sauerkraut & spareribs	1	-	-	-
Veal birds	-	2	-	2
Vegetables				
Potatoes	22	1	15	2
Corn	14	-	9	-
Tomatoes	7	2	-	3
Green beans	6	-	-	2
Egg plant	3	9	-	6
Cauliflower	2	5	2	7
Onions	2	2	-	2
Peas	2	5	1	5
Lettuce	2	-	1	-
Lima beans	2	7	-	7
Okra	2	9	1	5
Carrots	2	3	-	2
Sweet potatoes	2	4	4	3
Asparagus	2	13	1	3
Vegetables	2	4	2	3
Sauerkraut	1	5	-	1
Artichokes	1	-	-	-
Cabbage	1	4	1	9
Spinach	1	16	-	19
Green pepper	1	3	-	4
Broccoli	-	9	1	10
Squash	-	4	1	4
Green vegetables	-	-	1	1
Celery	-	-	-	1
Parsnips	-	1	-	-
Swiss chard	-	1	-	-
Brussels sprouts	-	6	-	1
Turnips	-	4	-	4
Beets	-	4	-	1
Blackeyed peas	-	1	-	-

FOOD PREFERENCES OF UNIVERSITY STUDENTS

by

ANN ELAINE BARLOW

B. S., University of New Mexico, 1961

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
Manhattan, Kansas

1962

The purpose of this investigation was to study the relationship of size of home community and the sex of the student to food preferences. Therefore, a check list of food items was developed and presented during the spring of 1962 to 240 selected students living in residence halls on the Kansas State University campus. The check list consisted of 70 food items, biographical information about the students, and two open-end questions. The hedonic rating scale was used for eliciting responses for the various food items. Out of 240 check lists distributed 89 per cent were returned. The lists were tabulated and analyzed using chi square by the Statistical Laboratory at Kansas State University.

The sample was composed of 120 females and 93 males, with all academic classifications represented. The average age of the students was between 18 and 20. Semesters of living in residence halls ranged from one semester to five or more. Eighty-three per cent of the respondents lived in Kansas and 17 per cent were from out of state. Students' home communities ranged in size from rural areas to cities of 100,000 or over.

When the relationship of sex to food preferences was studied, significant differences were obtained for 26 foods out of the 70 listed. Nineteen foods appeared to be liked better by females than by males, whereas men seemed to like two foods more than did women. Women had aversions for two food items, but men had none.

Significant differences were found for only three foods when size of home community was related to food preferences. Crab and artichokes were preferred by students residing in cities of 100,000 or over and in rural areas. Turkey was most popular with students from cities, and was disliked by those from towns of 2,500 and rural areas.

Meats and poultry were found to be the most popular food class when foods were ranked according to per cent "liked", "disliked", and "neither liked nor disliked". No distinct food groups were apparent as "disliked". "Disliked" foods were buttermilk, okra, egg plant, tongue, heart, sour cream, and hominy. Accessory foods and the lesser known vegetables and fruits were high in the "neither liked nor disliked" category.

Ten per cent of the students were found to be familiar with all 70 foods listed. Men were familiar with 56 per cent of the food items, whereas women had tried 44 per cent. Fifty-four per cent of the foods had never been tried by at least one student. Slight differences were observed when comparing foods "never eaten" by males and females.