HIGH SCHOOL STUDENT'S' STATED ENTREE DECISIONS AS A FORECASTING TOOL

by

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INTRODUCTION

The largest single foodservice operation in the United States is the National School Lunch Program, serving approximately twenty-five million students per day (1). Low participation has been cited as a major problem of the program, especially among high school students (2-7). Currently, 80 per cent of the nation's children have access to the school lunch program while only 50 per cent of these children participate in the program (1). Law et al. (8) reported that programs managed by those who are alert to teen-agers' needs and preferences have relatively high participation rates. Some high schools operate with an "open campus" policy, allowing students to leave the campus during the lunch period if they choose. Forecasting the number of students who will eat in the school cafeteria and the foods they will choose, if a selective menu is offered, presents a challenge for school foodservice directors and managers.

The overall objective of this research was to assess the reliability of two methods of measuring food preferences for forecasting high school students' actual entree choices from a selective school lunch menu. More specifically, the objectives were:

(a) to study stated choices for entree or main dish items by asking respondents to indicate their selections among pairs of entree items on a printed questionnaire;

(b) to study stated choices for entree items by asking respondents to indicate their selections among pairs of entree items after viewing slides of the various entrees;

(c) to study actual selection data from records of entrees chosen from cafeteria serving lines and to compare actual selection data

with stated selection data collected using the questionnaire and slide approaches;

(d) to compare reliability of the two approaches for studying stated choices as predictors of actual behavior;

(e) to study biographical data of respondents, including classification or grade level; size of childhood community; number of communities lived in; and number of semesters at the high school; and

(f) to study students' attitudes toward the high school foodservice including such factors as lunchroom environment and quality of food served.

This study was an extension of the research of college students' entree choices by Johnson (9). The method for studying preferences and selections was adapted from her study. However, in this research, the population studied was younger; high school students were the participants. Also, Johnson used only the printed questionnaire to study preferences and selection decisions. The use of visual stimuli was an additional variable in this study. It was hypothesized that more accurate preference and selection data would result if participants viewed pictures of the foods prior to making decisions. Literature reviewed relative to the study included: background and legislative development of school foodservice, current approaches, nutrient contribution, participation in school lunch programs, student involvement projects, food preferences, forecasting, and visual perception concepts.

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REVIEW OF LITERATURE

School Foodservice

Background and Legislative Developments

School feeding programs increasingly are viewed as important contributors to the health and well being of children and, through this contribution, to their performance at school (10). School lunches were first served in the United States during the latter part of the nineteenth century (11). Prior to the 1920's, there were limited school lunch programs in metropolitan areas such as Boston, New York, and Philadelphia. Although the need for serving a nutritious lunch was recognized by many, most educators in the 1920 period considered the high school lunchroom a necessary evil, as students had to be fed during the one session day (12).

Efforts were made in the early 1900's to provide means of bringing foods from home or preparation of foods at school. Public funds generally were not available for these purposes. School oriented associations, interested groups, and county extension personnel developed the school lunch movement during the early 1900's. City-wide lunch programs began to appear as early as 1911, followed in 1921 by the passage of the first state school laws (11).

Federal assistance to the school lunch program was initiated in 1933, when the Reconstruction Finance Corporation provided loans to several communities in Missouri to pay labor costs of preparing and serving school lunches. By the end of 1934, this type of assistance was being provided in thirty-nine states through the Civil Works Administration and the Federal Emergency Relief Administration. Legislation was passed in Congress in 1935

enabling the federal government to give added assistance to school food-service programs in the form of surplus commodities (13).

The war years spotlighted some important facts about nutrition. One third of all the men classified as unfit for military duty were rejected because of nutritional deficiencies. Moreover, many women were leaving their homes to accept employment during war time. This increased the need in many localities for school foodservice programs which provided midday meals for children of working mothers (11).

Flanagan (14) reflected that the role of the school lunch program in contributing to the health and well being of the nation's children was becoming increasingly important in the early 1940's. This realization of the positive aspects of the school lunch program became an added thrust to the passage of the National School Lunch Act (14).

> It is hereby declared to be the policy of Congress, as a measure of national security, to safeguard the health and well being of the nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other food, by assisting the States, through grants-in-aid and other means, in providing an adequate supply of food and other facilities for the establishment, maintenance, operation and expansion of nonprofit school lunch programs (15).

Milk programs have been a significant component of the school food-service program. These programs were sponsored in such areas as Chicago and Boston as early as 1938 and were known as "penny milk" programs. Through the milk programs, the use of fluid milk was encouraged by selling it at a reduced price. These programs provided for federal reimbursements to milk producers and distributors (11).

A 1956 survey in the schools in St. Louis, Missouri, conducted by the Agricultural Marketing Service showed that average daily milk consumption

per pupil in elementary schools rose 50 per cent after the special milk program was initiated (12). The Child Nutrition Act of 1966 (16) provided funds to initiate new programs. The continuation of the Special Milk Program was included under this act.

In May of 1970, Congress passed legislation concerning child nutrition programs. This legislation stated that all children in need of food shall be served free or reduced price meals at school. Funds were made available to the Secretary of Agriculture, as an amendment to Section 6 of the National School Lunch Act, up to 1 per cent of the funds provided for carrying out programs under the National School Lunch Act and Child Nutrition Acts for these purposes and for conducting surveys and studies of the need for such programs. Priority was given to projects that were regional or national in scope (17). Public Law 91-248 of 1970 (18) assisted children of low income families. The law stated that every child from a low income home had the right to have a meal at school. This legislation was a landmark in the development of school foodservice. In 1972 it was estimated that 84 per cent of those in need of free lunches were receiving them (13).

Public Law 93-150 of 1973 (19) increased reimbursement from eight to ten cents with an average of forty-five cents. This law made provision for an escalator clause, so that USDA would review rising food costs and assign reimbursement in relation to higher costs.

National concern over plate waste has increased greatly. In recognition of this concern, Public Law 94-105 of 1975 (20) requires that students in senior high schools participating in the National School Lunch Program not be required to accept offered foods which they do not intend to consume.

The proposed regulations (21) stated that senior high school students shall be offered all five food items comprising the full Type A lunch and must choose at least three of these foods items in order for that lunch to be eligible for federal reimbursement. Further, the intent of Congress is reflected in the proposed regulations that state if a student chooses less than the complete Type A lunch, the student would be expected to pay the established price of the lunch; and the amount of reimbursement made to any such school for such a lunch would not be affected.

Current Approaches

Evaluation of the usefulness and adaptability of new products and concepts for possible implementation in child nutrition programs has been recommended as a key focus for USDA (22). Some school foodservice operations, in an effort to solve operational difficulties, use prepared or partially prepared foods. Convenience foods include foods that do not require basic cooking. Howard (23) cites the use of disposables as another aid to some school foodservice programs.

Other innovations in child feeding are not technical advances entirely, but have contributed to facilitating foodservice in no-program schools by cutting costs or adding convenience to the system. The USDA and various universities have worked on several "engineered" or alternate foods, of which the most promising appears to be textured vegetable protein (24).

USDA Food and Nutrition Service has approved the use of canned lunches in "hard to reach" schools and schools without preparation facilities. In this approach, institution- or individual-sized cans are purchased and heated unopened. To meet specifications for the Type A lunch, milk, bread and butter, a vegetable and fresh fruit are added to the meal. This

"cup-can" program was first attempted successfully in Philadelphia parochial schools (25).

"Airline lunches" have been a more recent development in school feeding. This method consists of a commercially prepared, individual sized, frozen package containing meat and two vegetables and/or fruits. To complete Type A requirements, bread and butter and milk are added (24).

Other projects have been concerned with methods to improve the operation and efficiency of child nutrition programs. In the Shawnee Mission, Kansas school system, computer-assistance was introduced to ease purchasing and preparation tasks. Raskin (26) reported advantages in using the computer as speed, accuracy, and assurance that meals meet Type A requirements.

Nutrient Contribution

School lunch menus qualifying for federal reimbursement have followed a Type A pattern based on the four food groups (27). The Type A pattern is designed to provide approximately one-third of the recommended dietary allowances for major nutrients and calories for children 9 to 12 years old (28).

Several studies have been reported on the nutrient content of Type A school lunches. Laboratory analyses of the nutritional content of lunches from a nationwide sample of 300 schools in the fall of 1966 showed that on the average, all lunches served met the nutritional goal of one-third the recommended dietary allowances for all nutrients except iron and magnesium. However, calories tended to be below the nutritional goals and high levels of fat (over 40 per cent of total calories) were found. Vitamin A and carotene data presented the greatest regional differences, e.g., eastern

schools frequently served foods rich in Vitamin A. Frequent use of legumes in the western region probably accounted for slightly higher thiamin levels in that area (29-34). In the New York study of school feeding programs (10), school lunches provided significantly more protein, calcium, Vitamin A, thiamin, riboflavin, niacin, and ascorbic acid than did lunches from home. In a survey of school lunches conducted by Metzinger, Unglaub, and Moore (35) in Louisiana using a 36-hour dietary recall, it was found that the proportion of calories from fat was 54 per cent.

Since the Type A pattern approximates, but does not assure that the nutritional goal of the meal will be met, the USDA Food and Nutrition Service contracted with Colorado State University to develop nutrient standard menu (NSM) planning methods as an alternate to the Type A lunch. Nutrient standard menus would require minimum levels of nutrients to be presented in the meal. Frey et al. (27) noted the following advantages of nutrient standard menus over the Type A pattern: (a) greater menu flexibility, (b) increased menu acceptability and less waste, (c) crediting nutrient content in regular and fortified foods, (d) greater assurance that menus meet nutrient requirements; and (e) reduced cost.

In a study conducted by Harper et al. (36) in which Type A and nutrient standard methods in menu planning were compared, twenty-nine school lunch menu planners representing three regions of the USDA's Food and Nutrition Service participated. Two-thirds of the menu planners thought that the menus' acceptability was enhanced by greater freedom in item selection and number of items served.

Participation in School Lunch Programs

Because of the nutritional benefits of the school lunch program to dietary intakes of children, participation in school lunch has been the thrust of several projects (37,38). Doucette (39) reported that low participation is a key problem of the school lunch program. Therefore, identification of the factors affecting participation is necessary. Involvement of students in menu planning (4), program flexibility via the use of menu choices within the Type A lunch pattern (40,41), and treating students as customers (42) have been cited as positive approaches to increasing participation in high school lunch programs. Researchers (43,44) have identified the following as influencing school lunch participation: quality of food served, portion sizes, amount of time allowed for lunch, lunchroom environment, and friendliness of personnel.

There are certain factors, however, inherent in any school situation, which remain fixed. Ottman (45) reported that certain uncontrollable factors affecting school lunch participation included average daily attendance, size and type of community, and number of students riding buses to school. He found that percentage of participation in the school lunch program tended to decrease as the size of the school increased; students in schools in rural areas participated more frequently in contrast to those in urban and industrial areas; and schools with more than the average number of students riding buses showed somewhat higher participation rates than other schools.

Koskie (44) cited participation of adolescents in high school as low in comparison to the participation of elementary school children and concluded that this may be a result of adolescents' increased need for

independence. One of the ways a teen-ager may assert himself/herself is through selection of foods.

Law et al. (8) reported that when students were asked directly what they disliked about school lunch, waiting in line was listed more than any other factor. The Massachusetts survey of 1969 (46) also revealed that waiting too long in line to get lunch and then having to eat quickly were reasons why students in the study did not purchase the Type A lunch. In the Louisiana study of attitudes of tenth grade students and their parents toward school lunch programs offering one or more menu patterns, more students in schools offering one menu said they did not like to wait in line for lunch than did students in schools offering a choice. Length of time in line was not specified, however (43).

In the USDA study on high school participation in Child Nutrition Programs (47), twenty secondary schools throughout the country were selected. The regional offices of the USDA Food and Nutrition Service worked with state agencies to choose four schools in each region to participate. Two of the schools in each region were high participation schools while the other two were low participation schools.

Two-thirds of all low participation schools surveyed operated within a "closed campus" setting, in which students were not allowed off school grounds during lunch period. Low participation by students in closed campus high schools suggested a strong desire by students to be treated as customers, not as part of a captive audience. In the average high participation school, 82 per cent of the students surveyed believed that they should have a part in planning the menu. Also, food quality was average or better, a la carte items were limited, and the Type A lunch was merchandised well.

Choices in the style of lunch and in the components of the lunch were available. In the average low participation school, 76 per cent of the students felt that they should have a part in planning menus for school foodservice. Food quality was average to good, a la carte items were emphasized, and the Type A lunch was not merchandised or promoted. Few choices were available either in style of lunches or in the components of the lunch (47).

Indifferent or negative attitudes held by faculty and administrators also was found to influence participation. All of the administrators polled in the high participation schools had very positive feelings about the school lunch program and its benefits, while only two of the ten low participation school administrators were positive in their feelings toward the program (47).

Garrett (48) studied the influence of student selected menus on school lunch participation, plate waste, and attitudes toward school foodservice of sixth grade students in three Kansas City elementary schools. She concluded that involvement of students in menu planning and individualizing the program to the preferences of children had a beneficial effect on participation. She cited tailoring menus to suit student preferences as a means of reducing plate waste.

A project in a Georgia School System, Project SMILE, demonstrated that a team approach in improving menu choice, food quality, and lunchroom environment had a positive effect on participation, consumption, and student behavior. Participation increased 15 per cent for the project year and overall school lunch participation for that period was 83 per cent of student attendance. Food consumption increased 5 per cent; and improvements in lunchroom behavior were reported (49).

Martineau (50) asserted that the attitudes that students hold for or against the school lunch may be expected to influence their decisions and their food behavior. She asserted that the way students perceive and respond to the school lunch situation ought to be an area of prime interest to school lunch managers, school administrators, parents, and teachers.

Student Involvement Projects

Student feedback has been identified as necessary to an effective school foodservice program (51,52). Student food committees have been implemented by some school foodservices as a mechanism for student input (51). For example, in Milwaukee, the school lunch committee of the Inter-High Council advises the foodservice director and staff. A committee taste panel selected food items to be purchased. The food products selected by the student committee were those actually ordered from purveyors. Students were asked to judge food on the basis of color, flavor, and texture, and to consider price in making decisions (52).

At a high school in Fort Lauderdale, Florida, students were involved through participation in committee work also. According to Lewis (53) the school foodservice committee was made up of the principal, the cafeteria manager, a teacher, a guidance counselor, a parent, and a student elected by the Inter-Club Council. The student representative also served as chairperson of a student cafeteria committee made up of representatives from each grade level. Committee ideas and recommendations were sent to the principal for consideration and possible implementation (53).

Food Preferences

The planning of a feeding program for a particular group requires knowledge of the patterns of eating behavior of the members of the group to be served. Preferences follow certain trends reflecting influences of sensory factors, family tradition, and cultural patterns, education, socio-economic level, and availability of food. Pilgrim (54) reported preference to be an important indicator of food consumption and an expression of the degree of like or dislike of a specific food item. He purported that preference not only predicts the average amount of food consumed in certain situations, but also the proportion of persons accepting a food.

A questionnaire checklist was the strategy of a study by Sun (55) of food preferences of elementary school children. She found that the food items most liked by the students were fried chicken and do-it-yourself hamburgers. Hot dogs, spaghetti, and meat balls also were liked. The vegetable category comprised most disliked items; buttered peas were disliked by the highest percentage of students.

In an effort to give more consideration to the individuality of students, Kinzell (56) conducted a study among 137 third, fourth, and fifth grade students in Seattle's Greenlake Elementary school. The objective was to compare students' appetites (amounts of foods that students desired) with portion sizes contained in a packaged Type A lunch system. Two packaged Type A sizes were offered to insure that students obtain a lunch that met their individual requirements as well as those of the Type A lunch pattern. A questionnaire allowed students to show amounts of foods they desired as compared to standard portions served. Of the two different sizes offered, the larger lunch contained larger portions of foods that

students wanted more of and smaller portions of foods that students wanted less of, but that still met Type A lunch requirements. The larger lunch sold for a slightly higher price. Conclusions included the following: (a) amounts of foods students desired were consistent when these foods were served on different days; (b) amounts of foods students desired could be quantified by using a diagram for evaluating standard portion sizes; (c) boys consistently wanted larger food portions than girls and students who wanted larger lunches wanted larger servings of the entree, roll, and/or dessert; (d) students often wanted the same size or a smaller size serving of vegetables and salads; and (e) generally, the amount of fruit served was acceptable.

Kilroy (57) studied comparative methods of preparation and acceptance of thirty school lunch menu items. Acceptance check lists were distributed to four schools in East Baton Rouge, Louisiana. Information was collected on ten main dishes and twenty-one vegetables. Kilroy found that most main dishes were accepted with the exception of meat loaf in one of the schools studied. Only two vegetables were found to be acceptable to students: potatoes, regardless of preparation method, and buttered corn.

Robin (58) maintained that teenage tastes are definitely an element in low school lunch participation, and noted that limited research has been done in the school lunch program, particularly in the area of participation and how it relates to food habits. Crimmins (37) identified high school as the level in which there is a marked decline in the number of Type A lunches purchased when compared with junior high school.

Eating habits of college students comprised many of the early results regarding food preferences. Stasch, Johnson, and Spangler (59) administered

a questionnaire to 171 men and 223 women at New Mexico State University. The purpose of the study was to obtain information about students' backgrounds and eating practices relating to breakfast, foods high in ascorbic acid, snacks, and food preferences. A significant relationship was found between the mother of a family and whether students liked to eat breakfast or not. Preferred lunch and dinner items included steak, ice cream, rolls, and milk.

Hall and Hall (60) conducted a study in which 693 students in three universities were given a mimeographed list of 150 foods arranged in alphabetical order. Each student was instructed to check those foods which he/she disliked so much that they would refuse to eat them. For each food checked, the student was instructed to indicate the reason for disliking it. Students were asked to place question marks before those foods with which they were not familiar or had never had an opportunity to taste. The most universally disliked food of those listed was buttermilk. Organ meats and alcoholic beverages also were disliked by a relatively large proportion of the students. Some of the foods which ranked high as being disliked also ranked high as being unfamiliar. Women students had more food aversions than men; however, women were familiar with more foods than men.

Johnson's (9) research focused on a comparison of entree selections from a residence hall cafeteria line and students' stated choices on a research instrument listing entree selections that were included on these menus. Actual data concerning students' entree item choices were collected by tabulating the number of portions of each entree served over an eight-week period. Students also were asked to indicate what they would select if offered two entree choices and how certain they were of this choice.

Preference findings indicated that steak or cutlet, pork chop and ham, fried and roasted poultry, hamburger sandwich, hot and cold sandwiches, and Italian and Mexican ethnic dishes were preferred more than were ground meat items, specialty poultry items, fried and baked fish, salad plates, casseroles, creamed and extended main dishes, and other entrees. Items liked by the majority of the respondents were steak items, sandwiches, and Mexican or Italian ethnic items. Items disliked by a third or more of the respondents included non-meat entrees, salad plates, and ambiguously named items (e.g., plum delicious plate, brighten a blustery day plate). Many of the same foods were included in both the disliked and unfamiliar categories (9).

Mean certainty scores reflected greater uncertainty for items selected by smaller percentages of the students. Similar mean certainty scores for individual selections were obtained when two preferred items were presented together and when two items were unfamiliar to a large number of respondents. Comparison of mean certainty scores with preference data indicated that students were more certain in selecting highly preferred items when paired with less known items (9).

Preferences of armed service personnel have been the focus of a number of food habits studies. Kamen (61) investigated refusal and non-consumption of food items in the army. This research gave evidence that choices of food from the serving line were more indicative of food preference than consumption indexes according to plate waste. Questionnaires were developed to survey food preferences of the servicemen. Soldiers in two dining halls, or one consolidated hall, were surveyed each day for all three meals. Some were resurveyed during the last half of the study to obtain

estimates of reliability. The questionnaire sought three types of information: (a) whether a soldier took or did not take each food from the serving line; (b) if he took the food, how much of the food he ate; and (c) if he did not take, or did not eat all of what he took, why not?

The Quartermaster Food and Container Institute for the Armed Forces (62) conducted a study of the food preferences of army personnel in which soldiers were asked to indicate their like or dislike using a nine-point scale. Breads were highly preferred as were fruits and desserts; vegetables and soup were least preferred. Fish, lamb, meat combinations, and liver were the least liked meats; fowl, pork, ham, and ground meat were well liked.

Forecasting

According to Johnson, Kast and Rosenzweig (63), forecasting is the foundation for long-range planning and is an attempt to make the future environment less uncertain. High school lunch programs operating within an "open campus" policy, allowing students to leave the campus during the lunch period if they choose, imposes constraints on foodservice production planning. Hubbard (64) stressed that assumptions in forecasting depend on circumstances surrounding the operation, and that menu census probably has the greatest effect on production demand.

Uhrich and Noort (65) explained that production demand forecasting is the result of the interaction between two basic elements: population forecast and food preference prediction. Analysis of past census and preference data may provide information for accurate projection of current demand. McManis (66) cited the following factors as considerations in systematic

forecasting in a college residence hall foodservice: popularity of an item, meal count records, weather, events, sex, previous production records, plate waste studies, specifications, portion sizes, purchasing units, recipe batch sizes, and pan sizes.

Uhrich and Noort (65) described three methods of forecasting; the first is the guess method, which is probably the oldest, least expensive, and most common. This method tends to reflect the biases and knowledge of the person who is making the estimate. McManis (66) also stressed that an objective view on the part of a foodservice manager is an important rule of forecasting. Schmitz (67) concluded that neither the tally or educated guessing methods proved feasible in obtaining an accurate forecast.

A second type of forecasting is internal analysis of individual and cumulative data. This method requires the maintenance of accurate records to predict production demand, in contrast to the guess method. Two shortcomings of this method are that it is time-consuming and does not take into consideration many variables that may affect demand (67).

Statistical techniques compose the third type of forecasting. These techniques require technical skills and may be expensive and time consuming. Included in this category are the moving average techniques and exponential smoothing models. These methods can supplement other methods in analyzing a specific forecasting problem (67).

Johnson (9) studied the use of stated entree data as a predictor of actual entree selections from lunch and dinner in a college residence hall foodservice. She found that in the majority of cases the item chosen by the greatest percentage of students on the research instrument also was selected more often from the cafeteria lines. Although stated selections

often gave an indication of the more popular of the two choices, analysis indicated they did not provide accurate statistical data for forecasting. Students tended to be more uncertain in choices where there was a larger disparity between actual and stated choices.

Visual Perception Concepts

Students of all ages have been exposed to visual media, most importantly television. With television there is immediate and direct reaction, where with the printed word there is a delay between intake and translation of a series of related words that require time to process (68). The main object of visual literacy is to give new dimensions to each individual's perceptions and expression, and not substitute one dimension for another (69).

Gibson (70) pointed out that perception is more than interpreting sensory messages because constant interaction between the organism and the environment is involved. Murch (71) asserted that the psychology of perception involves the study of the way in which information observed relates to the environment or the way in which information is gathered and interpreted by an observer.

A critical factor affecting the process of perception is the time available for this process to occur. Studies have suggested that events preceding the stimulus presentation can restrict perception time: the initiation of perceptual processes can be delayed if two stimuli occur in close succession; perception of the second stimuli may be delayed until the first is perceived (72). In short term memory experiments with sequential presentations, the perception time for any individual item may be restricted

by the preceding and succeeding item of the series (72). Most short term memory experiments in which rate of objects viewed by subjects was varied showed that faster rates, which reduce time available for perception, produce lower accuracy (72).

Noton and Stark (73) stated that eye movements play an important role in visual perception. Eye movements are necessary for a physiological reason. Because detailed visual information can be obtained only through the fovea, the eyes must move in order to provide information about objects that are to be inspected in any detail.

Miller (74) showed that visual acuity decreased when subjects' eyes had to follow a moving object as contrasted to a stationary object. This effect was found to become magnified by increasing the speed of the object, and by longer exposure of the subject to the object. While moving pictures stimulate subjects more than a series of stills, still pictures have the advantage that the subject can view them at his/her own pace; it is also simple to refer to previously viewed pictures.

Konz (75) emphasized that visual obstructions should be removed in order to maximize viewing time. He also stated that in work situations, operators should be faced directly toward the object viewed and serviced. Operator paced stations are recommended, contrasted by machine paced stations, so that the operator may vary viewing time in relation to the viewing requirements.

METHODOLOGY

Site of the Study

The study was conducted at a high school with an approximate enrollment of 1,250 located in a medium-sized midwestern city. Total enrollment of students was divided into three classes (sophomores, juniors, and seniors) with approximately equal number of students in each classification. The high school operates with an "open campus" policy, allowing students to leave the campus during the lunch period if they choose. Also, students in the vocational-technical curriculum leave the campus after attending morning classes at the high school.

Objectives for the school foodservice are as follows: to provide students with one-third of the nutritional requirements needed daily, to promote nutrition education, and to promote student involvement in school foodservice via the food committee. The food committee at the high school is composed of one student from each grade level, chosen by the head of the food committee who is a student council member.

Lunch is the only meal provided at the high school and is served Monday through Friday from 11:20 a.m. to 1:10 p.m. Within this time period, students are scheduled for lunch from 11:20 a.m. to 12:15 p.m. or from 12:20 p.m. to 1:10 p.m.

Menus for the school lunch foodservice are centrally planned by the district foodservice director four weeks in advance of service. The cook managers at the various schools in the district receive copies of the tentative menu. They review the menus and make recommendations before menus are finalized.

The high school offers the Type A meal pattern. The Type A lunch, if consumed, supplies one-third to one-half of a child's daily food needs (28). Students may select a la carte items in addition to, or independent of, the Type A lunch, both of which are available from two serving lines. Two luncheon entrees are planned for the meal service period daily. Additions to the menu result when there is an inadequate amount of a planned entree.

Approval for the study was granted by the district foodservice director and the high school principal. The foodservice director and the cook manager were consulted prior to the study and their suggestions were sought throughout the study.

Types of Data Collected

Several types of data were needed to fulfill the objectives of this study. Data collection included:

(a) actual data of entrees selected from cafeteria serving lines for thirty school days;

(b) stated entree choices of a random sample of students (Approach I. Questionnaire Approach), using a printed questionnaire on which luncheon entree selections were indicated for each of thirty pairs of entrees served on the school lunch menus during the period of collection of actual selection data;

(c) stated choices of a random sample of students (Approach II. Slide Approach), using the same thirty pairs of entrees as in Approach I, after they viewed slides of each of the entrees;

In addition, two other types of data were collected from students participating in both of the approaches:

(d) students' perceptions of the high school foodservice program, including food-related and nonfood-related attitudes; and

(e) biographical information including: size of childhood community; number of communities, cities, or towns lived in; and number of semesters in attendance at the high school.

Data were collected during the spring semester, 1975, for the questionnaire approach and during the fall 1975, for the slide approach.

Approach I. Questionnaire Approach

Development of the Instrument. The instrument for the questionnaire approach of the study was comprised of two parts. Part I consisted of a listing of thirty choices of luncheon entrees actually served on the high school luncheon menus (Appendix A) and students were asked for three responses regarding each choice (instrument is in Appendix B). To delimit the study, only entree items were included because they comprise the most costly part of the menu; also, it was hypothesized that the entree is a key influence to the overall reaction to meal acceptability. Respondents were asked to indicate: (a) a choice between two luncheon entree items, designated as entree A and entree B; (b) their degree of certainty of the choice using a three-point scale, A=very sure, B=fairly sure, and C=not sure, and (c) their like or dislike for each entree item using a four-point scale: like, will eat, dislike and don't know. The method was adapted from that of Johnson (9) in her study of college students' selections.

Each pair of entrees was numbered sequentially corresponding to the order in which the entrees were served on the menus at the high school.

Horizontal lines separated each choice to increase the readability of the printed instrument. An introduction page was developed which included the purpose of the study and instructions for completion of the instrument (Appendix B). An example was printed at the top of each page in Part I which indicated how to complete the choice frames of the instrument so that respondents could refer to it as needed. The following is an example of the choice frames in the printed instrument:

Choice #1

Check your choice (A or B)	LIKE	WILL EAT	DISLIKE	DON'T KNOW
_____ A Beef Stew	1	2	3	4
_____ B Baked Ham	1	2	3	4

How sure are you?

A = very sure B = fairly sure C = not sure

Part II of the instrument consisted of biographical questions. Data asked for included: classification or grade level; size of childhood community; number of communities, cities, or towns lived in; and number of semesters in attendance at the high school. Also, attitude data were collected pertaining to lunchroom environment, opinion of food quality, and desired involvement in school foodservice. Biographical and attitude questions were adapted from studies conducted by Garrett (48) and Ingalsbe (76).

The members of the food committee at the high school were asked to complete the instrument before it was distributed to the study sample to

determine if directions were clearly stated. Minor editorial changes were made in Part II of the instrument following suggestions of this group.

Selection of the Sample. A random sample of 382 students (approximately 30 per cent of the student population) was selected to complete the questionnaire approach of the study. To insure that the sample chosen was representative of the student population at the high school, the sample was stratified proportionally by student grade classification (Table 1).

A student directory containing students' names, phone numbers, and addresses was obtained from the high school principal. The student directory listed students' names in alphabetical order and then listed the classification of each student next to their name: 10 = sophomore, 11 = junior, and 12 = senior. Students were numbered consecutively within each classification. A list of random numbers was generated with a computer program and students' names corresponding to these numbers were selected for distribution of the questionnaire.

Distribution of the Instrument. Initially, the printed instruments were distributed directly to the students at the high school. Since all students are required to enroll in an English class at each grade level, permission was granted to distribute questionnaires during those class periods. Class schedules were reviewed to determine during which class periods the students in the sample attended English class.

The teachers were given a page (Appendix C) briefly describing the study and explaining the introduction of the instruments to the students one week prior to distribution of the printed instruments. For purposes of follow-up, the printed instruments were numbered with the identification

Table 1: Comparison of study sample and high school student body population

	questionnaire approach[1]				slide approach[2]			
	high school population		study sample[3]		high school population		study sample[3]	
	N	%	N	%	N	%	N	%
classification:								
sophomore	445	35.9	143	37.4	506	38.1	42	38.0
junior	400	32.2	123	32.2	426	32.0	37	33.0
senior	396	31.9	116	30.4	397	29.9	32	29.0
total	1241	100.0	382	100.0	1329	100.0	111	100.0
sex:								
girls	578	46.6	179	46.9	653	49.1	53	47.7
boys	663	53.4	203	53.1	676	50.9	58	52.3

[1]Data collected Spring 1975.

[2]Data collected Fall 1975.

[3]Sample stratified by student classification.

number previously assigned to each student in the sample. Instructions on the cover page of the instrument indicated that students were to place completed questionnaires in a box marked SCHOOL FOODSERVICE STUDY located in the principal's office. A second identical instrument, a cover letter (Appendix D), and a stamped, return envelope were delivered to the non-respondents four weeks after the initial delivery. Total overall return was 252 or 66 per cent.

Approach II. Slide Approach

Development of the Instrument and Data Collection. The printed instrument for the slide approach of the study (Appendix E) was comprised of two parts. Part I consisted of a listing of the same thirty pairs of luncheon entrees from actual school lunch menus as in the questionnaire approach and each participant was asked for the same three responses regarding each choice (selection of entree, certainty of choice, and preference for items listed). However, respondents were asked to indicate their choice after viewing color slides of the entrees. Each choice on the printed instrument which accompanied the slides was kept separate from other choices by a combination of vertical and horizontal lines or "frames," to increase the readability of the instrument.

Each day of the six week period during which actual selection data were collected, pictures were taken of the two choices of luncheon entree items served in the high school cafeteria. Four sets of slides were produced. The slide sets were placed in slide trays in the order that entrees were served during the six week cycle in the high school cafeteria and corresponding to the order on the printed instrument accompanying the

slides. A series of five slides was set up for each choice, as illustrated in Figure 1, starting with Choice #1. Choice #2 would then be ready for viewing by the respondent. This process continued throughout the thirty choices of luncheon entree items.

It was hypothesized that by introducing entree B before entree A in a random number of cases, the halo effect of introducing entree A first in all cases would tend to be eliminated. Using a random selection process, it was determined which choices would show entree A as first and which choices would show entree B as first. In twelve choices entree B was shown first followed by entree A, and in eighteen choices entree A was shown first followed by entree B.

To facilitate viewing of the slides, the slide sets were placed on four self-paced pushbutton controlled rear screen projectors[1] in individual study carrells at the high school library. Four respondents could view the slides and complete the instrument within approximately the same time period. Part II of the instrument for the slide approach consisted of the same biographical and attitude items as in the questionnaire approach.

A pilot study was conducted for development of data collection techniques. Permission was granted to conduct the pilot study during class hours in the independent study carrell area of the library. The participants were asked to come to the high school library to view the slides of the entrees. Student library monitors received a list of four participants every twenty minutes and located the students by checking their class schedules. The method for enlisting student participation was revised for

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[1]Caramate, Singer Audiovisual Products, Model SP.

THIS BOOK CONTAINS NUMEROUS PAGES THAT WERE BOUND WITHOUT PAGE NUMBERS.

THIS IS AS RECEIVED FROM CUSTOMER.

Slide 1: Choice Marker

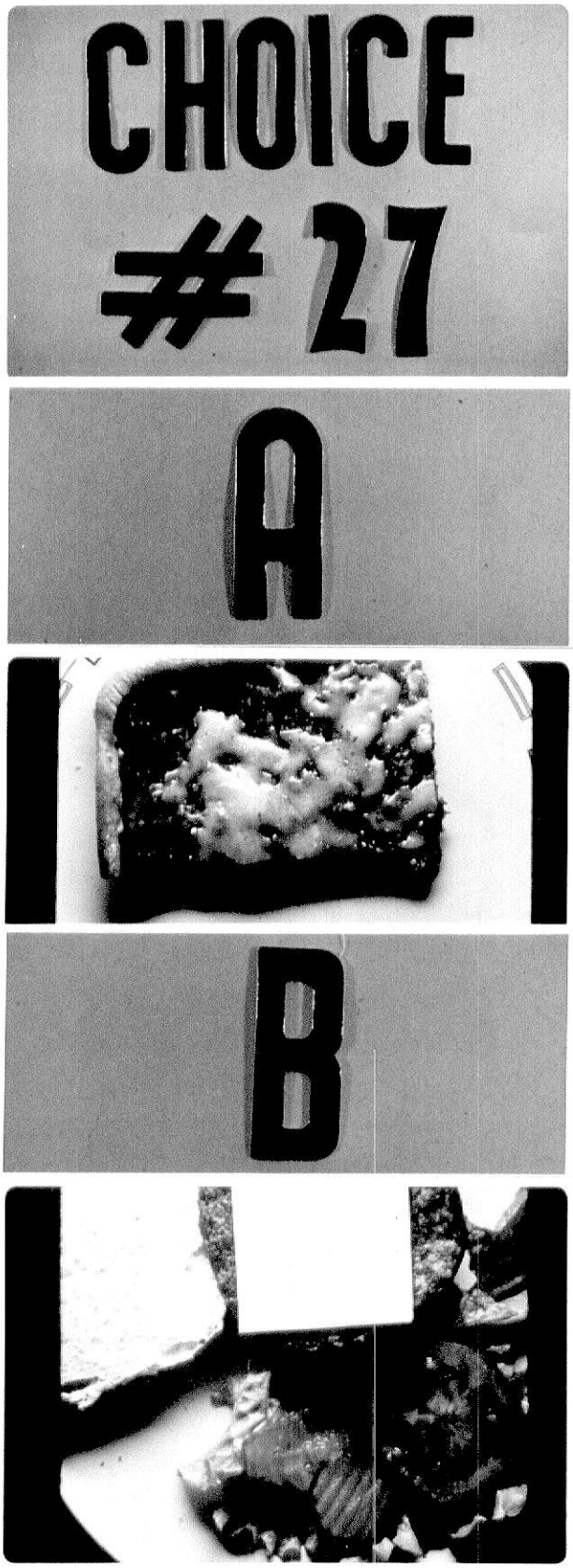
Slide 2: First Selection Marker

Slide 3: First Entree Picture

Slide 4: Second Selection Marker

Slide 5: Second Entree Picture

Figure 1. Series of slides for each of thirty choices of entrees.


CHOICE
#27
A
B

the actual data collection. It was decided the approach used in the pilot study was somewhat disruptive to classes.

The students in the study sample received a letter stating the purpose of the study and asking for their participation (Appendix F). Respondents then were contacted by telephone to make appointments to view the slides in the high school library during a free hour or before or after school. All of the eleven alternates were used because of scheduling conflicts with the other students.

Student employees assisted in data collection in the slide approach. A training session was held with the student employees to orient them to the study and to instruct them concerning data collection procedures. Each assistant was given a letter describing the purpose of the study and instructions for administering the slide approach of the study (Appendix G).

Selection of the Sample. A random sample of 111 students were selected to participate in the slide approach of the study. The desired sample size was 100 students; the additional eleven students were selected as alternates in the event some of the students in the sample would be unavailable to participate (Table 1).

A list of random numbers was generated with a computer program and students' names corresponding to those numbers were determined as in the questionnaire approach. Duplicate numbers representing the same student as a possible participant in both approaches of the study were not used. Approximately equal numbers of each student classification were chosen to participate in the slide approach.

Collection of Actual Selection Data

An orientation session was held with cafeteria personnel to acquaint them with the project and instruct them concerning the use of single key tabulators. Two single key tabulators, one tabulator for each entree offered, were placed on each of the two cafeteria lines to record the number of students choosing each of the two entree items offered during the meal service period. At the end of the meal, the cumulative number of selections for each entree item was recorded on a form (Appendix H).

RESULTS AND DISCUSSION

Description of Sample

Table 2 summarizes demographic data for students in samples for both the questionnaire and slide approaches of the study. Relative distribution among the three classes of students (sophomores, juniors, seniors) was similar in both approaches; although proportionally, there were a few more females in the slide approach.

The majority of students indicated that they had lived in urban communities most of their lives; although community size was not specified. However, a large majority of students indicated they had been raised in the midwest; therefore, it was assumed that many students were from small and medium-sized cities, rather than large urban centers. Only a few students had lived in the northeast, southeast, and outside the United States most of their lives. About a third of students in both approaches indicated that they had lived in only one place, and an approximate third had lived in four or more places. Respondents were distributed among the three classifications (sophomores, juniors, and seniors) in proportions similar to the populations from which the samples were drawn (Table 3).

Preference Data

Preferences by Entree Types

Similar entrees were grouped into categories according to the classifications established by Shriwise (77). Three categories of the sixteen groupings were not used because items in these classifications were not served on the school lunch menu during the six week period of data

Table 2: Description of study samples

	questionnaire approach		slide approach	
	N[1]	%	N	%
student classification	249		100	
sophomore		37.4		38.0
junior		32.2		33.0
senior		30.4		29.0
sex	248		100	
female		49.2		55.0
male		50.8		45.0
community most of life	237		99	
urban area		76.8		78.8
rural area		23.2		21.2
number of different places lived	249		100	
1		30.5		35.0
2-3		42.2		30.0
4-6		17.3		20.0
more than 6		10.0		15.0
regional location most of life	239		91	
west		3.3		7.7
southwest		2.9		7.7
midwest		83.3		75.8
northeast		4.6		5.5
southeast		2.9		1.1
outside U.S.A.		2.9		2.2
number of semesters at this high school	248		100	
1-2		32.7		30.0
3-4		36.3		38.0
more than 4		31.0		32.0

[1] N varies slightly because of nonresponses.

Table 3: Comparison of study participants and high school student population

	questionnaire approach		slide approach	
classification	population (N=1241)	sample (N=249)	population (N=1329)	sample (N=100)
sophomore	35.9	35.3	38.1	38.0
junior	32.2	36.5	32.1	33.0
senior	31.9	28.1	29.9	29.0

collection. Table 4 is a compilation of the mean preference scores by category for the thirty-seven different entrees included on the instrument. Nine items were included more than once in the paired choices; e.g., on different menus, baked ham was paired with beef stew, fried shrimp, and corn dogs. Preference scores were similar for each response, however. The score in Table 4 is a mean derived from cumulative responses each time an item was listed on the instrument. A lower preference score indicates greater degree of "like" for an entree. Appendix I includes tables summarizing percentage responses of entree preferences.

The hot sandwich, hamburger sandwich, and Italian or Mexican main dishes were the entree categories most liked by the students (mean 1.75 or lower). Koskie (46) and Johnson (9) also found that sandwich items and Italian and Mexican ethnic entrees were well accepted. For most items in these categories, the preference scores were similar in both approaches; the difference in item scores between the two approaches was less than 0.2 for all except two items: beef taco pie and enchilada casserole. In each instance, the preference score was less positive in the slide approach.

Table 4: Mean preference scores for entree items by categories[1]

item	questionnaire mean s.d.	slide mean s.d.
03 beef: ground		
meat loaf	1.96±1.12	1.89±1.03
04 pork: chop or ham		
baked ham	1.64± .92	1.98±1.09
05 pork: other		
breaded pork cutlet	1.81±1.03	1.70± .98
06 poultry: fried or roast		
roast turkey and gravy	1.44± .77	2.25±1.08
fried chicken	1.47±1.41	1.53± .90
baked chicken	1.68±1.01	1.69± .94
08 fish: fried		
fried shrimp	1.70±1.01	1.73±1.09
fish cutlets	2.28±1.20	1.84±1.05
fish and chips	1.91±1.14	1.70±1.06
surfcakes on bun	2.46±1.18	2.52±1.25
fishwitch	2.00±1.09	1.95±1.16
09 fish: baked		
baked fish	2.14±1.18	2.04±1.11
10: salad plate		
cold cut assortment	1.55± .82	1.71± .94
ham salad	2.11±1.14	2.83±1.12
turkey salad	2.05±1.11	2.76±1.15
11: cold sandwich		
submarine sandwich	1.35± .76	1.50± .81
egg salad on bun	2.43±1.23	2.87±1.18

[1]Entree categories specified by Shriwise (77).

Scale = 1, like; 2, will eat; 3, don't know; 4, dislike.

Table 4: (cont.)

item	questionnaire mean s.d.	slide mean s.d.
12: hot sandwich		
chilidog on bun	1.49± .81	1.55± .82
BBQ beef on bun	1.57± .88	1.55± .73
pigs in blanket	1.44± .84	1.30± .57
corn dogs	1.68±1.00	1.70± .92
13: hamburger sandwich		
char-broiled hamburger	1.42± .77	1.47± .76
BBQ hamburger	1.58± .90	1.51± .83
cheeseburger	1.46± .86	1.44± .80
hamburger	1.36± .71	1.39± .74
14: casserole, creamed, extended main dishes		
beef noodle casserole	2.09±1.08	2.18±1.03
beef stew	1.89±1.04	2.19±1.08
macaroni and cheese	1.70±1.05	2.06±1.19
tuna noodle casserole	2.07±1.13	2.58±1.18
turkey tetrazzini	2.07±1.05	2.37±1.14
15: Italian, Mexican dishes		
pizza	1.35± .55	1.19± .62
chili and crackers	1.31± .71	1.42± .82
cavatini	1.83±1.04	1.56± .90
Mexican pie	1.36± .78	1.35± .77
taco pie	1.26± .71	1.42± .77
beef taco pie	1.36± .84	1.57± .90
enchilada casserole	1.62± .91	1.95±1.10
16: other main dishes		
vegetable soup	2.33±1.24	2.42±1.30

Baked ham, roast turkey and gravy, and macaroni and cheese were scored as well liked in the questionnaire approach but not in the slide approach; whereas, fish and chips and breaded pork cutlet were scored among most liked entrees only in the slide approach.

The entrees least liked by the students in the slide approach were ham salad, turkey salad, and egg salad on bun. However, in the questionnaire approach, scores were more positive for the three salad items. After viewing pictures of these items, the manner in which these foods were served in the school lunch apparently had a negative impact.

Pizza was the most preferred food in the slide approach (mean 1.19); while taco pie had the most positive score in the questionnaire approach (mean 1.26). Egg salad on bun was the least liked food in both approaches. Johnson's (9) findings corroborates these results; pizza was a well liked item in her study; salad plate items tended to be disliked.

The categories including many unpopular items were: fish, fried and baked; salad plates; and casseroles, creamed and extended main dishes. Johnson's (9) findings were similar to these data. Fried shrimp was the only item in the fish categories that was rated as well liked in both approaches, although as indicated above, fish and chips was a well liked item in the slide approach. Less positive responses preference scores were recorded in all casserole type items in the slide approach when compared to the questionnaire approach. Perhaps these are items that students may accept better at home than as served in the school lunch.

Liked, Disliked and Unfamiliar Entrees

Items were grouped in relation to preference responses. Tables 5 and 6 summarize entrees least liked (30 per cent or more of the respondents

Table 5: Entree items most liked, disliked, and unfamiliar to high school students (N = 252)

questionnaire approach					
items liked by 60% or more		items disliked by 30% or more		items unfamiliar to 5% or more	
item	% "like" responses	item	% "dislike" responses	item	% "don't know" responses
Italian pizza	86.1	egg salad on bun	34.2	turkey tetrazzini	15.0
taco pie	82.7	vegetable soup	32.5	Italian cavatini	10.4
chili and crackers	78.6	surfcakes on bun	31.4	surfcakes on bun	7.9
submarine sandwich	76.9			enchilada casserole	6.7
Mexican pie	76.7				
hamburger on bun	72.8				
fried chicken	72.5				
pigs in blanket	71.1				
cheeseburger	70.3				
char-broiled hamburger	69.5				
roast turkey and gravy	67.6				
chilidog on bun	64.7				
fried shrimp	63.7				
barbecued beef on bun	61.2				
barbecued hamburger	60.9				
macaroni and cheese	60.2				

Table 6: Entree items most liked, disliked, and unfamiliar to high school students (N = 100)

slide approach					
items liked by 60% or more		items disliked by 30% or more		items unfamiliar to 5% or more	
item	% "like" responses	item	% "dislike" responses	item	% "don't know" responses
Italian pizza	88.9	egg salad on bun	48.5	enchilada casserole	10.0
Mexican pie	77.8	ham salad on lettuce	43.5	roast turkey and gravy	9.1
pigs in blanket	73.8	turkey salad on lettuce	42.4	turkey tetrazzini	9.0
chili and crackers	71.7	tuna noodle casserole	36.8	ham salad	8.7
hamburger on bun	71.4	vegetable soup	36.7	surfcakes on bun	7.1
cheeseburger on bun	68.7	surfcakes on bun	36.4	baked chicken	6.1
taco pie	66.9			beef stew	5.1
fried chicken	65.8			tuna noodle casserole	5.1
car-broiled hamburger	64.0			taco pie	5.1
submarine sandwich	64.0			beef noodle casserole	5.1
Italian cavatini	64.0			turkey salad on lettuce	5.1
barbecued hamburger	64.0			barbecued beef on bun	5.0
fried shrimp	63.0				
fish and chips	60.0				

indicated dislike for the item), those liked by 60 per cent or more, and those unfamiliar to 5 per cent or more of the respondents.

Pizza was the entree item with the highest percentage of "like" responses of all items listed on the instruments in both approaches of the study. Chili, Mexican pie, hamburger on bun, fried chicken, and pigs on blanket were entrees liked by 70 per cent or more of the students in both approaches. Submarine sandwich, fried chicken, and cheeseburger on bun ranked in the 70 per cent or over preference category in the slide approach. These items also appeared among the most preferred items (60 per cent or more "like" responses) in the questionnaire approach.

Four items appeared on the most liked list in the questionnaire approach which did not appear on the listing in the slide approach: roast turkey and gravy, chilidog, BBQ beef on bun, and macaroni and cheese. Cavatini and fish and chips were among the best liked items in the slide approach only. Twelve of the thirty-seven entrees were among the best liked items in both approaches; however, their rankings differed. Apparently, seeing the way in which the items were served influenced the students' responses.

Only three items appeared on the disliked item listing in the questionnaire approach, whereas six items were disliked by 30 per cent or more in the slide approach. Also, the percentages of disliked responses were greater in the slide approach. Egg salad was the item disliked by the largest number of students in both phases of the study. Vegetable soup and surfcakes on bun also appeared on both listings.

Many more items were unfamiliar to the students in the slide approach compared to the questionnaire approach. Turkey tetrazzini and Italian

cavatini were items most unfamiliar in the questionnaire phase; although these items did not appear in the unfamiliar listing in the slide approach. Apparently the names of the entrees were unfamiliar to the students.

Surfcakes on bun appeared on both the disliked and unfamiliar lists in both phases of the study. Three other items were on both listings in the slide approach. Apparently foods that were unknown also were perceived as disliked in many instances.

Selection and Certainty of Choice Data

Table 7 summarizes students' responses concerning items they would select if offered the various choices presented on the research instrument. Same or similar entrees paired with different choices were grouped together. Mean certainty scores (indicating degree of certainty about selection of the item) and mean preference scores (indicating degree of like or dislike) for each item also are presented in Table 7.

Comparison of questionnaire and slide selection data indicated that in all but three instances the item chosen by the greatest percentage of students in the questionnaire approach also was selected more often in the slide approach. When Italian cavatini and roast turkey were paired, 54.7 per cent of the students indicated they would select roast turkey on the questionnaire; although 84 per cent of the students selected cavatini after viewing the slides. Pizza was selected much more frequently than taco pie in the slide approach; whereas the students were almost evenly divided in item selections between these two entrees in the questionnaire phase. The other choice in which the direction of the percentage selection differed between the two approaches was enchilada casserole and baked chicken. A

Table 7: Students' stated entree selection decisions and decision certainty scores[1]

choice no.[2]	selection[3]	stated selection decisions		item certainty score[4]		item preference[5]	
		questionnaire	slide	questionnaire	slide	questionnaire	slide
		%	%	mean s.d.	mean s.d.	mean s.d.	mean s.d.
baked ham with other choices:							
1	beef stew	44.3	39.8	1.37± .51	1.74± .59	1.89±1.04	2.19±1.08
	baked ham	55.7	60.2	1.39± .53	1.54± .57	1.67± .93	2.00±1.05
6	baked ham on whole wheat bun	42.4	41.0	1.38± .53	1.61± .63	1.62± .85	1.81± .97
	fried shrimp	57.6	59.0	1.32± .55	1.41± .62	1.72±1.09	1.72±1.07
11	barbecued hamburger	56.2	70.7	1.40± .60	1.49± .68	1.55± .86	1.50± .80
	baked ham	43.8	29.3	1.31± .48	1.93± .72	1.63± .94	2.00±1.08
16	fried shrimp	57.6	62.6	1.26± .53	1.37± .66	1.69±1.10	1.68±1.07
	baked ham	42.4	37.4	1.38± .56	1.86± .72	1.64± .91	1.97±1.11

[1] N = 382, Questionnaire Approach; N = 100, Slide Approach.

[2] Number indicates placement on research instrument.

[3] Selections including same or similar items are grouped.

[4] Scale = 1, very sure; 2, fairly sure; 3, not sure.
Mean certainty score for those who selected each item.

[5] Scale = 1, like; 2, will eat; 3, don't know; 4, dislike.

Table 7: (cont.)

choice no.	selection	stated selection decisions		item certainty score		item preference	
		questionnaire	slide	questionnaire	slide	questionnaire	slide
		%	%	mean s.d.	mean s.d.	mean s.d.	mean s.d.
21	fish and chips	51.7	69.0	1.39± .61	1.42± .63	1.91±1.14	1.70±1.06
	baked ham	48.3	31.0	1.36± .60	1.58± .76	1.67± .96	2.01±1.12
23	baked ham	69.6	59.0	1.34± .57	1.50± .73	1.64± .95	2.00±1.12
	surfcakes on bun	30.4	41.0	1.42± .58	1.66± .79	2.64±1.18	2.52±1.25
24	pigs in blanket	69.6	82.0	1.38± .56	1.49± .65	1.44± .84	1.24± .52
	baked ham	30.4	18.0	1.29± .49	1.67± .77	1.64± .92	2.05±1.16
26	corn dogs	60.1	67.0	1.38± .58	1.64± .69	1.68±1.00	1.70± .92
	baked ham	39.9	33.0	1.25± .48	1.67± .65	1.67± .96	2.00±1.13
roast turkey with other choices:							
5	roast turkey and gravy	37.8	12.0	1.32± .51	1.75± .75	1.40± .72	2.18±1.07
	Italian pizza	62.2	88.0	1.26± .48	1.16± .40	1.20± .56	1.31± .78
9	Italian cavatini	45.3	84.0	1.55± .63	1.41± .56	1.83±1.04	1.56± .90
	roast turkey and gravy	54.7	16.0	1.27± .48	1.81± .75	1.48± .79	2.26±1.07
29	roast turkey and gravy	75.9	71.7	1.28± .50	1.94± .81	1.44± .77	2.32±1.11
	ham salad on lettuce	24.1	28.3	1.45± .57	2.18± .79	2.16±1.16	2.89±1.09

Table 7: (cont.)

choice no.	selection	stated selection decisions		item certainty score		item preference	
		questionnaire	slide	questionnaire	slide	questionnaire	slide
		%	%	mean s.d.	mean s.d.	mean s.d.	mean s.d.
pigs in blanket with other choices:							
24	pigs in blanket	69.6	82.0	1.38± .56	1.49± .65	1.44± .84	1.24± .52
	baked ham	30.4	18.0	1.29± .49	1.67± .77	1.64± .92	2.05±1.16
25	turkey tetrazzini	31.0	15.0	1.32± .60	1.87± .83	2.07±1.05	2.37±1.14
	pigs in blanket	69.0	85.0	1.33± .51	1.32± .52	1.45± .85	1.37± .63
ham salad with other choices:							
13	breaded pork cutlet	64.0	90.0	1.44± .59	1.53± .71	1.81±1.03	1.70± .98
	ham salad	36.0	10.0	1.38± .60	1.60± .52	2.14±1.14	2.83±1.11
17	ham salad on lettuce	27.2	12.0	1.41± .56	2.08± .79	2.05±1.12	2.79±1.16
	fried chicken	72.8	88.0	1.25± .49	1.38± .62	1.46± .90	1.58± .94
29	roast turkey and gravy	75.9	71.7	1.28± .50	1.94± .81	1.44± .77	2.32±1.11
	ham salad on lettuce	24.1	28.3	1.45± .57	2.18± .79	2.16±1.16	2.89±1.09
pizza with other choices:							
3	Italian pizza	80.9	82.0	1.16± .42	1.23± .51	1.20± .61	1.18± .59
	cold cut assortment	19.1	18.0	1.56± .69	1.39± .70	1.55± .82	1.71± .94

Table 7: (cont.)

choice no.	selection	stated selection decisions		item certainty score		item preference	
		questionnaire	slide	questionnaire	slide	questionnaire	slide
		%	%	mean s.d.	mean s.d.	mean s.d.	mean s.d.
5	roast turkey and gravy	37.8	12.0	1.32± .51	1.75± .75	1.40± .72	2.18±1.07
	Italian pizza	62.2	88.0	1.26± .48	1.16± .40	1.20± .56	1.31± .78
18	pizza	49.0	78.8	1.36± .66	1.76± .81	1.16± .47	1.15± .61
	taco pie	51.0	21.2	1.37± .63	1.81± .75	1.26± .71	1.42± .77
27	pizza	74.7	71.0	1.34± .56	1.61± .73	1.18± .55	1.17± .62
	cheeseburger	25.3	29.0	1.41± .64	1.93± .80	1.46± .86	1.44± .80
28	fishwitch	19.5	25.0	1.45± .62	1.80± .76	2.00±1.09	1.95±1.16
	pizza	80.5	75.0	1.19± .43	1.47± .67	1.21± .57	1.15± .52
fried shrimp with other choices:							
2	chilidog on bun	49.6	45.0	1.35± .55	1.47± .63	1.49± .81	1.55± .82
	fried shrimp	50.4	55.0	1.24± .46	1.40± .56	1.69±1.11	1.79±1.14
6	baked ham on whole wheat bun	42.4	41.0	1.38± .53	1.61± .63	1.62± .85	1.81± .97
	fried shrimp	57.6	59.0	1.32± .55	1.41± .62	1.72±1.09	1.72±1.07
16	fried shrimp	57.6	62.6	1.26± .53	1.37± .66	1.69±1.10	1.68±1.07
	baked ham	42.4	37.4	1.38± .56	1.86± .72	1.64± .91	1.97±1.11

Table 7: (cont.)

choice no.	selection	stated selection decisions		item certainty score		item preference	
		questionnaire	slide	questionnaire	slide	questionnaire	slide
		%	%	mean s.d.	mean s.d.	mean s.d.	mean s.d.
tuna noodle casserole with other choices:							
12	tuna noodle casserole	36.6	30.0	1.42± .64	1.87± .78	2.03±1.13	2.56±1.22
	macaroni and cheese	63.4	70.0	1.40± .59	1.71± .73	1.70±1.05	2.06±1.19
15	Mexican pie	85.8	91.9	1.24± .47	1.36± .64	1.36± .78	1.35± .77
	tuna noodle casserole	14.2	8.1	1.40± .55	2.14± .90	2.12±1.14	2.60±1.14
chili and crackers with other choices:							
7	chili and crackers	87.3	85.9	1.19± .41	1.38± .65	1.30± .70	1.43± .84
	vegetable soup	12.7	14.1	1.52± .68	1.79± .80	2.33±1.24	2.42±1.30
10	fish cutlets	18.6	39.0	1.42± .62	1.56± .72	2.28±1.20	1.84±1.05
	chili and crackers	81.4	61.0	1.24± .47	1.52± .68	1.32± .73	1.41± .80

Table 7: (cont.)

choice no.	selection[1]	stated selection decisions		item certainty score		item preference	
		questionnaire	slide	questionnaire	slide	questionnaire	slide
		%	%	mean s.d.	mean s.d.	mean s.d.	mean s.d.
9	*Italian cavatini	45.3	84.0	1.55± .63	1.41± .56	1.83±1.04	1.56± .90
	roast turkey and gravy	54.7	16.0	1.27± .48	1.81± .75	1.48± .79	2.26±1.07
13	*breaded pork cutlet	64.0	90.0	1.44± .59	1.53± .71	1.81±1.03	1.70± .98
	ham salad	36.0	10.0	1.38± .60	1.60± .52	2.14±1.14	2.83±1.11
14	fried chicken	69.4	73.0	1.27± .50	1.45± .67	1.47± .90	1.48± .86
	*meat loaf	30.6	27.0	1.41± .62	1.63± .74	1.96±1.12	1.89±1.03
4	*char-broiled hamburger	68.3	64.0	1.27± .50	1.37± .61	1.42± .77	1.47± .76
	*baked fish	31.7	36.0	1.45± .62	1.75± .65	2.14±1.18	2.06±1.11
7	chili and crackers	87.3	85.9	1.19± .41	1.38± .65	1.30± .70	1.43± .84
	*vegetable soup	12.7	14.1	1.52± .68	1.79± .80	2.33±1.24	2.42±1.30
11	*barbecued hamburger	56.2	70.7	1.40± .60	1.49± .68	1.55± .86	1.50± .80
	baked ham	43.8	29.3	1.31± .48	1.93± .72	1.63± .94	2.00±1.08
2	*chilidog on bun	49.6	45.0	1.35± .55	1.47± .63	1.49± .81	1.55± .82
	fried shrimp	50.4	55.0	1.24± .46	1.40± .56	1.69±1.11	1.79±1.14

[1]Starred item in each of these choices was included only once on the menu plan.

Table 7: (cont.)

choice no.	selection	stated selection decisions		item certainty score		item preference	
		questionnaire	slide	questionnaire	slide	questionnaire	slide
		%	%	mean s.d.	mean s.d.	mean s.d.	mean s.d.
3	Italian pizza	80.9	82.0	1.16± .42	1.23± .51	1.20± .61	1.18± .59
	*cold cut assortment	19.1	18.0	1.56± .69	1.39± .70	1.55± .82	1.71± .94
27	pizza	74.7	71.0	1.34± .56	1.61± .73	1.18± .55	1.17± .62
	*cheeseburger	25.3	29.0	1.41± .64	1.93± .80	1.46± .86	1.44± .80
22	enchilada casserole	57.1	43.4	1.38± .52	1.90± .82	1.62± .91	1.95±1.10
	*baked chicken	42.9	56.6	1.39± .55	1.68± .77	1.68±1.01	1.69± .94
26	*corn dogs	60.1	67.0	1.38± .58	1.64± .69	1.68±1.00	1.70± .92
	baked ham	39.9	33.0	1.25± .48	1.67± .65	1.67± .96	2.00±1.13
20	barbecued hamburger on bun	76.5	86.0	1.38± .56	1.47± .70	1.57± .88	1.55± .73
	*egg salad on bun	23.5	14.0	1.42± .63	1.71± .61	2.43±1.23	2.87±1.18
10	*fish cutlets	18.6	39.0	1.42± .62	1.56± .72	2.28±1.20	1.84±1.05
	chili and crackers	81.4	61.0	1.24± .47	1.52± .68	1.32± .73	1.41± .80
21	*fish and chips	51.7	69.0	1.39± .61	1.42± .63	1.91±1.14	1.70±1.06
	baked ham	48.3	31.0	1.36± .60	1.58± .76	1.67± .96	2.01±1.12
23	baked ham	69.6	59.0	1.34± .57	1.50± .73	1.64± .95	2.00±1.12
	*surfcakes on bun	30.4	41.0	1.42± .58	1.66± .79	2.46±1.18	2.52±1.25

Table 7: (cont.)

choice no.	selection	stated selection decisions		item certainty score		item preference	
		questionnaire	slide	questionnaire	slide	questionnaire	slide
		%	%	mean s.d.	mean s.d.	mean s.d.	mean s.d.
28	*fishwitch	19.5	25.0	1.45± .62	1.80± .76	2.00±1.09	1.95±1.16
	pizza	80.5	75.0	1.19± .43	1.47± .67	1.21± .57	1.15± .52
15	*Mexican pie	85.8	91.9	1.24± .47	1.36± .64	1.36± .78	1.35± .77
	tuna noodle casserole	14.2	8.1	1.40± .55	2.14± .90	2.12±1.14	2.60±1.14
18	pizza	49.0	78.8	1.36± .66	1.76± .81	1.16± .47	1.15± .61
	*taco pie	51.0	21.2	1.37± .63	1.81± .75	1.26± .71	1.42± .77
19	*beef taco pie	84.6	65.0	1.25± .48	1.45± .69	1.36± .84	1.57± .90
	beef noodle casserole	15.4	35.0	1.39± .55	1.85± .78	2.09±1.08	2.18±1.03

majority of students selected baked chicken in the slide approach; whereas more students chose enchilada casserole on the printed questionnaire.

The percentage of students choosing the most popular selection (the item indicated as the entree that would be selected by a majority of the students) was greater in eighteen of the thirty choices in the slide phase and in eight instances in the questionnaire phase. It was of interest that in the slide approach, in almost all cases students were less certain of their selections than on the printed questionnaire. Seeing actual pictures of the food must have made the decision much more difficult. Greater uncertainty was associated with selections of less popular items. Students selecting the less popular choice were less certain of their decisions than those who selected the more popular choice in twenty-one of thirty instances in the questionnaire phase and in all thirty choices in the slide phase.

The selection data tended to verify the preference data. For example, in the twelve choices in which an Italian or Mexican dish was paired with another item, the other item was chosen most frequently in only two instances. On the four menus that included a hamburger sandwich as one of the two selections, the hamburger was chosen by a majority of the students in three cases. Hot sandwiches, the other most liked category in the preference data, were selected most often on three of five menus. On the two menus in which the hot sandwich was not selected most often it was paired with fried shrimp which scored high in the preference ratings.

Actual Selection Data

As described in the methodology, actual entree selection data were collected over a six-week period corresponding with the six weeks of

selective menus utilized in construction of the research instruments for the questionnaire and slide approaches of the study (Appendix J). Two preplanned entrees were served on each menu; however, other entrees were added to the two choices at time of service on seven of the thirty data collection days. The policy of the foodservice is to serve over-produced items from one day on the following day. Both serving lines offered the added main dishes as shown in Appendix J, although there was not a sufficient quantity to serve throughout the service period. In all but two instances, the preplanned entrees were offered throughout the serving period.

Comparison of Actual and Stated Selection Data

Actual selection data, stated selection data, chi-square values and mean certainty scores for both questionnaire and slide approaches are included on Table 8. In twenty-one of thirty choices, the item which was indicated by the greatest percentage of students to be their choice on the research instruments for the questionnaire and slide approaches also was selected more often from the cafeteria lines.

In six choices the majority of respondents in both approaches chose the item that was selected less frequently from the cafeteria line. Choices where stated behavior did not indicate the majority choice were: beef stew vs. baked ham, chilidog on bun vs. fried shrimp, baked ham vs. fried shrimp, fish cutlets vs. chili and crackers, tuna noodle casserole vs. macaroni and cheese, and turkey tetrazzini vs. pigs in blanket.

In the two instances in which shrimp was chosen by a majority of students in the stated selections and by less than 50 per cent in the

selections from the cafeteria lines, the reason may be related to the item actually served. The shrimp item was not breaded whole shrimp or shrimp pieces, but a shaped shrimp product. Perhaps students like breaded whole shrimp but are less likely to enjoy the extended shrimp item, which would explain the discrepancy. In the stew vs. ham choice in which ham was chosen less frequently on the cafeteria line and more frequently in the questionnaire and slide phases of the study, the same phenomenon may be operating. The baked ham served on the school lunch menus was a canned, pressed-type product. In the remaining two instances, the fish cutlet and tuna were selected more often than students actually projected that they would in the stated selections. Perhaps the tuna casserole and fish appeared to be more satisfying than the items with which they were paired (macaroni and cheese and chili).

In two choices results of the slide approach agreed with actual data in predicting the item selected by the majority of students; whereas the questionnaire results did not predict the items selected most frequently. Those choices were Italian cavatini vs. roast turkey and pizza vs. taco pie. As was hypothesized in the section on preference data, cavatini may have been an unfamiliar item name, but when students actually saw the item, apparently they had a positive reaction. The remaining choice in which one of the approaches failed to predict the item actually selected most often was enchilada casserole vs. baked chicken. In this case the questionnaire approach was a better predictor than the slide approach of the enchilada casserole as the most popular choice. However, neither approach predicted production demand accurately; 80.5 per cent of the students selected

Table 8: Actual and stated entree choices and certainty scores

choice no.	selection[1]	actual choice		stated choice by approach				χ^2			certainty score[3]	
				questionnaire		slide					questionnaire	slide
		N	%	N	%	N	%	actual vs. questionnaire[2]	actual vs. slide	questionnaire vs. slide	mean s.d.	mean s.d.
1	beef stew	248	63.6	108	44.3	39	39.8	22.77	18.31	.40	1.38 ± .52	1.62 ± .58
	baked ham	142	36.4	136	55.7	59	60.2					
2	chilidog on bun	370	87.7	121	49.6	45	45.0	115.78	90.36	.43	1.29 ± .51	1.43 ± .59
	fried shrimp	52	12.3	123	50.4	55	55.0					
3	Italian pizza	451	99.3	199	80.9	82	82.0	81.84	67.56	.01	1.23 ± .50	1.26 ± .55
	cold cut assortment	3	.7	47	19.1	18	18.0					
4	char-broiled hamburger	337	87.5	164	68.3	64	64.0	34.27	30.70	.42	1.33 ± .55	1.51 ± .65
	baked fish	48	12.5	76	31.7	36	36.0					
*5	roast turkey and gravy	139	34.3	93	37.8	12	12.0	.81	19.06	21.19	1.28 ± .49	1.24 ± .50
	Italian pizza	266	65.7	153	62.2	88	88.0					

[1] Starred selections indicate an additional choice was offered for part of serving period.

[2] χ^2 values greater than 6.63 are significant at the .01 level.

[3] Certainty score = 1, very sure to 3, not sure of stated choice.

Table 8: (cont.)

choice no.	selection	actual choice		stated choice by approach: questionnaire		stated choice by approach: slide		χ^2: actual vs. questionnaire	χ^2: actual vs. slide	χ^2: questionnaire vs. slide	certainty score: questionnaire	certainty score: slide
		N	%	N	%	N	%				mean s.d.	mean s.d.
6	baked ham	329	76.3	104	42.4	41	41.0	77.90	47.97	.02	1.35 ± .54	1.50 ± .63
	fried shrimp	102	23.7	141	57.6	59	59.0					
7	chili and crackers	430	96.0	214	87.3	85	85.9	17.97	15.09	.04	1.23 ± .47	1.43 ± .69
	vegetable soup	18	4.0	31	12.7	14	14.1					
8	submarine sandwich	364	82.7	172	69.9	59	59.0	15.15	27.03	3.34	1.31 ± .52	1.61 ± .72
	barbecued hamburger	76	17.3	74	30.1	41	41.0					
9	Italian cavatini	375	87.0	110	45.3	84	84.0	134.16	.63	41.70	1.40 ± .57	1.47 ± .61
	roast turkey and gravy	56	13.0	133	54.7	16	16.0					
10	fish cutlets	244	66.8	45	18.6	39	39.0	135.86	25.56	14.82	1.28 ± .51	1.54 ± .69
	chili and crackers	121	33.2	197	81.4	61	61.0					
*11	barbecued hamburger	376	92.4	136	56.2	70	70.7	119.32	35.80	5.59	1.36 ± .56	1.61 ± .71
	baked ham	31	7.6	106	43.8	29	29.3					
12	tuna noodle casserole	228	55.5	89	36.6	30	30.0	21.72	20.88	1.10	1.41 ± .61	1.76 ± .74
	macaroni and cheese	183	44.5	154	63.4	70	70.0					

Table 8: (cont.)

choice no.	selection	actual choice		stated choice by approach: questionnaire		stated choice by approach: slide		χ^2: actual vs. questionnaire	χ^2: actual vs. slide	χ^2: questionnaire vs. slide	certainty score: questionnaire	certainty score: slide
		N	%	N	%	N	%				mean s.d.	mean s.d.
13	breaded pork cutlet	395	95.4	155	64.0	90	90.0	110.88	4.43	22.19	1.42 ± .59	1.54 ± .69
	ham salad	19	4.6	87	36.0	10	10.0					
*14	fried chicken	311	68.5	170	69.4	73	73.0	.06	.80	.29	1.31 ± .54	1.50 ± .69
	meat loaf	143	31.5	75	30.6	27	27.0					
15	Mexican pie	428	97.7	211	85.8	91	91.9	36.57	8.38	1.91	1.27 ± .49	1.41 ± .69
	tuna noodle casserole	10	2.3	35	14.2	8	8.1					
16	fried shrimp	279	66.4	141	57.6	62	62.6	5.24	.51	.56	1.31 ± .55	1.55 ± .72
	baked ham	141	33.6	104	42.4	37	37.4					
17	ham salad	124	35.0	66	27.2	12	12.0	4.11	19.71	8.43	1.30 ± .51	1.47 ± .68
	fried chicken	230	65.0	177	72.8	88	88.0					
*18	pizza	459	93.3	120	49.0	78	78.8	190.69	20.89	24.44	1.37 ± .65	1.77 ± .79
	taco pie	33	6.7	125	51.0	21	21.2					
19	beef taco pie	435	98.6	208	84.0	65	65.0	52.27	31.70	15.18	1.27 ± .49	1.59 ± .74
	beef noodle casserole	6	1.4	38	15.4	35	35.0					

Table 8: (cont.)

choice no.	selection	actual choice		stated choice by approach: questionnaire		stated choice by approach: slide		χ^2: actual vs. questionnaire	χ^2: actual vs. slide	χ^2: questionnaire vs. slide	certainty score: questionnaire	certainty score: slide
		N	%	N	%	N	%				mean s.d.	mean s.d.
*20	barbecued beef on bun	350	96.7	186	76.5	86	86.0	58.38	16.84	3.31	1.39 ± .57	1.50 ± .69
	egg salad on bun	12	3.3	57	23.5	14	14.0					
21	fish and chips	197	75.5	125	51.7	69	69.0	30.95	1.57	7.98	1.37 ± .60	1.47 ± .67
	baked ham	64	24.5	117	48.3	31	31.0					
*22	enchilada casserole	321	80.5	137	57.1	43	43.4	40.31	55.26	4.71	1.38 ± .53	1.78 ± .79
	baked chicken	78	19.5	103	42.9	56	56.6					
23	baked ham	264	75.6	165	69.6	59	59.0	2.61	10.67	3.10	1.36 ± .57	1.57 ± .76
	surfcakes	85	24.4	72	30.4	41	41.0					
24	pigs in blanket	234	72.2	167	69.6	82	82.0	.47	3.85	4.94	1.35 ± .54	1.52 ± .67
	baked ham	90	27.8	73	30.4	18	18.0					
25	turkey tetrazzini	163	51.1	74	31.0	15	15.0	22.67	40.60	8.47	1.33 ± .54	1.40 ± .60
	pigs in blanket	156	48.9	165	69.0	85	85.0					
26	corn dogs	259	80.4	143	60.1	67	67.0	27.98	7.84	1.15	1.33 ± .55	1.65 ± .67
	baked ham	63	19.6	95	39.9	33	33.0					
*27	pizza	226	59.0	180	74.7	71	71.0	16.00	4.82	.32	1.35 ± .58	1.70 ± .76
	cheeseburger	157	41.0	61	25.3	29	29.0					

Table 8: (cont.)

choice no.	selection	actual choice		stated choice by approach: questionnaire		stated choice by approach: slide		χ^2: actual vs. questionnaire	χ^2: actual vs. slide	χ^2: questionnaire vs. slide	certainty score: questionnaire	certainty score: slide
		N	%	N	%	N	%				mean s.d.	mean s.d.
28	fishwitch	74	19.4	47	19.5	25	25.0	.00	1.51	.97	1.24 ± .48	1.56 ± .70
	pizza	307	80.6	194	80.5	75	75.0					
29	roast turkey and gravy	123	69.5	183	75.9	71	71.7	2.16	.15	.46	1.32 ± .52	2.01 ± .81
	ham salad	54	30.5	58	24.1	28	28.3					
30	turkey salad	72	18.3	60	25.1	4	4.0	4.14	12.35	18.89	1.33 ± .52	1.41 ± .62
	hamburger	321	81.7	179	74.9	95	95.0					

enchilada casserole from the cafeteria line and only 57.1 per cent on the printed questionnaire and 43.4 per cent after viewing slides.

Chi-square values indicated that in all but eight cases actual and questionnaire results varied significantly ($P \leq 0.01$) and in all but nine instances in the slide approach (Table 8). However, as indicated above, the ratio was in the same direction; i.e., the item selected by a majority of the students in the actual selection also was chosen by a majority in the questionnaire and slide approaches. The questionnaire and slide data differed significantly in eleven of the thirty choices. The stated selections often gave an indication of the more popular of two choices, but did not provide accurate statistical data for predictions. The appearance of the choices on the serving line or other factors may have been responsible for the discrepancy between stated and actual selection data.

Spearman's (78) rank order correlation coefficient was computed between the overall certainty score for each decision choice and the chi-square value of stated versus actual choice. The coefficient was .37 indicating a significant relationship ($P \leq .05$) between these two statistics: higher certainty scores in the questionnaire approach and chi-square values. Higher certainty scores indicated less certainty regarding respondents' stated choices; therefore, uncertainty was related to differences between actual and stated choices. The correlation coefficient (.11) indicated there was no significant relationship between the certainty score in the slide approach and the chi square value.

Data from Attitude Instrument

General Information

Students in both approaches of the study completed the twenty-five item attitude instrument (Part II of the study in the slide and questionnaire approaches). A preliminary analysis indicated data did not differ significantly in the two approaches; therefore, data were combined in the analysis and discussion. The students were asked to indicate their usual place for eating lunch (Table 9). The majority of students (52.1 per cent) reported that they usually ate lunch in the school cafeteria. Approximately a third of the students (32.4 per cent) indicated that they usually ate lunch at a drive-in or restaurant; and 15.5 per cent of the students usually ate lunch at home.

Of those students who frequently ate school lunch (ate three or more times per week), 63.1 per cent indicated that they liked the food served in the school lunch (Table 10). "My friends eat the school lunch" and "the price of the school lunch is low" was an influence for about a half of the participants in school lunch. "Parents want me to" was a factor influencing 43.1 per cent of the students. The main reason given by those students who were infrequent participants (eat only two times weekly or less) in school lunch was that they did not like the food served (69.6 per cent). No other factor appeared to be a strong influence in the infrequent group; however, 16.5 per cent indicated that they believed a sack lunch to be less expensive than the Type A lunch. Peer pressure was shown to be an influence on participation in the frequent participation group (50.8 per cent) but not in the infrequent group. Only 9.5 per cent of the students stated that they and their friends brought sack lunches.

Table 9: Lunch habits of high school students

	N[1]	%
usual place for lunch		
school cafeteria	172	52.1
home	51	15.5
drive in or restaurant	107	32.4
frequency of school lunch participation		
frequent		
every day	65	18.9
3-4 times a week	66	19.2
infrequent		
1 or 2 times a week	70	20.3
rarely or never	143	41.6

[1] N = combined samples from questionnaire and slide approaches.

Table 10: Factors influencing frequent and infrequent participation in Type A lunch program

	reason	not a reason
	%	%
reasons frequent participants eat school lunch (N = 130)[1]		
like the food	63.1	36.9
friends eat there	50.8	49.2
parents want me to	43.1	56.9
lunch price is low	51.5	48.5
reasons infrequent participants do not eat school lunch (N = 158)		
don't like the food	69.6	30.4
friends and I bring lunch	9.5	90.5
sack lunch is cheaper	16.5	83.5
have food allergies	1.9	98.1
vegetarian, don't eat meat dishes	1.9	98.1

[1]Nonresponses were omitted in computation of percentages.

Attitude Scores

Responses on the fifteen attitude items were weighted one, two, or three with the most positive response weighted highest; six were nonfood related and seven were food related. An overall attitude score, a food score, and a nonfood score were computed by summing the scores of all of the items and of the food and nonfood items. The t-test was used to study differences in the frequent and infrequent school lunch participants. Overall attitude, nonfood and food scores all were significantly higher for those students who were frequent participants (those who ate the school lunch three or more times per week) than for those who ate infrequently (Table 11).

Analysis of Attitude Items

In addition to the analysis of attitude scores, food and nonfood related items were analyzed individually using the t-test to compare responses of frequent and infrequent school lunch participants (Table 11). The food related items were concerned with serving size, temperature, and flavor of the food, acceptance of meat, vegetables and dessert menu items and perception of usual amount of food consumed. The nonfood related items pertained to lunchroom noise and cleanliness, cooks' and cashiers' attitudes, lunchroom atmosphere and perception of time allowed for lunch.

Food Related Items. Proper serving size is important to the success of a school lunch program, in view of cost control and meeting USDA Type A lunch standards. The Type A framework has been shown to be sufficiently flexible to allow adjustment of serving size in consideration to age and sex of students to meet the needs of students. Students had positive

Table 11: Frequency of school lunch participation and perceptions of foodservice program

	scores[1] for frequent participant[2]		scores for infrequent participant		
	mean	s.d.	mean	s.d.	t value[3]
nonfood related items					
lunch room is noisy	2.27	± 0.90	2.12	± 0.94	1.44
lunch room is clean	2.50	± 0.78	2.22	± 0.78	3.23***
cooks are friendly	2.76	± 0.49	2.70	± 0.55	1.06
lunch room is cheerful	2.14	± 0.55	2.00	± 0.55	2.16*
cashiers are friendly	2.94	± 0.27	2.80	± 0.43	3.52***
lunch is rushed	2.64	± 0.62	2.43	± 0.80	2.72**
food related items					
size of servings is right	2.15	± 0.84	2.20	± 0.81	0.52
*temperature is right	1.61	± 0.49	1.51	± 0.51	1.88
food is good	1.44	± 0.60	2.00	± 0.66	7.94***
like meat dishes	2.62	± 0.56	2.17	± 0.74	6.37***
like vegetables	1.94	± 0.75	1.78	± 0.78	1.86
like desserts	2.57	± 0.63	2.34	± 0.72	3.14**
eat most of food	2.83	± 0.40	2.56	± 0.62	4.80***
nonfood score[4]	15.25	± 1.57	14.00	± 2.72	5.38***
food score	15.02	± 1.95	14.12	± 2.61	3.63***
overall score	30.27	± 2.67	27.99	± 4.86	5.60***

[1]Higher score = more positive response. All items scored on 3 point scale except for starred item (*) which was scored on 2 point scale.

[2]Frequent: students who eat lunch 3 or more times per week.
Infrequent: students who eat lunch 2 or less times per week.
Frequent: N varies from 126 to 131.
Infrequent: N varies from 201 to 210.

[3]t test for two independent samples.

[4]Nonfood score = Σ of nonfood related item scores.
Food score = Σ of food related item scores.
Overall score = Nonfood score + food score.

* $P \leq .05$
** $P \leq .01$
*** $P \leq .001$

reactions to serving size in both the frequent and infrequent groups. Students' attitude toward the temperature of food also revealed that the students reacted favorably in both groups.

The offering of a nutritionally adequate meal does not guarantee its acceptance. The needs and preferences of the group to be served must be met. Students who were frequent participants in the school lunch program indicated less positive reactions than did the infrequent participants to the statement "the food is good." Perhaps frequent participants reacted less positively toward the food because of frequency itself; menu items might have appeared repetitious. However, the students' attitudes toward main dish and dessert items was significantly more positive among students in the frequent group, contrasted by a less positive reaction in the infrequent group. Garrett (50) also found that frequent participants were more positive in their reactions toward entrees than were infrequent participants. Students' attitudes toward vegetables revealed that they tended to be more acceptable to students in the frequent group; although both groups had more negative attitudes about vegetables than other menu items.

In the reported consumption of school lunch food students in both groups indicated that they usually ate most of their food, although this reaction had a higher score among the frequent participants. Garrett's (50) study corroborates these findings.

Nonfood Related Items. Students' attitudes toward several items were studied to determine perception of the school lunch program generally. Significantly more students in the frequent group identified the school lunch room as clean than did students in the infrequent group; however, there was no significant difference in rating of the noise level.

Students in both groups indicated a positive reaction toward the cooks and cashiers in the school lunch program when asked to respond to their friendliness. Students in the frequent group indicated a significantly more positive reaction towards the cashiers in the school lunch program than did students in the infrequent group.

Students were asked to evaluate the cheerfulness of the school lunch room atmosphere (Item 16). Students in the frequent group were more positive than were students in the infrequent group. Both groups, however, indicated that the lunch room was "okay, so-so." Perhaps there is a strong need for lunch room atmosphere that does not resemble classrooms. Different seating patterns, piped-in music, and student art work may warrant consideration in improving lunch room atmosphere.

Students' perception of time allowed for lunch indicated that frequent and infrequent participants were not usually rushed during lunch time; although the infrequent participants' score was significantly lower. These responses may be tapping different reactions. Those who eat less frequently may feel more rushed because of the time involved in leaving school for lunch.

Interest in Involvement of School Foodservice Projects

Respondents were asked to indicate their interest in becoming involved in the high school foodservice (Item 25). Responses were divided into three levels to denote degree of interest: would like to, might like to, and not really interested.

Table 12 indicates that the majority of students were "not really interested" in becoming involved in the foodservice. However, approximately one-fourth of the students expressed that they might like to plan a menu

for a meal to be used in the school lunch menus. Also, 20 per cent of the students indicated that they would like to serve on a panel to discuss foodservice at the high school. Apparently the desire to become involved in menu planning resulted from the influence that food has on determining participation in school lunch.

Table 12: Interest in involvement in school foodservice program

activity[1]	would like to	might like to	not really interested
	%	%	%
plan a menu	8.9	26.4	64.6
take a tour of kitchen	7.1	15.4	77.6
bring recipe for use on menu	5.8	14.0	80.2
serve on a student panel	11.8	20.1	68.2
provide art work for dining room	4.8	13.4	81.8
plan a special event	7.0	17.8	75.2
provide entertainment during lunch	5.7	14.0	80.3

[1]N varies from 312 to 314.

Over 80 per cent of the students indicated that they were not really interested in providing art work for the dining room or providing entertainment during lunch. Perhaps students were satisfied with the present lunch room atmosphere and did not feel that changes were necessary or were not interested in spending time in this way.

Only 7.1 per cent of the respondents indicated that they would like to take a tour of the kitchen. The low interest in this activity may be a result of some students who work in the kitchen on a part-time basis and are already familiar with the kitchen. Also, students are able to see much

of the meal preparation area from the cafeteria line. Therefore, students may view that a tour of the kitchen would not be a new stimulus.

Approximately 18 per cent of the students stated that they might like to be involved in planning a special event. Perhaps students did not indicate more interest in this activity because the high school foodservice plans special events on a continuing basis that correspond with menu items. On these days, cafeteria personnel dress in costumes portraying the theme of the event planned.

Students were not really interested (80.2 per cent) in bringing a recipe of their own for use on the school lunch menu. These responses may be due to limited interest in preparing food themselves. High school students comprise a group which recognize food quality but may not experience the interest in preparation.

SUMMARY AND CONCLUSIONS

Forecasting consumer demand for a high school foodservice with an "open campus" system in which students may leave the school during the noon hour presents a challenge for foodservice managers. Reliable prediction of consumer demand, therefore, is a key factor in controlling production and ultimately, food cost. The purpose of this research was to assess the reliability of food preferences for forecasting high school students' actual choices from a selective menu and to study menu item decisions using printed and visual stimuli.

The research focused on a comparison of actual luncheon entree selections from a high school lunch program selective menu and students' stated choices on two research instruments listing entree selections from the menus that were served. Actual data concerning students' entree item choices were collected by tabulating the number of entree portions selected over a six-week period. Data were compared with results of a survey of stated preferences using two approaches of a random sample of high school students from a medium-sized midwestern town. The survey instrument in the questionnaire approach consisted of a listing of thirty pairs of preplanned entree choices of school lunch menus corresponding to the time period when actual choice data were collected. Students were asked to indicate which entree they would select from each pair of entrees, their degree of certainty about the choice, and their degree of like or dislike for each entree item. Respondents in the slide approach of the study completed the research instrument after viewing slides of the same thirty pairs of entree items as in the questionnaire approach. The questionnaire approach included 252 students and in the slide approach, 100 students.

Items in the hamburger sandwich; Italian, Mexican dishes and hot sandwich categories were preferred more than salad plates; casseroles, creamed, and extended main dishes; and some fish items. Items liked by at least 60 per cent of the respondents were sandwiches; fried fish items; and Italian, Mexican dishes. Items disliked by 30 per cent or more of the respondents included salad plates, and several casserole, creamed and extended main dishes. Findings from both approaches followed a similar pattern with a few exceptions. These instances usually were entrees with names that might be unfamiliar (e.g., turkey tetrazzini). These items tended to have a higher score in the slide approach.

Mean certainty scores reflected greater uncertainty for items selected by smaller percentages of students in both approaches. Similar mean certainty scores for individual selections were obtained when two preferred items were presented together (e.g., pizza and cheeseburger).

Preference scores were more favorable for items selected by the majority of students. In choices where a well liked item was paired with a lesser liked item students were more certain of their choice than when paired with an item having a similar preference. Comparison of actual and stated selection data indicated that in the majority of cases the item chosen by the greatest percentage of students on both the questionnaire and slide instruments also was selected more often from the cafeteria lines. Although stated selections often gave an indication of the more popular of the two choices, chi-square analysis in both approaches indicated they did not provide accurate statistical data for predictions. Also, in the questionnaire approach students tended to be more uncertain in choices where there was a larger difference between actual and stated choices.

Entree item choices of high school students are apparently influenced by factors other than the choices available on a selective menu. In order for a food preference survey to be used as a reliable predictor of consumer demand it would be necessary for other influences to be identified. These factors might include: merchandising of the foods on the serving line; other items on the menus; environmental conditions such as weather or season of the year; and school activities.

Students were asked to select their usual place for eating lunch on the attitude instrument. The majority of students reported that they usually ate lunch in the school cafeteria. Of those students responding, over 60 per cent indicated that they liked the food served in the school lunch. "My friends eat the school lunch also" and "the price of the school lunch is low" appeared to influence the students' participation in school lunch. The main reason given by those students who were infrequent participants in school lunch was that they did not like the food served.

Attitude scores were significantly higher for frequent participants of the school lunch program. This was true for both food-related and nonfood related opinions. Apparently there is a selective process which occurs; those who enjoy the school foodservice stay on campus for lunch. Those who don't exercise their option to leave and are not concerned about the inconveience or time involved.

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APPENDIXES

APPENDIX A

School Lunch Menus

School Lunch Menus[1]
Manhattan High School

Choice #1

Beef Stew or
Baked Ham

Bu. Succotash
Crisp Garden Relishes
Roll and Butter
Blushed Applesauce

Choice #2

Chilidog on Bun or
Fried Shrimp

Bu. Whole Kernel Corn
Lettuce and Endive Salad
Frozen Canned Peaches

Choice #3

Italian Pizza or
Cold Cut Assortment

Baby Lima Beans
Shredded Lettuce Salad
Bu. Cinnamon Puffs
Blond Brownies

Choice #4

Char-Broiled Hamburger on Bun or
Baked Fish

Tri-Taters
Crisp Garden Relishes
Orange and Grapefruit Sections

Choice #5

Roast Turkey and Gravy or
Italian Pizza

Bu. Peas and Carrots
Crisp Greens w/Dressing
Hot Bread
Fruit Gelatin or Fruit Juice

Choice #6

Baked Ham on Whole Wheat Bun or
Fried Shrimp

Bu. Carrots
Lettuce Wedge w/Dressing
Apple Crisp w/Cream

Choice #7

Chili and Crackers or
Vegetable Soup

Carrots and Cheese Cubes
Cinnamon Puff
Sliced Pears and Peaches

Choice #8

Submarine Sandwich or
Barbecued Hamburger

Tri-Taters
Brussel Sprouts
Crisp Garden Relishes
Chocolate Ice Cream Cup

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[1]Served between March 24, 1975 and May 2, 1975.
Milk was served with all menus to complete Type A requirements.

School Lunch Menus
Manhattan High School

Choice #9

Italian Cavatini or
Roast Turkey and Gravy

Bu. Broccoli
Fresh Garden Relishes
Bishops Bread
Strawberries and Pineapple
in Gelatin

Choice #10

Fish Cutlets or
Chili and Crackers

Hash Browns
Celery Stuffed with Peanut Butter
Cinnamon Roll
Fresh Orange

Choice #11

Barbecued Hamburger or
Baked Ham

Tri-Taters
Bu. Spinach
Chopped Lettuce w/Dressing
Sliced Peaches

Choice #12

Tuna Noodle Casserole or
Macaroni and Cheese

Asparagus Spears Vinagrette
Crisp Garden Relishes
Hot Roll and Butter
Peanut Butter Brownie

Choice #13

Breaded Pork Cutlet or
Ham Salad

Peas and Carrots
Chopped Lettuce w/Dressing
School Roll
Blushed Apple Crisp

Choice #14

Fried Chicken or
Meat Loaf

Bu. Green Beans
Carrot and Celery Sticks
Rye Roll and Butter
Jello (no Fruit)

Choice #15

Mexican Pie or
Tuna Noodle Casserole

Bu. Beets
Lettuce and Tomato
Congealed Fruit Mold

Choice #16

Fried Shrimp or
Baked Ham

French Fries
Cream Corn Pudding
Lettuce w/Dressing
Fresh Fruit

School Lunch Menus
Manhattan High School

Choice #17

Ham Salad on Lettuce or
Fried Chicken

Green Beans
Chopped Lettuce w/Dressing
Biscuit
Pineapple Upside Down Cake

Choice #18

Pizza or
Taco Pie

Bu. Corn
Carrot and Celery Sticks
Cinnamon Puff
Fruit Cup

Choice #19

Beef Taco Pie or
Beef Noodle Casserole

Bu. Green and Wax Beans
Deviled Egg Half on Lettuce
Bu. Hot Roll
Sliced Peaches w/Cream

Choice #20

Barbecued Beef on Bun or
Egg Salad on Bun

Spring Garden Relishes
Bu. Carrots
Pineapple Fruit Cup

Choice #21

Fish and Chips or
Baked Ham

Bu. Cornmeal Roll
Bu. Brussels Sprouts
Tossed Green Salad
Fresh Fruit

Choice #22

Enchilada Casserole or
Baked Chicken

Seasoned Mixed Vegetables
Lettuce and Tomato
Hot Bread
Ambrosia

Choice #23

Baked Ham or
Surfcakes on Bun

Oven Fried Potatoes
Bu. Spinach
Creamy Coleslaw
Ice Cream Bars

Choice #24

Pigs in Blanket or
Baked Ham

Bu. Carrots
Orange and Grapefruit Salad
Bu. Roll
Fresh Fruit

School Lunch Menus
Manhattan High School

Choice #25

Turkey Tetrazzini or
Pigs in Blanket

Hash Browns
Vegetable Relishes
Apricot and Pears
Bu. Broccoli

Choice #26

Corn Dogs or
Baked Ham

Baked Beans
Peas and Carrots
Celery Sticks
Orange Juice

Choice #27

Pizza or
Cheeseburger

Tater Puffs
Lettuce and Cabbage Salad
Cinnamon Puff
Fresh Fruit or Applesauce

Choice #28

Fishwitch or
Pizza

Bu. Corn
Tossed Green Salad
Cherry Cobbler

Choice #29

Roast Turkey and Gravy or
Ham Salad on Lettuce

Bu. Peas and Carrots
Lettuce and Tomato
Fresh Fruit

Choice #30

Turkey Salad on Leaf Lettuce or
Hamburger on Bun

Potato Puffs
Red and White Coleslaw
Citrus Salad
School Roll

APPENDIX B

Research Instrument for Questionnaire Approach

KANSAS STATE UNIVERSITY

Department of Institutional Management
Justin Hall
Manhattan, Kansas 66506
Phone: 913 532-5521

SCHOOL FOODSERVICE STUDY

Instructions: Please complete this questionnaire and return this questionnaire in the envelope provided to the sealed box in the Principal's Office marked School Foodservice Study. Please read the directions carefully and answer all questions as directed. Thank you for your cooperation.

THIS BOOK CONTAINS NUMEROUS PAGES WITH MULTIPLE PENCIL AND/OR PEN MARKS THROUGHOUT THE TEXT.

THIS IS THE BEST IMAGE AVAILABLE.

Introduction

The Department of Institutional Management at Kansas State University is working on a research project concerning prediction of amounts of food to prepare in various foodservices. We are expanding the project to include this study of the Manhattan High school lunch program.

We need your help with this project. The most important factor to consider in a study like this is the student--what foods do students prefer? What do they select when given a choice? This is what we want you to tell us. You are among a group of students that was randomly selected to be representative of the student body at Manhattan High.

We are asking 250 Manhattan High students to answer the questionaire, approximately equal numbers of sophomores, juniors, and seniors. Please answer every question so that information will be complete.

Part I consists of 30 choices of main dishes. These are all foods that are served on the Type A school lunch menu. We want you to answer 3 questions for each choice:

1. Which would you select if offered a choice of main dishes?
2. How sure are you of your choice?
3. For each main dish--how well do you like this food?

The example below is given at the top of each page of the questionnaire to assist you in completing Part I.

EXAMPLE:

Check your choice (A or B) from each pair of main dishes	Do you like these items?(Circle 1,2,3,or4) LIKE	WILL EAT	DISLIKE	DON'T KNOW
X A Beef Stew	(1)	2	3	4
____ B Baked Ham	(1)	2	3	4

How sure are you of your choice?
(Circle A,B, or C)

(A)- very sure B - fairly sure C - not sure

EXPLANATION:

In the above example the student indicated that he/she would select Beef Stew if offered stew or Baked Ham and is very sure about the choice. The numbers circled to the right indicate that the student likes both of these items, however.

Part II of this study consists of 25 questions about you and your opinions of school lunch to help in analyzing the results.

An I.D. number is used for analysis and electronic data processing purposes only--you will not be identified with your answers individually.

THANKS FOR YOUR HELP

PART I

EXAMPLE

Check your choice (A or B) from each pair of main dishes	Do you like these items? (Circle 1, 2, 3, or 4) LIKE	WILL EAT	DISLIKE	DON'T KNOW
X A Beef Stew	(1)	2	3	4
___ B Baked Ham	(1)	2	3	4

How sure are you of your choice? (Circle A, B, or C)

(A) - very sure B - fairly sure C - not sure

Choice #1

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Beef Stew	1	2	3	4
___ B Baked Ham	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #2

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Chilidog on Bun (two weiners topped with ground meat in barbecue sauce)	1	2	3	4
___ B Fried Shrimp	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #3

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Italian Pizza (ground beef and pork, spicy tomato sauce, mozzarella cheese)	1	2	3	4
___ B Cold Cut Assortment (bologna, salami, and cheese)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #4

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Char-Broiled Hamburger on Bun	1	2	3	4
___ B Baked Fish (fish square on bun)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #5

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Roast Turkey and Gravy	1	2	3	4
___ B Italian Pizza	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

EXAMPLE

Check your choice (A or B) from each pair of main dishes	Do you like these items? (Circle 1, 2, 3, or 4) LIKE	WILL EAT	DISLIKE	DON'T KNOW
X A Beef Stew	(1)	2	3	4
___ B Baked Ham	(1)	2	3	4

How sure are you of your choice? (Circle A, B, or C)

(A) - very sure B - fairly sure C - not sure

Choice #6

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Baked Ham on Whole Wheat Bun	1	2	3	4
___ B Fried Shrimp	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #7

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Chili and Crackers	1	2	3	4
___ B Vegetable Soup	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #8

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Submarine Sandwich (salami, bologna, cheese, lettuce, and tomato on a hoagie bun)	1	2	3	4
___ B Barbecued Hamburger (beef pattie with barbecue sauce on bun)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #9

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Italian Cavatini (tomato sauce over long noodles and cheese)	1	2	3	4
___ B Roast Turkey and Gravy	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #10

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Fish Cutlets (breaded, fried fish)	1	2	3	4
___ B Chili and Crackers	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

EXAMPLE

Check your choice (A or B) from each pair of main dishes	Do you like these items? (Circle 1, 2, 3, or 4) LIKE	WILL EAT	DISLIKE	DON'T KNOW
X A Beef Stew	(1)	2	3	4
___ B Baked Ham	(1)	2	3	4

How sure are you of your choice?
(Circle A, B, or C)

(A) - very sure B - fairly sure C - not sure

Choice #11

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Barbecued Hamburger (beef pattie with barbecue sauce on bun)	1	2	3	4
___ B Baked Ham	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #12

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Tuna Noodle Casserole (noodles, tuna, celery and onion in casserole)	1	2	3	4
___ B Macaroni and Cheese	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #13

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Breaded Pork Cutlet (breaded, fried pork)	1	2	3	4
___ B Ham Salad (ham cubes, celery, and mayonnaise on lettuce)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #14

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Fried Chicken	1	2	3	4
___ B Meat Loaf (ground beef mixture topped w/tomato sauce)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #15

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Mexican Pie (ground beef, lettuce, tomato, and cheese on tortilla)	1	2	3	4
___ B Tuna Noodle Casserole (noodles, tuna, celery & onion in casserole)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

EXAMPLE

Check your choice (A or B) from each pair of main dishes	Do you like these items? (Circle 1, 2, 3, or 4) LIKE	WILL EAT	DISLIKE	DON'T KNOW
X A Beef Stew	(1)	2	3	4
___ B Baked Ham	(1)	2	3	4

How sure are you of your choice? (Circle A, B, or C)

(A) very sure B - fairly sure C - not sure

Choice #16

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Fried Shrimp	1	2	3	4
___ B Baked Ham	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #17

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Ham Salad on Lettuce	1	2	3	4
___ B Fried Chicken	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #18

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Pizza	1	2	3	4
___ B Taco Pie (ground beef mixture, lettuce, cheese and tomato with corn chips)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #19

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Beef Taco Pie	1	2	3	4
___ B Beef Noodle Casserole (beef cubes, noodles, and vegetables in a beef broth)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #20

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Barbecued Beef on Bun (beef with barbecue sauce)	1	2	3	4
___ B Egg Salad on Bun (hard cooked eggs, celery, and mayonnaise on lettuce)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

EXAMPLE

Check your choice (A or B) from each pair of main dishes	Do you like these items? (Circle 1, 2, 3, or 4) LIKE	WILL EAT	DISLIKE	DON'T KNOW
X A Beef Stew	(1)	2	3	4
___ B Baked Ham	(1)	2	3	4

How sure are you of your choice? (Circle A, B, or C)

(A) - very sure B - fairly sure C - not sure

Choice #21

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Fish and Chips	1	2	3	4
___ B Baked Ham	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #22

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Enchilada Casserole (ground beef mixture, cheese, tomato sauce on tortilla cake)	1	2	3	4
___ B Baked Chicken	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #23

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Baked Ham	1	2	3	4
___ B Surfcakes on Bun (fish cakes, fried, on bun)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #24

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Pigs in Blanket (two weiners wrapped in pastry)	1	2	3	4
___ B Baked Ham	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #25

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Turkey Tetrazzini (noodles, turkey, onion, in a white sauce)	1	2	3	4
___ B Pigs in Blanket (two weiners wrapped in pastry)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

EXAMPLE

Check your choice (A or B) from each pair of main dishes	Do you like these items? (Circle 1, 2, 3, or 4) LIKE	WILL EAT	DISLIKE	DON'T KNOW
X A Beef Stew	(1)	2	3	4
___ B Baked Ham	(1)	2	3	4

How sure are you of your choice? (Circle A, B, or C)

(A) - very sure B - fairly sure C - not sure

Choice #26

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Corn Dogs (two weiners in cornbread)	1	2	3	4
___ B Baked Ham	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #27

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Pizza	1	2	3	4
___ B Cheeseburger	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #28

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Fishwitch (fish square on bun)	1	2	3	4
___ B Pizza	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #29

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Roast Turkey and Gravy	1	2	3	4
___ B Ham Salad on Lettuce (ham cubes, mayonnaise and celery on lettuce)	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

Choice #30

Check your choice (A or B)	Do you like these items? LIKE	WILL EAT	DISLIKE	DON'T KNOW
___ A Turkey Salad on Leaf Lettuce	1	2	3	4
___ B Hamburger on Bun	1	2	3	4

How sure are you?

A - very sure B - fairly sure C - not sure

PART II

STUDY OF FOOD PREFERENCES OF HIGH SCHOOL STUDENTS

PLEASE CHECK:

_____1. Student Classification

____ Sophomore

____ Junior

____ Senior

_____2. Sex

____ Female

____ Male

_____3. Where have you lived most of your life?

____ Urban area

____ Rural area

_____4. In what section of the country have you lived most of your life?

____ West

____ Southwest

____ Midwest

____ Northeast

____ Southeast

____ Outside U.S.A., please specify_____

_____5. In how many different cities, towns, or communities have you lived?

____ 1

____ 2-3

____ 4-6

____ more than 6

_____6. Number of semesters in Manhattan High School including this semester

____ 1-2 semesters

____ 3-4 semesters

____ more than 4 semesters

_____7. Where do you usually eat lunch during the school week (Monday through Friday)?

____ don't usually eat lunch in the school cafeteria

____ at home

____ at a drive-in or another commercial food service (specify)_____

_____8. During the school week (Monday through Friday) how often do you usually eat the Type A school lunch?

____ every day

____ 3-4 times a week

____ 1 or two times a week

____ rarely or never

_____9. If you eat the Type A school lunch more than 3 times a week, check as many of the following as you feel are correct for you.

____ I usually like the food that is served

____ My friends eat the school lunch also

____ My parents want me to eat the school lunch

____ The price of the school lunch is low

_____10. If you rarely or never eat the Type A school lunch, check as many of the following as you feel are correct for you.

____ I don't like the food that is served at the school

____ My friends and I bring sack lunches

____ It's cheaper to bring a sack lunch

____ I'm allergic to some foods

____ I'm a vegetarian, and do not eat the main dishes that contain meat

PLEASE RATE YOUR SCHOOL LUNCH PROGRAM BY CHECKING THE ONE ANSWER TO EACH QUESTION THAT BEST DESCRIBES YOUR FEELINGS:

____11. The school lunch room is noisy.

____ most of the time

____ some of the time

____ the noise doesn't bother me.

____12. The lunch room is clean.

____ most of the time

____ I don't really notice

____ some of the time

____13. The size of the servings is about right.

____ most of the time

____ some of the time

____ the servings are too large

____ I don't get enough to eat

____14. The food in the school lunch program is:

____ usually the right temperature

____ hot food is not really hot

____ cold food is not well chilled

____15. The cooks in the school lunch program are:

____ usually friendly

____ friendly sometimes

____ often crabby

____16. The lunch room is cheerful.

____ yes, very cheerful

____ okay, so-so

____ not really very cheerful

____17. The food in the school lunch program is:

____ almost always good

____ good only some of the time

____ usually not very good

____18. The cashiers in the school lunch program are:

____ usually friendly

____ friendly sometimes

____ often crabby

____19. I like the meat dishes:

____ most of the time

____ some of the time

____ not very often

____20. I like the vegetables:

____ most of the time

____ some of the time

____ not very often

____21. I like the desserts:

____ most of the time

____ some of the time

____ not very often

____22. We are rushed during lunch time

____ most of the time

____ some of the time

____ not usually

____23. When I eat the school lunch:

____ I usually eat most of my food

____ I usually eat about half of my food

____ I usually leave a lot of my food

____24. I eat breakfast:

____ most of the time

____ some of the time

____ hardly ever

____25. We are interested in knowing if you would like to become involved in some aspects of the food service. Please rate each of the following items using the following scale:

1 = would really like to do
2 = might like to do that
3 = not really interested

(Circle the number that corresponds to your interest)

1 2 3 plan a menu for one meal to be used at M.H.S.

1 2 3 take a tour of the M.H.S. cafeteria

1 2 3 bring your own recipe to be used

1 2 3 serve on a student panel to discuss food service

1 2 3 provide art work for the dining room decor at M.H.S. cafeteria

1 2 3 plan to be involved in planning a special event

1 2 3 provide entertainment during a meal (or meals)

APPENDIX C

Letter to Teachers

Dear ___(teacher's name)___

The Department of Institutional Management at Kansas State University is working on a research project concerning prediction of amounts of food to prepare in various foodservices.

Questionnaires are being distributed to a random sample of students from this high school. Would you kindly distribute these questionnaires at your next English class to the students whose names appear on the strips of paper (to be torn off upon distribution) attached to each questionnaire?

Students may return their completed questionnaires to the box marked SCHOOL FOODSERVICE STUDY in the principal's office.

Thank you for your help!

If there are any questions, please call

Teri Gargano

office 532-5521
home 539-3440

APPENDIX D

Follow-up Letter to Students in Questionnaire Approach

Hi!

Have you completed your School Foodservice Study questionnaire?

Well, now that school is over for the year you're probably wondering where to return it. All you need to do is place your completed questionnaire in the stamped envelope provided and drop it in the mail. If you've misplaced the questionnaire, you may complete and mail the one that is enclosed.

Remember, it is very important to receive every questionnaire so that responses can be thoroughly analyzed. Since you were selected to participate in the study, I'm sure that you will want to return your completed questionnaire as soon as possible.

Thanks for your help!

Sincerely,

Teri Gargano
Graduate Research Assistant

APPENDIX E

Research Instrument for Slide Approach

KANSAS STATE UNIVERSITY

Department of Institutional Management
Justin Hall
Manhattan, Kansas 66506
Phone: 913 532-5521

SCHOOL FOODSERVICE STUDY

Instructions: Please complete this questionnaire and return this questionnaire in the envelope provided to the sealed box in the Principal's Office marked School Foodservice Study. Please read the directions carefully and answer all questions as directed. Thank you for your cooperation.

Introduction

The Department of Institutional Management at Kansas State University is working on a research project concerning prediction of amounts of food to prepare in various foodservice operations. Presently, studies are underway in Kansas State University residence hall foodservices. We are expanding the project to include this study of the Manhattan High school lunch program.

We need your help in this project. The most important factor in a study like this is the student--what foods do students prefer? What do they select when given a choice? This is what we want you to tell us. You are among a group of students that was randomly selected to be representative of the student body at Manhattan High. A sample of 125 Manhattan High students are being asked to view slides and tell us about their likes and dislikes. Approximately equal numbers of sophomores, juniors, and seniors will participate in the study. We want to know which main dishes students will choose if offered a choice of two main dishes.

Part I consists of viewing slides of main dishes served in the Manhattan High cafeteria. These are all foods that are served on the Type A school lunch menu. We want you to answer 3 questions for each choice:

1. Which would you select if offered a choice of main dishes?
2. How sure are you of your choice?
3. For each main dish--how well do you like this food?

After viewing each pair of main dishes, check either A or B on your answer sheet as the main dish you would choose if you were offered these two main dishes. As you view the slides in pairs, A will be first in some instances and B will be first in others. Please mark your answer sheet carefully.

Study the example question frame below:

EXAMPLE:

Choice #1

1. Check A or B

   X A Beef Stew

   ____ B Baked Ham

2. How sure are you?

   (1) - very sure
   2 - fairly sure
   3 - not sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	(1)	2	3	4
B	(1)	2	3	4

EXPLANATION:

In the preceding example the student indicated that he/she would select Beef Stew if offered stew or Baked Ham and is very sure about the choice. The numbers circled at the bottom of the question frame indicate that the student likes both of the main dishes, however.

An I.D. number is used for analysis and electronic data processing purposes only--you will not be identified with your answers individually. Now would you view the slides? Reverse the slides to view any previous item if this will aid you in your choice. Remember, A is not always first - B is first in some of the 30 choices. Part II of the study consists of 25 questions about you and your opinions of school lunch to help in analyzing the results.

THANKS FOR YOUR HELP

PART I

ANSWER SHEET
(SLIDES)

EXAMPLE:

Choice #1

1. Check A or B

   X A Beef Stew
   ___ B Baked Ham

2. How sure are you?

   (1) - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	(1)	2	3	4
B	(1)	2	3	4

Choice #1

1. Check A or B

   ___ A Beef Stew
   ___ B Baked Ham

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #2

1. Check A or B

   ___ A Chilidog on Bun
   ___ B Fried Shrimp

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #3

1. Check A or B

   ___ A Italian Pizza
   ___ B Cold Cut Assortment

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #4

1. Check A or B

   ___ A Char-Broiled Hamburger on Bun
   ___ B Baked Fish

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #5

1. Check A or B

   ___ A Roast Turkey and Gravy
   ___ B Italian Pizza

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

EXAMPLE:

Choice #1

1. Check A or B

   X A Beef Stew
   ___ B Baked Ham

2. How sure are you?

   (1) - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	(1)	2	3	4
B	(1)	2	3	4

Choice #6

1. Check A or B

   ___ A Baked Ham on Whole Wheat Bun
   ___ B Fried Shrimp

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #7

1. Check A or B

   ___ A Chili and Crackers
   ___ B Vegetable Soup

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #8

1. Check A or B

   ___ A Submarine Sandwich
   ___ B Barbecued Hamburger

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #9

1. Check A or B

   ___ A Italian Cavatini
   ___ B Roast Turkey and Gravy

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #10

1. Check A or B

   ___ A Fish Cutlets
   ___ B Chili and Crackers

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

EXAMPLE:

Choice #1

1. Check A or B

   X A Beef Stew
   ___ B Baked Ham

2. How sure are you?

   (1) - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	(1)	2	3	4
B	(1)	2	3	4

Choice #11

1. Check A or B

   ___ A Barbecued Hamburger
   ___ B Baked Ham

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #12

1. Check A or B

   ___ A Tuna Noodle Casserole
   ___ B Macaroni and Cheese

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #13

1. Check A or B

   ___ A Breaded Pork Cutlet
   ___ B Ham Salad

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #14

1. Check A or B

   ___ A Fried Chicken
   ___ B Meat Loaf

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #15

1. Check A or B

   ___ A Mexican Pie
   ___ B Tuna Noodle Casserole

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

EXAMPLE:

Choice #1

1. Check A or B

   X A Beef Stew

   ___ B Baked Ham

2. How sure are you?

   (1) very sure

   2 - fairly sure

   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	(1)	2	3	4
B	(1)	2	3	4

Choice #16

1. Check A or B

   ___ A Fried Shrimp

   ___ B Baked Ham

2. How sure are you?

   1 - very sure

   2 - fairly sure

   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #17

1. Check A or B

   ___ A Ham Salad on Lettuce

   ___ B Fried Chicken

2. How sure are you?

   1 - very sure

   2 - fairly sure

   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #18

1. Check A or B

   ___ A Pizza

   ___ B Taco Pie

2. How sure are you?

   1 - very sure

   2 - fairly sure

   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #19

1. Check A or B

   ___ A Beef Taco Pie

   ___ B Beef Noodle Casserole

2. How sure are you?

   1 - very sure

   2 - fairly sure

   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #20

1. Check A or B

   ___ A Barbecued Beef on Bun

   ___ B Egg Salad on Bun

2. How sure are you?

   1 - very sure

   2 - fairly sure

   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

EXAMPLE:

Choice #1

1. Check A or B

   X A Beef Stew
   ___ B Baked Ham

2. How sure are you?

   (1) - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	(1)	2	3	4
B	(1)	2	3	4

Choice #21

1. Check A or B

   ___ A Fish and Chips
   ___ B Baked Ham

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #22

1. Check A or B

   ___ A Enchilada Casserole
   ___ B Baked Chicken

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #23

1. Check A or B

   ___ A Baked Ham
   ___ B Surfcakes on Bun

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #24

1. Check A or B

   ___ A Pigs in Blanket
   ___ B Baked Ham

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #25

1. Check A or B

   ___ A Turkey Tetrazzini
   ___ B Pigs in Blanket

2. How sure are you?

   1 - very sure
   2 - fairly sure
   3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

EXAMPLE:

Choice #1

1. Check A or B

X A Beef Stew

___ B Baked Ham

2. How sure are you?

(1) - very sure

2 - fairly sure

3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	(1)	2	3	4
B	(1)	2	3	4

Choice #26

1. Check A or B

___ A Corn Dogs

___ B Baked Ham

2. How sure are you?

1 - very sure

2 - fairly sure

3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #27

1. Check A or B

___ A Pizza

___ B Cheeseburger

2. How sure are you?

1 - very sure

2 - fairly sure

3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #28

1. Check A or B

___ A Fishwitch

___ B Pizza

2. How sure are you?

1 - very sure

2 - fairly sure

3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #29

1. Check A or B

___ A Roast Turkey and Gravy

___ B Ham Salad on Lettuce

2. How sure are you?

1 - very sure

2 - fairly sure

3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

Choice #30

1. Check A or B

___ A Turkey Salad on Leaf Lettuce

___ B Hamburger on Bun

2. How sure are you?

1 - very sure

2 - fairly sure

3 - not so sure

3. Do you like these items?

	LIKE	WILL EAT	DISLIKE	DON'T KNOW
A	1	2	3	4
B	1	2	3	4

PART II

STUDY OF FOOD PREFERENCES OF HIGH SCHOOL STUDENTS

PLEASE CHECK:

_____1. Student Classification

____ Sophomore

____ Junior

____ Senior

_____2. Sex

____ Female

____ Male

_____3. Where have you lived most of your life?

____ Urban area

____ Rural area

_____4. In what section of the country have you lived most of your life?

____ West

____ Southwest

____ Midwest

____ Northeast

____ Southeast

____ Outside U.S.A., please specify_____

_____5. In how many different cities, towns, or communities have you lived?

____ 1

____ 2-3

____ 4-6

____ more than 6

_____6. Number of semesters in Manhattan High School including this semester

____ 1-2 semesters

____ 3-4 semesters

____ more than 4 semesters

_____7. Where do you usually eat lunch during the school week (Monday through Friday)?

____ don't usually eat lunch in the school cafeteria

____ at home

____ at a drive-in or another commercial food service (specify)_____

_____8. During the school week (Monday through Friday) how often do you usually eat the Type A school lunch?

____ every day

____ 3-4 times a week

____ 1 or two times a week

____ rarely or never

_____9. If you eat the Type A school lunch more than 3 times a week, check as many of the following as you feel are correct for you.

____ I usually like the food that is served

____ My friends eat the school lunch also

____ My parents want me to eat the school lunch

____ The price of the school lunch is low

_____10. If you rarely or never eat the Type A school lunch, check as many of the following as you feel are correct for you.

____ I don't like the food that is served at the school

____ My friends and I bring sack lunches

____ It's cheaper to bring a sack lunch

____ I'm allergic to some foods

____ I'm a vegetarian, and do not eat the main dishes that contain meat

PLEASE RATE YOUR SCHOOL LUNCH PROGRAM BY CHECKING THE ONE ANSWER TO EACH QUESTION THAT BEST DESCRIBES YOUR FEELINGS:

____11. The school lunch room is noisy.

____ most of the time

____ some of the time

____ the noise doesn't bother me.

____12. The lunch room is clean.

____ most of the time

____ I don't really notice

____ some of the time

____13. The size of the servings is about right.

____ most of the time

____ some of the time

____ the servings are too large

____ I don't get enough to eat

____14. The food in the school lunch program is:

____ usually the right temperature

____ hot food is not really hot

____ cold food is not well chilled

____15. The cooks in the school lunch program are:

____ usually friendly

____ friendly sometimes

____ often crabby

____16. The lunch room is cheerful.

____ yes, very cheerful

____ okay, so-so

____ not really very cheerful

____17. The food in the school lunch program is:

____ almost always good

____ good only some of the time

____ usually not very good

____18. The cashiers in the school lunch program are:

____ usually friendly

____ friendly sometimes

____ often crabby

____19. I like the meat dishes:

____ most of the time

____ some of the time

____ not very often

____20. I like the vegetables:

____ most of the time

____ some of the time

____ not very often

____21. I like the desserts:

____ most of the time

____ some of the time

____ not very often

____22. We are rushed during lunch time

____ most of the time

____ some of the time

____ not usually

____23. When I eat the school lunch:

____ I usually eat most of my food

____ I usually eat about half of my food

____ I usually leave a lot of my food

____24. I eat breakfast:

____ most of the time

____ some of the time

____ hardly ever

____25. We are interested in knowing if you would like to become involved in some aspects of the food service. Please rate each of the following items using the following scale:

1 = would really like to do
2 = might like to do that
3 = not really interested

(Circle the number that corresponds to your interest)

1 2 3 plan a menu for one meal to be used at M.H.S.

1 2 3 take a tour of the M.H.S. cafeteria

1 2 3 bring your own recipe to be used

1 2 3 serve on a student panel to discuss food service

1 2 3 provide art work for the dining room decor at M.H.S. cafeteria

1 2 3 plan to be involved in planning a special event

1 2 3 provide entertainment during a meal (or meals)

APPENDIX F

Letter to Students for Slide Approach

Dear (student's name)

The Department of Institutional Management at Kansas State University is working on a research project concerning prediction of amounts of food to prepare for various foodservices.

You are among a group of students that was randomly selected to be representative of the student body at your high school. You will be asked to view slides of main dish items and record your likes and dislikes on a questionnaire. We want to know which main dishes students will choose if offered a choice of two main dishes.

We will contact you by telephone to make an appointment to view the slides at the high school library at your convenience.

Thank you for your help in advance!

If there are any questions, please call

Teri Gargano

office 532-5521
home 539-3440

APPENDIX G

Instructions for Student Employees

Teri Gargano

office 532-5521
home 539-3440

SCHOOL FOODSERVICE STUDY

slide approach

Instructions for Student Employees

1. Students in the sample (respondents) will report to the designated area of the Manhattan High School library which is the independent study area near the conference room.

2. Ask respondents' name and check the list of respondents for that respondents' I.D. number and write the I.D. number at the upper right hand corner of the instrument for the slide approach of the study.

3. Introduce yourself to the respondent. Encourage him/her to ask questions anytime during slide viewing if the instrument is unclear. If the respondent needs to ask a question, please tell them to do so by raising his/her hand so as not to disturb those who are also completing the instrument.

4. Give the respondent the instrument with his/her I.D. number on it and a pencil, and direct the respondent to a caramate for viewing the slides.

5. Tell the respondent to read the directions carefully, after which you will turn on the power for the caramate and go through the example for Choice #1 with the respondent, using the slides for Choice #1 (Beef Stew and Baked Ham).

6. After the respondent has completed the instrument and you have checked to see that all questions are answered, collect the instrument and pencil from the respondent, and thank him/her for participating in the study.

Reminders

1. Emphasize to the respondents that ALL questions must be answered (check back page of instrument to see if question #25 is answered).

2. Remind respondents that they must look at the slides carefully because entree A does not always appear first in the choices.

3. Remind respondents to answer all 3 questions regarding each choice frame in Part I of the instrument. In question 3 of each frame in Part I there must be a circled response for both entrees (A and B).

4. Spot-check instruments to insure that they are being properly completed.

THANKS FOR YOUR HELP!

APPENDIX H

Menu Item Census Form

DATE _____ DAY _____

_____

_____

LUNCH:	ENTREE ITEMS	FINAL COUNT
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

APPENDIX I

Stated Selection Data for Luncheon Entrees

Students' stated choice, certainty of choice, and preference for luncheon entrees served on high school lunch menus

choice no.[1]	selection	stated choice by approach[2]		certainty of choice[3]						preference[4]							
				questionnaire			slide			questionnaire				slide			
		questionnaire	slide	A	B	C	A	B	C	like	will eat	dislike	don't know	like	will eat	dislike	don't know
		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
1	beef stew	44.3	39.8	63.6	35.5	0.9	33.3	59.0	7.7	44.3	38.7	16.1	0.9	28.6	44.9	21.4	5.1
	baked ham	55.7	60.2	63.4	34.3	2.2	49.2	47.5	3.4	54.2	34.3	10.2	1.3	37.1	44.3	17.5	1.0
2	chilidog on bun	49.6	45.0	68.1	28.6	3.4	60.0	33.3	6.7	64.7	28.2	6.3	0.8	59.0	34.0	7.0	0.0
	fried shrimp	50.4	55.0	77.9	20.5	1.6	63.6	32.7	3.6	65.5	16.2	16.2	2.1	58.6	22.2	18.2	1.0
3	Italian pizza	80.9	82.0	85.9	12.1	2.0	80.2	16.0	3.7	87.0	9.2	3.3	0.4	89.0	7.0	3.0	1.0
	cold cut assortment	19.1	18.0	55.6	33.3	11.1	72.2	16.7	11.1	59.6	32.2	6.5	1.7	52.5	34.3	10.1	3.0
4	char-broiled hamburger	68.3	64.0	75.8	21.7	2.5	69.4	24.2	6.5	69.5	24.7	5.9	0.0	64.0	30.0	5.0	1.0
	baked fish	31.7	36.0	61.3	32.0	6.7	36.1	52.8	11.1	37.7	35.6	25.4	1.3	38.4	39.4	20.2	2.0
5	roast turkey and gravy	37.8	12.0	69.9	28.0	2.2	41.7	41.7	16.7	69.6	25.7	4.6	0.0	28.0	47.0	21.0	4.0
	Italian pizza	62.2	88.0	76.2	21.9	2.0	84.7	14.1	1.2	85.2	12.3	2.5	0.0	81.8	11.1	6.1	1.0

[1]Choice number is the item number on the survey instrument. Luncheon choices are listed in chronological order of service on menus.

[2]Respondents were asked to indicate which of the items they would select if offered the choice listed. N = 249, Questionnaire Approach; N = 100, Slide Approach.

[3]$\% = \frac{\text{no. responding A, B, or C}}{\text{no. who chose each item.}}$

[4]Respondents were asked to indicate preference for each entree.

Students' stated choice, certainty of choice, and preference for luncheon entrees served on high school lunch menus (cont.)

choice no.	selection	stated choice by approach		certainty of choice						preference							
				questionnaire			slide			questionnaire				slide			
		questionnaire	slide	A	B	C	A	B	C	like	will eat	dislike	don't know	like	will eat	dislike	don't know
		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
6	baked ham on bun	42.4	41.0	64.4	33.7	2.0	46.3	46.3	7.3	53.8	38.1	8.1	0.0	45.0	42.0	13.0	0.0
	fried shrimp	57.6	59.0	71.9	23.7	4.3	65.5	27.6	6.9	61.4	20.8	15.7	2.1	59.6	24.2	15.2	1.0
7	chili and crackers	87.3	85.9	82.4	16.7	1.0	71.8	18.8	9.4	79.3	16.1	4.5	0.0	71.7	20.2	7.1	1.0
	vegetable soup	12.7	14.1	58.1	32.3	9.7	42.9	35.7	21.4	33.3	33.3	32.5	0.9	34.7	25.5	36.7	3.1
8	submarine sandwich	69.9	59.0	74.1	22.9	2.9	44.1	35.6	20.3	76.9	17.4	5.8	0.0	64.0	28.0	6.0	2.0
	barbecued hamburger	30.1	41.0	67.1	30.1	2.7	65.9	29.3	4.9	60.1	28.8	10.7	0.4	65.7	24.2	7.1	3.0
9	Italian cavatini	45.3	84.0	52.8	39.8	7.4	62.7	33.7	3.6	51.2	26.2	12.1	10.4	64.0	24.0	8.0	4.0
	roast turkey and gravy	54.7	16.0	74.4	24.0	1.6	37.5	43.8	18.8	65.0	28.3	5.9	0.8	25.3	44.4	21.2	9.1
10	fish cutlets	18.6	39.0	64.4	28.9	6.7	56.4	30.8	12.8	33.5	33.5	28.4	4.7	48.0	36.0	16.0	0.0
	chili and crackers	81.4	61.0	77.9	20.0	2.1	58.3	31.7	10.0	77.9	17.0	5.1	0.0	71.7	21.2	6.1	1.0
11	barbecued hamburger	56.2	70.7	65.4	28.6	6.0	61.4	28.6	10.0	61.4	30.1	8.1	0.4	64.0	27.0	5.0	4.0
	baked ham	43.8	29.3	70.2	28.8	1.0	28.6	50.0	21.4	58.2	31.0	10.8	0.0	39.4	39.4	18.2	3.0
12	tuna noodle casserole	36.6	30.0	65.9	26.1	8.0	36.7	40.0	23.3	41.5	35.9	21.4	1.3	23.0	36.0	38.0	3.0
	macaroni and cheese	63.4	70.0	65.1	29.6	5.3	44.3	40.0	15.7	60.2	24.5	14.5	0.8	44.4	28.3	23.2	4.0
13	breaded pork cutlet	64.0	90.0	61.7	33.1	5.2	59.6	28.1	12.4	50.4	31.9	13.4	4.2	56.0	29.0	11.0	4.0
	ham salad	36.0	10.0	67.9	26.2	6.0	40.0	60.0	0.0	35.7	37.0	22.7	4.6	12.1	34.3	41.4	12.1
14	fried chicken	69.4	73.0	75.4	22.2	2.4	64.4	26.0	9.6	71.8	18.5	9.2	0.4	68.0	24.0	8.0	0.0
	meat loaf	30.6	27.0	66.2	27.0	6.8	51.9	33.3	14.8	44.4	34.6	19.7	1.3	43.4	39.4	15.2	2.0

Students' stated choice, certainty of choice, and preference for luncheon entrees served on high school lunch menus (cont.)

choice no.	selection	stated choice by approach		certainty of choice						preference							
				questionnaire			slide			questionnaire				slide			
		question-naire	slide	A	B	C	A	B	C	like	will eat	dis-like	don't know	like	will eat	dis-like	don't know
		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
15	Mexican pie	85.8	91.9	77.6	20.5	1.9	73.3	17.8	8.9	76.7	16.2	5.8	1.2	77.8	14.1	5.1	3.0
	tuna noodle casserole	14.2	8.1	62.9	34.3	2.9	28.6	28.6	42.9	36.8	37.7	22.9	2.6	16.3	42.9	35.7	5.1
16	fried shrimp	57.6	62.6	77.9	17.9	4.3	72.6	17.7	9.7	64.3	18.5	16.0	1.3	63.0	21.0	15.0	1.0
	baked ham	42.4	37.4	66.3	29.7	4.0	33.3	47.2	19.4	55.6	34.3	10.0	0.0	43.4	35.4	19.2	2.0
17	ham salad	27.2	12.0	61.9	34.9	3.2	25.0	41.7	33.3	39.1	37.4	20.6	2.9	14.0	37.0	44.0	5.0
	fried chicken	72.8	88.0	77.1	20.6	2.4	68.6	24.4	7.0	73.2	16.6	8.9	1.3	63.6	25.3	10.1	1.0
18	pizza	49.0	78.8	74.4	15.4	10.3	47.4	29.5	23.1	87.4	10.9	1.3	0.4	93.0	3.0	4.0	0.0
	taco pie	51.0	21.2	70.7	21.1	8.1	38.1	42.9	19.0	84.7	9.7	5.1	0.4	70.7	20.2	4.0	5.1
19	beef taco pie	84.6	65.0	76.8	21.2	2.0	65.6	23.4	10.9	80.6	9.9	7.0	2.5	63.0	25.0	8.0	4.0
	beef noodle casserole	15.4	35.0	63.9	33.3	2.8	38.2	38.2	23.5	33.9	43.3	19.7	3.0	25.5	50.0	19.4	5.1
20	barbecued beef	76.5	86.0	66.3	29.9	3.8	65.1	22.9	12.0	61.2	29.2	8.3	1.2	56.0	36.0	3.0	5.0
	egg salad	23.5	14.0	64.9	28.1	7.0	35.7	57.1	7.1	29.2	32.5	34.2	4.2	14.1	33.3	48.5	4.0
21	fish and chips	51.7	69.0	67.5	26.0	6.5	65.2	27.5	7.2	50.6	27.4	19.4	2.5	60.0	25.0	15.0	0.0
	baked ham	48.3	31.0	70.4	23.5	6.1	58.1	25.8	16.1	56.2	31.9	11.5	0.4	41.4	36.4	20.2	2.0
22	enchilada casserole	57.1	43.4	63.2	35.3	1.5	38.1	33.3	28.6	59.8	25.9	7.5	6.7	47.0	27.0	16.0	10.0
	baked chicken	42.9	56.6	64.4	32.7	3.0	50.0	32.1	17.9	58.9	27.5	13.1	0.4	55.6	29.3	9.1	6.1
23	baked ham	69.6	59.0	71.1	23.9	5.0	63.8	22.4	13.8	57.9	31.1	11.1	0.0	42.0	36.0	20.0	2.0
	surfcakes	30.4	41.0	62.5	33.3	4.2	53.7	26.8	19.5	24.9	35.8	31.4	7.9	28.3	28.3	36.4	7.1

Students' stated choice, certainty of choice, and preference for luncheon entrees served on high school lunch menus (cont.)

choice no.	selection	stated choice by approach		certainty of choice						preference							
				questionnaire			slide			questionnaire				slide			
		question-naire	slide	A	B	C	A	B	C	like	will eat	dis-like	don't know	like	will eat	dis-like	don't know
		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
24	pigs in blanket	69.6	82.0	65.9	30.5	3.7	59.8	31.7	8.5	71.4	20.6	7.6	0.4	79.0	19.0	1.0	1.0
	baked ham	30.4	18.0	72.2	26.4	1.4	50.0	33.3	16.7	56.1	33.5	10.0	0.4	42.4	32.3	22.2	3.0
25	turkey tetrazzini	31.0	15.0	75.3	17.8	6.8	40.0	33.3	26.7	36.9	33.5	14.6	15.0	26.0	38.0	27.0	9.0
	pigs in blanket	69.0	85.0	68.7	29.4	1.8	70.6	27.1	2.4	70.8	20.8	7.6	0.8	68.7	27.3	2.0	2.0
26	corn dogs	60.1	67.0	66.9	28.2	4.9	47.8	40.3	11.9	58.1	28.0	12.3	1.7	52.0	35.0	9.0	4.0
	baked ham	39.9	33.0	77.2	20.7	2.2	42.4	48.5	9.1	56.6	31.4	11.5	0.4	43.4	34.3	20.2	2.0
27	pizza	74.7	71.0	70.9	24.6	4.5	53.5	32.4	14.1	87.1	10.4	2.5	0.0	91.0	5.0	4.0	0.0
	cheeseburger	25.3	29.0	67.2	24.6	8.2	34.5	37.9	27.6	70.3	21.1	7.8	0.9	68.7	24.2	6.1	1.0
28	fishwitch	19.5	25.0	61.7	31.9	6.4	40.0	40.0	20.0	40.6	38.5	19.2	1.7	48.5	28.3	20.2	3.0
	pizza	80.5	75.0	82.5	15.9	1.6	62.2	28.4	9.5	84.2	13.2	2.6	0.0	89.9	7.1	2.0	1.0
29	roast turkey and gravy	75.9	71.7	73.9	23.9	2.2	35.2	35.2	29.6	68.2	25.9	5.9	0.0	24.0	46.0	26.0	4.0
	ham salad	24.1	28.3	58.2	38.2	3.6	22.2	37.0	40.7	36.2	36.2	24.1	3.4	9.1	37.4	44.4	9.1
30	turkey salad	25.1	4.0	72.9	23.7	3.4	50.0	50.0	0.0	39.1	37.0	20.0	3.8	14.1	38.4	42.4	5.1
	hamburger	74.9	96.0	68.7	29.1	2.2	67.0	25,5	7.4	72.8	22.6	4.3	0.4	71.4	23.5	5.1	0.0

APPENDIX J

Actual Selection Data for Luncheon Entrees

Students' actual entree selections from cafeteria serving lines at luncheon meals

choice no.[1]	date of service	selections	situation[2]	portions served at each line		total portions served of each entree	% of total portions served
				east	west		
1	M	Beef Stew	1	89	159	248	63.6
	3/24	Baked Ham	1	45	97	142	36.4
2	Tu	Chilidog on Bun	1	107	263	370	87.7
	3/25	Fried Shrimp	1	14	38	52	12.3
3	W	Italian Pizza	1	75	451	451	99.3
	3/26	Cold Cut Assortment	1	1	2	3	.7
4	Th	Char-Broiled Burger	1	78	259	337	87.5
	3/27	Baked Fish	1	16	32	48	12.5
5	F	Roast Turkey and Gravy	1	53	86	139	27.9
	3/28	Italian Pizza	1	114	152	266	53.3
		Baked Fish	3	39	55	94	18.8
6	M	Baked Ham	1	140	189	329	76.3
	3/31	Fried Shrimp	1	48	54	102	23.7
7	Tu	Chili and Crackers	1	152	278	430	96.0
	4/1	Vegetable Soup	1	10	8	18	4.0

[1]Corresponds to number on research instrument for assessment of stated choices.

[2]Situation: 1 = planned entree, adequate amount throughout serving period
2 = planned entree, inadequate amount for serving period
3 = addition to planned menu

Students' actual entree selections from cafeteria serving lines at luncheon meals (cont.)

choice no.	date of service	selections	situation	portions served at each line		total portions served of each entree	% of total portions served
				east	west		
8	W	Submarine Sandwich	1	185	179	364	82.7
	4/2	Barbecued Hamburger	1	24	52	76	17.3
9	Th	Italian Cavatini	1	173	202	375	87.0
	4/3	Roast Turkey and Gravy	1	27	29	56	13.0
10	F	Fish Cutlets	1	89	155	244	66.8
	4/4	Chili and Crackers	1	59	62	121	33.2
11	M	Barbecued Hamburger	1	105	271	376	83.1
	4/7	Baked Ham	1	10	21	31	6.9
		Fish Cutlets	3	16	29	45	10.0
12	Tu	Tuna Noodle Casserole	1	103	125	228	55.5
	4/8	Macaroni and Cheese	1	74	109	183	44.5
13	W	Breaded Pork Cutlet	1	184	211	395	95.4
	4/9	Ham Salad	1	8	11	19	4.6
14	Th	Fried Chicken	1	136	175	311	59.5
	4/10	Meat Loaf	1	68	75	143	27.3
		Ham Salad	3	27	42	69	13.2
15	F	Mexican Pie	1	139	289	428	98.0
	4/11	Tuna Noodle Casserole	1	4	6	10	2.0
16	M	Fried Shrimp	1	135	148	279	66.4
	4/14	Baked Ham	1	59	82	141	33.6

Students' actual entree selections from cafeteria serving lines at luncheon meals (cont.)

choice no.	date of service	selections	situa-tion	portions served at each line		total portions served of each entree	% of total portions served
				east	west		
17	Tu	Ham Salad	1	78	46	124	35.0
	4/15	Fried Chicken	1	101	129	230	65.0
18	W	Pizza	1	111	119	459	78.5
	4/16	Taco Pie	2	21	12	33	5.6
		Fried Chicken	3	52	41	93	15.9
19	Th	Beef Taco Pie	1	158	277	435	98.6
	4/17	Beef Noodle Casserole	1	2	4	6	1.4
20	F	BBQ Beef	1	176	174	350	92.6
	4/18	Egg Salad	1	5	7	12	3.2
		Beef Noodle Casserole	3	10	6	16	4.2
21	M	Fish and Chips	1	91	106	197	75.5
	4/21	Baked Ham	1	21	43	64	24.5
22	Tu	Enchilada Casserole	2	153	168	321	67.7
	4/22	Baked Chicken	1	36	44	78	16.5
		Fish and Chips	3	48	27	75	15.8
23	W	Baked Ham	1	147	117	264	75.6
	4/23	Surfcakes	1	32	53	85	24.4
24	Th	Pigs in Blanket	1	125	109	234	72.2
	4/24	Baked Ham	1	43	47	90	27.8
25	F	Turkey Tetrazzini	1	80	83	163	51.1
	4/25	Pigs in Blanket	1	72	84	156	48.9

Students' actual entree selections from cafeteria serving lines at luncheon meals (cont.)

choice no.	date of service	selections	situation	portions served at each line		total portions served of each entree	% of total portions served
				east	west		
26	M	Corn Dogs	1	84	175	259	80.4
	4/28	Baked Ham	1	29	34	63	19.6
27	Tu	Pizza	1	112	114	226	54.3
	4/29	Cheeseburger	1	61	96	157	37.7
		Baked Ham	3	15	18	33	8.0
28	W	Fishwitch	1	22	52	74	19.4
	4/30	Pizza	1	119	188	307	80.6
29	Th	Roast Turkey and Gravy	1	58	65	123	69.5
	5/1	Ham Salad	1	20	34	54	30.5
30	F	Turkey Salad	1	26	46	72	18.3
	5/2	Hamburger	1	137	184	321	81.7

APPENDIX K

Scoring of Attitude Instrument

Scoring of Attitude Instrument

Item Score		
	11.[1]	The school lunch room is too noisy:
1		____most of the time
2		____some of the time
3		____the noise doesn't bother me.
	12.	The lunch room is clean.
3		____most of the time
2		____I don't really notice
1		____some of the time
	13.	The size of the servings is about right.
3		____most of the time
2		____some of the time
1		____I don't get enough to eat
	14.	The food in the school lunch program is
2		____usually the right temperature
1		____hot food is not really hot ____cold food is not well chilled
	15.	The cooks in the school lunch program are:
3		____usually friendly
2		____friendly sometimes
1		____often crabby
	16.	The lunch room is cheerful
3		____yes, very cheerful
2		____okay, so-so
1		____not really very cheerful

Item Score		
	17.	The food in the school lunch program is
3		____almost always good
2		____good only some of the time
1		____usually not very good
	18.	The cashiers in the school lunch program are:
3		____usually friendly
2		____friendly sometimes
1		____often crabby
	19.	I like the meat dishes
3		____most of the time
2		____some of the time
1		____not very often
	20.	I like the vegetables
3		____most of the time
2		____some of the time
1		____not very often
	21.	I like the desserts
3		____most of the time
2		____some of the time
1		____not very often
	22.	We are rushed during lunch time
1		____most of the time
2		____some of the time
3		____not usually
	23.	When I eat the school lunch
3		____I usually eat most of my food
2		____I usually eat about half of my food
1		____I usually leave a lot of my food

[1] Items 1-10 were demographic items.

Computation of Scores

Overall Score

The overall score is the sum of scores for items 11-23 (Maximum Score = 38).

Food Score

The food score is the sum of scores for items 13, 14, 17, 19-21, 23 (Maximum Score = 20).

Nonfood Score

The nonfood score is the sum of items 11, 12, 15, 16, 18, 22 (Maximum Score = 18).

APPENDIX L

Percentage Responses to Attitude Items

Percentage Responses to Attitude Items
(Nonfood Related)

		slide		questionnaire	
		N[1]	%	N	%
11.	The school lunch room is noisy.	100		243	
	-most of the time		40.0		34.2
	-some of the time		5.0		13.6
	-the noise doesn't bother me.		55.0		52.3
12.	The lunch room is clean.	100		245	
	-most of the time		52.0		53.5
	-I don't really notice		34.0		23.7
	-some of the time		14.0		22.9
15.	The cooks in the school lunch program are:	98		242	
	-usually friendly		72.4		77.7
	-friendly sometimes		26.4		16.9
	-often crabby		1.0		5.4
16.	The lunch room is cheerful.	99		241	
	-yes, very cheerful		20.2		17.4
	-okay, so-so		71.7		68.5
	-not really very cheerful		8.1		14.1
18.	The cashiers in the school lunch program are:	98		240	
	-usually friendly		87.8		86.2
	-friendly sometimes		12.2		12.1
	-often crabby		0.0		1.7
22.	We are rushed during lunch time	99		241	
	-most of the time		11.1		16.2
	-some of the time		21.2		17.8
	-not usually		67.7		66.0

[1]N varies because all students did not respond to all questions.

Percentage Responses to Attitude Items
(Food Related)

		slide		questionnaire	
		N[1]	%	N	%
13.	The size of the servings is about right.	99		226	
	-most of the time		50.5		42.5
	-some of the time		26.3		30.5
	-the servings are too large		23.2		27.0
	-I don't get enough to eat				
14.	The food in the school lunch program is:	98		234	
	-usually the right temperature		59.2		52.6
	-hot food is not really hot		40.8		47.4
	-cold food is not well chilled				
17.	The food in the school lunch program is:	99		239	
	-almost always good		38.4		36.8
	-good only some of the time		50.5		46.9
	-usually not very good		11.1		16.3
19.	I like the meat dishes	100		241	
	-most of the time		44.0		49.8
	-some of the time		43.0		35.7
	-not very often		13.0		14.5
20.	I like the vegetables	99		240	
	-most of the time		17.2		24.6
	-some of the time		40.4		37.9
	-not very often		42.4		37.5

[1] N varies because all students did not respond to all questions.

Percentage Responses to Attitude Items
(Food Related) (cont.)

		slide		questionnaire	
		N	%	N	%
21.	I like the desserts	99		239	
	-most of the time		49.5		56.5
	-some of the time		42.4		30.1
	-not very often		8.1		13.4
23.	When I eat the school lunch:	98		236	
	-I usually eat most of my food		73.5		70.3
	-I usually eat about half of my food		23.5		24.6
	-I usually leave a lot of my food		3.1		5.1

HIGH SCHOOL STUDENTS' STATED ENTREE DECISIONS AS A FORECASTING TOOL

by

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B.S., Mundelein College, 1974

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ABSTRACT

Forecasting consumer demand for a high school foodservice with an "open campus" system in which students may leave the school during the noon hour presents a challenge for foodservice managers. Reliable prediction of consumer demand, therefore, is a key factor in controlling production and ultimately, food cost. The purpose of this research was to assess the reliability of food preferences for forecasting high school students' actual choices from a selective menu and to study menu item decisions using printed and visual stimuli.

The research focused on a comparison of actual luncheon entree selections from a high school lunch program selective menu and students' stated choices on two research instruments listing entree selections from the menus that were served. Actual data concerning students' entree item choices were collected by tabulating the number of entree portions selected over a six-week period. Data were compared with results of a survey of stated preferences using two approaches of a random sample of high school students from a medium-sized midwestern town. The survey instrument in the questionnaire approach consisted of a listing of thirty pairs of preplanned entree choices of school lunch menus corresponding to the time period when actual choice data were collected. Students were asked to indicate which entree they would select from each pair of entrees, their degree of certainty about the choice, and their degree of like or dislike for each entree item. Respondents in the slide approach of the study completed the research instrument after viewing slides of the same thirty pairs of entree items as in the questionnaire approach. The questionnaire approach included 252 students and in the slide approach, 100 students.

Items in the hamburger sandwich; Italian, Mexican dishes and hot sandwich categories were preferred more than salad plates; casseroles, creamed, and extended main dishes; and some fish items. Items liked by at least 60 per cent of the respondents were sandwiches; fried fish items; and Italian, Mexican dishes. Items disliked by 30 per cent or more of the respondents included salad plates, and several casserole, creamed and extended main dishes. Findings from both approaches followed a similar pattern with a few exceptions. These instances usually were entrees with names that might be unfamiliar (e.g., turkey tetrazzini). These items tended to have a higher score in the slide approach.

Mean certainty scores reflected greater uncertainty for items selected by smaller percentages of students in both approaches. Similar mean certainty scores for individual selections were obtained when two preferred items were presented together (e.g., pizza and cheeseburger).

Preference scores were more favorable for items selected by the majority of students. In choices where a well liked item was paired with a lesser liked item students were more certain of their choice than when paired with an item having a similar preference. Comparison of actual and stated selection data indicated that in the majority of cases the item chosen by the greatest percentage of students on both the questionnaire and slide instruments also was selected more often from the cafeteria lines. Although stated selections often gave an indication of the more popular of the two choices, chi-square analysis in both approaches indicated they did not provide accurate statistical data for predictions. Also, in the questionnaire approach students tended to be more uncertain in choices where there was a larger difference between actual and stated choices.

Entree item choices of high school students are apparently influenced by factors other than the choices available on a selective menu. In order for a food preference survey to be used as a reliable predictor of consumer demand it would be necessary for other influences to be identified. These factors might include: merchandising of the foods on the serving line; other items on the menus; environmental conditions such as weather or season of the year; and school activities.

Students were asked to select their usual place for eating lunch on the attitude instrument. The majority of students reported that they usually ate lunch in the school cafeteria. Of those students responding, over 60 per cent indicated that they liked the food served in the school lunch. "My friends eat the school lunch also" and "the price of the school lunch is low" appeared to influence the students' participation in school lunch. The main reason given by those students who were infrequent participants in school lunch was that they did not like the food served.

Attitude scores were significantly higher for frequent participants of the school lunch program. This was true for both food-related and nonfood related opinions. Apparently there is a selective process which occurs; those who enjoy the school foodservice stay on campus for lunch. Those who don't exercise their option to leave and are not concerned about the inconvenience or time involved.