

INFLUENCE OF NUTRITION EDUCATION ON THE EATING HABITS
OF JUNIOR HIGH SCHOOL STUDENTS

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BY
BEVERLY PRATER WILLIAMSON, B.S.

DENTON, TEXAS

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The Graduate School
Texas Woman's University

Denton, Texas

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Master of Science

Committee:

Anna Shepherd
Chairman
Claire Yane
Dorothy R. Smith

Accepted:

Margaret J. Ferrell
Dean of The Graduate School

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CHAPTER I

INTRODUCTION

With the passage of the National School Lunch Act of 1977, the United States Congress identified nutrition education as a major concern for the nation's public school children (1). Congress found "...a need to create opportunities for children to learn about the importance of the principles of good nutrition in their daily lives and how these principles are applied in the school cafeteria."

Nutrition has traditionally been taught in the public schools through health or home economics courses. The school foodservice program has had little to do with formal education of young people in the principles of nutrition, other than providing a choice of nutritious foods for lunch and/or breakfast. Several factors affect the ability of school foodservice personnel to influence children's eating habits. In many cases there is simply not enough time for existing personnel to teach good nutrition. Even if time were allotted during the day for foodservice personnel to present a nutrition unit, studies (2-7) indicate that children rarely alter their eating patterns because of increased knowledge of nutrition. Food acceptance is the major factor influencing a child's food selection. If a child

has never seen or tasted the food given to him at lunch the predominant behavior is rejection of that food. This same behavior occurs when previously disliked foods are given to the child. Based on plate waste studies (7-11) of the Type A school lunch, there is strong evidence that children are not accepting what is given to them on their trays. This trend is accentuated as the child grows into adolescence and early adulthood.

An attempt has been made in several states to increase the participation by foodservice personnel in teaching nutrition to students. One method proposed for this increased participation is the formation of a Youth Advisory Council (YAC) in each school. These YAC groups consist of varied numbers of students, usually with a school faculty sponsor. YAC program objectives include: desire to learn about school foodservice and nutrition and motivate students to select and consume Type A lunches. Additional YAC program activities include student participation concerning acceptability of lunch menus, and preparation and serving methods. As part of this study's hypothesis, it was assumed that as YAC members begin to understand the resources of the school foodservice department, their attitudes toward participation may improve. Effective communication between food service personnel and YAC students could further contribute to acceptability of the Type A school lunch.

Purposes of the Study

The overall purpose of this study was to determine if a Youth Advisory Council could increase school-wide lunch acceptance by gaining an understanding of school foodservice and basic nutrition principles. One of the assumptions is that effective peer pressure can alter students' eating habits. Objectives of this study were:

- 1) Assess the Carter Junior High School Youth Advisory Council's knowledge of the Guide to Good Eating and Type A lunch components.
- 2) Determine if a nutrition learning unit changes nutrition test scores.
- 3) Measure changes between YAC and non-YAC participation on the acceptance of Type A school lunch food groups by junior high school students.

Review of Literature

The food industry, education supply companies, and educators spend millions of dollars and man hours designing successful nutrition education materials. The literature provides several examples of the effectiveness of one or more of these teaching methods with youth and adults (2-7, 12-16). Numerous studies have shown that significant increases in nutrition knowledge can be realized among elementary and secondary students enrolled in nutrition education

classes (4,5,7,16). The commonalities of these studies include active student participation during lessons, specific behavioral objectives, meticulous lesson preparation, creative teaching methods, and varied testing procedures.

Of the studies reporting successful teaching methods, all stressed the importance of making students aware of the variety of foods in the marketplace. Taste testing was a frequently used tool to help students experience new foods and new preparation methods. Instructors also utilized cartoons, posters, games, television spots, and field trips to help students identify foods and familiarize themselves with various food products. In addition to food identification, the nutrition units were designed to motivate students to learn about food groups, the nutrient contributions of food, and the relationship of food to health. Many studies, at this point, went one step further. Students were asked to evaluate their present diets and determine where improvement could be made. The major point being, according to Bell (4), "we can expect that nutrition education can modify dietary behavior."

There are conflicting reports as to whether or not increasing a person's knowledge of nutrition actually causes an improvement in their dietary habits. After completion of a nutrition unit taught to fifth, seventh, and tenth grade levels, Head (7) observed significant increases on

cognitive tests of nutrition knowledge among all fifth grade classes and one seventh grade class. The diets for the seventh grade level significantly improved after the nutrition unit. Fifth grade students showed no significant changes in their dietary habits, as recorded by a 24 hour dietary recall. These same fifth graders, however, did significantly decrease their school lunch plate waste. The tenth grade students showed no significant gains in nutrition knowledge or food selection. This study proposed that the amount of change in nutrition knowledge and dietary habits decreased progressively at higher grade levels.

Another study including fourth and fifth graders found that even though knowledge of nutrition facts increased significantly, the nutritive and caloric values of the diets changed little (3). In this research, students participated in a three week unit on nutrition education. To determine dietary changes the authors obtained two 24 hour dietary recalls and a 24 hour dietary record from the children. Height, weight, skinfold thickness, and arm and leg girth were measured at the beginning and end of the study. None of these measurement techniques yielded significant changes as a result of nutrition education.

Even when dealing with very young children, Blakeway (5) found dietary habits were difficult to change. This study, including first through third grade subjects, used

school lunch consumption as a measure of the effects of nutrition education. After a series of nutrition lessons, plate waste studies revealed an improvement in consumption of most foods tested. The data indicated that "eating patterns were more rigid and difficult to change in third-grade than in first- and second-grade children."

A study by Alford and Tibbets (2) of diabetic children, ages 6 through 17, showed that nutrition education significantly increased vegetable consumption. In this particular study no measurements were made to determine if vegetable consumption varied between age groups.

Smith (15) incorporated another factor when studying the effects of nutrition education on the "comprehension and application of nutrition knowledge by third grade students." She found that participation in the school lunch program improved only among those students whose parents were included in the nutrition education program. Vegetable consumption increased among the students who were not in the nutrition study group, but whose parents participated in the education program.

Parent participation and assistance in helping their children learn about good nutrition habits was considered of major importance by Boysen and Ahrens (6). In this study, a small sample of second grade students took part in a project to determine the effects of a nutrition education unit.

Both a cognitive test and a school lunch plate waste survey were administered. Parents received information about the nutrition unit periodically. Parents also answered a questionnaire to determine if the nutrition unit had any noticeable effect on their child's eating habits. The results indicated the nutrition education program increased nutrition knowledge and resulted in some improvement in eating habits.

Norton (14) proposed that changes in dietary habits may not be the only indicator of successful nutrition education program. Third grade children served as subjects for this nutrition education study. Changes in nutrition attitudes, food frequency intake, and nutrition knowledge were measured. The results showed insignificant improvement for experimental and control groups. The hemoglobin values of the students did change in this study. In conclusion Norton stated: "...the nutrition status of the experimental group, as measured by hemoglobin values, improved significantly before significant improvements occurred in written tests on nutrition attitudes, eating practices, and nutrition knowledge.

From these studies there is evidence that nutrition education may influence dietary habits. Determining appropriate methodologies for evaluating changes in a person's diet poses a difficult problem. For example, do measurements

of school lunch plate waste indicate dietary change more accurately than a 24 hour dietary recall? Additional methods of evaluation that should be considered include: three day food records, height and weight measurement, biochemical values, and attitude scales.

Several studies use a variety of measurement techniques that seem to effect conflicting results. In one study (7) a group of students showed no significant changes in their dietary habits as measured by a 24 hour food recall. School lunch plate waste studies demonstrated that these same students significantly decreased their food waste, indicating changes in dietary habits. From a previously cited study (14), hemoglobin values indicated changes in diet before changes appeared in nutrition attitudes or food frequency intakes. The selection of a measurement technique, therefore, may considerably alter the results of a study. One technique may be inappropriate for a group of subjects for several reasons. Age, socioeconomic background, educational background, and personality characteristics of the teacher are just a few of the variables that may affect the ability of a measuring technique to verify changes in behavior. From a practical standpoint, Head (9) views this problem of selecting an appropriate measurement technique in two ways. "First, is an accurate measure of food consumption necessary, or is an indicator of consumption or a measure of change

adequate? Secondly, what are the comparative costs of the methods?"

These two questions relate directly to many of the studies assessing consumption and acceptability of the Type A school lunch. Plate waste studies are time, energy, and money consuming. As a result of comprehensive studies by Head et al. (9) and Jansen et al. (10,11), it has been recognized that student ratings of acceptability can be highly correlated with consumption. A study by Head et al. (9), including elementary and secondary students, correlated hedonic scale results of food acceptability with an amount consumed rating scale. Plate waste data were obtained from randomly selected students completing both scales. The data indicated that "despite high standard deviations of predicted values, generally very high positive correlations were found between predicted (as obtained from the rating scales) and measured consumption." It may be possible to estimate the amount of food by using affective or discrimination ratings. This predictive method of food consumption is much less expensive than plate waste studies, but not as accurate. A general, not specific, change in dietary habits would be indicated by this method.

The possibility that nutrition education may change food selection, in a measureable way, is an important concept. Selecting the best method of implementing a nutrition

education program for young people is of major concern. Which teaching methods cause a change in behavior? Is it possible to identify those factors that should be incorporated when teaching a successful nutrition program?

The literature cites similarities among methods resulting in positive behavior changes. First and foremost, students must be motivated to try new foods. Food will not be liked unless it is tasted and presented without bias and prejudice (3). An explanation of the importance of various foods in the diet and their contribution to health provides a foundation for learning and maintaining new habits.

Several studies resulting in positive dietary changes used taste testing as a means of stimulating interest in nutrition. The tasting demonstration technique used by Alford and Tibbets (2) was conducted to help diabetic children learn to use low carbohydrate vegetables in their diet. The children watched the vegetables being prepared and then sampled the food product. Specific nutrients provided by each of the foods demonstrated was not discussed. Program results indicated significant levels of vegetable consumption.

Blakeway (5) concluded from her study that "a child learns to eat a variety of foods by having an opportunity to taste them." The children participating in this study tasted five food items prepared by their school cafeteria.

With one exception, prunes, the consumption of these foods increased significantly after the nutrition unit was taught.

Attitudes have a great deal to do with food acceptance. Baker (3) noted that when children were exposed to positive comments about squash, consumption of that vegetable increased. The opposite behavior also occurred. In one class, a teacher made negative remarks about squash. The consumption and acceptability ratings of that food decreased significantly among her students. After assessing the nutrition knowledge, attitudes, and dietary practices of high school graduates, Schwartz (17) discovered that attitudes significantly affected dietary practices. Dwyer et al. (13) found that among high school students there was a very low level of interest in nutrition. The results of a nutritional knowledge test revealed a very low mean score of 55.9 percent for these students. Hinton et al. (17) related eating practices of young adolescent girls to the following factors: knowledge of nutrition, emotional stability, family relationships, and the value placed on health. After reviewing the research concerning food acceptance, Lamb (18) stated: "contacts made early in life greatly influence food acceptance and that familiarity with food seems to be the important factor in food selection."

Successful nutrition programs stress principles rather than memorization of facts when attempting to modify dietary

behavior (4). With so much misinformation concerning nutrition in the media today, it is important to identify misconceptions about food and establish a sound basis for evaluating nutrition information. Nutrition educators must realize that popular magazines and booklets frequently provide nutrition information that is eagerly accepted. Female high school graduates, for example, listed popular printed materials as a major source of nutrition information (17). Education must be aimed at helping consumers identify accurate nutrition information easily.

Emphasis on nutrition principles was often reflected in the behavioral objectives stated in each study. Increasing interest in nutrition, recognizing that diet affects health, and increasing consumption of high nutrient foods are objectives based on principles rather than facts. These principles will be remembered much longer than the nutrient content of individual food items. Being able to recognize a variety of foods and willingly try new foods were also considered as important objectives. It is interesting to note that these objectives deal not only with knowledge but with attitudes as well. As Guthrie (19) states: "Information alone is often not enough to cause or enable a person to improve her/his eating habits and thus her/his nutritional state."

In order to be most effective different messages must be used for different audiences. A knowledge of the social, economic, cultural, educational, and psychological factors affecting a given audience must be obtained prior to presenting a nutrition education program (19). Understanding these social variables increases the possibility that a program may alter eating habits for the better. Realizing the impact of television, for example, and using it to disseminate nutrition information met with success in Florida (20). This study included 400 ninth grade students. Researchers gathered information about the television viewing and radio listening times of the teenagers. A mass media campaign involving television spots, radio spots, brochures, and a radio contest was conducted for eight weeks. Results showed significant increases in nutrition knowledge among the experimental group.

This mass media campaign may not have been effective for younger children or adults. Younger children derive many of their food habits from their parents and other adults. Parent education has been shown to positively affect adoption of food habits by elementary age children (6,15). Adults, on the other hand, adopt many of their food beliefs from written materials, such as popular magazines (17).

The goal of nutrition education is to change dietary habits. Research has demonstrated that nutrition education can increase knowledge as well as influence dietary behavior. There are no specific rules for implementing a successful nutrition education program. A few guidelines have been suggested that may increase the impact of nutrition education. First, concentrate on principles rather than facts when teaching nutrition; these will be more readily retained. Begin nutrition education as early as possible in a school situation. Encourage parents to become involved in nutrition programs at all grade levels, elementary and secondary. Understand the characteristics and interests of various audiences. Use the media to help relate information about nutrition. Nutrition education programs must be highly visible to various groups within a community. Finally, nutrition education should be flexible. What is successful with one group may not be effective with another.

CHAPTER II

PLAN OF PROCEDURE

The major purpose of this study was to assess the influence of a Youth Advisory Council program on the acceptance of Type A school lunch food groups by junior high school students. The members of the Youth Advisory Council participated in a nutrition education unit prior to planning a week of Type A lunch menus to be served throughout the school district. A nutrition knowledge pre-test and post-test were administered to the YAC members to determine if the nutrition education unit changed their test scores.

Population

Two junior high subgroup populations were selected to participate in this study. The first subgroup involved the nine Youth Advisory Council (YAC) members of Carter Junior High in Arlington, Texas. The second subgroup included a modified random sampling of non-YAC students at Carter Junior High and Hutcheson Junior High who consumed Type A school lunches for one week.

The Youth Advisory Council students represented the following grade levels: three each from the seventh, eighth, and ninth grade levels. The YAC members applied for council

membership and were screened by their teachers. The selected members perform academically at average or above average levels and were considered leaders among their peers. This was the first year the group functioned as a Carter Junior High school organization.

Nutrition Education Program

At the beginning of the school year, YAC members were administered a nutrition knowledge test (Appendix A). Following the pre-assessment, the members participated in a series of lessons explaining the Type A lunch, the nutritional benefits of this lunch pattern, the Guide to Good Eating Basic Four Food Groups, and menu planning. Student and teacher lesson plans may be found in Appendix C. As part of the learning experiences, an orientation of the foodservice organization, including its resources, was provided by the school cafeteria manager, foodservice nutritionist, and Foodservice Director. The lessons extended over a three week period and were conducted before regular school hours once a week. Upon completion of the lessons, YAC members assisted the school foodservice nutritionist and school cafeteria manager in planning lunch menus for one week to be served throughout the school district (Appendix B).

Two weeks after the menus were planned, the YAC members and a set of matched controls completed a post-test on

nutrition knowledge. The matched controls were selected by teachers at Carter Junior High and met the qualifications for YAC membership. The test questioned students about the Basic Four Food Groups and all components of the Type A school lunch.

Menu Acceptability Survey

The menus planned by the YAC were served for one week during each of three months, December, February, and March. The first or pre-test week determined the baseline acceptability of the YAC menus for both the control and experimental groups. The interim menu survey indicated the influence of YAC intervention on the acceptance of the school lunch menus. The post-test survey measured long-term effects of the YAC program on school lunch acceptance. At least four weeks lapsed between each time the YAC menus were served. Specifically, there were 33 school days between the pre-test and interim study periods. Twenty days of school lapsed between the interim and post-test study periods.

Per each five day period, students at Carter and Hutcheson junior high schools completed menu acceptability forms (Appendix A). Each questionnaire indicated daily menus and a hedonic acceptability scale for each food. Lunch items eaten were rated according to four factors: "I ate it," "I ate it because I liked it," "I ate it because

it was good for me," and "I ate it because I liked it and it was good for me." Similar hedonic scales have been employed to measure acceptability of school lunch menus (13,14). In the present study an additional concept was added to the hedonic scale, "I ate it because it was good for me." This concept required an evaluation of the food's nutritional value and implied that good nutrition was a criteria for food selection.

Permission to conduct this survey was obtained from the principals of both junior high schools, after consultation with the Arlington Independent School District central administration and the Foodservice Director (Appendix D). The survey forms were given to students by their teachers in the class period immediately following lunch. Only those students who had eaten a Type A lunch completed the forms. Participation was voluntary. The teachers explained to the students that their cooperation would be appreciated but not required. A scheduling problem in both schools prevented the eighth grade students from participating in the study. During the first week the students at Carter and Hutcheson schools were unaware of the YAC planned menus. The YAC members also did not know their menu was prepared that particular week.

Prior to the interim survey week, YAC members conducted a media campaign announcing that the week's lunches had been

selected by Carter students. Colorful posters urged students to "Leave home the sack and try the meals planned by YAC." Other posters encouraged students to eat a nutritious Type A lunch and reduce the amount of food wasted. The school and city newspapers included articles about the Carter YAC activities, the planned menus, and emphasis was placed on eating a Type A lunch. Daily intercom announcements by YAC members also urged students to try the Type A school lunch and complete the menu acceptability forms. Each day menu acceptability forms were distributed at both schools.

Four weeks later, students completed the final lunch survey. Students checked the acceptability forms as before, unaware the menus were planned by the YAC of Carter Junior High. The menus were identical to those rated during the previous two surveys.

Following the last lunch survey, YAC members and their matched controls took a retention test on the Guide to Good Eating Basic Four Food Groups and the Type A lunch requirements.

Data Collection and Analysis

The total data collected included: menu acceptability forms from two junior high grade levels, seventh and ninth, and the written nutrition test given to YAC members and their controls (Table 1). From this data the influence of a

TABLE I

RESEARCH PROTOCOL SUMMARY

Study Group	Experimental Parameters	Testing Periods		
		Pre-test ^d	Inter-im	Post-test
<u>Control Group^a</u>				
Hutcheson	Type A lunch menu acceptability ^c	X	X	X
Carter	Cognitive nutrition test	X		X
<u>Experimental Group^b</u>				
Carter	Type A lunch menu acceptability	X	X	X
	Cognitive nutrition test	X		X

^aControl group's description:
 Hutcheson Junior High School 7th and 9th graders; no functioning YAC group.
 Carter Junior High School--matched controls for Carter YAC group.

^bExperimental group's description:
 Carter Junior High School 7th and 9th graders; functioning YAC group.

^cMenu acceptability determined by hedonic scale categories:
 "I ate it," "I ate it because I liked it," "I ate it because it was good for me," "I ate it because I liked it and it was good for me."

^dYAC intervention occurred after the preassessment testing period.

YAC on school-wide participation in the lunch program was evaluated. Furthermore, the study examined the collected data for evidence of nutrition knowledge gained by YAC members.

The responses given on the menu acceptability forms from the experimental and control groups were organized by survey week and tabulated according to degree of acceptability. The responses from the seventh and ninth grade students were combined for this tabulation. The food items for each day were categorized according to the Basic Four Food Groups. Combination food items, such as beef stew, were placed in a food group according to the United States Department of Agriculture school lunch requirements. For example, if beef stew was the meat served for the day it would be categorized in the meat group.

The chi-square test compared the responses given for each food group on each day surveyed. Survey data from the pre-test week was compared to the interim week data. Comparisons were made between the interim week data and the post-test week. In addition, the pre-test week was compared to the post-test week survey data. The level of significance chosen was $p \leq 0.01$.

YAC members and their set of controls at Carter Junior High completed a nutrition test during the pre-test and post-test periods. A comparison was made between the

scores of the YAC and control students at each grade level represented. A t-test determined whether the differences in scores were significant at $p \leq 0.05$.

CHAPTER III

RESULTS AND DISCUSSION

The purpose of this study was twofold: to determine if a YAC program could alter the school lunch eating habits of junior high school peers, and to determine if nutrition education could improve cognitive knowledge of YAC members. Changes in the acceptance of the school lunch menus were assessed by a menu acceptability survey conducted of all seventh and ninth grade students eating a Type A lunch. The menu acceptability survey allowed students to rate a week of lunch items according to a four factor hedonic scale: "I ate it," "I ate it because I liked it," "I ate it because it was good for me," and "I ate it because I liked it and it was good for me." The survey responses of the seventh and ninth grade students were combined before comparing the results from the control and experimental junior high schools. Responses to individual food items were categorized according to the Guide to Good Eating Basic Four Food Groups. This method provided a view of the overall food preferences of junior high school students and indicated the food groups these teenagers were more willing to accept or reject.

For the pre-test, interim, and post-test study periods, the results of the menu surveys showed that foods from the

Milk and Meat Group were well-accepted by students at both junior high schools. The responses from the three weeks of menu surveys showed that 61 to 100 percent of the students consumed the foods from the Meat Group (Table 2). Milk provided by the Type A lunch during the three week period was consumed by 81 to 96 percent of the students (Table 3).

Foods from the Bread Group were consumed by 11 to 100 percent of the students at both junior high schools during the three weeks of menu acceptability studies. When the bread was served as part of the meat entree, students consumed 67 to 100 percent of the bread provided by their school lunch. When it was served as a side dish (Tables 4-11), 11 to 98 percent of the students consumed the bread.

Responses at Carter Junior High, the experimental school, indicated that between the pre-test and interim study periods there were increases in the acceptance of hot rolls (Tables 4-7). For example, on day three the number of responses given in the category, "I ate it," increased 14 percent between the pre-test week and interim week. During this same time period, the number of responses made by students who ate the hot roll because they liked it increased 15 percent. There was a significant ($p \leq 0.05$) increase in the acceptance of hot rolls between the pre-test and interim study periods for the category "I ate it because I liked it and it was good for me" (Table 12). The experimental group

TABLE 2
EXPERIMENTAL AND CONTROL GROUP RESPONSES FOR THE MEAT FOOD GROUP,
BASED ON THE SUM OF ALL HEDONIC SCALE RESPONSES

Conse- cutive 5-Day Survey	Study Periods																	
	Pre-Test						Interim						Post-Test					
	No. Student Responses		Percent Student Responses		Total Student Responses		No. Student Responses		Percent Student Responses		Total Student Responses		No. Student Responses		Percent Student Responses		Total Student Responses	
	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont
1	203	377	87	94	232	401	148	294	91	87	162	336	131	232	73	96	179	242
2 ^a	242	334	100	100	243	332	137	284	91	99	151	283	177	220	103 ^b	106 ^b	172	206
3	225	296	100	99	224	299	127	224	100	96	127	234	126	189	93	102 ^b	136	185
4	144	237	90	94	160	252	113	184	80	97	141	190	131	126	81	102 ^b	162	123
5	199	133	99	98	201	135	132	190	93	99	142	191	155	c	99	c	156	c

^aMenu selection included both meat and pinto beans selection options. Pinto beans represented a "side-dish" menu component.

^bGreater than 100% meat consumption represents students who consume two meat entrees.

^cFollow-up tests were unavailable.

TABLE 3
EXPERIMENTAL AND CONTROL GROUP RESPONSES FOR THE MILK FOOD GROUP,
BASED ON THE SUM OF ALL HEDONIC SCALE RESPONSES

Conse- cutive 5-Day Survey							Study Periods											
	Pre-Test						Interim						Post-Test					
	No. Student Responses		Percent Student Responses		Total Student Responses		No. Student Responses		Percent Student Responses		Total Student Responses		No. Student Responses		Percent Student Responses		Total Student Responses	
Day	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont	Exp	Cont
1	201	359	87	89	232	401	140	291	86	87	162	336	164	222	92	92	179	242
2	218	299	90	90	243	332	141	250	93	87	151	288	155	179	90	87	172	206
3	201	265	90	89	224	299	114	206	90	88	127	234	122	165	90	89	136	185
4	153	228	96	90	160	252	128	156	91	82	141	190	143	110	88	89	162	123
5	182	115	90	85	201	135	122	163	86	85	142	191	141	a	90	a	156	a

^aFollow-up tests were unavailable

TABLE 4
EXPERIMENTAL GROUP RESPONSES FOR THE BREAD FOOD GROUP,
BASED ON THE HEDONIC SCALE CATEGORY I ATE IT

Conse- cutive 5-Day Survey				Study Period					
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
Day									
1	35	15	232	28	17	162	24	13	179
2	69	28	243	33	22	151	42	24	172
3	55	24	224	49	39	127	33	24	136
4	35	22	160	31	22	141	40	25	162
5	63	31	201	42	30	142	60	38	156

TABLE 5
EXPERIMENTAL GROUP RESPONSES FOR THE BREAD FOOD GROUP, BASED ON THE
HEDONIC SCALE CATEGORY I ATE IT BECAUSE I LIKED IT

Conse- cutive 5-Day Survey	Study Periods								
	Pre-Test			Interim			Post-Test		
Day	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	27	12	232	22	13	162	9	5	179
2	131	54	243	74	49	151	96	56	172
3	95	42	224	73	53	127	86	63	136
4	29	18	160	39	28	141	80	49	162
5	100	50	201	68	48	142	72	46	156

TABLE 6
EXPERIMENTAL GROUP RESPONSES FOR THE BREAD FOOD GROUP, BASED ON THE
HEDONIC SCALE CATEGORY I ATE IT BECAUSE IT WAS GOOD FOR ME

Conse- cutive 5-Day Survey	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
Day									
1	4	2	232	2	1	162	1	0	179
2	2	1	243	3	2	151	0	0	172
3	6	3	224	3	2	127	0	0	136
4	3	2	160	4	3	141	3	2	162
5	2	1	201	2	1	142	2	1	156

TABLE 7
EXPERIMENTAL GROUP RESPONSES FOR THE BREAD FOOD GROUP, BASED ON THE
HEDONIC SCALE CATEGORY I ATE IT BECAUSE I LIKED IT
AND IT WAS GOOD FOR ME

Conse- cutive 5-Day Survey [Day]	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	8	3	232	8	5	162	4	2	179
2	40	16	243	27	18	151	39	23	172
3	22	10	224	21	16	127	23	17	135
4	9	6	160	19	13	141	20	12	162
5	34	17	201	20	14	142	21	13	156

TABLE 8
CONTROL GROUP RESPONSES FOR THE BREAD FOOD GROUP, BASED ON THE
HEDONIC SCALE CATEGORY I ATE IT

Conse- cutive 5-Day Survey Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	31	8	401	90	27	336	57	24	242
2	83	25	332	77	27	288	78	38	206
3	105	34	299	79	34	234	68	37	185
4	36	14	252	64	34	190	44	36	123
5	31	23	135	72	38	191	a	a	a

^aFollow-up data unavailable

TABLE 9
CONTROL GROUP RESPONSES FOR THE BREAD FOOD GROUP, BASED ON THE
HEDONIC SCALE CATEGORY I ATE IT BECAUSE I LIKED IT

Conse- cutive 5-Day Survey Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	40	10	401	57	17	336	23	9	242
2	180	54	332	156	54	288	110	53	206
3	163	54	299	103	44	234	64	34	185
4	62	25	252	65	34	190	52	42	123
5	67	50	135	87	45	191	a	a	a

^aFollow-up data unavailable

TABLE 10
CONTROL GROUP RESPONSES FOR THE BREAD FOOD GROUP, BASED ON THE
HEDONIC SCALE CATEGORY I ATE IT BECAUSE IT WAS GOOD FOR ME

Conse- cutive 5-Day Survey. Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	5	1	401	11	3	336	1	0	242
2	8	2	332	9	3	288	4	2	206
3	9	3	299	5	2	234	4	2	185
4	5	2	252	7	4	190	3	2	123
5	7	5	135	5	3	191	a	a	a

^aFollow-up data unavailable

TABLE 11
 CONTROL GROUP RESPONSES FOR THE BREAD FOOD GROUP, BASED ON THE
 HEDONIC SCALE CATEGORY I ATE IT BECAUSE I LIKED IT
 AND IT WAS GOOD FOR ME

Conse- cutive 5-Day Survey Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	13	3	401	29	9	336	25	10	242
2	63	19	332	50	17	288	28	14	206
3	55	18	299	33	14	234	22	12	185
4	25	10	252	21	11	190	15	12	123
5	28	21	135	26	14	191	a	a	a

^aFollow-up data unavailable

TABLE 12

CHI-SQUARE COMPARISON OF EXPERIMENTAL GROUP RESPONSES TO THE BREAD FOOD GROUP CATEGORY
SERVED ON THE TYPE A LUNCH FOR PRE-TEST, INTERIM, AND POST-TEST PERIODS^a

Consecutive 5-Day Survey	Hedonic Scale Response Categories											
	I ate it			I ate it because I liked it			I ate it because it was good for me			I ate it because I liked it and it was good for me		
	A	B	C	A	B	C	A	B	C	A	B	C
1	0.34	0.99	0.23	0.34	7.32	5.55	0.17	0.49	1.17	0.53	1.83	0.51
2	2.09	0.31	0.82	0.91	1.5	0.15	1.04	3.46	1.33	0.13	1.17	2.55
3	7.70	6.26	11.69	7.36	0.93	14.64	0.04	6.09	1.72	3.34 ^c	0.00	3.89
4	0.00	0.3	0.36	3.85	14.95	35.23	0.28	0.28	0.00	5.45 ^b	0.1	4.43
5	0.13	2.61	2.0	0.12	0.09	0.48	0.09	0.01	0.09	0.52	0.02	0.79

^aStudent responses for each hedonic scale category were compared by study periods.

Study period A represents changes between pre-test and interim intervals.

Study period B represents changes between interim and post-test intervals.

Study period C represents changes between pre-test and post-test intervals.

^b $p \leq 0.01$

^c $p \leq 0.05$

did not show statistically significant increases in the acceptance of cornbread throughout the study. The percentage of total student responses indicating cornbread intake, for the experimental group, ranged from 21 to 37 percent for the pre-test, interim, and post-test study periods. Acceptance values varied for cornbread within the four response categories. Possibly, this may be attributed to subtle cultural differences.

Acceptance of the cornbread by the control group varied within the four response categories and from the pre-test to post-test study periods. Comparing the pre-test, interim, and post-test study periods, 22, 56, and 43 percent, respectively, of the students consumed the cornbread (Tables 8-11). Variation in cornbread recipe standardization may be a possible factor for the above noted acceptance differences.

For the five day menu period, hot rolls were served on days three and four. On day three, results from the control group responses indicated an acceptance range of 10 to 25 percent for the "I ate it because I liked it" category. A range of 5 to 8 percent was noted for the "I ate it because I liked it and it was good for me" category. The percentage differences in acceptability were not significant at the $p \leq 0.01$ level.

On day four, results from the control group responses showed an acceptance range of 25 to 42 percent for the

category, "I ate it because I liked it." An acceptance range of 10 to 12 percent was noted for the category, "I ate it because I liked it and it was good for me." These changes in acceptance characteristics from day three to day four for hot rolls may be due to the menu selection alternatives for each day.

Following YAC intervention the experimental group responses indicated a general increase of vegetable and fruit consumption as noted in Tables 14-17. However, there were individual variations for specific fruit and vegetable acceptances. Specifically, when all acceptance levels were combined for the following five day menu items: peaches, spiced apples, corn, mixed fruit cup, applesauce, and fried okra, acceptance increases from pre-test to interim-test periods were 17, 6 43, 20, 32, and 10 percents, respectively. For the same time period, green beans, Italian blend vegetables, tossed salad, broccoli, spinach, and pears with cottage cheese declined 9, 6, 27, 11, 9, and 13 percents, respectively. When comparing the responses of the pre-test and interim-test periods, the response category, "I ate it" showed statistically significant increases ($p \leq 0.01$) for fruit and vegetable consumption (Table 18).

Student responses from the control group indicated a general decrease of fruit and vegetable consumption from the pre-test to interim-study periods (Tables 19-22). When

TABLE 13

CHI-SQUARE COMPARISON OF CONTROL GROUP RESPONSES TO THE BREAD FOOD GROUP CATEGORY SERVED
ON THE TYPE A LUNCH FOR PRE-TEST, INTERIM, AND POST-TEST PERIODS^a

Consecutive 5-Day Survey	Hedonic Scale Response Categories											
	I ate it			I ate it because I liked it			I ate it because it was good for me			I ate it because I liked it and it was good for me		
	A	B	C	A	B	C	A	B	C	A	B	C
1	39.94	0.76	32.04	7.84	6.57	0.03	3.51 ^c	5.61	1.17	9.98	0.48	13.64
2	0.25	6.95	10.1	0.00	0.04	0.04	0.28	0.64	0.16	0.27	1.27	2.66
3	0.01	0.41	0.25	5.8	3.81	18.26	0.36	0.00	0.34	1.73	0.43	3.31
4	23.25	0.13	22.94	4.87	2.06	12.18	1.13	0.35	0.09	0.14	0.16	0.45
5	7.88	d	d	0.51	d	d	1.42	d	d	2.87	d	d

^a Student responses for each hedonic scale category were compared by study periods.
Study period A represents changes between pre-test and interim intervals.
Study period B represents changes between interim and post-test intervals.
Study period C represents changes between pre-test and post-test intervals.

^b $p \leq 0.01$

^c $p \leq 0.05$

^d Follow-up tests were unavailable.

TABLE 14
EXPERIMENTAL GROUP RESPONSES FOR THE FRUIT AND VEGETABLE FOOD GROUP,
BASED ON THE HEDONIC SCALE CATEGORY I ATE IT

Conse- cutive 5-Day Survey Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	88	38	232	75	46	162	75	42	179
2	61	25	243	34	22	151	25	14	172
3	77	34	224	61	48	127	48	35	136
4	44	27	160	46	33	141	75	46	162
5	78	39	201	48	34	142	64	41	156

TABLE 15
EXPERIMENTAL GROUP RESPONSES FOR THE FRUIT AND VEGETABLE FOOD GROUP, BASED ON
ON THE HEDONIC SCALE CATEGORY I ATE IT BECAUSE I LIKED IT

Conse- cutive 5-Day Survey Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	225	97	232	157	97	162	106	59	179
2	59	21	243	41	27	151	22	13	172
3	88	39	224	65	51	127	63	46	136
4	37	23	160	52	37	141	70	49	162
5	161	80	201	94	66	142	102	65	156

TABLE 16

EXPERIMENTAL GROUP RESPONSES FOR THE FRUIT AND VEGETABLE GROUP, BASED ON THE
HEDONIC SCALE CATEGORY I ATE IT BECAUSE IT WAS GOOD FOR ME

Conse- cutive 5-Day Survey Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	25	11	232	12	7	162	8	4	179
2	21	9	243	2	1	151	5	3	172
3	26	12	224	5	4	127	2	1	136
4	10	6	160	7	5	141	4	2	162
5	9	4	201	3	2	142	2	1	156

TABLE 17

EXPERIMENTAL GROUP RESPONSES FOR THE FRUIT AND VEGETABLE FOOD GROUP, BASED ON THE HEDONIC
SCALE CATEGORY I ATE IT BECAUSE I LIKED IT AND IT WAS GOOD FOR ME

Conse- cutive 5-Day Survey Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	75	32	232	56	35	162	67	37	179
2	33	14	243	25	16	151	24	14	172
3	52	23	224	38	29	127	45	33	136
4	21	13	160	37	26	141	29	17	162
5	51	25	201	32	22	142	18	11	156

TABLE 18

CHI-SQUARE COMPARISON OF EXPERIMENTAL GROUP RESPONSE TO THE FRUIT AND VEGETABLE FOOD
GROUP CATEGORY SERVED ON THE TYPE A LUNCH FOR PRE-TEST, INTERIM,
AND POST-TEST PERIODS^a

Consecutive 5-Day Survey	Hedonic Scale Response Categories											
	I ate it			I ate it because I liked it			I ate it because it was good for me			I ate it because I liked it and it was good for me		
	A	B	C	A	B	C	A	B	C	A	B	C
1	2.75 ^c	0.65	0.66	0.00	68.67	25.62	1.56	0.23	6.03	0.21	0.29	1.19
2	0.34	3.4	6.94	2.25	10.47	4.32	9.04	1.02	5.68	0.67	0.42	0.01
3	6.38 ^b	4.43	0.03	4.62	0.63	1.69	5.82	1.5	12.1	1.89	0.31	4.24
4	10.37	5.86 ^b	12.16	6.79	1.22	14.7	0.26	1.37	2.7	8.23	3.08	1.37
5	0.91	1.62	0.18	8.48	0.02	9.77	1.42	0.29	2.94	0.38	6.49	10.86

^aStudent responses for each hedonic scale category were compared by study periods.
Study period A represents changes between pre-test and interim intervals.
Study period B represents changes between interim and post-test intervals.
Study period C represents changes between pre-test and post-test intervals.

^b $p \leq 0.01$

^c $p \leq 0.05$

TABLE 19
CONTROL GROUP RESPONSES FOR THE FRUIT AND VEGETABLE FOOD GROUP, BASED ON THE
HEDONIC SCALE CATEGORY I ATE IT

Conse- cutive 5-Day Survey Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	180	45	401	175	52	336	162	67	242
2	84	25	332	74	26	288	68	33	206
3	139	46	299	119	51	234	78	42	185
4	71	28	252	80	42	190	45	37	123
5	56	41	135	74	39	191	a	a	a

^aFollow-up tests were unavailable

TABLE 20

CONTROL GROUP RESPONSES FOR THE FRUIT AND VEGETABLE FOOD GROUP, BASED ON THE
HEDONIC SCALE CATEGORY I ATE IT BECAUSE I LIKED IT

Conse- cutive 5-Day Survey Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	351	87	401	305	91	336	168	69	242
2	70	21	332	73	25	288	41	20	206
3	166	55	299	91	37	234	42	23	185
4	52	21	252	65	34	190	23	19	123
5	97	72	135	113	59	191	a	a	a

^aFollow-up tests were unavailable

TABLE 21

CONTROL GROUP RESPONSES FOR THE FRUIT AND VEGETABLE FOOD GROUP, BASED ON THE
HEDONIC SCALE CATEGORY I ATE IT BECAUSE IT WAS GOOD FOR ME

Conse- cutive 5-Day Survey Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	37	9	401	26	8	336	16	7	242
2	11	3	332	14	5	288	11	5	206
3	24	8	299	14	6	234	5	3	185
4	22	9	252	7	4	190	8	6	123
5	9	7	135	8	4	191	a	a	a

^aFollow-up tests were unavailable

TABLE 22

CONTROL GROUP RESPONSES FOR THE FRUIT AND VEGETABLE FOOD GROUP, BASED ON THE HEDONIC
SCALE CATEGORY I ATE IT BECAUSE I LIKED IT AND IT WAS GOOD FOR ME

Conse- cutive 5-Day Survey Day	Study Periods								
	Pre-Test			Interim			Post-Test		
	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses	No. Student Responses	Percent Student Responses	Total Student Responses
1	151	38	401	113	34	336	70	29	242
2	46	14	332	40	14	288	18	9	206
3	117	39	299	49	21	234	29	16	185
4	47	19	252	34	18	190	15	12	123
5	48	35	135	26	14	191	a	a	a

^aFollow-up tests were unavailable

comparing the two test periods, these fruits and vegetables from the five day menu survey: green beans, Italian blend vegetables, corn, mixed fruit cup, broccoli, fried okra, spinach, and pears with cottage cheese decreased their response percentages 7, 3, 24, 14, 14, 7, 9, and 27 percent, respectively. The responses to the fruits and vegetables served on days one, two, and four increased significantly ($p \leq 0.05$) at the "I ate it" level of acceptance for at least one of the three study periods (Table 23).

Changes, as measured by the four factor hedonic scale, did occur in non-YAC student responses to the Type A school lunch menus after YAC intervention. However, no significant changes were observed for the YAC members' nutrition knowledge test scores (Table 24). According to the t-test calculations, results of the nutrition knowledge test given to six YAC members and their controls revealed no significant differences between the two groups. Only the seventh and eighth grade YAC members and their controls were used for this test. The ninth grade students were not present on the day the test was given and did not return a completed test at a later date. The mean test score of YAC members was higher than the mean test score of the non-YAC students. The YAC and non-YAC mean scores for the pre-test were 17.16 and 15.16, out of a possible 19 points, respectively. The mean scores for the post-test were 17.16 and 15.5 for the

TABLE 23

CHI-SQUARE COMPARISON OF CONTROL GROUP RESPONSES TO THE FRUIT AND VEGETABLE FOOD GROUP
CATEGORY SERVED ON THE TYPE A LUNCH FOR PRE-TEST, INTERIM, AND
POST-TEST PERIODS^a

Consecutive 5-Day Survey	Hedonic Scale Response Categories											
	I ate it			I ate it because I liked it			I ate it because it was good for me			I ate it because I liked it and it was good for me		
	A	B	C	A	B	C	A	B	C	A	B	C
1	3.77 ^c	12.77	29.52	1.95	43.91	31.66	0.5	0.27	1.33	1.29	1.43	5.11
2	0.00	3.16 ^c	3.72 ^c	1.6	1.98	0.10	0.97	0.05	1.35	0.00	3.09	3.16
3	0.99	3.15	0.86	14.5	12.46	50.21	0.84	2.59	5.79	0.86	1.86	29.83
4	9.31	0.94	2.69 ^c	10.26	8.92	0.19	4.55	1.28	0.53	0.03	1.88	2.45
5	0.25	d	d	5.51	d	d	1.02	d	d	21.82	d	d

^a Student responses for each hedonic scale category were compared by study periods.
Study period A represents changes between pre-test and interim intervals.
Study period B represents changes between interim and post-test intervals.
Study period C represents changes between pre-test and post-test intervals.

^b $p \leq 0.01$

^c $p \leq 0.05$

^d Follow-up tests were unavailable.

TABLE 24
NUTRITION KNOWLEDGE TEST SCORE COMPARISONS BETWEEN
YAC AND NON-YAC STUDENTS

Non-YAC Group				YAC Group			
Grade Level	Subject Number	Test Score Pre-Test	Percentage Post-Test	Grade Level	Subject Number	Test Score Pre-Test	Percentage Post-Test
7	1	68	79	7	7	95	95
7	2	79	79	7	8	95	89
7	3	74	68	7	9	79	89
8	4	84	95	8	10	89	89
8	5	74	74	8	11	84	79
8	6	100	95	8	12	100	100
Mean		79.8	81.6	Mean		90.3	90.3
Standard Deviation		2.14	2.1	Standard Deviation		1.47	1.33

Note: t-test calculations showed no significant differences between YAC and Non-YAC values

YAC and non-YAC group, respectively. These differences were not significant at the $p \leq 0.05$ level.

CHAPTER IV

CONCLUSIONS

The present study was conducted to determine the effects of a Youth Advisory Council program on the dietary behavior of junior high school students. Two junior high schools in the Arlington Independent School District participated in the study, Carter Junior High and Hutcheson Junior High school. Carter Junior High school students served as the experimental group. Hutcheson Junior High school students served as controls for the study. Demographic characteristics of the two schools selected were very similar with regard to the student population represented. The majority of students lived in lower to upper middle class families with a minor percentage of those families classified as transient.

One aspect of this study examined the nutrition knowledge of the junior high YAC members. An objective nutrition test was administered to measure the effects of a series of nutrition lessons presented to YAC members. The purpose was to determine if a nutrition education program might increase nutrition knowledge and awareness of good nutrition principles.

This study also attempted to measure the influence of YAC membership on peer acceptance of the Type A school

lunch. YAC members, with guidance and direction from the school cafeteria manager and foodservice nutritionist, planned lunch menus for one week to be served throughout the district. The menus planned by the YAC were served three times during the school year and each time seventh and ninth grade students completed menu acceptability forms. The students rated the menu items on a four factor hedonic scale of acceptability: "I ate it," "I ate it because I liked it," "I ate it because it was good for me," and "I ate it because I liked it and it was good for me." The only week the students knew the YAC had planned the lunch menus was the second time the menus were served. The first and third menu surveys were collected to determine the baseline acceptance of the menus and any residual effects of the YAC campaign motivating students to eat a Type A lunch.

A comparison of the nutrition test scores of YAC members and their matched controls indicated no significant differences for either the pre- or post-test. The number of correct responses on the nutrition tests taken by YAC members was slightly higher than the control group's test scores. The YAC members correctly answered from 79 to 100 percent of the nutrition test questions. The control group ranged from 68 to 100 percent. The relatively high test scores of both groups might be attributed to two factors. One, the test questioned students about information they had

studied previously in school. For example, the concept of the Basic Four Good Groups was a part of the elementary and junior high school health curriculums. Second, the section of the test asking the students to identify the components of the Type A lunch might have been accurately answered simply because the students had been exposed to this lunch pattern in elementary and junior high school.

Data obtained from the three menu acceptability surveys indicated that the YAC program did influence the acceptance of the school lunch by junior high school students. According to the combined responses of participating seventh grade and ninth grade students, the YAC efforts increased the acceptance of fruits, vegetables, and breads on the Type A lunch. The results of the menu surveys showed very little change in the acceptability of milk or meat items. These foods were already highly acceptable to the junior high school students as indicated by the first and subsequent menu surveys.

Responses of the students from the experimental and control groups indicated a high acceptance, 67 to 100 percent consumed, of bread items when served as part of the entree. Hamburgers and tacos were highly acceptable items of both groups of students throughout the three study periods. Forty-seven to 51 percent of the students at both schools indicated they ate tacos because they liked them.

Hamburgers were consumed by 38 to 48 percent of the students because they liked them, as shown by their responses to the hedonic scale.

When the bread item served was a roll or piece of cornbread the acceptability varied. Cornbread was poorly accepted in both schools. Experimental and control group responses for all hedonic scale categories during the three study periods indicated that 21 to 56 percent of the students consumed cornbread. The low acceptability of cornbread has been documented in a previous study involving school children in grades five and ten (10). The combined response data from both schools showed that hot rolls were eaten by 11 to 100 percent of the students. Factors influencing the acceptance pattern for breads include: variations in recipe standardization, menu selection alternatives, and the role of bread in relation to other menu items.

Data for this study indicates fruits and vegetables, as a component of the Basic Four Food Groups, were the least acceptable food items on the school lunch menu. The poor acceptance of the Fruit and Vegetable Food Group has been reported in other school lunch acceptability studies of elementary, junior high and high school students (9-11). The fruits and vegetables that were well-liked by students in both junior high schools included french fries, peaches, green beans, spiced apples, pears, and corn. French fries

were the most popular vegetable item on the menu. For all three study periods, combined data from both junior high schools indicated the french fries were eaten by 77 to 96 percent of the students. These same vegetables and fruits have been well-liked by students in other Type A lunch acceptability studies (2, 9-11).

Students from Carter Junior High, the experimental group, significantly ($P \leq 0.01$) increased their acceptance of fruit and vegetable menu items following YAC intervention. The interim-test survey indicated significant ($p \leq 0.01$) increases for the "I ate it" level of acceptance. When comparing hedonic scale responses for the pre-test and interim-study periods, the percentage consumption of fruits and vegetables increased for peaches (17 percent), spiced apples (6 percent), corn (43 percent), mixed fruit cup (20 percent), applesauce (32 percent), and fried okra (10 percent). The peaches and spiced apples were consumed by the largest percentage of students during the pre-test period, 40 and 52 percent, respectively.

Post-test measures of hedonic scale responses for the experimental group indicated a decrease in acceptance of peaches, spiced apples, tossed salad, and pears. The percentage decreases for these fruits and vegetables when comparing the interim and post-test study periods were 44, 27, 5 and 12 percent, respectively. Statistically, the changes in acceptance were not significant.

Comparing control group responses from the pre-, interim, and post-test study periods, there were consistent decreases in consumption of peaches, green beans, corn, Italian blend vegetables, fruit cup, and okra. The percentage decreases from the pre- to post-test study periods, for the fruits and vegetables listed above, were 13, 5, 48, 3, 11, and 10 percent, respectively. Responses from the pre- to post-test study periods indicated significant ($p \leq 0.05$) increases in Fruit and Vegetable Food Group consumption in the acceptance category, "I ate it."

Summary

The present study attempted to determine the effect of a YAC program on the members of the Council and their junior high school peers. The results of an objective nutrition test taken by the YAC members and their matched controls indicated no significant differences in nutrition test scores between the two groups before or after the nutrition education program for the YAC.

The YAC program did increase the level of acceptance of selected fruits, vegetables, and breads served on the Type A lunch by junior high school students. The junior high school students seemed to respond more positively when they knew their YAC group had participated in planning the Type A lunch menus. Evidence from this study indicates that efforts

to increase participation in the school lunch program should include student involvement that is recognized by their peers at school.

APPENDICES

APPENDIX A
INSTRUMENTS

MENU ACCEPTABILITY FORM^a

GRADE LEVEL _____

DATE _____

Directions: Place a check in the column that best describes what you had for lunch today.

Lunch item	I ate it	I ate it because I liked it	I ate it because it's good for me	I ate it because I liked it & it's good for me
Beef Stew				
Pepper Steak				
Peaches				
Green Beans				
French Fries				
Cornbread				
Milk				

^aThe same format was used for each of the five days during the selected week of YAC menus. The food items, of course, changed daily.

NUTRITION QUIZ

NAME _____

GRADE _____

TEACHER _____

Directions: Please answer the questions below to the best of your ability. This is not for a grade or for a class you are enrolled in. Thank you for your cooperation.

1. List the Basic Four food groups and the number of servings from each group a teenager needs daily:

- a. _____ servings per day
 b. _____ servings per day
 c. _____ servings per day
 d. _____ servings per day

2. Circle the food items to be included in the school Type A lunch pattern:

MEAT

FRUIT

MILK

VEGETABLES

DESSERT

BREAD

POTATOES

JUICE

3. Below are some examples of a Type A school lunch menu. In the blank below each menu write the missing food item or group in that menu.

Corny dogs
 Applesauce
 Hot roll
 Dessert
 Milk

Spaghetti
 Hot roll
 Green beans
 Green salad
 Cake
 Iced tea

Chicken fried steak
 Corn
 Spinach
 Apple crisp
 Milk

NAME _____

Directions: Fill in what you eat during the day for the three days listed below. Please list everything you eat--snacks, meals, etc. This is not a test and the information will not be given to anyone but Mrs. Williamson. Thank you for your help. Try to estimate how much of each food item was eaten and write that in the spaces below. Be as specific as possible about the types of food eaten.

Date _____

Morning:

Noon:

Evening:

Date _____

Morning:

Noon:

Evening:

OVER FOR THE THIRD DAY...

APPENDIX B
YAC PLANNED MENUS

YAC MENUS

Day 1

Beef Stew
Pepper Steak
Peaches
Green Beans

French Fries
Cornbread
Milk

Day 2

Tacos
Grilled Cheese Sandwich
Pinto Beans

Spiced Apples
Italian Blend Vegetables
Milk

Day 3

Chili Dogs
Chicken Fried Steak
Corn
Tossed Green Salad

Fruit Cup
Hot Roll
Milk

Day 4

Spaghetti
Ham Patty
Broccoli with Cheese Sauce
Rosie Applesauce

Fried Okra
Hot Roll
Milk

Day 5

Hamburger
Manager's Choice
French Fries

Spinach
Pears with Cottage Cheese
Milk

APPENDIX C
NUTRITION LESSON PLANS

YOUTH ADVISORY COUNCIL
STUDENT NUTRITION LESSON PLANS

1. WHAT IS A TYPE A SCHOOL LUNCH OR BREAKFAST??????

A Type A school lunch or breakfast must follow the menu patterns given below:

LUNCH

<u>Food Item</u>	<u>Serving(s)</u>	<u>Amount</u>
Milk	1	1 cup (1/2 pint)
Meat or Meat Alternate	1	2 oz. cooked meat 1 egg 2 oz. cheese 1/2 c. cooked dried beans 4 Tbsp. peanut butter
Vegetables & Fruits	2	3/4 c. serving of two or more vegetables or fruits, or both. 1 food item (apple, banana, orange)
Bread	1	1 slice enriched bread 1 serving of cornbread 1 roll, muffin, etc.

BREAKFAST

Milk	1	1 cup
Protein Source	1	Suggested 3 times/week
Breads & Cereals	1	3/4 c. enriched cereal 1 slice enriched bread 1 serving cornbread 1 roll, muffin, etc.
Fruits & Vegetables	1	1/2 c. full strength juice 1/2 c. fruit or vegetable

2. WHAT NUTRIENTS DO WE NEED THAT THIS MENU PATTERN PROVIDES?

In the chart below are several major nutrients needed for health and well-being by any group of people. Studies have shown that teen-agers, as a group, do not get enough iron, calcium, vitamin A, or thiamin in their diets. These are the nutrients you should pay special attention to in your diets.

NUTRIENT	FOOD SOURCES	NEEDED BY THE BODY TO:
Calcium	Milk, cheese, dark green leafy vegetables	Build bones & teeth, Help muscles work
Iron	Liver, meat, green leafy vegetables (dark)	Build red blood cells, Prevent anemia, carry oxygen to all parts of the body
Protein	Meat, eggs, milk, breads and cereals	Build & repair tissues, Promote growth, Provide energy
Fats	Butter, salad oils, fatty meats	Provide energy (calories)
Carbohydrates	Breads & cereals, potatoes, corn, sugar, jelly	Provide energy (calories)
Vitamin A	Deep yellow or dark green leafy vegetables, liver, whole milk	Keep skin healthy, Protect against night blindness
B Vitamins -thiamin -niacin -riboflavin	Bread, meat, milk	Keep nervous system healthy Maintain good appetite

NUTRIENT	FOOD SOURCES	NEEDED BY THE BODY TO:
Vitamin C	Citrus fruits, white potatoes, tomatoes, broccoli, strawberries	Hold body cells together, Resist infection, Help wounds heal
Vitamin D	Vitamin D milk	Build strong bones

3. ISN'T THERE AN EASIER WAY TO FIGURE OUT WHETHER THESE MENUS ARE GOOD FOR US WITHOUT CHECKING ALL THOSE NUTRIENTS?

Yes, a plan called the Basic Four groups foods in such a way that all of the nutrients listed previously will be present in adequate amounts if this plan is followed. For example:

<u>BASIC FOUR FOOD GROUPS</u>	<u>LEADER NUTRIENTS</u>
1. Milk & Milk Products 4 servings/day	Protein Riboflavin Calcium
2. Fruits & Vegetables 4 servings/day:	Vitamin A
1 serving vitamin C	Vitamin C
1 serving vitamin A	
2 servings other fruits or vegetables	
3. Meat & Meat Alternates 2 servings/day	Protein Thiamin Riboflavin Niacin Iron
4. Breads & Cereals 4 servings/day	B Vitamins Carbohydrates Iron

There may be a fifth group, OTHER FOODS, that provide CARBOHYDRATES & FATS. OTHER FOODS include butter, margarine, sugars, candy, doughnuts, cake, carbonated beverages, gelatins, cookies, etc. These foods add extra CALORIES to the diet and, sometimes, very small amounts of nutrients.

4. NOW THAT WE KNOW A SIMPLE PLAN TO USE WHEN CHECKING FOR A NUTRITIOUS MENU, LET'S PUT OUR KNOWLEDGE INTO ACTION.

Here is a sample school lunch menu. In the space provided, list the servings from the Basic Four found in this menu.

MENUBASIC FOUR PLAN

CORN DOGS

Milk group _____

BUTTER CARROTS

Meat group _____

TOSSED GREEN SALAD

Fruit &
vegetable _____

BROWNIES

Bread &
cereal _____

MILK

Does this menu provide approximately 1/3 of the Basic Four requirements for each group? _____

Does this menu lack anything according to the Basic Four plan? _____

5. Look at the menu again, are there some foods on the menu we know most teenagers do not like? LIST THESE:

DISLIKED FOODS

REPLACE WITH

Did the foods you replaced in the menu contain the same nutritive value as the disliked foods? _____

6. TO EVALUATE THESE LUNCH OR BREAKFAST MENUS USE THE COLOR CODE METHOD. USING THE COLOR DISCS FOR THE BASIC FOUR, DETERMINE THE NUMBER OF SERVINGS FROM EACH GROUP.

MENUBASIC FOUR PLAN

ENCHILADAS WITH CHILE
& CHEESE

Milk group: _____

HOT ROLL

Meat group: _____

TOSSED GREEN SALAD

Bread/cereals: _____

PINTO BEANS OR CORN

Fruits/vegetables: _____

Does this menu provide approximately 1/3 of the Basic Four requirements for each group? _____

Does this menu lack anything according to the Basic Four plan?

Does this menu seem to have too much of any one nutrient?

Would you replace any of the foods in the menu with a better liked food? If so, what would you replace it with?

7. EVALUATE THIS MENU, USING THE COLOR-CODE METHOD. ANSWER THE QUESTIONS FOLLOWING THE MENU.

MENU: ALL BEEF HAMBURGERS, STEAK HOUSE FRIES,
ORANGE JELLO, ENGLISH PEAS, CHOCOLATE CAKE
(carrots &
pineapple in
it)

Is there anything lacking according to the Basic Four plan?

Would you replace any of the foods in the menu?

YOUTH ADVISORY COUNCIL
TEACHER NUTRITION LESSON PLANS

SUGGESTIONS FOR BUILDING ENTHUSIASM AMONG YAC MEMBERS AND THEIR CLASSMATES FOR THE SCHOOL LUNCH PROGRAM:

1. Organize the YAC group early--spring or summer.
2. Select members based on their application and grades. Do not automatically keep YAC members from year to year.
3. Make a suggestion box for students and teachers in the cafeteria.
4. Write a YAC column in the student newspaper.
5. Put up a YAC bulletin board for all school events in the cafeteria.
6. Give a prize for the student who selects and eats the most Type A lunches in a month.
7. Conduct a food preference survey among students. From these suggestions and opinions try to improve the lunch program acceptability.
8. Begin a "Keep the Cafeteria Clean" campaign.
9. Put up posters on good nutrition in the cafeteria.
10. Allow school spirit posters in the cafeteria--in good taste!
11. Involve the school administrators, especially the principal.
12. Involve the parents and PTA whenever possible.
13. YAC members may want to help serve behind the cafeteria lines, but a health permit is required as well as a TB test.
14. Conduct a tasting party of salesman's samples during the summer or school year. Ask the Director of Food Service to arrange this activity for the students. This is the process used to select the foods to buy for the school cafeterias.

1. WHAT IS A TYPE A SCHOOL LUNCH OR BREAKFAST??????

A Type A school lunch or breakfast must follow the menu patterns given below:

LUNCH

<u>Food Item</u>	<u>Serving(s)</u>	<u>Amount</u>
Milk	1	1 cup (1/2 pint)
Meat or Meat Alternate	1	2 oz. cooked meat 1 egg 2 oz. cheese 1/2 c. cooked dried beans 4 Tbsp. peanut butter
Vegetables & Fruits	2	3/4 c. serving of two or more vegetables or fruits, or both. 1 food item (apple, banana, orange)
Bread	1	1 slice enriched bread 1 serving of cornbread 1 roll, muffin, etc.

BREAKFAST

Milk	1	1 cup
Protein Source	1	Suggested 3 times/week
Breads & Cereals	1	3/4 c. enriched cereal 1 slice enriched bread 1 serving cornbread 1 roll, muffin, etc.
Fruits & Vegetables	1	1/2 c. full strength juice 1/2 c. fruit or vegetable

TEACHER SECTION

Section 1 - What is a Type A lunch or breakfast pattern?

TEACHER NOTES

1. This lunch pattern was developed to provide approximately 1/3 of the recommended daily nutrient allowances for teenagers.
2. Nutrients - substances found in foods necessary for body function. The six major nutrient groups include: protein, vitamins, minerals, water, fats, and carbohydrates.
3. The breakfast plan does not have to include a protein source, but it has been suggested by food service personnel that a protein source be included 3 times per week.

SUGGESTED ACTIVITIES

1. Use food models, available from the Dairy Council, to help students understand how to classify foods under each of the four groups listed.

Students must be able to correctly classify foods as a bread, fruit, vegetable, meat or meat alternate, or milk product. This step is necessary before progressing through the rest of the learning experiences.

2. Obtain sample school menus and help students recognize how the menus meet the lunch or breakfast plan requirements.
3. Illustrate, with food models or measuring equipment or food samples, the serving sizes of the required food items.
4. Obtain the serving utensils used by the cafeteria line workers to illustrate how food portions are standardized and measured.

2. WHAT NUTRIENTS DO WE NEED THAT THIS MENU PATTERN PROVIDES?

In the chart below are several major nutrients needed for health and well-being by any group of people. Studies have shown that teen-agers, as a group, do not get enough iron, calcium, vitamin A, or thiamin in their diets. These are the nutrients you should pay special attention to in your diets.

NUTRIENT	FOOD SOURCES	NEEDED BY THE BODY TO:
Calcium	Milk, cheese, dark green leafy vegetables	Build bones & teeth, Help muscles work
Iron	Liver, meat, dark green leafy vegetables	Build red blood cells, Prevent anemia, carry oxygen to all parts of the body
Protein	Meat, eggs, milk, breads and cereals	Build & repair tissues, Promote growth, Provide energy
Fats	Butter, salad oils, fatty meats	Provide energy (calories)
Carbohydrates	Breads & cereals, potatoes, corn, sugar, jelly	Provide energy (calories)
Vitamin A	Deep yellow or dark green leafy vegetables, liver, whole milk	Keep skin healthy, Protect against night blindness
B Vitamins -thiamin -niacin -riboflavin	Bread, meat, milk	Keep nervous system healthy Maintain good appetite

NUTRIENT	FOOD SOURCES	NEEDED BY THE BODY TO:
Vitamin C	Citrus fruits, white potatoes, tomatoes, broccoli, strawberries	Hold body cells together Resist infection, Help wounds heal
Vitamin D	Vitamin D milk	Build strong bones

TEACHER SECTION

Section 2 - What nutrients do we need that this menu pattern provides?

TEACHER NOTES

1. The best way to get adequate amounts of these nutrients is to eat a varied diet each day.
2. Nutrients operate in many ways in the body, only the most important functions are listed on the chart.
3. Citrus fruits include oranges, lemons, limes and grapefruit. Pineapple is not considered a citrus fruit and contains very little vitamin C in comparison to citrus fruit vitamin C levels.
4. Carbohydrates and fats are absolutely necessary in the diet, but in excess can cause obesity. Obesity plagues, at the present time, 30-40% of the American adult population.
5. Certain vegetables are considered high starch foods (high carbohydrate content). These foods include potatoes, corn, turnips, sweet potatoes, and other white vegetables that are roots. These foods would not be appropriate in a menu already containing high carbohydrate foods, i.e., bread, cereal, macaroni, spaghetti, pizza crust, etc.
6. A good source of vitamin C should be included daily. A good source of vitamin A should be included 3-4 times per week.

SUGGESTED ACTIVITIES

1. Use the Dairy Council comparison cards to illustrate the nutrient content of various foods.
2. Identify foods that are major sources of several nutrients. For example:

Dark green leafy vegetables are good sources of vitamin A, calcium, iron, and other vitamins & minerals.

Milk and milk products are good sources of calcium, protein, vitamin D and riboflavin.

3. Conduct a tasting party of vegetables, prepared in unusual ways if you like, that are high in nutritive value.

3. ISN'T THERE AN EASIER WAY TO FIGURE OUT WHETHER THESE MENUS ARE GOOD FOR US WITHOUT CHECKING ALL THOSE NUTRIENTS?

Yes, a plan called the Basic Four groups foods in such a way that all of the nutrients listed previously will be present in adequate amounts if this plan is followed.
For example:

<u>BASIC FOUR FOOD GROUPS</u>	<u>LEADER NUTRIENTS</u>
1. Milk & Milk Products 4 servings/day	Protein Riboflavin Calcium
2. Fruits & Vegetables 4 servings/day:	Vitamin A
1 serving vitamin C	Vitamin C
1 serving vitamin A	
2 servings other fruits or vegetables	
3. Meat & Meat Alternates 2 servings/day	Protein Thiamin Riboflavin Niacin Iron
4. Breads & Cereals 4 servings/day	B Vitamins Carbohydrates Iron

There may be a fifth group, OTHER FOODS, that provide CARBOHYDRATES & FATS. OTHER FOODS include butter, margarine, sugars, candy, doughnuts, cake, carbonated beverages, gelatins, cookies, etc. These foods add extra CALORIES to the diet and, sometimes, very small amounts of nutrients.

TEACHER SECTION

Section 3 - Basic Four Food Groups

TEACHER NOTES

1. The Type A lunch pattern is designed around the Basic 4 Food Group concept. The Basic 4 is an excellent guide to nutritious eating and one that can be used very simply and quickly.
2. The leader nutrients are those nutrients found in large amounts in a specific food group. This classification of nutrients is fairly easy to use and identifies the types of food high in certain nutrients.
3. Serving sizes of the four food groups vary from food to food and should be illustrated to students. NOTE: use guidelines for teen-agers listed in the Basic Four plan.

SUGGESTED ACTIVITIES

1. Review the foods that fit into each food group.
2. Using Dairy Council food models, illustrate serving sizes of various foods in each group.
3. Review the functions of the leader nutrients and generalize this information according to the food groups:

Milk and milk products help our bodies grow and repair themselves (protein), build bones and teeth (calcium, Vit. D), and provide energy for growth to occur (riboflavin).

Riboflavin is an integral part of an enzyme necessary for the conversion of food energy to a form of energy we can use for body functions & growth.

4. NOW THAT WE KNOW A SIMPLE PLAN TO USE WHEN CHECKING FOR A NUTRITIOUS MENU, LET'S PUT OUR KNOWLEDGE INTO ACTION.

Here is a simple school lunch menu. In the space provided, list the servings from the Basic Four found in this menu.

MENUBASIC FOUR PLAN

CORN DOGS

Milk group _____

BUTTER CARROTS

Meat group _____

TOSSED GREEN SALAD

Fruit &
vegetable _____

BROWNIES

Bread &
cereal _____

MILK

Does this menu provide approximately 1/3 of the Basic Four requirements for each group? _____

Does this menu lack anything according to the Basic Four plan?

5. Look at the menu again, are there some foods on the menu we know most teenagers do not like? LIST THESE:

DISLIKED FOODS

REPLACE WITH

Did the foods you replaced in the menu contain the same nutritive value as the disliked foods? _____

TEACHER SECTION

Sections 4 and 5 - Menu evaluations

TEACHER NOTES

1. Some menu items do contain ingredients from more than one food group. Be aware of the ingredients used in preparing school lunches--see the food service ordering and portion control guide.
2. A school survey of student food preferences should be completed before the section is begun.
3. Menu evaluation, to be successful, must reflect a good knowledge of the Basic 4, serving sizes, and the importance of food nutrients in maintaining health.

SUGGESTED ACTIVITIES

1. Obtain actual school menus to evaluate.
2. Using common sense and the portion and ordering control guide, determine the major ingredients in the food items.
3. To complete section 5, the student food preferences survey results should be used.
4. Determine if there is an over-abundance of carbohydrates and fats in the menu.
5. Are certain food groups over-emphasized? Are there too many servings from a food group? Is this harmful or not?
6. Take a field trip to the food service warehouse to see how ingredients are packaged and stored.
7. Tour the school cafeteria food preparation area.
8. Ask the cafeteria manager to speak to the group on how menus are planned and how food preparation on a large scale must differ from food preparation done for a family.

6. TO EVALUATE THESE LUNCH OR BREAKFAST MENUS USE THE COLOR-CODE METHOD. USING THE COLOR DISCS FOR THE BASIC FOUR, DETERMINE THE NUMBER OF SERVINGS FROM EACH GROUP.

MENUBASIC FOUR PLAN

ENCHILADAS WITH CHILE
& CHEESE

Milk group: _____

HOT ROLL

Meat group: _____

TOSSED GREEN SALAD

Bread/cereals: _____

PINTO BEANS OR CORN

Fruits/vegetables: _____

Does this menu provide approximately 1/3 of the Basic Four requirements for each group? _____

Does this menu lack anything according to the Basic Four plan?

Does this menu seem to have too much of any one nutrient?

Would you replace any of the foods in the menu with a better liked food? If so, what would you replace it with?

7. EVALUATE THIS MENU, USING THE COLOR-CODE METHOD. ANSWER THE QUESTIONS FOLLOWING THE MENU.

MENU: ALL BEEF HAMBURGERS, STEAK HOUSE FRIES,
ORANGE JELLO, ENGLISH PEAS, CHOCOLATE CAKE
(carrots &
pineapple in
it)

Is there anything lacking according to the Basic Four plan?

Would you replace any of the foods in the menu?

TEACHER SECTION

Sections 6 and 7 - Advanced menu evaluation

TEACHER NOTES

1. Refer to sections 4 and 5.

SUGGESTED ACTIVITIES

1. Progress to menus using food items more difficult to place in a food group category.
2. Use the color-code discs to, quickly, determine the menu's adherence to the Basic 4 plan.

Each color disc represents a serving from one of the following food groups:

Brown disc	-	meat
Yellow disc	-	vitamin C serving
Orange disc	-	vitamin A serving
Green disc	-	other vegetables and fruits
Red disc	-	breads and cereals
Blue disc	-	milk and milk products

Students put down, on the table or paper, the color discs appropriate for each menu item. This allows them to SEE how the menu stacks up nutritionally.

3. After successfully completing this section, the students should be able to plan a menu for a day, and then a week, for their cafeteria manager, food service director and food service nutritionist in this project. They will provide all the necessary information.
4. The whole purpose of these lessons in nutrition and menu planning should be geared to planning school lunches. This is a goal students are eager to tackle and feel they can accomplish (with some help).

APPENDIX D
PERMISSION LETTERS

GUY C. HUTCHESON JUNIOR HIGH SCHOOL

2101 BROWNING DRIVE 460-6572

ARLINGTON, TEXAS 76010

DON H. CARSON
PRINCIPAL

November 20, 1978

Texas Womans University
Human Research Committee

Permission is granted for the students at Hutcheson Junior High School to participate in the Type A lunch survey.

This survey will be conducted by Mrs. Beverly Williamson.



Don H. Carson

J. I. CARTER JR. HIGH SCHOOL

701 THARP STREET
ARLINGTON, TEXAS 76010

OFFICE OF:

TO WHOM IT MAY CONCERN:

I have given my permission for the students at Carter Junior High to participate in the thesis project as proposed by Beverly Williamson.

I understand the project will involve the completion of menu acceptability cards by those students eating a Type A lunch. The Youth Advisory Council of Carter Junior High will also be participating in this study.

A handwritten signature in cursive script, likely belonging to J. I. Carter Jr., the principal of the school mentioned in the letter. The signature is fluid and stylized, with a long horizontal flourish at the end.

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