

**Development of Middle/Junior High School Student  
Surveys to Measure Factors that Impact  
Participation In and Satisfaction With  
The National School Lunch Program**



National Food Service Management Institute  
The University of Mississippi  
1-800-321-3054

**2012**

This project has been funded at least in part with federal funds from the U.S. Department of Agriculture, Food and Nutrition Service through an agreement with the National Food Service Management Institute (NFSMI) at The University of Mississippi. The contents of this publication do not necessarily reflect the views or policies of the U.S. Department of Agriculture, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. government.

The information provided in this publication is the result of independent research produced by NFSMI and is not necessarily in accordance with U.S. Department of Agriculture Food and Nutrition Service (FNS) policy. FNS is the federal agency responsible for all federal domestic child nutrition programs including the National School Lunch Program, the Child and Adult Care Food Program, and the Summer Food Service Program. Individuals are encouraged to contact their local child nutrition program sponsor and/or their Child Nutrition State Agency should there appear to be a conflict with the information contained herein, and any state or federal policy that governs the associated Child Nutrition Program. For more information on the federal Child Nutrition Programs please visit [www.fns.usda.gov/cnd](http://www.fns.usda.gov/cnd).

The University of Mississippi is an EEO/Title VI/Title IX/Section 504/ADA/ADEA Employer.

© 2012, National Food Service Management Institute, The University of Mississippi

Except as provided below, you may freely use the text and information contained in this document for non-profit or educational use providing the following credit is included:

Suggested Reference Citation:

Castillo, A. & Lofton, K. L. (2012). *Development of middle/junior high school student surveys to measure factors that impact participation in and satisfaction with the National School Lunch Program*. University, MS: National Food Service Management Institute.

The photographs and images in this document may be owned by third parties and used by The University of Mississippi or The University of Southern Mississippi under a licensing agreement. The universities cannot, therefore, grant permission to use these images. For more information, please contact [nfsmi@olemiss.edu](mailto:nfsmi@olemiss.edu).

**National Food Service Management Institute  
The University of Mississippi**

**Building the Future Through Child Nutrition**

The National Food Service Management Institute was authorized by Congress in 1989 and established in 1990 at The University of Mississippi in Oxford and is operated in collaboration with The University of Southern Mississippi in Hattiesburg. The Institute operates under a grant agreement with the United States Department of Agriculture, Food and Nutrition Service.

**PURPOSE**

The purpose of the National Food Service Management Institute is to improve the operation of child nutrition programs through research, education and training, and information dissemination.

**MISSION**

The mission of the National Food Service Management Institute is to provide information and services that promote the continuous improvement of child nutrition programs.

**VISION**

The vision of the National Food Service Management Institute is to be the leader in providing education, research, and resources to promote excellence in child nutrition programs.

**CONTACT INFORMATION**

**Headquarters**

**Administrative Division**

The University of Mississippi

Phone: 800-321-3054

Fax: 800-321-3061

[www.nfsmi.org](http://www.nfsmi.org)

**Education and Training Division**

**Information Services Division**

The University of Mississippi

6 Jeanette Phillips Drive

P.O. Drawer 188

University, MS 38677-0188

**Applied Research Division**

The University of Southern Mississippi

118 College Drive #5060

Hattiesburg, MS 39406-0001

Phone: 601-266-5773

Fax: 888-262-9631



## **Acknowledgments**

**WRITTEN AND DEVELOPED BY**

**Alexandra Castillo, MPH  
Researcher**

**Kristi L. Lofton, PhD, RD  
Assistant Director**

**Applied Research Division  
The University of Southern Mississippi**

**NFSMI EXECUTIVE DIRECTOR  
Katie Wilson, PhD, SNS**

---

---

## TABLE OF CONTENTS

---

---

EXECUTIVE SUMMARY .....	8
INTRODUCTION .....	11
Research Objectives	
METHOD .....	14
Phase I: Survey Development	
Phase II: Survey Pilot Test	
Stage 1	
Stage 2	
Informed Consent	
Data Analysis	
RESULTS AND DISCUSSION .....	19
Phase I: Survey Development	
Characteristics of Participating School Nutrition Programs	
Phase II: Survey Pilot Test	
Stage 1	
Stage 2	
Middle/Junior High School Student Participation Survey	
Middle/Junior High School Student Non-Participation Survey	
Description of Validated Survey Instruments	
CONCLUSIONS AND RECOMMENDATIONS .....	38
Research Study Conclusions	
Education and Training Implications	
Research Implications	
REFERENCES .....	43

---

---

## LIST OF TABLES

---

---

Table 1:	School Nutrition Program Demographics of Participating Middle/Junior High Schools (Stages 1 and 2).....	19
Table 2:	Participating Middle/Junior High School Students' Level of Agreement with Characteristics of the School Lunch Experience .....	22
Table 3:	Reasons for Eating School Lunch by Participating Middle/Junior High School Students.....	24
Table 4:	Personal Demographics of Participating Middle/Junior High School Students .....	25
Table 5:	Reliability ( $\alpha$ ), Standardized Factor Loadings, Means, and Standardized Deviations (SD) of Factors that Affect the School Lunch Experience of Participating Middle/Junior High School Students .....	26
Table 6:	Comparison of Means and Standard Deviations (SD) for Participation Factors by Grade Levels .....	28
Table 7:	Non-Participating Middle/Junior High School Students' Level of Agreement with Reasons for Not Eating School Lunch.....	29
Table 8:	Reasons for Eating School Lunch by Non-Participating Middle/Junior High School Students.....	31
Table 9:	Personal Demographics of Non-Participating Middle/Junior High School Students.....	32
Table 10:	Reliability ( $\alpha$ ), Standardized Factor Loadings, Means, and Standard Deviations (SD) of Reasons Why Middle/Junior High School Students Do Not Eat School Lunch .....	33
Table 11:	Comparison of Means and Standard Deviations (SD) between Female and Male Middle/Junior High School Students with Non-Participation Factors .....	34
Table 12:	Comparison of Means and Standard Deviations (SD) for Non-Participation Factors by Grade Levels .....	35

**DEVELOPMENT OF MIDDLE/JUNIOR HIGH SCHOOL STUDENT SURVEYS  
TO MEASURE FACTORS THAT IMPACT PARTICIPATION IN AND  
SATISFCATION WITH THE NATIONAL SCHOOL LUNCH PROGRAM**

---

---

**EXECUTIVE SUMMARY**

The steady decline in high school student lunch participation is one of the greatest challenges facing school nutrition (SN) programs. Previous research has shown that the decline begins at the middle/junior high school level, sixth through eighth grade (McConnell, Matta, & Shaw, 1997). During this age period, students are still considered a captive audience since most middle/junior high schools do not allow students to eat lunch off campus as they do at many high schools (McConnell et al., 1997; Meyer, 2000). However, there is a lack of research on factors that affect middle/junior high school students' school lunch participation.

A previous National Food Service Management Institute, Applied Research Division (NFSMI, ARD) study showed that at the middle/junior high school level, SN professionals need to focus on customer service in order to retain these students once they enter high school (Castillo, Lofton, & Nettles, 2011). School nutrition professionals can apply this customer-oriented approach in an effort to gain a better understanding of middle/junior high school students' perceptions, wants, and needs related to the school foodservice operation. This information can direct the decision making of SN professionals as to which products and services will satisfy their customers. Assessing students' satisfaction and addressing their concerns proactively will give students a sense of empowerment and may positively influence their decision to eat school lunch (Roseman & Niblock, 2006). School nutrition professionals can also benefit from asking students to participate in focus groups to identify areas of improvement and participate in the process of implementing changes in the SN program. Student feedback can be



instrumental in developing strategies to increase participation and customer satisfaction. One approach that involves customers and can assist SN professionals on improving their SN program is to survey students on their perceptions of school lunch.

The purpose of this study was to develop and validate two customer service surveys for middle/junior high school students to measure factors that impact their participation in and satisfaction with the National School Lunch Program. The qualitative data from the previous NFSMI, ARD focus group study and the validated NFSMI, ARD participation and non-participation surveys for high school students were used as the foundation for drafting two middle/junior high school student surveys (Asperin, Nettles, & Carr, 2008; Asperin, Nettles, & Carr, 2009; Castillo et al., 2011). A two-stage pilot test was conducted to refine and validate the survey instruments prior to making it available for use by SN directors nationwide. The participation and non-participation surveys were administered to a total of 1,401 middle/junior high school students from 22 middle/junior high schools within 12 school districts across five United States Department of Agriculture regions. Statistical analyses included descriptive statistics, exploratory factor analysis, Cronbach's alpha, independent sample t-tests, and one-way ANOVA with Tukey's post hoc test.

Results from the participation survey and factor analyses showed that middle/junior high school student satisfaction with their school lunch experience can be attributed to two main factors, food preference and staff attentiveness. Food preference indicates the aspects of the food served during school lunch that appeal to middle/junior high school students, such as aroma, appearance, quality, variety, and freshness. Staff attentiveness indicates the responsiveness of SN staff and their interaction with students, including listening to students, friendliness, and attitude towards work. The top five reasons for eating school lunch among participating middle/junior

high school students were “I am hungry,” “I get to sit with my friends,” “I didn’t bring anything to eat,” “It gives me energy for the rest of the day,” and “I have no choice.”

Results from the non-participation survey and factor analyses showed that low participation among middle/junior high school students can be attributed to two main factors, food quality and customer service. Food quality indicates the quality of the food served during school lunch, such as taste, likeability, food recognition, properly cooked food, and healthfulness. Customer service indicates the approachability of SN staff and services provided for students, including cleanliness of cafeteria, communication with students, and accuracy of menu. The top five reasons that would encourage students to eat school lunch more often were “Better tasting food,” “Shorter wait in line,” “Better quality food,” “More food choices I like,” and “Fresher looking food.”

The participation survey developed in this study is a research-based tool generalizable for use by the middle/junior high school student population (grades 6 through 8), regardless of school district size. This survey is appropriate for SN programs that have a relatively high rate of participation at the middle/junior high school level and would like to retain students by increasing customer satisfaction. The non-participation survey developed in this study is a research-based tool generalizable for use by the middle/junior high school student population (grades 6 through 8), regardless of school district size. This survey is appropriate for SN programs that have a lower rate of participation at the middle/junior high school level and would like to focus on customer service issues in an effort to increase participation.

## INTRODUCTION

One of the greatest challenges facing school nutrition (SN) programs is the steady decline in school lunch participation at the high school level (Gilmore, Hutchinson, Brown, 2000). Past research has indicated that this decline begins during the middle/junior high school years, sixth through eighth grade (McConnell, Matta, & Shaw, 1997). Reasons for the decline may be attributed to middle/junior high school students experiencing emotional, social, and physical changes that influence the choices they make, including participating in the National School Lunch Program (NSLP). Young adolescents seek freedom to make their own decisions, thus gradually become more liberated from their parents. One decision they learn to control is their choice in foods (Meyer, 2000). Children and adolescents today are more knowledgeable about foods due to their exposure and experiences frequenting restaurants, grocery stores, and convenience stores with their parents. Because of this experience, they have learned to recognize brands, expect good customer service, and make decisions concerning what foods they will or will not eat. Once students reach the middle/junior high school level, they begin to have some independence as to the choices they make regarding school lunch. Students choose whether they will or will not eat school lunch and select what they are willing to eat from the food choices offered with very little to no parental influence. Sixth grade students, on the other hand, are more inclined to make decisions based on parental influence than seventh and eighth grade students (Roseman & Niblock, 2006).

During this age period, students are still considered a captive audience, since most middle/junior high schools do not allow students to eat lunch off campus as they do at many high schools (McConnell et al., 1997; Meyer, 2000). A previous National Food Service Management Institute, Applied Research Division (NFSMI, ARD) study showed that at the middle/junior high

school level, SN professionals need to focus on customer service in order to retain these students once they enter high school (Castillo, Lofton, & Nettles, 2011). School nutrition professionals can apply this customer-oriented approach in an effort to gain a better understanding of middle/junior high school students' perceptions, wants, and needs related to the school foodservice operation. This information can direct the decision making of SN professionals as to which products and services will satisfy their customers. Positive perceptions of the SN program and student satisfaction may lead to a greater willingness to participate in the NSLP once these students move to high school. Past research has also identified that student satisfaction is associated with an increase in participation, which is essential for the financial stability of SN programs across the country (Gilmore et al., 2000).

However, there is a lack of research on the wants and needs of middle/junior high school students regarding the NSLP. Available information attributed middle/junior high school students' participation and satisfaction to key factors, including dining atmosphere, quality and variety of food, length of time in lunch lines, choice to eat or not eat school lunch, perceived healthfulness of menu items, visual attractiveness of foods, willingness to try new foods, and value for price paid. The literature suggests that the best method to determine a customer's perception is to ask them (McConnell et al., 1997; Meyer, 2000; Roseman & Niblock, 2006). Therefore, focusing on student retention and involvement can be advantageous to SN professionals when determining factors that affect their perceptions regarding their school lunch experience (Wojcicki & Heyman, 2006). Assessing students' satisfaction and addressing their concerns proactively will give students a sense of empowerment and may positively influence their decision to eat school lunch (Roseman & Niblock, 2006). School nutrition professionals can also benefit from asking students to participate in focus groups to identify areas of improvement

and participate in the process of implementing changes in the SN program. Student feedback can be instrumental in developing strategies to increase participation and customer satisfaction. One approach that involves customers and can assist SN professionals on improving their SN program is to survey students on their perceptions of school lunch. Therefore, the purpose of this study is to develop two customer service surveys for middle/junior high school students to measure factors that impact their participation in and satisfaction with the NSLP.

### **Research Objectives**

The specific objectives of this project included the following:

- Develop two middle/junior high school student surveys to measure factors that impact their participation in and satisfaction with the NSLP;
- Validate surveys for identifying factors that will aid SN professionals in providing products and services that middle/junior high school students desire in a school foodservice operation; and
- Identify factors than can influence the middle/junior high school students' perception of the services offered by the SN program.

## **METHOD**

The purpose of this study was to develop and validate two customer service surveys for middle/junior high school students to measure factors that impact their participation in and satisfaction with the National School Lunch Program (NSLP). A qualitative research approach identified by Nassar-McMillan and Borders (2002) was utilized by researchers as the foundation for this study. In the previous National Food Service Management Institute, Applied Research Division (NFSMI, ARD) focus group study, researchers collected data from middle/junior high school students for the development of two quantitative surveys (Castillo, Lofton, & Nettles, 2011). This research project was conducted in two phases. During Phase I, the qualitative data from the previous NFSMI, ARD focus group study and the validated NFSMI, ARD participation and non-participation surveys for high school students were used as the foundation for drafting two middle/junior high school student surveys (Asperin, Nettles, & Carr, 2008; Asperin, Nettles, & Carr, 2009; Castillo et al., 2011). In Phase II, a two-stage pilot test was conducted to refine and validate the survey instruments prior to making it available for use by school nutrition (SN) directors nationwide.

### **Phase I: Survey Development**

Researchers used the five themes from the previous focus group study with middle/junior high school students and the NFSMI, ARD validated participation survey for high school students, *The School Lunch Experience Survey*, to develop statements for the draft participation survey (Asperin et al., 2009). This draft survey was designed to explore the reasons why middle/junior high school students choose to eat school lunch. The participation survey instrument, *Middle/Junior High School Student Participation Survey*, consisted of three sections. In Section I, students were asked to use the phrase “When I eat school lunch...” before each of

the 24 statements, and then indicate their level of agreement with each statement, ranging from 5 (*strongly agree*) to 1 (*strongly disagree*). Section II asked students to choose the top five among 14 reasons why they eat school lunch. In Section III, students were asked to provide demographic information related to grade level, frequency of eating school lunch per week, and gender.

Researchers also used four themes from the previous focus group study with middle/junior high school students and the NFSMI, ARD validated non-participation survey for high school students, *Understanding Why High School Students Do Not Eat School Meals*, to develop statements for the draft non-participation survey (Asperin et al., 2008). This draft survey was designed to explore the reasons why middle/junior high school students choose not to eat school lunch. The non-participation survey instrument, *Middle/Junior High School Student Non-Participation Survey*, consisted of three sections. In Section I, students were asked to use the phrase, “My reason for not eating school lunch is that...” before each of the 24 statements, and then indicate their level of agreement with each statement, ranging from 5 (*strongly agree*) to 1 (*strongly disagree*). Section II asked students to choose the top five among 14 reasons that would encourage them to eat school lunch more often. In Section III, students were asked to provide demographic information related to grade level, frequency of eating school lunch per week, and gender.

### **Phase II: Survey Pilot Test**

After survey development, the draft instruments were formatted into scannable surveys to be administered during a two-stage pilot test. Stage 1 was primarily designed to test survey administration protocol and assess student comprehension of the instrument. Stage 2 was designed to validate the survey instruments. Both surveys were administered to a total of 1,401

middle/junior high school students from 22 middle/junior high schools within 12 school districts across five United States Department of Agriculture (USDA) regions.

### *Stage 1*

E-mail invitations providing an overview of the study were sent to six SN directors within one USDA region to participate in Stage 1 of the survey pilot test. Three school districts agreed to serve as pilot test sites. Two of the school districts had participated in the previous NFSMI, ARD focus group study with middle/junior high school students (Castillo et al., 2011). Confirmation e-mails were sent to the three participating SN directors to coordinate survey administration in their school districts. The researcher administered the surveys on site with the assistance of an SN director or manager. Surveys were administered to a total of 56 middle/junior high school students during the Stage 1 pilot test. To preserve the anonymity of all respondents, no identifying codes were placed on the questionnaires. A student assent statement was read to the students informing them about the study to assure them of the confidentiality of their responses. The students were told their participation was voluntary, and that they may withdraw participation at any time. It was also emphasized that there were no right or wrong answers to the survey questions, but that it was important for them to provide honest answers. The researcher observed the time it took students to complete the surveys. Once the students submitted the completed surveys, they were asked to provide feedback on survey instructions, statements, and scales.

### *Stage 2*

The researcher sent e-mail invitations to 25 SN directors across five USDA regions to solicit their participation in Stage 2 of the survey pilot test. Confirmation e-mails were sent to nine SN directors who agreed to pilot test the surveys in their school district. The e-mail also



included information related to survey administration, suggestions for selecting students for the pilot test, and a passive parental consent form. Survey packets containing the requested number of scannable surveys; instructions for survey administration; a student assent statement; a middle/junior high school profile form; and a self-addressed, postage-paid envelope were mailed to participating SN directors. The instructions outlined the steps to be taken for coordinating the survey process. The student assent statement informed the students of the purpose of the study, asked for their participation, and assured them of the confidentiality of their responses. The statement was to be read prior to survey administration. The middle/junior high school profile form asked the SN director to provide demographic information about their SN program (e.g., student enrollment, average daily attendance, and average daily participation). To preserve the anonymity of all respondents, no identifying codes were placed on the questionnaires.

School nutrition directors were asked to use their point-of-sale software to electronically select 25 to 50 students who eat school lunch daily and 25 to 50 students who eat school lunch sometimes or not at all to complete the surveys. A total of 995 participation surveys and 660 non-participation surveys were distributed to the nine school districts. After approximately two weeks, a follow-up e-mail was sent to SN directors thanking them for their participation and reminding them to complete and return the surveys.

### **Informed Consent**

The protocol for Phase I and Phase II of the study were reviewed and approved by the Human Subjects Protection Review Committee at the University of Southern Mississippi.

### **Data Analysis**

Surveys were analyzed using the statistical package SPSS Version 15.0 for Windows. Descriptive statistics included means, standard deviations, frequencies, and percentages of total

responses. Exploratory factor analyses were performed using data from Section I of both survey instruments to establish the factor structure for reasons why middle/junior high school students eat school lunch and reasons why middle/junior high school students do not eat school lunch.

Cronbach's alpha reliability coefficients were calculated to determine the internal consistency of the factors that emerged from both survey instruments. Independent sample t-tests were used to compare participation survey factors and non-participation survey factors by gender. One-way analyses of variances with Tukey's post hoc tests were used to evaluate differences in participation survey factors and non-participation survey factors with participants' grade levels.

## RESULTS AND DISCUSSION

### Phase I: Survey Development

#### *Characteristics of Participating School Nutrition Programs*

Across the two-stage pilot test, a total of 1,711 participation and non-participation surveys were sent to school nutrition (SN) directors; Of these surveys, 1,401 (81.9%) were completed and returned. Twelve school districts including 22 middle/junior high schools participated across the two stages of survey administration. Of the 12 participating school districts, three represented the Southwest region (25%), three represented the Mountain Plains region (25%), three represented the Western region (25%), two represented the Southeast region (16.7%), and one represented the Midwest region (8.3%) as classified by the United States Department of Agriculture (USDA). On average, the enrollment at participating middle/junior high schools was 600, ranging from 143 to 1,060 students. Average daily participation in the National School Lunch Program (NSLP) varied from 36% to 92%, with an average participation rate of 64%. Table 1 shows a summary of SN program demographics across the two-stage pilot test.

Table 1

*School Nutrition Program Demographics of Participating Middle/Junior High Schools (Stages 1 and 2)*

<b>Demographics</b>	<b>Range</b>	
	<b>Min</b>	<b>Max</b>
Enrollment	143	1,060
Average Daily Attendance (ADA)	93%	98%
Average Daily Participation (ADP)	36%	92%

(Table 1 continues)

(Table 1 continued)

*School Nutrition Program Demographics of Participating Middle/Junior High Schools (Stages 1 and 2)*

Demographics	Range	
	Min	Max
Percent of Students Eligible		
Free	7%	80%
Reduced priced	5%	22%
ADP Per Benefit Category		
Free	9%	80%
Reduced priced	4%	22%
Paid	8%	74%
Lunch price	free	\$3.00

## Phase II: Survey Pilot Test

### *Stage 1*

A total of 56 participation and non-participation surveys were completed by students from four middle/junior high schools in three school districts. All responses were retained and used for descriptive and exploratory factor analyses in Stage 2. In Section I of the *Middle/Junior High School Student Participation Survey*, students were provided 24 statements pertaining to characteristics that affect their school lunch experience. Students were asked to indicate their level of agreement with each statement using a scale of 5 (*strongly agree*) to 1 (*strongly disagree*). The last three statements were overall evaluations of food quality, service, and lunch

experience. In Section II, students were provided 14 statements related to reasons middle/junior high school students eat school lunch. Students were asked to indicate their top five reasons for eating school lunch. In Section III, students were asked to provide demographic information regarding their grade level, frequency of eating school lunch per week, and gender.

In Section I of the *Middle/Junior High School Student Non-Participation Survey*, students were provided 24 statements pertaining to reasons for not eating (or not eating often) school lunch. Students were asked to indicate their level of agreement with each statement using a scale of 5 (*strongly agree*) to 1 (*strongly disagree*). In Section II, students were provided 14 statements related to reasons that would encourage middle/junior high school students to eat school lunch. Students were asked to indicate their top five reasons for eating school lunch more often. In Section III, students were asked to provide demographic information regarding their grade level, frequency of eating school lunch per week, and gender.

After completion of the surveys, students were asked if they understood the instructions, statements, and scales on both survey instruments. Based on the feedback received from student participants, no changes were made to either the participation or non-participation surveys prior to Stage 2.

### ***Stage 2***

A total of 1,655 participation and non-participation surveys were distributed to nine SN directors. Each participant received a cover letter, requested number of surveys, instructions for administering the surveys, and a postage-paid envelope for returning the completed surveys. A total of 1,345 completed surveys were returned from 18 middle/junior high schools and used in statistical analysis, for a response rate of 81.3%.

***Middle/Junior High School Student Participation Surveys***

A total of 829 participation surveys from the two-stage pilot test were used in statistical analysis. In Section I, the characteristics that affect students’ school lunch experiences the most were “I get to socialize with my friends” ( $4.33 \pm 0.97$ ), “The food choices change every day” ( $3.77 \pm 1.10$ ), and “The menu offers healthy choices” ( $3.77 \pm 1.06$ ). The majority of the statements had a high level of agreement from students, with 21 out of the 24 statements receiving a mean rating of 3.0 or greater. Table 2 represents the means, standard deviations, and frequency for each of the 24 statements.

Table 2

*Participating Middle/Junior High School Students’ Level of Agreement with Characteristics of the School Lunch Experience (N=829)*

<b>When I eat school lunch...</b>	<b>Mean<sup>a</sup> ± SD</b>	<b>Frequency</b>
I get to socialize with my friends.	4.33 ± 0.97	813
The food choices change every day.	3.77 ± 1.10	820
The menu offers healthy choices.	3.77 ± 1.06	810
There is a variety of food choices.	3.71 ± 1.09	812
There are enough seats in the dining area.	3.65 ± 1.22	808
The staff is friendly.	3.65 ± 1.25	815
The service is good.	3.63 ± 1.10	824
The quality of the service is good.	3.45 ± 1.14	787
The food tastes good.	3.41 ± 1.09	821

<sup>a</sup> Scale: 1-Strongly Disagree/ 5-Strongly Agree

(Table 2 continues)

(Table 2 continued)

*Participating Middle/Junior High School Students' Level of Agreement with Characteristics of the School Lunch Experience (N=829)*

<b>When I eat school lunch...</b>	<b>Mean<sup>a</sup> ± SD</b>	<b>Frequency</b>
The menu has food I like.	3.34 ± 1.16	810
The food is properly cooked.	3.33 ± 1.14	813
The food is fresh.	3.33 ± 1.08	823
The quality of my lunch experience is good.	3.33 ± 1.14	797
I know what is being served before I get to the cafeteria.	3.29 ± 1.31	808
The food smells good.	3.24 ± 1.10	816
I have enough time to eat.	3.15 ± 1.35	812
I am satisfied after I eat.	3.12 ± 1.18	810
The staff looks like they enjoy their work.	3.11 ± 1.26	818
The quality of the food is good.	3.10 ± 1.12	804
The food looks appealing.	3.10 ± 1.14	806
I get enough food to fill me up.	3.01 ± 1.33	815
I can buy other food items if I don't want the meal.	2.91 ± 1.32	817
The staff listens to my suggestions.	2.87 ± 1.27	805
The food tastes homemade.	2.54 ± 1.23	820

<sup>a</sup>Scale: 1-Strongly Disagree/ 5-Strongly Agree

In Section II, the top reasons students eat school lunch were “I am hungry” (81.4%), “I get to sit with my friends” (69.8%), “I didn’t bring anything to eat” (44.2%), and “It gives me energy for the rest of the day” (38.9%). Frequency and percentages are presented in Table 3.

Table 3

*Reasons for Eating School Lunch by Participating Middle/Junior High School Students (N=829)*

<b>Choose the top five reasons why you eat school lunch.</b>	<b>Frequency</b>	<b>%</b>
I am hungry.	658	81.4%
I get to sit with my friends.	564	69.8%
I didn't bring anything to eat.	357	44.2%
It gives me energy for the rest of the day.	314	38.9%
I have no choice.	304	37.6%
My friends eat school lunch.	303	37.5%
It's convenient.	272	33.7%
I like the food.	258	31.9%
It's affordable.	227	28.1%
I like the variety of food choices.	209	25.9%
I get to try different foods.	162	20.0%
My parents pay in advance.	153	18.9%
I know what is being served.	148	18.3%
I get a homemade meal.	30	3.7%

The results for Section III indicated the majority of student respondents were female (50.4%) and the sample was distributed among participating 6<sup>th</sup> graders (26.4%), 7<sup>th</sup> graders (38.5%), and 8<sup>th</sup> graders (32.9%). Personal demographics of student respondents are provided in Table 4.



Table 4

*Personal Demographics of Participating Middle/Junior High School Students (N=829)*

<b>Demographics</b>	<b>Frequency</b>	<b>%</b>
What is your grade in school?		
6 <sup>th</sup> grade	219	26.4%
7 <sup>th</sup> grade	319	38.5%
8 <sup>th</sup> grade	273	32.9%
What is your gender?		
Male	390	47.0%
Female	418	50.4%

Exploratory factor analyses were conducted on the statements in Section I of the participation survey. Two factors emerged demonstrating adequate internal consistency and reliability, with Cronbach’s alpha of .87 and .91. The first factor, “Food Preference,” included 11 statements related to the aspects of the food served during school lunch that appeal to middle/junior high school students. The second factor, “Staff Attentiveness,” included six statements related to the responsiveness of SN staff and their interaction with students. Table 5 displays the two factors, the factored statements, and the Cronbach’s alpha for each factor.

Table 5

*Reliability ( $\alpha$ ), Standardized Factor Loadings, Means, and Standard Deviations (SD) of Factors that Affect the School Lunch Experience of Participating Middle/Junior High School Students (N=829)*

<b>Factor Structure (Cronbach Alpha)</b>	<b>Standardized Loading<sup>a</sup></b>	<b>Mean<sup>b</sup> <math>\pm</math> SD</b>
<b>Factor 1: Food Preference (<math>\alpha = .91</math>)</b>		
The food tastes good.	.90	3.40 $\pm$ 1.08
The food looks appealing.	.76	3.08 $\pm$ 1.13
The food smells good.	.75	3.22 $\pm$ 1.09
The menu has food I like.	.70	3.33 $\pm$ 1.15
The quality of the food is good.	.69	3.09 $\pm$ 1.11
The food is fresh.	.67	3.30 $\pm$ 1.09
There is a variety of food choices.	.63	3.69 $\pm$ 1.08
The food is properly cooked.	.61	3.32 $\pm$ 1.13
The food tastes homemade.	.54	2.48 $\pm$ 1.22
I am satisfied after I eat.	.43	3.10 $\pm$ 1.18
The menu offers healthy choices.	.42	3.74 $\pm$ 1.06

<sup>a</sup>All factor loadings were significant at .001

<sup>b</sup>Scale = 5 (*strongly agree*) to 1 (*strongly disagree*)

(Table 5 continues)

(Table 5 continued)

Reliability ( $\alpha$ ), Standardized Factor Loadings, Means, and Standard Deviations (SD) of Factors that Affect the School Lunch Experience of Participating Middle/Junior High School Students (N=829)

Factor Structure (Cronbach Alpha)	Standardized Loading <sup>a</sup>	Mean <sup>b</sup> ± SD
<b>Factor 2: Staff Attentiveness (<math>\alpha = .87</math>)</b>		
The staff is friendly.	.90	3.62 ± 1.25
The quality of the service is good.	.82	3.43 ± 1.14
The staff looks like they enjoy their work.	.75	3.10 ± 1.25
The staff listens to my suggestions.	.66	2.87 ± 1.26
The service is good.	.64	3.62 ± 1.09
The quality of my lunch experience is good.	.41	3.32 ± 1.13

<sup>a</sup>All factor loadings were significant at .001

<sup>b</sup>Scale = 5 (*strongly agree*) to 1 (*strongly disagree*)

Independent sample t-tests were used to assess differences in mean scores between male and female student participants and the identified participation factors. No statistical differences were found. In addition to calculating the Cronbach's alpha levels for the statements in each participation factor, one-way analyses of variances (ANOVA) were also conducted to compare the two participation factors with student participants' grade levels. Statistical significances were identified at the 0.05 level of significance. There were statistical significant differences between "food preference" ( $F[2, 808] = 7.66, p = .00$ ) and "staff attentiveness" ( $F[2, 806] = 5.80, p = .00$ ) factors and the responses from 6<sup>th</sup> grade participants. Post hoc comparisons using Tukey's HSD tests indicated that mean scores for 6<sup>th</sup> grade participants were significantly higher than 7<sup>th</sup> and 8<sup>th</sup> grade participants for the "food preference" and "staff

attentiveness” factors. This finding suggests that participating 6<sup>th</sup> graders are more likely to agree than participating 7<sup>th</sup> and 8<sup>th</sup> graders that they are satisfied with the food served during school lunch and the responsiveness and interaction with SN staff. Means and standard deviations for each factor by grade levels are presented in Table 6.

Table 6

*Comparison of Means and Standard Deviations (SD) for Participation Factors by Grade Levels*

<b>Factor</b>	<b>n<sup>a</sup></b>	<b>Mean ± SD</b>
Food Preference*		
6 <sup>th</sup> grade	219	3.34 ± 0.82
7 <sup>th</sup> grade	319	3.25 ± 0.86
8 <sup>th</sup> grade	273	3.05 ± 0.80
Staff Attentiveness*		
6 <sup>th</sup> grade	219	3.92 ± 0.81
7 <sup>th</sup> grade	319	3.68 ± 0.83
8 <sup>th</sup> grade	273	3.76 ± 0.79

<sup>a</sup>n is based on cases included for comparison of participation factors by grade levels.

\*p < .05 for ANOVA comparing 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade student responses

***Middle/Junior High School Student Non-Participation Survey***

A total of 516 non-participation surveys from the two-stage pilot test were used in statistical analysis. In Section I, students were asked to indicate their level of agreement with 24 statements regarding reasons for not eating (or not eating often) school lunch. “There are long lines” (4.24 ± 1.06) had the highest mean rating followed by “I prefer to eat what I bring from home” (3.86 ± 1.06), and “The food does not look fresh” (3.49 ± 1.30). Table 7 represents the means, standard deviations, and frequency for each of the 24 statements.

Table 7

*Non-Participating Middle/Junior High School Students' Level of Agreement with Reasons for Not Eating School Lunch (N=516)*

<b>My reason for not eating school lunch is that...</b>	<b>Mean<sup>a</sup> ± SD</b>	<b>Frequency</b>
There are long lines.	4.24 ± 1.06	511
I prefer to eat what I bring from home.	3.86 ± 1.06	511
The food does not look fresh.	3.49 ± 1.30	508
The food does not look appealing.	3.47 ± 1.34	509
The food I like runs out before I get to the cafeteria.	3.40 ± 1.26	504
The food does not taste good.	3.36 ± 1.20	515
My parents buy food for me to take to school.	3.35 ± 1.31	502
The menu does not have food I like.	3.33 ± 1.22	505
The quality of the food is poor.	3.31 ± 1.32	510
The food does not look healthy.	3.27 ± 1.34	505
I do not like the food being served.	3.24 ± 1.31	509
The food is not properly cooked.	3.15 ± 1.17	503
I do not have enough time to eat.	3.08 ± 1.34	502
I do not get enough food to fill me up.	3.05 ± 1.28	508

<sup>a</sup> Scale: 1-Strongly Disagree/ 5-Strongly Agree

(Table 7 continues)

(Table 7 continued)

*Non-Participating Middle/Junior High School Students' Level of Agreement with Reasons for Not Eating School Lunch (N=516)*

<b>My reason for not eating school lunch is that...</b>	<b>Mean<sup>a</sup> ± SD</b>	<b>Frequency</b>
I do not recognize the food being served.	2.92 ± 1.30	506
There is no variety of food choices.	2.88 ± 1.26	503
The service is poor.	2.85 ± 1.20	506
The staff does not speak to me.	2.79 ± 1.23	504
The cafeteria does not look clean.	2.76 ± 1.24	504
The food choices offered are not the same as the menu.	2.74 ± 1.16	507
The food served is the same every day.	2.56 ± 1.24	503
The staff is not friendly.	2.55 ± 1.30	504
There are not enough seats in the dining area.	2.48 ± 1.34	510
I do not get to sit with my friends.	1.99 ± 1.23	502

<sup>a</sup>Scale: 1-Strongly Disagree/ 5-Strongly Agree

In Section II, the top reasons that would encourage students to eat school lunch more often were “better tasting food” (70.2%), “shorter wait in line” (61.3%), “better quality food” (59.0%), and “more food choices that I like” (50.9%). Frequency and percentages are presented in Table 8.

Table 8

*Reasons for Eating School Lunch by Non-Participating Middle/Junior High School Students (N=516)*

<b>Choose the top five reasons that would encourage you to eat school lunch more often.</b>	<b>Frequency</b>	<b>%</b>
Better tasting food	356	70.2%
Shorter wait in line	311	61.3%
Better quality food	299	59.0%
More food choices that I like	258	50.9%
Fresher looking food	240	47.3%
More appealing food	226	44.6%
More variety of food choices	212	41.8%
Food doesn't run out before I get to the cafeteria	179	35.3%
Enough food to fill me up	178	35.1%
Friendlier staff	77	15.2%
Know what food is being served	71	14.0%
Cleaner cafeteria	59	11.6%
Better service	50	9.9%
More accurate menu	45	8.9%

The results for Section III indicated the majority of student respondents were female (63.2%) and the sample was distributed among non-participating 6<sup>th</sup> graders (26.4%), 7<sup>th</sup> graders (34.7%), and 8<sup>th</sup> graders (37.2%). Personal demographics of student respondents are provided in Table 9.

Table 9

*Personal Demographics of Non-Participating Middle/Junior High School Students (N=516)*

<b>Demographics</b>	<b>Frequency</b>	<b>%</b>
What is your grade in school?		
6 <sup>th</sup> grade	136	26.4%
7 <sup>th</sup> grade	179	34.7%
8 <sup>th</sup> grade	192	37.2%
What is your gender?		
Male	176	34.1%
Female	326	63.2%

Exploratory factor analyses were conducted on the statements in Section I of the non-participation survey. Two factors emerged demonstrating adequate internal consistency and reliability, with Cronbach’s alpha of .80 and .92. The first factor, “Food Quality,” included 10 statements related to quality of the food served during school lunch. The second factor, “Customer Service,” included five statements related to the approachability of SN staff and services provided for students. Table 10 displays the two factors, the factored statements, and the Cronbach’s alpha for each factor.



Table 10

*Reliability ( $\alpha$ ), Standardized Factor Loadings, Means, and Standard Deviations (SD) of Reasons Why Middle/Junior High School Students Do Not Eat School Lunch (N=516)*

<b>Factor Structure (Cronbach Alpha)</b>	<b>Standardized Loading<sup>a</sup></b>	<b>Mean<sup>b</sup> ± SD</b>
Factor 1: Food Quality ( $\alpha = .92$ )		
The food does not look appealing.	.84	3.47 ± 1.34
The food does not look fresh.	.83	3.48 ± 1.29
The quality of the food is poor.	.82	3.33 ± 1.32
The food does not taste good.	.77	3.37 ± 1.20
I do not like the food being served.	.74	3.22 ± 1.31
The menu does not have food I like.	.71	3.34 ± 1.19
I do not recognize the food being served.	.69	2.88 ± 1.29
The food does not look healthy.	.61	3.25 ± 1.34
The food is not properly cooked.	.60	3.16 ± 1.15
There is no variety of food choices.	.48	2.89 ± 1.26
Factor 2: Customer Service ( $\alpha = .80$ )		
The staff is not friendly.	.77	2.52 ± 1.30
The staff does not speak to me.	.64	2.78 ± 1.24
The cafeteria does not look clean.	.57	2.76 ± 1.26
The service is poor.	.52	2.83 ± 1.21
The food choices offered are not the same as the menu.	.50	2.73 ± 1.17

<sup>a</sup>All factor loadings were significant at .001

<sup>b</sup>Scale = 5 (*strongly agree*) to 1 (*strongly disagree*)

Independent sample t-tests were used to assess differences in mean scores between male and female student participants and the identified non-participation factors. Results indicated statistical significance for the “food quality” factor ( $p < .05$ ). The mean scores for female participants were significantly higher than male participants. No statistical differences were found between male and female participants and the “customer service” factor. Means and standard deviations for each set are presented in Table 11.

Table 11

*Comparison of Means and Standard Deviations (SD) Between Female and Male Middle/Junior High School Students with Non-Participation Factors*

<b>Non-Participation Factor</b>	<b>n<sup>a</sup></b>	<b>Mean ± SD<sup>b</sup></b>
Factor 1: Food Quality*		
Females	326	3.32 ± 0.91
Males	176	3.12 ± 1.05
Factor 2: Customer Service		
Females	326	2.78 ± 0.86
Males	176	2.67 ± 0.99

<sup>a</sup>n is based on cases included for independent samples t-test comparing female and male middle/junior high school students level of agreement with non-participation factors.

<sup>b</sup>Females’ mean and standard deviation scores in descending order

\*  $p < .05$  for independent sample t-test comparing female and male middle/junior high school student responses

In addition to calculating the Cronbach’s alpha levels for the statements in each non-participation factor, one-way analyses of variances (ANOVA) were also conducted to compare the two non-participation factors with student participants’ grade levels. A statistical significance was identified at the 0.05 level of significance. There was a statistical significant difference between the “food quality” ( $F[2, 506] = 9.10, p = .00$ ) factor and responses from 8<sup>th</sup> grade

participants. Post hoc comparisons using Tukey’s HSD tests indicated that mean scores for 8<sup>th</sup> grade participants were significantly higher than 6<sup>th</sup> and 7<sup>th</sup> grade participants for the “food quality” factor. This finding suggests that non-participating 8<sup>th</sup> graders are more likely to agree than non-participating 6<sup>th</sup> and 7<sup>th</sup> graders that they are not satisfied with the quality of the food served during school lunch. No significant differences were found between the “customer service” factor and student participants’ grade levels. Means and standard deviations for each factor by grade levels are presented in Table 12.

Table 12

*Comparison of Means and Standard Deviations (SD) for Non-Participation Factors by Grade Levels*

<b>Factor</b>	<b>n<sup>a</sup></b>	<b>Mean ± SD</b>
Food Quality*		
6 <sup>th</sup> grade	136	3.02 ± 0.99
7 <sup>th</sup> grade	179	3.20 ± 0.93
8 <sup>th</sup> grade	192	3.46 ± 0.94
Customer Service		
6 <sup>th</sup> grade	136	2.66 ± 0.96
7 <sup>th</sup> grade	179	2.78 ± 0.82
8 <sup>th</sup> grade	192	2.77 ± 0.95

<sup>a</sup>n is based on cases included for comparison of non-participation factors by grade levels.  
\*p < .05 for ANOVA comparing 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade student responses

### ***Description of Validated Survey Instruments***

The validated participation survey is composed of three sections. Section I of the survey provides student perceptions of specific characteristics that contribute to the school lunch experience of middle/junior high school students who participate in the National School Lunch Program (NSLP). Students are instructed to use the phrase “When I eat school lunch...” before each of the 20 statements, and then indicate their level of agreement with each statement using a scale of 5 (*strongly agree*) to 1 (*strongly disagree*). The last three statements provide an overall evaluation of food quality, service, and lunch experience. Section II asks students to choose the top five reasons (out of 14) that influence their decision to eat school lunch. Section III includes questions regarding grade level and gender to provide the SN director demographic information to better understand the decision making and trends within the subgroups of students.

The validated non-participation survey is composed of three sections. Section I of the survey provides specific reasons why middle/junior high school students do not participate in the NSLP. Students are instructed to use the phrase “My reason for not eating school lunch is that...” before each of the 21 statements, and then indicate their level of agreement with each statement using a scale of 5 (*strongly agree*) to 1 (*strongly disagree*). Section II asks students to choose the top five reasons (out of 14) that would encourage them to eat school lunch more often. Section III includes questions regarding grade level and gender to provide the SN director demographic information to better understand the decision making and trends within the subgroups of students.

Prior to survey administration, SN directors should use their point-of-sale software to electronically select students who eat school lunch daily to complete the participation survey and

Development of Middle/Junior High School Student Surveys to Measure Factors that Impact Participation In and Satisfaction with the National School Lunch Program

select students who eat school lunch sometimes or not at all to complete the non-participation survey.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Research Study Conclusions**

The objective of this study was to develop and validate two middle/junior high school student surveys to measure factors that impact the participation in and satisfaction with the National School Lunch Program (NSLP), and to identify factors that influence students' perception of the services offered by the school nutrition (SN) program. Results from the participation survey and factor analyses showed that middle/junior high school student satisfaction with their school lunch experience can be attributed to two main factors, food preference and staff attentiveness. Food preference indicates the aspects of the food served during school lunch that appeal to middle/junior high school students, such as aroma, appearance, quality, variety, and freshness. Staff attentiveness indicates the responsiveness of SN staff and their interaction with students, including listening to students, friendliness, and attitude towards work. Results implied that SN professionals should focus on enhancing the smell, appearance, and freshness of foods served during school lunch and on staff friendliness and attitude towards work. These factors appear to have the greatest effect on improving students' perception and satisfaction with the NSLP.

The top five reasons for eating school lunch among participating middle/junior high school students were "I am hungry," "I get to sit with my friends," "I didn't bring anything to eat," "It gives me energy for the rest of the day," and "I have no choice". The three least cited reasons for eating school lunch were "My parents pay in advance," "I know what is being served," and "I get a homemade meal". Both factors had significant differences when compared with student participants' grade levels. Mean scores of 6<sup>th</sup> grade participants were significantly higher than 7<sup>th</sup> and 8<sup>th</sup> grade participants for the "food preference" and "staff attentiveness" factors. This finding suggests that participating 6<sup>th</sup> graders are more likely than participating 7<sup>th</sup>

and 8<sup>th</sup> graders to be satisfied with the food served and the service received during school lunch. This is consistent with the research findings of Roseman & Niblock (2006) which suggested 6<sup>th</sup> grade students are more inclined than 7<sup>th</sup> and 8<sup>th</sup> grade students to be influenced by their parents. School nutrition professionals can use this information to focus on promotional efforts to engage their customers and monitor their satisfaction with the SN program.

Results from the non-participation survey and factor analyses showed that low participation among middle/junior high school students can be attributed to two main factors, food quality and customer service. Food quality indicates the quality of the food served during school lunch, such as taste, likeability, food recognition, properly cooked food, and healthfulness. Customer service indicates the approachability of SN staff and services provided for students, including cleanliness of cafeteria, communication with students, and accuracy of menu. Results implied that SN professionals should focus on identifying food items that students like and recognize, possibly by conducting focus groups to gain insight on students' perception regarding products and services that satisfy these customers. In addition, SN professionals should focus on ensuring their SN staff is cooking foods properly, enhancing the flavor and freshness of foods, and communicating with students. These factors appear to have the greatest effect on improving student participation in the NSLP.

The top five reasons that would encourage students to eat school lunch more often were "better tasting food," "shorter wait in line," "better quality food," "more food choices I like," and "fresher looking food". The three least cited reasons that would encourage students to eat school lunch more often were "cleaner cafeteria," "better service," and "more accurate menu". The "food quality" factor had a significant difference when compared to the responses of female and male participants. Mean scores of female participants were significantly higher than male

participants for the “food quality” factor. This finding suggests that non-participating female students are more likely than male students to not be satisfied with the quality of the food served during school lunch. The “food quality” factor also had a significant difference when compared with student participants’ grade levels. Mean scores of 8<sup>th</sup> grade participants were significantly higher than 6<sup>th</sup> and 7<sup>th</sup> grade participants for the “food quality” factor. This finding suggests that non-participating 8<sup>th</sup> graders are more likely than 6<sup>th</sup> and 7<sup>th</sup> graders to not be satisfied with the quality of the food served during school lunch. School nutrition professionals can use this information to focus on the following: (a) identifying reasons students do not eat school lunch; (b) addressing concerns of non-participating students; (c) developing strategies to obtain student “buy-in” and (d) marketing their SN program to increase awareness. Furthermore, SN professionals can positively influence students’ decisions, give students a sense of empowerment, and increase student participation in the NSLP.

The participation survey developed in this study is a research-based tool generalizable for use by the middle/junior high school student population (grades 6 through 8), regardless of school district size. This survey is appropriate for SN programs that have a relatively high rate of participation at the middle/junior high school level and would like to retain students by increasing customer satisfaction. The non-participation survey developed in this study is a research-based tool generalizable for use by the middle/junior high school student population (grades 6 through 8), regardless of school district size. This survey is appropriate for SN programs that have a lower rate of participation at the middle/junior high school level and would like to focus on customer service issues in an effort to increase participation.

The results from this study will guide the development of a National Food Service Management Institute, Applied Research Division (NFSMI, ARD) project that will develop a



participation and non-participation middle/junior high school student survey guide for SN professionals. This survey guide will assist SN professionals with planning and administering middle/junior high school student surveys, collecting and analyzing survey data, and developing and implementing action plans to improve their SN programs.

### **Education and Training Implications**

Research findings from this study suggest the following implications for education and training:

- Training modules are needed to assist SN professionals in assessing the need to administer middle/junior high school student surveys, collecting and analyzing survey data, and designing action plans to address areas of improvement.
- Educational materials are needed to help SN professionals in understanding consumer psychology and behavior, especially at the middle/junior high school level. The food and service expectations of these students are evolving as they become more exposed and accustomed to commercial and culinary dining experiences.
- Training modules are needed for guiding SN professionals interested in conducting focus groups with students in an effort to determine issues with their participation in and satisfaction with the NSLP. Modules should incorporate brainstorming activities to guide SN professionals in creating efficient and effective solutions to address these issues.

### **Research Implications**

Outcomes from this study and feedback from participating SN professionals indicated there are more opportunities for research to support the goal of increasing participation and satisfaction at the middle/junior high school level. The development of a survey guide to provide a step-by-step instruction on planning, administering, and interpreting the results of the surveys would be beneficial to SN professionals who want to increase participation and satisfaction among middle/junior high school students. Additional research is also needed to identify best practices or quality indicators to help SN professionals improve middle/junior high school students' participation in and satisfaction with the NSLP. This best practices resource could be used as a guide or assessment tool for school districts looking to improve their SN programs at the middle/junior high school level.

## REFERENCES

- Asperin, A. E., Nettles, M. F., & Carr, D. H. (2008). Investigation of factors impacting participation of high school students in the National School Lunch Program. *The Journal of Child Nutrition & Management*, 34(1).
- Asperin, A. E., Nettles, M. F., & Carr, D. H. (2009). *Exploring factors that affect the school lunch experience of high school students participating in the National School Lunch Program*. University, MS: National Food Service Management Institute.
- Castillo, A., Lofton, K. L., & Nettles, M. F. (2011). *Determining factors impacting the decision of middle/junior high school students to participate in the National School Lunch Program*. University, MS: National Food Service Management Institute.
- Gilmore, S. A., Hutchinson, J. C., & Brown, N. E. (2000). Situational factors associated with student participation in the National School Lunch Program. *The Journal of Child Nutrition & Management*, 24(1), 8-12.
- McConnell, P., Matta, G., & Shaw, J. (1997). Factors affecting breakfast and lunch participation by middle school students in Fairfax County, Virginia. *School Food Service Research Review*, 21, 18-23.
- Meyer, M. K. (2000). Top predictors of middle/junior high school students' satisfaction with school food service and nutrition programs. *Journal of the American Dietetic Association*, 100(1), 100-103.
- Nassar-McMillan, S. C. & Border, L. D. (2002). Use of focus groups in survey item development. *The Qualitative Report*, 7(1). Retrieved from <http://www.schoolnutrition.org>

Development of Middle/Junior High School Student Surveys to Measure Factors that Impact Participation In and Satisfaction with the National School Lunch Program

Roseman, M. & Niblock, J. R. (2006). A culinary approach to healthy menu items: Middle school student's opinion of school lunch and lunch decision factors. *Journal of Culinary Science and Technology*, 5(1), 75-90.

Wojcicki, J. M. & Heyman, M. B. (2006). Healthier choices and increased participation in a middle school lunch program: Effects of nutrition policy changes in San Francisco. *American Journal of Public Health*, 96(9), 1542-1547.



**National Food Service Management Institute**

The University of Mississippi

P. O. Drawer 188

University, MS 38677-0188

[www.nfsmi.org](http://www.nfsmi.org)

GY 2010 Project 3

© 2012 National Food Service Management Institute  
The University of Mississippi