STUDENT AND PARENT PERCEPTIONS
OF THE LUNCHES SERVED UNDER THE REVISED
GUIDELINES FOR THE NATIONAL SCHOOL LUNCH PROGRAM

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The purpose of this study was to examine the perceptions of fifth and sixth students and their parents regarding the lunches served under the revised guidelines for the National School Lunch Program. The goal of the new guidelines is to increase whole grains, fruits, vegetables, and low-fat/fat-free dairy in students’ daily diets (USDA, 2013c). Parents play an important role in eating behaviors and deciding whether or not the students purchase school lunch. There are few qualitative studies examining the perceptions of students and parents regarding the meals served under the National School Lunch Program along with healthy eating.

The participants in this study were 45 fifth and sixth students along with 900 fifth and sixth grade parents. The students took part in focus groups and taste tests and the parents completed an online questionnaire. Themes emerged from the qualitative data from the student focus groups and parent questionnaire. The quantitative data from the parent questionnaire was analyzed for means, standard deviations and frequencies. The results revealed that students and parents are satisfied overall with the lunches provided and lack awareness of the changes that have been made to the school lunches.
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CHAPTER I

INTRODUCTION

The National School Lunch Program (NSLP) was implemented in 1946 to provide nutritious meals for students (“Federal Child Nutrition Programs”, 2010; USDA, 2013b). The initial goal of the program was to address the nutrient deficiency diseases seen in young men during World War II. These young men were unfit for duty due to the lack of proper nutrition (Martin, 1996). The program has been modified over the years in order to better meet the nutritional needs of the current generations and serve the continually increasing number of participants in the federal school lunch program.

The NSLP served approximately thirty one million students each school day in 2009 (Bhatia, Jones & Reicks, 2011; Hirschman & Chriqui, 2012). The NSLP accounted for $11.6 billion dollars in revenue in 2012, making it the second largest food and nutrition program in the United States, following the Supplemental Nutrition Assistance Program (Hanson & Oliveira, 2013; “National School Lunch Program”, 2013). The economic conditions brought about by the Great Recession of 2007 led to an increased number of students eligible for free or reduced-priced lunches; so much so that the fiscal school year of 2012 saw the greatest percentage of eligible students for free or reduced-priced lunches (68.2%) since the program was established in the 1940s (Hanson & Oliveira, 2013; “National School Lunch Program”, 2013). These findings illustrate the role the school has in providing adequate nutrition and educating students how to build a healthy, well-balanced meal.
Some schools participating in the NSLP have worked diligently to improve the nutrition and quality of the foods provided to students for lunch. The school food environment can influence the students’ food choices (Wordell, Daratha, Mandal, Bindler & Butkus, 2012). Schools that offer a variety of fruits, vegetables, whole grains and low fat or fat free milk encourage students to make healthy food choices and can impact food preferences (Reinaerts, Nooijer, Candel & Vries, 2005; Wordell et al., 2012). However, schools that do not have strong wellness policies that seek to educate students on how to choose healthy meal options and offer a variety of foods the students are willing to eat may not see students making better choices at lunch (Belansky et al., 2010; Turner & Chaloupka, 2012).

The schools cannot modify eating behaviors without the support of the parents/guardians. The home environment has a major impact on food choices and preferences (Larson, Story, Wall & Neumark-Sztainer, 2006; Zabinski et al., 2006). Modifying students’ eating behaviors is a multi-component approach that requires alterations to the school and home food environments (Knai, Pomerleau, Lock & McKee, 2005; Larson et al., 2006; Wind et al., 2006; Zabinski et al., 2006). The findings in the literature iterate the importance of parental involvement in the students’ food selections. There are few qualitative studies examining the perspectives of students and parents regarding the new guidelines for the NSLP and the impact the healthier lunches are having on student food choices and eating behaviors.

When students do not have access to foods they are willing to eat they will look elsewhere. Snacks bars, kiosks, the a la carte line and vending machines on campus
compete with the National School Lunch Program by providing competitive foods (Hirschman & Chriqui, 2012; Public Law 111-296, 2010; Public Law 108-296, Section 204, 2004). These foods compete for students’ money and calories and can thus be a barrier to participation in the lunch program (Fleischchhaker, 2007; Guthrie, Newman, Ralston, Prell & Ollinger, 2013; Kakarala, Keast & Hoerr, 2010).

For the past several years, the United States Department of Agriculture (USDA) and the Institute of Medicine (IOM) have been re-evaluating the nutritional content of school lunches provided to students under the NSLP. Modifications to the NSLP guidelines were recommended and agreed upon in order to provide more balanced meals according to the needs of the current generation. The revisions to the NSLP began with requiring schools to implement a wellness policy, which is to promote the health of the students and reduce childhood obesity (CDC, 2013). The implementation of the revised guidelines (i.e. required wellness policy) began in the 2006-2007 school year.

**Statement of the Problem**

The goal of the NSLP is to provide students with a nutritious meal that provides a specified caloric range based on age along with one-third of daily nutrient needs for calcium, vitamin A, vitamin C, protein and iron (“Federal Child Nutrition Program”, 2010; USDA, 2013). Modifications to the NSLP guidelines were recommended to provide more balanced meals according to the needs of the current generation. The new guidelines sought to increase whole grains, fruits and vegetables, and milk consumption in students (USDA, 2013b). However, there is still a lack of whole grains, vegetables and milk consumption in middle school-aged students (Belansky et al., 2010; Condon,

To date there is limited research examining students’ and parents’ perceptions of the NSLP especially since the revised guidelines that required a wellness policy to be established for any school participating in the NSLP were implemented in the 2006-2007 school year and then the dietary guideline revisions in the 2012-2013 school year. The previous studies have assessed food consumption through plate waste analyses and food frequency questionnaires (Cullen, Eagan, Baranowski, Owens & Moor 2000; Cullen et al., 2007; Neumark-Sztainer, Wall, Perry & Story, 2003; Wind et al., 2006). There have been even few qualitative studies utilizing focus groups with middle school students to find common themes in their perception of the school lunch program and the new guidelines (Burgess-Champoux, Marquart, Vickers & Reicks, 2006; Cullen et al., 2007; Bailey-Davis, Virus, McCoy, Wojtanowski, Veur & Foster, 2013). Also, middle school, fifth through eighth grade, is the stage when students are developing eating patterns that will be taken into adulthood, and behavioral patterns are difficult to modify after sixth grade (Kelder, Perry, Klepp, & Lytle, 1994; Oulette & Wood, 1998; Reinart et al., 2005; Young, Fors, Fasha & Hayes, 2004).

The lack of research examining students’ and parents’ perceptions of the school lunches provided under the revised guidelines for the NSLP suggests that research is needed in order to understand how the changes made to school lunches have impacted the students’ and parents’ choice to participate in the program. Also, many students rely on the school lunch program to provide a nutritious meal and are the primary customers
affected by the modifications made to the school lunches (USDA, 2013c). Gaining the parents’ perception is also critical because the parents provide the monetary means to purchase school lunch. There is balance needed in order to satisfy the parents while providing meals the students actually want to eat. Thus, providing the importance of examining how the revisions to the NSLP guidelines have impacted the students’ and parents’ perceptions of the food choices at lunch.

**Purpose Statement**

The purpose of this study is to examine the perception of fifth and sixth grade students and their parents regarding lunches served under the new guidelines for the USDA National School Lunch Program in a rural Ohio school district.

**Hypothesis**

Students and parents will have a positive perception of the lunches served under the new guidelines for the USDA National School Lunch Program.

**Null Hypothesis**

Students and parent will not have a positive perception of the lunches served under the new guidelines for the USDA National School Lunch Program.
CHAPTER II
LITERATURE REVIEW
The History of the National School Lunch Program

The National School Lunch Program (NSLP) was initially established to ensure students attending schools in the United States were provided nutritious meals (USDA, 2010a). The government wanted to address the nutrient deficiency diseases in adolescents due to the fact that the young men during World War II were physically unfit for duty which was related to poor nutrition (Martin, 1996; USDA 2010a). The National School Lunch Act, passed in 1946 and signed by President Harry Truman, set the National School Lunch Program into effect. The goals of the act were to ensure all students received a lunch at school that was nutritionally adequate to meet nutrition standards (Martin, 1996; USDA, 2010a). The program has been nationally administered under the United States Department of Agriculture and the State Department of Education since 1946 (Martin, 1996; USDA, 2013c).

Once the Dietary Guidelines for Americans were published in 1980, the school lunch nutritional requirements were modified to align with the Dietary Guidelines for Americans (USDA, 2013c). School districts have the choice whether or not to take part in the NSLP (USDA, 2010a; USDA, 2013c). The schools in the NSLP are given cash subsidies and commodities from the USDA for each meal served. The lunches had to meet federal nutrition standards to be eligible for reimbursement with two subtypes of
reimbursable lunches, Type A and Type B, and the requirements for reimbursement were established (Table 1) (USDA, 2010a; USDA, 2013c).

The guidelines for school lunches under the School Meal Initiative stated that the meals were to provide thirty percent of calories from fat and less than ten percent of calories from saturated fat (USDA, 2010a). The lunches were to provide one third of the Recommended Dietary Allowance for vitamin A, protein, vitamin C, calcium, iron and calories (USDA, 2010a; USDA, 2013c). The Type A and Type B lunches provided the RDAs for the nutrients of concern; however, specific foods served and how the foods were prepared were determined by the local school officials. Therefore, there was a wide variation of meals served in the schools that participate in the National School Lunch Program. There are still variations in preparation methods for school meals; however, there are much stricter guidelines that are currently in place.

**The National School Lunch Program Today**

**Participation**

The NSLP served approximately 31 million students per day in the United States in 2009 (Bhatia, Jones & Reicker, 2011; Hirschman & Chriqui, 2012). Elementary schools typically have the highest participation followed by middle and high schools, respectively (Bhatia et al., 2011). Participation in the NSLP varies from district to district, often reflecting the social economic status of the areas and/or parental desire for the kids to participate in the lunch program (Bhatia et al., 2011; Mirtcheva & Powell, 2009).
The participation rates for the NSLP respond to times of economic growth and downturn. Overall, the NSLP was the second largest food and nutrition program, following the Supplemental Nutrition Assistance Program, in 2012 fiscal year (Hanson & Oliveira, 2013). The NSLP accounted for $11.6 billion dollars in revenue and increased participation of 31.6 million students served on a daily basis in 2012. Participation has continued to increase at 1.1% per year since the mid-1980s (Hanson & Oliveira, 2013; USDA, 2013c). It is important to note that participation itself is independent of the economic situation; however, the children eligible for free or reduced-price lunches are economically responsive. The Great Recession in December 2007 to June 2009 saw one of the largest increases, ten percent, in students eligible for free or reduced-price lunches and there were also less students paying for full-priced meals due to the economic situation (Hanson & Oliveira, 2013). Sixty-five percent of NSLP participants in the 2010 fiscal year were eligible for free or reduced-priced lunches compared to 59% prior to the Great Recession of 2007 (Hanson & Oliveira, 2013; USDA, 2013c). The current fiscal school year of 2012 saw the highest percentage of free and reduced-price lunches (68.2%) since the establishment of the program in the 1940s.

**Current Guidelines in 2013**

The nutrient standards for the NSLP went through a series of revisions that began in the 2012-2013 school year in order to provide more adequate nutrition to students. The USDA has set forth the criteria for the meals served at schools under the NSLP (Figure 1) in order to achieve balanced meals for students.
Sodium criteria for meals. Sodium is one nutrient that is of particular concern because students are consuming more sodium than is recommended. The average sodium intake for children ages 2-17 is 2,965 milligrams per day compared to the recommendation of less than 2,000 milligrams per day (CDC, 2011; WHO, 2012). The recommendations for sodium content of meals and snacks provided at school are based on the Dietary Guidelines for Americans 2010 (USDA, 2010b; USDA, 2013c) The USDA has progressive goals for schools to meet in order to provide more balanced meals containing less sodium than is currently being served (USDA, 2013c). The schools
participating in the NSLP have until July 1, 2022 to meet the final sodium target (Table 2). There is little data examining students’ current intakes of sodium specifically from the meals provided at school.

The sodium criteria for K-12 lunches served under the NSLP will progressively decrease until the target is reached on July 1, 2022 (USDA, 2013c). The sodium targets that are being set are a daily average for the sodium content of the meals being served over a five day week. The final target for schools to meet for each age/grade group can be seen in Table 3. The reductions in sodium align with the Dietary Guidelines for Americans 2010, in order to provide students with a more well-balanced diet (USDA, 2010b; USDA, 2013c).

**Sodium criteria for snacks.** There also are sodium targets for the snacks foods and competitive foods sold at schools participating in the NSLP. Any snack foods and/or competitive foods offered may only contain ≤ 200 milligrams of sodium per packaged portion (USDA, 2013c). Controlling the amount of sodium provided by these foods also aligns with the recommendations put forth by the Dietary Guidelines for Americans 2010 (USDA, 2013c). These recommendations are developed to guide individuals on choosing foods in order to have a well-balanced diet and are utilized by the United States Department of Agriculture’s (USDA) NSLP to educate students on healthy food options as part of an overall healthy lifestyle (USDA, 2010b; USDA, 2013c).

**Standards for snack foods at school.** There was a proposal for new standards for school foods in 2013 by the USDA called the “All Foods Sold in Schools” standards that included not only smart snacks but set forth standards for any food sold in the
schools during meal times. The proposed standards were that any food sold in school must include (“Smart Snacks in Schools”, n.d.; USDA, 2013a):

- A “whole grain rich” product; or
- Have as the first ingredient a fruit, vegetable, dairy or protein food; or
- Be a combination of food that contains at least ¼ cup of fruit and/or vegetable; or
- Contain 10% of the Daily Value of one of the nutrients of public health concern in the 2010 Dietary Guidelines for Americans (calcium, potassium, vitamin D or fiber).

These guidelines are being implemented for the 2014 to 2015 school year so that the snack foods offered in schools fit into a healthy, well-balanced meal pattern for the students.

**The Current Issues of the National School Lunch Program**

Laws and policies are set into place by the USDA to govern and regulate the foods served to students under the NSLP. The primary authority for school meals belongs to the federal government (Hirschman & Chriqui, 2012; USDA, 2013c). The success and areas of improvement are monitored by the government, specifically the USDA, to ensure students are receiving proper nutrition from school meals (Hirschman & Chriqui, 2012). The findings of the monitoring and evaluation can lead to new legislation and policy to improve school lunch nutrition and the other foods available to students throughout the school day. New policies do take time to implement, which was the case the revised NSLP guidelines that overhauled what schools could offer to students
at lunch. Schools participating in the NSLP have worked diligently to offer foods that are in accordance with the modified guidelines.

The USDA for the 2012-2013 school year required a new set of nutritional standards to be followed for reimbursable meals under the NSLP (Newman, 2013). The new standards increased the offerings of fruits, vegetables, whole grains and low-fat or fat-free milk. The schools participating in the NSLP also had to begin to decrease sodium in the foods offered. There is an increased cost to providing healthier meal options; however, the USDA does provide an additional six cent reimbursement for school lunches that meet the new nutritional standards. This is an additional incentive for the schools participating in the NSLP to meet the nutritional standards by providing nutritious meals for the students that meet the new guidelines.

Offer versus serve

Offer versus serve (OVS) was established for the National School Lunch Program (NSLP) under the section 9(a) (3) of the Richard B. Russell National School Lunch Act. The regulations for offer versus serve for the NSLP are found at 7 CR 210.10 (e) (Food and Nutrition Service, n.d.).

Offer versus serve (OVS) is currently required at the high school level and is optional at the elementary and middle school levels, as defined by the state educational agency. OVS allows the students to decline certain foods offered as part of the school lunch (Food and Nutrition Service, n.d.). The goals of OVS were to decrease plate waste and allow students to choose the foods they wanted for lunch. Offer versus serve increases the likelihood that students will choose the foods they prefer to eat thus
increasing intake and decreasing plate waste. The OVS option requires that students take at least three of the five components in the minimum required serving size to count the meal as reimbursable through the USDA. When students are required to select at least one option from every component, the school is not utilizing offer versus serve. The students must have a choice in which components to take in order to be considered OVS (Food and Nutrition Service, n.d.).

Some schools have integrated food and/or salad bars in the cafeteria to increase student participation in the lunch program. These food and salad bars give students the opportunity have increased food options and can aid in students selecting the foods they are willing to eat (Food and Nutrition Service, n.d.). These meal options are permitted under the OVS; however, there does need to be monitoring put into place to be sure the students are taking the required minimum amounts of the food components. This is especially important if the food and/or salad bars are placed after the point of sales. The local state agency can aid with determining how to be sure the food taken meets the requirements for the reimbursable meals.

The pricing of meals offered under the offer versus serve requires consideration. The school meals are required to be priced as a unit for free and reduced-price reimbursement. OVS does not affect the unit price of the meals that have been established. A meal has the same unit price whether the students choose 3, 4 or 5 components for lunch (Food and Nutrition Service, n.d.). The students and cashiers do need to know what constitutes a reimbursable meal. The school is responsible to provide
signage to identify what components need to be selected to have a reimbursable meal under OVS.

OVS is different from offering a variety of choices within a food component. A food component is defined as one of five food groups that comprise a reimbursable lunch. The components include: grains, fruits, vegetables, meat/meat alternatives and fluid milk. The school must always offer every food component in, at least, the minimum required amounts. A food item is then defined as a specific food offered within the five food components (Food and Nutrition Service, n.d.). One of the choices that the student selects must be at least ½ cup serving of fruit or vegetable component or ½ cup total serving of both fruit and vegetable.

The responsibility of the food service director is to decide what variety of foods will be offered and how much the students may choose. Some menu planners do allow students to take more than the minimum requirement for components, especially fruits and vegetables; while other menu planners, normally for budgetary reasons and waste, choose to limit to the requirement minimum amount of a food component. The menu planner must also plan meals that meet all the meal pattern requirements and provide the students the access to the required types and minimal amounts of each food component. The OVS gives these menu planners flexibility so they can offer a variety of foods the students are willing to eat, which can lead to cost savings through reduced plate waste (Food and Nutrition Service, n.d.).

The implementation of the offer versus serve (OVS) meal-planning strategy was to decrease the plate waste that schools were experiencing (Crepinsek, Gordon,
McKinney, Condon & Wilson, 2009; Guthrie & Buzby, 2002). The concern with the OVS plan was that the students would be missing the nutrients from the foods they declined to take as part of their lunch (Devaney, Gordon & Burghardt, 1995). However, the studies examining the nutrient content of such meals found that OVS did not have a significant effect on the nutritional quality of the students’ meals when compared to non-OVS student meals (Devaney et al., 1995; Guthrie & Buzby, 2002). There was also a decrease in plate waste seen in these studies, which was the ultimate goal of OVS implementation; thus the OVS option of the NSLP can decrease plate waste and give students options without having a negative impact on the nutritional quality of the lunches (Crepinsek, Gordon, McKinney, Condon & Wilson, 2009; Devaney et al., 1995; Guthrie & Buzby, 2002).

**Foods Being Served under the NSLP**

The NSLP seeks to offer nutritious meals to all students that participate in the program can better meet the recommendation for dietary intake. The NSLP has the unique opportunity to make a substantial contribution to students’ diets due to the 31 million students participating in the lunch program in schools across the United States (Condon, Crepinsek, & Fox, 2009; USDA, 2013b). The school lunch is the primary meal students participating in the lunch program eat during the school day and places responsibility on the schools to offer nutritious meals that meet the recommended needs of the students.

Researchers have been interested since the implementation of the NSLP in the 1940s as to what foods are being offered to students and if these foods are meeting
nutrient recommendations. Assessing the menu offerings at schools participating in the NSLP is accomplished through the School Nutrition Dietary Assessment Study (SNDA). The third SNDA was conducted in 2005. This study was a cross-sectional, nationally representative study that assessed the foods students were eating when taking part in the National School Lunch Program. The data was collected through 24 hour food recalls from the students. A trained interviewer assisted the students when completing the food recall. There were 2,314 students in grades first through twelfth from 287 schools that participated in the third SNDA. The data collected revealed that starchy vegetables, such as French fries and other varieties of potatoes, are the most common vegetables offered in most schools (Condon et al., 2009). Most schools in the study did offer 1% milk, fruit and/or 100% fruit juice and vegetables daily as part of the lunch program. The results of the study showed the ability of the program to have an impact on students’ dietary intake. Students participating in the National School Lunch Program were more likely to consume milk, fruits and vegetables at lunch than their non-participating counterparts. Seventy-five percent of NSLP participants consumed milk compared to 19% of non-participants; 45% ate fruit compared to 30% of non-participants; and 51% consumed vegetables compared to 23% of non-participants (Condon et al., 2009).

However, there are certain food groups, according to SNDA-III, that are still lacking in students’ diets including: dairy, whole grains, as well as dark green and orange vegetables (such as spinach, broccoli, carrots, and sweet potatoes) (Condon, Crepinsek, & Fox, 2009; USDA, 2013c). The guidelines and nutrient standards of the NSLP do encourage students to choose a nutritious, well-balanced meal. However, nutrition
Education is just as important as availability and accessibility to healthy food choices. “Efforts are needed not only to increase the availability and accessibility of healthful foods, but also to educate children on appropriate food choices within and among food groups” (Condon et al., 2009).

**Competitive Foods**

A competitive food is any food that is sold in competition with the NSLP meals. The state and district laws and policies decide which competitive foods can be sold (Hirschman & Chriqui, 2012; Public Law 111-296, 2010; Public Law 108-296, Section 204; 2004). Federal regulations may set minimum standards for the nutrient content of competitive foods in the future via the Smart Snacks regulations (Hirschman & Chriqui, 2012; Public Law 111-296, 2010). Competitive foods are typically found in areas such as the a la carte line, vending machines, school stores, kiosks and snack bars. Competitive foods are more commonly found in middle and high schools where students have more independence for meal selection and access to discretionary funds (Briefel, Crepinsek, Cabili, Wilson & Gleason, 2009; Fernandes, 2013; Fleischhacker, 2007; Fox, Gordon, Nogales, & Wilson, 2009; Schnedier, Schermbeck, Chriqui & Chaloupka, 2012). These foods, however, are available in many elementary schools as well (Fox, Gordon, Nogales, & Wilson, 2009; Schnedier, Schermbeck, Chriqui & Chaloupka, 2012). Students with discretionary funds are permitted to purchase any a la carte item(s) of their choice, thus highlighting the importance of offering nutritious a la carte items.

Competitive foods can be a barrier to participation in the NSLP. These foods compete with NSLP for students’ money and calories (Fleischhacker, 2007; Guthrie,

Approximately 30 to 40 percent of students purchase at least one competitive food item each day (Fox, Gordon, Nogales & Wilson, 2009; Guthrie, Newman, Ralston, Prell & Ollinger, 2013; Templeton, Marlette & Panemangalore, 2005). The former undersecretary’s of the USDA commented (as cited in Bhatia, Jones & Reicks, 2011) in her 2001 report to Congress that, “competitive foods undermine the nutrition integrity of programs and discourage participation…” However, recent policy modifications to the nutrition standards for competitive foods hold these foods to more strict nutrient guidelines. The thought then is how these foods are still influencing food choices and participation in the NSLP.

The Child Nutrition and WIC Reauthorization Act of 2004 along with the Healthy, Hunger-Free Kids Act of 2010 set standards for healthier competitive foods (Child Nutrition and WIC Reauthorization Act, 2004; USDA, 2013a). The concern was then how these new standards would affect revenue and participation in the NSLP. Responding to this concern, schools went to work and incorporated healthier options for the a la carte, snack bars and school stores. Some schools even asked for student involvement in the new menu options (Goslinger, Madsen, Woodward-Lopez & Crawford, 2011; Wojicki & Heyman, 2006). Peterson (2011) and Wojicki & Heyman (2006) found that healthier competitive food options either increased participation in the lunch program or had a neutral effect on the school food service finances. The findings of these studies showed that healthier competitive foods were accepted by the students and do not always have a negative impact on school finances. The best way to impact
food selection is to get the students involved in choosing healthy foods they are willing to eat (Goslinger, Madsen, Woodward-Lopez & Crawford, 2011; Wojicki & Heyman, 2006).

Fifth grade is typically when many students in the United States have more access to competitive foods and the discretionary funds to purchase a la carte items (Cullen, Eagan, Baranowski, Owens, & Moor, 2000; Fleischhacker, 2007; Guthrie, Newman, Ralston, Prell & Ollinger, 2013). Cullen et al. (2000) studied fourth and fifth grade students and examined if a difference existed in fifth grade students fruit and vegetable consumption when they ate school snack bar meals compared to participating in the NSLP. This was a cross-sectional study of 282 fifth grade students and the data was collected using a five-day food record along with a fruit and vegetable preference questionnaire. The results of the study found that fifth grade students ate less fruits and vegetables than the fourth grade students. Furthermore, they found that fifth grade students who ate a school meal consumed more fruits and vegetables than the students who purchased a snack bar meal or brought their lunches from home. The findings of this study, along with research from Lytle et al. (2006), identified that the fruits and vegetables that students like should be made available in both the cafeteria and snack bars to increase the likelihood of students purchasing fruits and vegetables at lunch.

The “Smart Snacks in Schools” nutrition standards, released in June, 2013, proposed guidelines for schools to follow for the snack foods offered to students at school. These guidelines are currently still in the proposal stage. These standards drew on the recommendations from the Institute of Medicine (IOM) and are in alignment with
the Healthy, Hunger-Free Kids Act (HHFKA) of 2010 which sought to increase whole grains, fruits and vegetables, low-fat dairy and lean protein while limiting fat, sugar and sodium in school foods (Public Law 111-296). The HHFKA of 2010 authorized the secretary of the USDA to establish a set of nutritional standards, in alignment with the Dietary Guidelines for Americans 2010, to be incorporated into the selection of all foods, even those offered outside of the federally-funded NSLP (USDA News Release, No. 0134.13, 2013). These guidelines were also extended to competitive foods through the wellness policy implementation set forth by the Child Nutrition and WIC Reauthorization Act of 2004 (Public Law 108-296, Section 204).

**Foods of Minimal Nutritional Value**

There are foods that the government has restricted student access to during the school day in order to decrease low nutrient food intake. The foods of minimal nutritional value (FMNV) are defined as foods that provide less than five percent of the Reference Daily Intake for eight specified nutrients per serving. The eight specified nutrients include: protein, vitamin A, vitamin C, niacin, riboflavin, thiamin, calcium and iron (Appendix B of 7 CRF Part 210, 1979). There are four defined categories of FMNV which include:

- Soda water – all carbonated beverages;
- Water ices – water-based products that do not contain fruit, fruit juices, milk, milk ingredients, or egg ingredients other than egg whites;
- Chewing gum;
• Certain candies – hard candy, jellies and gums, marshmallow candies, fondant, licorice, spun candy and candy-coated popcorn.

These foods are prohibited from being sold in the cafeteria during meal times due to the fact that these foods compete for student’s money and calories at lunch and do not provide necessary nutrients (Fleischhaker, 2007).

**Dietary Recommendations and Eating Behaviors of Preadolescents**

**Dietary Reference Intakes for Preadolescents**

Dietary reference intakes (DRI) are a set of nutrition recommendations from the Institute of Medicine (IOM) in regards to nutrient intake for healthy individuals (Institute of Medicine, 2005). The Dietary Reference intakes include the estimated average requirement (EAR), recommended dietary allowance (RDA), adequate intake (AI) and the tolerable upper intake level (UL). The RDAs are the recommendations schools seek to meet when planning school meals. The RDAs are the set of nutrient recommendations that meet the needs of 97-98% of healthy individuals in a group (Institute of Medicine, 2005). Table 3 contains the RDAs for which the lunch must provide thirty percent of total needs for the day (Institute of Medicine, 2005; USDA, 2013c).

Saturated and trans fats are assessed in a different way. There is no specific RDA because intake of these nutrients should be limited due to their association with chronic disease and to maintain a nutritionally balanced diet (Institute of Medicine, 2005).

**Eating Behaviors of Preadolescents**

A child’s eating behaviors can be due to a variety of interacting factors such as food exposure at home and school, food preferences and peers’ food choices. The food
choices parents/guardians make have an impact on the student’s dietary habits (Knai, Pomerleau, Lock & McKee, 2005; Thomson & Ravia, 2011; Young, Fors, Fasha & Hayes, 2004; Zabinski et al., 2006). Schools participating in the National School Lunch Program are striving to help improve students’ eating behaviors by offering nutritious meals that align with 2010 Dietary Guidelines for Americans (USDA, 2010b). However, a behavior-change intervention is needed to ensure the healthy eating behaviors change for the long term and modifying food preference takes time. (Baranowski, 2011; Thomson & Ravia, 2011). A way of altering eating behaviors in adolescents is to consider the socio-environmental factors that have an impact such as availability of fruits and vegetables and the influence at home regarding availability and socioeconomic status (Neumark-Sztainer, Wall, Perry, & Story, 2003; Young, Fors, Fasha & Hayes, 2004; Zabinski et al., 2006).

**Student fruit and vegetable consumption.** The study by Neumark-Sztainer et al. (2003) found that the strongest correlates to fruit and vegetable consumption in adolescents were availability of fruits and vegetables at home and taste preferences for the fruits and vegetables. There was an assumed influence of the availability of fruits and vegetables in the home on taste preference (Neumark-Sztainer et al., 2003; Knai, Pomerleau, Lock, & McKee, 2005). There were 3,957 students from 31 public middle and high schools in Minnesota that participated in the study by Neumark-Sztainer et al. (2003). The researchers collected survey and anthropometric data for each participant. A food frequency survey was used to assess how often students were consuming certain foods, such as fruits and vegetables. Along with the survey to assess what types of foods
the students were consuming, the study utilized the Project EAT survey in order to
determine the potential correlates of dietary intake and utilized the data from student
focus groups to develop the survey questions (Neumark-Sztainer et al., 2003).

Wind et al. (2006) also evaluated fruit and vegetable consumption in students and
found the strongest correlates for fruit and vegetable consumption in 11 year old children
were “…bringing fruit to school, modeling behavior of parents and friends, parents
demanding their child eat fruit, knowledge about recommended intake levels, liking fruit
and self-efficacy to eat fruit…” There were 2,468 school children from 98 randomly
selected schools that participated in the study and the data was collected through a cross-
sectional survey. Focus groups were used to gather qualitative data for creation of the
survey. The results of the study found three interventions to be most useful in affecting
student fruit and vegetable consumption: personal factors (taste preference), social factors
(parental influence) and environmental factors (availability of fruits and vegetables)

Krolner et al. (2009) also found, through the utilization of food frequency questionnaires
and 24 hour food recalls, that 11 year old students’ food choices were more strongly
influenced by their families than the school. The results of these studies showed that the
school’s attempt to impact fruit and vegetable intake was not as impactful as family
influence. Therefore, the success of school-level intervention depends on parental
involvement (Krolner et al., 2009 & Wind et al., 2006).

Other studies also had a similar finding to what Neumark-Sztainer et al. (2003)
found with regards to the availability of fruits and vegetables at home and taste
preference. These studies found that student consumption of fruits and vegetables were
influenced by parental consumption, availability and accessibility at home, exposure and habit (Reinaert, Nooijer, Candel & Vries, 2005; Wind et al., 2006). A habit is any perpetuated behavior that has become habitual due to repetition (Reinaert et al., 2005). Once the habit has been established, conscious decision making no longer determines the behavior (Oulette & Wood, 1998). Thus, one of the keys to improving students’ fruit and vegetable consumption and impacting eating behavior is making the consumption of fruits and vegetables a habit (Reinaert et al., 2005; Sandeno, Wolf, Drake & Reicks, 2000). Teaching students healthy eating behaviors and habits early on is important because behavioral patterns are difficult to modify after sixth grade (Kelder, Perry, Klepp, & Lytle, 1994).

**Student dairy consumption.** There has been a decrease in milk consumption over the last few decades with most school-aged students consuming less than two servings of milk per day (milk serving = 8 fluid ounces) (Larson, Story, Wall & Neumark-Sztainer, 2006; Thompson, Bachman, Watson, Baranowski & Cullen, 2007). The Dietary Guidelines for Americans 2010 encourages individuals to consume more low-fat and fat-free dairy products as part of a well-balanced diet (USDA, 2010b). Dairy products are a great source of calcium, which is important for building strong bones and teeth (Evert, 2013). The current recommendation for children age 9-18 years is 1300 milligrams of calcium per day (Evert, 2013). An eight ounce serving of milk or a six ounce serving of yogurt provides 300 milligrams, while two ounces of cheese is 530 milligrams of calcium. Thus three to four servings of dairy per day can provide the recommended 1300 milligrams of calcium for school-aged children.
The USDA, in 2011, proposed regulations that made substantial changes to the nutrient standards of school foods in order to improve the healthfulness of the school meals (Yon, Johnson, & Stickle, 2012; USDA, 2013c). One of the modifications was the offering of only fat-free and low-fat milk to students. Any flavored milks being offered had to be fat-free in an attempt to decrease fat and sugar consumption by students. According to Yon et al. (2012), “milk is an important source of shortfall nutrients; thus it is important to know how children accept these new milks.” The shortfall nutrients include vitamin D, calcium and potassium (Nicklas, O’Neil, & Fulgoni, 2009; Quann & Adams, 2013).

Yon et al. (2012) conducted a quasi-experimental plate waste study. There were five control schools that offered standard milk; while four other schools offered the lower calorie flavored milks, containing < 150 calories per 8 ounces, to the students. There was a convenience sample of 793 third through fifth grade students that participated in the plate waste study. The milk cartons were weighed in order to determine consumption. The results of the study found that students consumed an average of 5.88 ounces of the standard flavored milk and 4.92 ounces of the lower calorie flavored milk. These finding are important because 71% of students choose flavored milk according to the third School Nutrition Dietary Assessment (Gordon et al., 2007).

Larson, Story, Wall and Neumark-Sztainer (2006) also examined milk consumption and sought to identify the correlates for calcium, milk and dairy intake in middle and high school students. This was a cross-sectional study that utilized the Project EAT survey and food frequency questionnaire. The sample was 4,079 middle
and high school students attending public school in St. Paul, Minnesota. The findings of the survey and food frequency questionnaire found that male students had higher calcium, dairy and milk intake compared to the female students. The correlates that were positively associated with calcium, dairy and milk consumption included: availability at meals, taste preference, eating breakfast, higher socioeconomic status and social support for healthy eating. These findings speak to the role of the family environment in food choice (Hanson, Neumark-Sztainer, Eisenberg, Story, & Wall, 2005; Johnson, Panely, & Wang, 2001; Larson et al., 2006). A multi-component approach involving both the school and parents could most effectively impact dairy, calcium and milk consumption in students (Larson et al., 2006; Thompson, Bachman, Watson, Baranowski, & Cullen, 2007).

An observational study by Quann and Adams (2013) examined the impact that removing flavored milk had on milk consumption and nutrient intake. The idea of removing flavored milk from the school lunch goes against the finding by Yon et al. (2012) which found that 71% of students drinking milk were choosing the flavored milks and taste preference does play an important role in dairy consumption (Larson, Story, Wall and Neumark-Sztainer, 2006). However, due to pressure to decrease added sugar in students’ diets, some schools have decided to remove flavored milks. There were forty-nine elementary schools that participated in the study. The kitchen staff recorded the number of milk cartons and type of milk sold on twelve separate days. The study found a 26% decrease in milk sales and an 11.4% increase in milk waste when flavored milk was removed from the menu. That is a 37.4% decrease in milk consumption when only white
milk is offered. Through nutrient analysis, it was found that an additional three to four menu items would need to be added in order to adequately replace the nutrients lost in relation to the decreased milk consumption. The three to four additional menu items also added extra calories and fat to the overall nutrient content of the lunch, which is an important factor for schools to consider when, deciding whether or not to offer flavored milk.

**Student whole grain consumption.** Increased consumption of whole grain foods is recommended by the Dietary Guidelines for Americans (USDA, 2010b). The National School Lunch Program does utilize the guidelines recommended by the Dietary Guidelines for Americans to ensure student meals are in accordance (USDA, 2013c; USDA, 2010b). The three primary goals of the Dietary Guidelines for Americans 2010 include:

- Balance calories with physical activity to manage weight;
- Consume more of certain foods and nutrients such as fruits, vegetables, whole grains, fat-free and low-fat dairy products, and seafood;
- Consume fewer foods with sodium, saturated fat and trans fats, cholesterol, added sugar and refined grains.

The consumption of more whole grains and fewer refined grains was clearly defined in the guidelines. These guidelines applied to children as much as to adults; and the next step was to see how to increase the whole grains through the school lunch program meals that are being offered to students. This showed the need for further research and intervention development that will encourage students to consume more
whole grains throughout the day (USDA, 2010b; Larson, Neumark-Sztainer, Story & Burgess-Champoux, 2010).

The current guidelines recommend that school-aged children consume six ounces of grain per day with half of these grains being from whole-grain products (USDA, 2010b; Lin & Yen, 2007). A study conducted by the USDA surveyed the current grain consumption in the United States. The study aimed to see who eats whole grains, in what forms, where and how much. The findings of the study showed that the average school-aged child in the United States consumed 6.73 servings of grain per day and only 1.02 servings were from whole grains (Lin & Yen, 2007). Likewise, a study conducted by Burgess-Champoux, Chan, Rosen, Marquart and Reicks (2007) found that fifth grade students are not consuming the recommended servings of whole grains. The whole grain options need to be readily available in the lunch line and at home and students need to be encouraged to try them. Whole grains are an important part of the daily diet because they provide increased vitamins, minerals, and aid in weight maintenance. Whole grains have also been associated with decreasing the risk of health problems and cancer (USDA, 2010b, Lin & Yen 2007).

Burgess-Champoux, Marquart, Vickers and Reicks (2006) utilized focus groups of students, parents and teachers to assess perceptions of whole grains. The participants were comprised of a small, convenience sample of forty elementary students, eighteen parents and eleven teachers. The researchers also wanted to examine the factors that influence intake of whole grains. There was a tasting activity of whole grains conducted at each focus group to promote conversation. Qualitative data was collected in order to
generate common themes. Taste preference most strongly influenced the selection of
breads and cereals. Students commented that they would try the foods as long as they
looked and tasted good (Burgess-Champoux, Marquart, Vickers & Reicks, 2006; Toma et
al., 2009). The foods also needed to be items with which they were familiar. Parents, on
the other hand, generally liked the whole grain products sampled during the focus group.
The findings from this study suggested gradual incorporation of more whole grain
products; offering samples of the new products to students; and promotion and education
regarding the reason for choosing whole grain food products. The results of this study
coincide with the findings from a study utilizing the Project EAT survey data that sought
to determine correlates for whole grain consumption (Larson, Neumark-Sztainer, Story &
Burgess-Champoux, 2010). The survey data results showed that the mean whole grain
intake in children was below the recommendation for the age group. The data also
showed that taste preference was positively associated with whole grain intake and
opportunities needed to be presented to students to taste a variety of whole grain products
in order to improve taste preference (Larson, Neumark-Sztainer, Story & Burgess-
Champoux, 2010).

Another study conducted a plate waste analysis to assess the acceptance of whole
grain products in students K-6 (Toma et al., 2009). There were 459 students that
participated in the NSLP at the school studied. The consumption of the whole grain
products was compared to the control products (burritos and cookies), which were made
from refined flour. The foods were alternately served on Fridays for 13 weeks. The
whole grain cookies were more widely accepted. The students commented that taste and
texture were the primary factors affecting consumption (Burgess-Champoux, Marquart, Vickers & Reicks, 2006; Larson, Neumark-Sztainer, Story & Burgess-Champoux, 2010; Toma et al., 2009). The researchers equated this to the overall preference of sweets (i.e. cookies) over entrees (i.e. burritos). This coincides with the finding that taste preference most strongly influence food choices in school-aged children (Burgess-Champoux, Marquart, Vickers & Reicks, 2006). Studies have also noted that gradual incorporation of whole grains into familiar foods and providing samples of the new foods may increase intake and acceptance over time (Burgess-Champoux, Marquart, Vickers & Reicks, 2006; Rosen, Sadeghi, Reicks & Marquart, 2007; Toma et al., 2009).

The need for acceptable whole grain products and opportunities to sample these items is important because current research data has found that pre-adolescents’ whole grain consumption is below the recommendation of at least 3 servings per day (Larson, Neumark-Sztainer, Story & Burgess-Champoux, 2010; O’Neil, Nicklas, Zanovec, Cho & Kleinman, 2010). Whole grain intake has been associated with improved diet quality in children (O’Neil et al., 2010). The data utilized from the 1999-2004 National Health and Nutrition Examination Survey found that children who consumed ≥ 3 servings of whole grains per day also had increased intake of fiber, energy, vitamin B6, folate, magnesium, phosphorus, and iron. However, overall consumption of whole grains was found to still be less than the recommendation for pre-adolescents and adolescents (Larson, Neumark-Sztainer, Story & Burgess-Champoux, 2010; O’Neil et al., 2010).

**Student dietary fat consumption.** The dietary fat consumption by students is a concern. The current intake of fat in school-aged children exceeds the recommended
levels of 25-35% of total calories per day (CDC, 2012). There was a decrease seen in fat consumption from 1994-1998 (39% of total caloric intake) to 2009-2010 (33% of total caloric intake) (Slining & Popkin, 2013). This data coincides with the findings from the National Health and Nutrition Examination Survey 1999-2010. The survey data showed that the total percentage of total kilocalories from fat changed only slightly from 1999-2010 (Ervin & Ogden, 2013). There were no trends found in the percentage of kilocalories from fat or saturated fat consumed by children (Ervin & Ogden, 2013).

The meals and foods the schools provide can have an impact on diet quality (Briefel, Wilson & Gleason, 2009). Limiting access to less healthy food options with a high percentage of energy coming from fat can help to control fat intake for students at lunch (Bartholomew & Jowers, 2006; Briefel, Wilson & Gleason, 2009).

Offering lower fat entrée options is one the goals of the new guidelines for the NSLP (USDA, 2013c). However, simply offering these options has been found to not be sufficient to increase the selection of these items by the students (Bartholomew & Jowers, 2006; Briefel, Wilson & Gleason, 2009). The higher fat entrée options need to be decreased in order to promote the selection of the lower fat entrée options. Students select the higher fat options when available (Bartholomew, et al., 2006; Briefel et al., 2009; Martin et al., 2010).

Studies have shown that although the percentage of fat intake has only had a slight variation in the past decade, students are still consuming too much dietary fat (Martin et al., 2010; Zive et al., 2002). The recommended fat intake in the school lunches provided under the National School Lunch Program should not exceed 30% of
total daily caloric needs (IOM, 2005; Martin et al., 2010; Zive, et al., 2002). The research data showed that the average school lunch provided between 33% and 42% of the total daily calories from fat (Martin et al., 2010; Zive, et al., 2002). These percentages showed that school lunches were providing an excessive amount of energy from fat. Thus, these findings provided the evidence that a nutrition intervention was needed for schools participating in the National School Lunch Program so that the meals provided to the students meet the estimated energy requirement for fat intake.

**The Impact of Policy on Food Behaviors**

The impact that nutrition policy had on middle school students’ dietary intake, at a southeast Texas middle school, was assessed to see if policy influenced behavior (Cullen, Watson, & Zakeri, 2008). Lunch records were kept for three years (2001-2002, 2002-2003, and 2005-2006) to see if any change occurred post policy implementation. The food records over the three school years showed increased consumption of fruits, vegetables, and milk post policy implementation. There was no behavior change intervention component to this study. The nutrition policy placed restriction on portion sizes for high fat and sugar items, and the fat content of all foods being served. An example of the nutrition policy restriction on high fat foods is three ounces of French fries could be served three days per week. These guidelines applied to meals served in the cafeteria as well as for foods available in vending machines. These findings suggested that decreasing access to less healthful foods and beverages can shift middle school students’ meal choices.
State policies can also have an effect on the competitive foods students consume during the school day by setting standards and limits. A standard regulates the nutrient content of competitive foods and limits place restrictions on the time and venue of competitive food sales. The current standards have had a more dramatic impact on the competitive foods schools can offer; thus, decreasing the availability of low-nutrient snacks and beverages (Fernandes, 2013).

**Environmental Factors Affecting Food Choices**

Students spend the majority of their weekdays at school and this gives schools the opportunity to provide nutritious meals that have the potential to improve the diets of the students that consume the school meals (Roseman & Niblock, 2006). The schools then have the responsibility and opportunity to provide nutritious meals and encourage the students to eat a well-balanced meal.

**Examples of positive environmental influences on food choice.** The school food environment can have an impact on the food choices of the students. One study looked at modifying the school food environment to influence students’ food choices inside and outside of school. There were 4,113 students from six middle schools in a mid-sized western city in the United States. Two of the middle schools served as the intervention schools with 1,406 students. The other four middle schools were control groups comprising 2,707 students collectively. The intervention schools only offered bottled water in the vending machines on campus, and milk and fruit were the only options available in the a la carte line (Wordell, Daratha, Mandal, Bindler, & Butkus, 2012). The control schools served their normal meals and a la carte and vending items.
The results of the study showed that there was a positive association between food behaviors inside and outside of school when the school food environment was modified. However, students do tend to under report their food consumption. The most frequently consumed food was milk. The intervention group was 27% less likely to consume fruit juice and 56% less likely to consume pastries post-intervention. These results do show a positive influence of modifying the school environment to offer healthy foods (Wordell et al., 2012). The limited beverage options may have had an impact due to availability and altered taste preference (Reinaerts, Nooijer, Candel, & Vries, 2005; Wordell et al., 2012). Other studies found that fruit and vegetable consumption was not affected by the modifications made to the school food environment (Van Cauwenberghe, Maes, Spittaels, 2010; Wordell et al., 2012).

A multi-component approach to modifying student eating behaviors showed significant impact on food behavior modification as opposed to simply modifying the school food environment as in the study by Wordell, Daratha, Mandal, Bindler, & Butkus (2012). The multi-component interventions incorporated classroom education, changes to the food service, and at-home activities with parents (French & Stables, 2003; Krolner et al., 2009; Knai, Pomerleau, Lock & McKee, 2005; Vecchiarelli, Takayanagi, & Neumann, 2006; Zabinski et al., 2006). Fruit intake increased during these studies; however, vegetable intake was less affected by the interventions. Other environmental changes that had an impact on food choices by students were the variety of fruits and vegetables available and the signage in the cafeteria promoting healthy eating and taste tests (French & Stables, 2003; Knai et al., 2005).
An aspect to consider when modifying the school food service environment in order to offer healthy options to improve diet quality is the feasibility of such a process. Cullen et al. (2007) assessed the feasibility of an environmental change in a six week pilot study in six middle schools spanning across three states. The feasibility was determined through questionnaires focusing on thirteen food service achievement goals. Attainment of the goals was met through daily food production and sales. The researchers also collected qualitative data through feedback from students and food service staff. Overall, the students and food service staff accepted the changes. The hardest goal to meet was the restriction on foods in the vending machines. The vendors did not offer the items that would have complied with new standards. After the implementation, there was an increase in fruits and vegetables consumed as well greater variety of fruits and vegetables. The study by Hearn et al. (1998) had similar findings that fruit and vegetable intake are related to availability and variety. Modifying the school cafeteria is feasible and can be done so that students increase their nutritional intake during lunch (Cullen et al., 2007; Williamson, Han, Johnson, Martin, & Newton, 2013).

Briefel, Crepinsek, Cabili, Wilson & Gleason (2009) utilized the data from the third School Nutrition Dietary Assessment Study (SNDA III) to determine the role the school food service environment plays in students’ dietary intake. This was a cross-sectional study of 287 public schools comprised of 2,314 students that were a representative sample for the United States. The students were in first through twelfth grade. The students’ dietary intake was assessed using a 24 hour food recall. The
conclusions of the study found that removing sugar-sweetened beverages, improving the nutrition of a la carte items and decreasing the offerings of French fries per week led to more nutritious food choices in the students that participated in the study. The study by Wordell, Daratha, Mandal, Bindler & Butkus (2012) also found that restricting beverage and snack options may impact preference over time; thus changes in the food service environment at schools can lead to positive changes in students eating behaviors and can encourage the students to make nutritious food choices (Briefel, Crepinsek, Cabili, Wilson, & Gleason, 2009; Cullen et al., 2007; Cullen, Watson, & Zakeri, 2008; Williamson, Han, Johnson, Martin, & Newton, 2013).

**Examples of ineffective environmental influences on food choice.** A federal wellness policy, under the 2004 Child Nutrition and Women Infants and Children (WIC) Reauthorization Act, was put into place for the school year of 2006-2007. The policy required that every local educational agency participating in the National School Lunch Program establish a wellness policy for all its schools (Child Nutrition and WIC Reauthorization Act, 2004). These policies are to encourage student health and reduce obesity. Then in 2010, Congress passed the Healthy, Hunger-Free Kids Act to aid in implementation and evaluation of these wellness policies (CDC, 2013).

The slow progress of the wellness policies implementation has had an impact on the school food environment. Turner and Chaloupka (2012) examined the changes the wellness policies have had over time. The extent of changes that have occurred since the federal wellness policy requirement beginning in 2006-2007 is not currently well known. The study surveyed public and private schools in 2006-2007 and 2009-2010. There were
578 public schools and 259 private schools, which completed the survey in 2006-2007. In 2009-2010, 680 public schools and 313 private schools completed the survey. The characteristics of the schools were comparable over time. The survey assessed changes to competitive foods, schools meals, and nutrition education. Although there was an increase in school gardens, farm-to-school programs, whole grain and low-fat milk offerings, the overall changes were small. The 2009-2010 surveys showed that less than 25% of schools regularly offered whole grains at lunch and only about one-third offered only low fat milk.

Likewise, Belansky et al. (2010) examined the effect of the local wellness policy in forty school districts throughout Colorado. Forty-five elementary schools were randomly sampled to participate in the study. At least forty percent of the students were free and reduced-priced lunch recipients. The changes seen between 2005 and 2007 were modest at best. There was an increase in healthy foods for classroom parties, daily fresh fruits and skinless chicken. However, there were no changes seen to vending machines, vegetable offerings, high fat a la carte items, local farmers produce or fruit and vegetable availability in the a la carte line. The foodservice directors (73%) were familiar with the local wellness policy but saw no changes to the nutrient content of the meals served; thus, a null effect was seen in modifying the school food environment. Limiting the offerings of high fat/sugar items and increasing the availability of fresh fruits and vegetables is the goal in modifying the school food environment to promote healthful eating behaviors (Belansky et al., 2010; Cullen & Zakeri, 2004; Kubik, Lytle, Hannan, Story & Perry, 2003).
Meal Patterns in 5th and 6th Graders

Meal patterns in fifth and sixth grade students can vary from one individual to the next. The changes made to the guidelines for the NSLP sought to increase fruit, vegetable and fiber intake while decreasing sugar-sweetened beverages, fat, saturated fat, and sodium. Most children are still not meeting the recommended intakes of five fruits and vegetables per day (Upton & Taylor, 2012).

A good way that has been proven to be effective in modifying meal patterns in fifth and sixth grade students is to target their food behaviors by offering the fruits and vegetables they prefer so that eating these foods becomes habit (Reinaert, Nooijer, Candel, & Vries, 2005; Sandeno, Wolf, Drake, & Reicks, 2000). Students tend to favor fruits over vegetables; thus, increasing the difficulty in modifying vegetable intake (Domel et al., 1993; Sandeno et al., 2000).

Taste tests are a way to expose students to new foods that they might have not tried or seen previously. Repeated exposure to fruits and vegetables is a way to guide students to try new foods and may increase the liking of new foods, such as fruits and vegetables (Lakkakula, Geaghan, Zanove, Pierce, & Tuuri, 2010). The exposure to a food has been found to play a role in food preference and thus food choice and intake in children (Domel et al., 1993; Lakkakula et al., 2010; Lakkakula, Geaghan, Wong, Zanovec, Pierce & Tuuri, 2011). The study by Lakkakula et al (2010) examined to see if exposure to vegetables through repeated tastings in the cafeteria would increase the students’ liking of these vegetables. The study participants were 360 fourth and fifth grade students from a public school in southeast Louisiana. The students were offered
carrots, green peas, tomatoes, and bell peppers to taste once per week for ten weeks. The students rated their preference and liking for the foods on a Likert-type scale. After the ten week tastings, the carrots, peas, and tomatoes had increased liking while the liking for the bell peppers remained the same. The results of the study found that eight taste exposures were needed before there was significant improvement in the students’ “liking” of the vegetables (Hendy, Williams, & Camise 2005; Lakkakula et al., 2010). Another study by Lakkakula et al (2011) assessed taste tests in first, third and fifth grade students in public elementary schools in Louisiana to see if repeated opportunities for exposure to fruits and vegetables would increase the students preference for the foods. The program was eight weeks in duration and offered the vegetables one week and then the fruits and continued to alternate for a total of four exposures to each of the fruits and vegetables. Students completed a survey after each taste test to evaluate how well they liked each fruit and vegetable. The study also followed up with the students at four and eight months post intervention to see if the taste preferences remained. The study found that at least two taste tests for fruits and five taste tests for vegetables were required to see an increase in student preference for the foods (Lakkakula et al., 2011). These results of these studies showed that repeated exposure and taste tests may be required to increase students’ preference and liking of new foods such as fruits and vegetables (Hendy, Williams, & Camise 2005; Lakkakula et al., 2010).

Important factors for school foodservice directors or meal planners to keep in mind when developing the lunch menus are those that drive the students’ decision-making process when going through the lunch line. Their decision-making process is
multi-faceted and includes taste, appearance, hunger, healthfulness of the food, and amount of food provided (Roseman & Niblock, 2006). Student involvement in menu planning can aid with planning a menu that the students will be eager to eat.

**Student Perception of the National School Lunch Program**

Students are the primary customers in the NSLP and the program seeks to offer nutritious meals to all students attending schools that participate in the lunch program (American Dietetic Association, 2010). The NSLP has gone through a dramatic overhaul in order to offer more nutritious meals to school children. There has been a change in portions, calories, fat, saturated fat, *trans* fat, sodium, sugar, and whole grain content in the meals provided. Students have noticed the changes to the meals being served at school.

One of the most noticeable changes according to students is the incorporation of whole grain products (Burgess-Champoux, Marguart, Vickers, & Reicks, 2006). The study by Champoux et al. (2006) identified the perception of students and parents about the whole grain products being offered at school. There were focus groups conducted to speak with parents and students and retrieve qualitative data on their perceptions of whole grains. The students and parents were from four elementary schools in St. Paul, Minnesota. Taste preference for students had the greatest influence on selection of breads and cereals. Parents chose whole grain breads and cereals based on perceived healthfulness. The students noted that they preferred mild-flavored, soft bread without a heavy crust. The students were receptive to trying the whole grain products as long as they looked and tasted good and they were familiar with the products. The students also
noted that taste tests and incentives for eating the whole grain products would increase the likelihood of trying and then purchasing these whole grain items.

There are very limited data looking at students’ perceptions of the school meals, especially since the guideline revisions to the NSLP in 2012. However, previous studies have found students do not mind the change when it is gradual (Burgess-Champoux, Marquart, Vickers & Reicks, 2006). The modifications to the school meals occurred quickly and the students needed gradual, repeated exposure in order to become more accepting of the new foods being offered at lunch (Burgess-Champoux et al., 2006 & Lakkakula et al., 2011).

**Parents and the National School Lunch Program**

**Influence and Reaction to the NSLP**

Parents play a role in determining food preferences and food choices in adolescents (Young, Fors, Fasha & Hayes, 2004). The role that parents play in students’ food behaviors is important to help understand why students have particular eating patterns. Studies have examined how perceived parent behaviors affect the students’ food intake.

A study conducted in three middle schools in northeast Georgia sought to determine consumption predictors for middle school students (Young, Fors, Fasha, & Hayes, 2004). The consumption predictors included: parent modeling, perceived parent support, self-efficacy and perceived fruit and vegetable availability at home. There were 366 sixth through eighth grade students surveyed about their perception of parent behavior on fruit and vegetable consumption. The students had to return signed consent
forms from their parent/guardian before participating in the survey research. The survey was anonymous and contained 91 questions adapted from the 2001 Adolescent Fruit and Vegetable Survey. The results of the survey found that perceived parent modeling, defined as the parent eating and enjoying certain foods, and perceived parent support significantly predicted self-efficacy for the student to choose fruits and vegetables. Therefore, parent modeling is a modest and direct predictor of fruit and vegetable consumption for middle school students when the perceived availability of fruits and vegetables in the home is also high (Reinaerts, Nooijer, Candel & Vries, 2005; Young, Fors, Fasha, & Hayes, 2004).

Another study examined child and parent perception of fruit and vegetable availability in the home (Robinson-O’Brien, Neumark-Sztainer, Hannan, Burgess-Champoux, & Haines, 2009). This study sought to understand if a difference existed between parent and student perceptions of the availability of fruits and vegetables in the home. The participants in the study were 73 fourth through sixth grade students and one of their parents/guardians. Although the students’ and parents’ perceptions of the home environment in regards to fruits and vegetables were similar, 74.6% and 81.7%, respectively, there were a moderate proportion of parents and students that did not have a similar perception of the home environment. The study by Reinaerts, Nooijer, Candel & Vries (2005) also found that the availability of fruits and vegetables at home along with parenteral consumption, habit, and exposure all play a role in the students’ consumption of these foods and that overall parents do have impact on the dietary intake of students. The results of these studies have also shown the importance of collecting data from both
parents and students to get the combined perceptions of dietary intake and patterns (Hendy, Williams & Camise, 2006; Reinaerts, Nooijer, Candel & Vries, 2005; Robinson-O’Brien, Neumark-Sztainer, Hannan, Burgess-Champoux, & Haines, 2009).

Parents can play such an important role in the students’ food preferences that the school’s success with improving dietary intake relies on the parental involvement at school and at home (French & Stables, 2003; Knai, Pomerleau, Lock & McKee, 2005; Krolner et al., 2009). Often times the meals and snacks brought to school are chosen by the parents/guardians of the students and shows the importance of parental involvement in food selection (Cullen, Watson & Zakeri, 2008; Lytle, Kubik, Perry, Story, Birnham & Murray, 2006). Parents need to encourage students participating in the lunch program to select items such as brightly colored fruits and vegetables, whole grains, low-fat/fat-free milk, yogurt, and lean protein in order to build a nutritious lunch (Hess, n.d.).

Parents also model eating behaviors at home and students respond to what they see at home when making food choices at school (Neumark-Sztainer, Wall, Perry & Story, 2003; Reinaerts, Nooijer, Candel & Vries, 2005; Young, Fors, Fasha & Hayes, 2004). The access that students have to food has an impact on diet quality, energy intake, and the risk for obesity. Children are consuming an excessive amount of “empty calories” both at school and at home (Briefel, Wilson & Gleason, 2009). One study found that students consumed empty calories at an estimated 276 and 174 calories per day at home and at school, respectively (Briefel, Wilson & Gleason, 2009). The schools can decrease the amount of “empty calories” that students consume at school by limiting access to these foods and implementing strong wellness policies that encourage nutritious
meal. On the other hand, parents also play an important role in student food choices and preferences and can impact the NSLP by teaching and modeling healthful eating behaviors at home (Briefel et al., 2009).

However, the parents or the schools cannot modify eating behaviors separately; improving or modifying student eating behaviors has been found to be a multi-component approach including modifications to the school and home food environments and availability and accessibility to healthy foods (Knai, Pomerleau, Lock & McKee, 2005; Larson, Story, Wall & Neumark-Sztainer, 2006; Wind et al., 2006; Zabinski et al., 2006). These findings emphasize the importance of parents and schools working collectively to encourage healthy eating behaviors and exposing students to whole grains, fruits, vegetables, low-fat and fat-free dairy, and lean protein in order to educate students about well-balanced meals.
CHAPTER III

METHODOLOGY

Research Methodology and Design

Design

This study examined fifth and sixth grade students’ and their parents’ perceptions of the lunches served under the revised guidelines for the National School Lunch Program (NSLP). This retrospective, mixed methods study utilized qualitative data from student focus groups and a parent questionnaire along with quantitative data gathered from the parent questionnaire which assessed their perceptions about the school lunches provided under the USDA’s NSLP. The study occurred in two phases. The first phase was retrospective and consisted of data collected from focus groups with fifth and sixth grade students and the second phase was a questionnaire sent to the parents of the fifth and sixth grade students which assessed their perceptions of the NSLP.

Focus group data. The focus groups were conducted as part of a dietetic internship rotation for school foodservice and thus provided retrospective data for analysis. The foodservice director wanted to assess the students’ perceptions of the school lunches since the revised USDA guidelines were implemented in the 2012 school year. The foodservice director was also wanted to know if the students recognized the changes made to the lunches from the previous school year, and if the changes had an impact on their attitude toward the meals offered at school. The narrative data from the student focus groups was transcribed, coded and categorized into recurring themes related
to the research question once approval was given by the Kent State University Institutional Review Board.

**Setting and participants.** The focus groups for this study took place in an intermediate school building in rural northeast Ohio. There were 900 students in this fifth and sixth grade building (DASL, 2013). Thirty-eight percent of the students at the school qualified for free lunches and five percent reduced-price lunches (ODE, 2013). There was an average of 647 meals served per day in October 2012. Forty-five percent of the students were free and seven percent were reduced priced (ODE, 2013). Seventy-two percent of students participated in the school meal program and twenty percent purchased a la carte items. Since the new guidelines were implemented for the 2013-2014 school year, there was an average of 621 meals served per day with 49% free lunches and 7% reduced-price (ODE, 2013). Sixty-seven percent of students participated in the school meal program in October 2013 (ODE, 2013). This data showed a five percent decline in meal participation, despite the increase in students eligible for free meals. An important factor to consider was that if a student refused to take a fruit or vegetable component, the student was charged a la carte pricing for the main entrée and milk, which then led to a lost reimbursable meal for the school.

The focus groups were selected by the building principal as part of the “Tastings with Jen” series. A consent form had to be signed by each student’s parent/guardian and returned to the building principal in order to be able to participate. The forty-five students who participated in the focus groups were a convenience sample. The focus groups took place in the building cafeteria during the regular school day on November
13th and 15th as part of “Tastings with Jen,” which was taste test and an opportunity for the students to give input on potential menu items. The students sampled pepper jack string cheese, red pepper hummus with carrots, whole grain French toast, Wings of Fire and Baja fish sticks. The students ate the potential menu items during the focus groups. The focus groups were conducted in the cafeteria, which was a large room with long, rectangular tables with chairs. The students sat at the tables located on the platform, on the opposite wall from the kitchen, for the taste tests and focus groups. There were no other students in the cafeteria during the focus groups. The foodservice staff was preparing lunch in the kitchen at the opposite side of the cafeteria. The focus groups took place before the lunch periods began. The focus groups were held in 15 minute increments and once the students were finished they returned to their classrooms. There were four focus groups held on November 13th with 22 fifth grade students and five focus groups conducted on November 15th with 23 sixth grade students. Therefore, there were a total of nine taste tests and focus groups, with 45 total student participants, conducted as part of the “Tastings with Jen” series.

The participants in the study were fifth and sixth grade students from one rural intermediate school. There was a convenience sample of 25 fifth and 25 sixth graders selected by the middle school principal to participate in the focus groups. There were male and female students from diverse ethnic backgrounds selected for participation. A consent form was sent home with each student chosen to participate in the focus groups to get parental/guardian approval prior to participation in the focus group and audio recording (Appendix A). The consent forms were signed and returned to the principal
and then given to the food service director. Twenty-two fifth graders and 23 sixth
graders actually participated in the focus groups on the designated days. There were five
students selected to participate in the focus groups that were unable to attend due to
illness and extracurricular activities.

**Focus Group Procedures**

The focus groups were conducted in fifteen minute increments with the students.
Table 4 shows the number of participants that were in each focus group. Each focus
group was recorded using Microsoft Windows 7 Sound Recorder (Version 6.1).

**Focus Groups Questions.** The foodservice director created the focus groups
questions with the dietetic intern as part of the school foodservice dietetic internship
rotation. The questions were then reviewed by the intern’s thesis advisor at Kent State
University for content validity. The foodservice director made the final approval of the
questions to be used for the focus groups with the fifth and sixth grade students. There
were two sets of questions developed. The A set of questions focused on the school
lunches, favorite foods and opinion of having options. The B set of questions focused on
examining if the students noticed the changes made to the menu and their thoughts on
these modifications (Appendix C). Two different sets of questions were utilized because
it would have been too difficult to ask all the questions for all the groups. The focus
groups were held in fifteen minute increments, thus only allowing for a short set of
questions to be asked for each group and the two sets of questions provided an
opportunity to receive more feedback about the lunch program.
Several studies have utilized focus groups to assess students’ perspectives on school lunches and the school food environment. Cullen et al. (2007) used focus groups to get student feedback about lunch choices and the acceptance of these items after a pilot study that made environmental changes to improve the dietary quality of middle school lunches. Another study conducted focus groups with parents and students in order to evaluate student participation in the School Breakfast Program (Bailey-Davis, Virus, McCoy, Wojtanowski, Vander Veur & Foster, 2013). These studies found that the focus groups gave the students an opportunity to provide feedback about the meals and gave data to support the utilization of focus groups for the present study.

Parent Questionnaire

The second phase of this study was a parent questionnaire (Appendix B). The retrospective data collected from the focus groups was used to guide the building of the parent questionnaire. The survey was approved by the school district superintendent, building principal and food service director. The building principal sent the questionnaire via e-mail to the parents/guardians of all the fifth and sixth grade students at the intermediate school. The school foodservice administrator and intermediate school principal wanted to assess the parents’ perceptions of the school lunches and determine if they have noticed the changes made to the meals from the previous school year. The mixed methods questionnaire assessed the parents’ perceptions of the lunch offerings, the purpose of the NSLP and examined if they noticed the changes that had occurred to their students’ lunches. A questionnaire was utilized to assess parental perceptions because
focus groups with the parents were too difficult to conduct in the allotted time frame and gave all the parents an opportunity to participate.

**Procedure.** The questionnaire was sent to the district superintendent for approval once it had been reviewed for content validity. Once approval was received, the parent questionnaire was sent to the 900 fifth and sixth graders’ families electronically via e-mail by the building principal. The questionnaire was sent out on February 24, 2014. The principal sent out a reminder e-mail to the parents on March 3, 2014. The parent questionnaires were completed on March 7, 2014, thus the parents had two weeks to complete the online questionnaire.

**Data Analysis Procedures**

**Focus groups.** The audio recordings from the focus groups were transcribed by the Research Bureau at Kent State University and then coded for themes by the lead investigator and co-investigator independently. (Burgess-Champoux, Marquart, Vickers & Reicks, 2006; Cullen et al., 2007; Davis, Virus, McCoy, Wojtanowski & Veur, 2013). The two investigators analyzed the transcribed focus group data individually and identified emerging themes. A coding system of themes was developed and quotes from the focus groups were used to identify the themes similar to the procedure by Patton (1990). After coding the focus groups individually, the researchers met to compare analyses. There were no coding discrepancies found and the investigators were in consensus. Frequencies were calculated to determine theme prevalence. To aid in external validity, specific quotes were chosen as exemplars and illustrated the identified
themes. This gave insight to the common themes for the students’ perceptions of the lunches provided under the updated guidelines for the NSLP.

**Parent questionnaire.** The parent questionnaire was entered into Qualtrics and then completed by the parents that choose to participate by completing the online questionnaire via Qualtrics. The data was analyzed for means, standard deviations and frequencies. The qualitative data was also collected from the questionnaire and coded for themes utilizing the same procedure as the student focus groups, which was described by Patton (1990).
CHAPTER IV
JOURNAL ARTICLE

Introduction

The USDA’s National School Lunch Program (NSLP) has been providing meals for students since the early 1940s as a way to provide adequate nutrition during the school day ("Federal Child Nutrition Programs," 2010; USDA). The program has been modified over the years in order to better meet the nutritional needs of the current generation, and serve the continually increasing number of participants in the federal school lunch program. The battle between hunger and obesity has been fought for several years and the NSLP underwent guideline modifications during the 2012-2013 school year in order to provide more whole grains, fruits, vegetables, lean protein, and low-fat/fat-free dairy for students (USDA, 2013b).

The NSLP served approximately 31 million students each school day in 2009 (Bhatia, Jones & Reicks, 2011; Hirschman & Chriqui, 2012). The NSLP is the second largest food and nutrition program in the United States (Hanson & Oliveira, 2013; “National School Lunch Program”, 2013). The economic conditions brought about by the Great Recession of 2007 led to an increased number of students eligible for free or reduced-priced lunches; so much so that the fiscal school year of 2012 saw the greatest percentage of students eligible for free or reduced-priced lunches (68.2%) since the establishment of the program in the 1940s (Hanson & Oliveira, 2013; “National School Lunch Program”, 2013). These findings illustrate the role the school has in providing adequate nutrition and educating students how to build a healthy, well-balanced meal.
However, students have to be willing to try new foods and eat the foods that are available; thus iterating the importance of examining the students’ perceptions of the foods offered under the revised guidelines for the National School Lunch Program. The most effective way of encouraging healthy eating is a multi-component approach that consists of a collaboration among the food service staff, parents, and children so that the school is providing foods the kids are willing to eat, and parents are encouraging healthy food choices at home (Knai, Pomerleau, Lock & McKee, 2005; Larson, Story, Wall & Neumark-Sztainer, 2006; Wind et al., 2006; Zabinski et al., 2006).

Modifying student eating behaviors is a multi-component approach that requires alterations to both the school and home food environments (Knai, Pomerleau, Lock & McKee, 2005; Larson, Story, Wall & Neumark-Sztainer, 2006; Wind et al., 2006; Zabinski et al., 2006). Numerous studies showed that schools cannot modify eating behaviors without the support of the parents/guardians (Neumark-Sztainer, Wall, Perry & Story, 2003; Reinaerts, Noojer, Candel & Vries, 2005; Young, Fors, Fasha & Hayes, 2004). The findings in the literature iterate the importance of parental involvement in student food selections. The parents play a role in food choice and also deciding whether or not their students purchase lunch at school.

The student focus groups and parent questionnaire are important tools to understand how the students and parents view the school lunches because students are the primary customers of the National School Lunch Program and need to be offered foods they are willing to eat. The parents’ perceptions of the school lunches is also important to know because parents play a role in shaping the food behaviors that students develop.
over time (Larson et al., 2006 & Wind et al., 2006). The parents’ perception of the lunches offered at school plays a vital role in the decision of whether or not their student eats lunch at school or packs a lunch from home.

The purpose of this study was to examine the perceptions that fifth and sixth grade students and their parents have regarding the lunches served under the new guidelines for the USDA’s National School Lunch Program. Student focus groups with a taste test were formed, which allowed for open-ended questions and gave the students an opportunity to try new foods while giving feedback about those food items. The parent questionnaire was utilized as a way to get the perceptions of parents about the school lunches due to the role parents play in food choice and deciding whether or not the student purchases lunch at school. The hypothesis was that students and parents would have a positive perception of the lunches served under the new guidelines for the USDA’s National School Lunch Program.

**Methods**

This study was a retrospective, mixed methods design that utilized qualitative data from student focus groups and quantitative data gathered from a parent questionnaire to assess perceptions about the school lunches provided under the USDA’s National School Lunch Program. The study occurred in two phases. The first phase was retrospective and consisted of data collected from focus groups conducted with fifth and sixth grade students and the second phase was a questionnaire sent to the parents of the fifth and sixth grade students, which assessed their perceptions of the NSLP. The research
methods were approved by the university institutional review board prior to data collection and analysis.

**Focus Groups Data Collection**

The fifth and sixth grade student participants from one intermediate school in rural, Northeast Ohio were recruited by the school principal to participate in the “Tastings with Jen” taste tests and focus groups. The students’ parents were required to complete a consent form in order for the student to participate due to the audio recordings that were done during the focus groups (Appendix A). There were a total of 45 student participants, 22 fifth graders and 23 sixth graders. The students were separated into nine focus groups, of which five focus groups contained fifth graders and four focus groups contained sixth grade students. There was a range of 2-7 student participants in each focus group. Each focus group lasted 7-15 minutes depending upon student participation, with the fifth grade focus groups lasting longer due to stronger participation, in general. The focus groups were divided into A and B question sets. Two sets of questions were utilizing because there was not enough time to ask all the questions for each focus group. The A question set examined the students’ opinions of the school lunches and the B question set examined if the students noticed the changes that had been made to the school lunches when comparing the lunches from the previous school year. Five focus groups answered the A question set and four focus groups answered the B question set. The focus groups took place during the school day in the school cafeteria prior to lunch. The focus groups were conducted as part of a school foodservice rotation for a dietetic internship; thus the data was analyzed retrospectively. The foodservice director and
school principal gave permission to use the data for this research study. The audio recordings from the focus groups were audio recorded, transcribed and then coded for themes with a similar procedure by Patton (1990). Two investigators analyzed the transcribed focus group data and individually identified emerging themes. A coding system of themes was developed and quotes from the focus groups were used to identify the themes. After coding the focus groups individually, the researchers met to compare analyses. There were no coding discrepancies found and the investigators were in consensus. Frequencies were calculated to determine theme prevalence. To aid in external validity, specific quotes were chosen to be exemplars and to illustrate the identified themes.

**Parent Questionnaire Data Collection**

A parent questionnaire was constructed with guidance from the findings of the student focus groups in order to gain the parents’ perspectives of similar topics that were discussed in the student focus group regarding school lunches. The school district was interested to see if the parents had similar views as their students regarding the school lunches. Once the questionnaire was developed and approved by the school district superintendent and building principal, it was sent out via electronic mail by the principal to all 900 families of the fifth and sixth grader at the rural, northeast Ohio school district utilized for this study. The parents self-selected if they wanted to participate in the questionnaire research. The parents had two weeks to complete the questionnaire. There was one reminder e-mail sent out by the classroom teachers at the beginning of the second week to remind the parents about the questionnaire. The questionnaire consisted
of seventeen questions that assessed the parents’ perceptions and knowledge of the meals served under the NSLP utilizing both qualitative and quantitative questions.

The parent questionnaire data was then analyzed for frequencies, means and standard deviations. The qualitative questions were coded for themes using a similar procedure described by Patton (1990). The two investigators individually analyzed the responses, coding for themes. Once the coding was complete, the researchers met to compare analyses. There were no coding discrepancies found. Frequencies were calculated to determine theme prevalence. Specific responses were chosen as exemplars to aid in external validity and demonstrate the identified themes.

**Results**

**Focus Groups Data Results**

Forty-five fifth and sixth grade students participated in the focus groups and there were no drop outs for the focus groups. The themes that emerged from the qualitative analysis can be seen in Table 6. The themes found in the focus group data displayed the student participants’ opinions of the lunches at school since the changes were implemented for the 2012 to 2013 school year and their food patterns regarding how they choose what to eat. The students, overall, seemed unaware of the changes that had been made to the school lunches. The most notable themes were that they chose foods by “which looks good” (59%) and that 83% stated “I like it” in reference to having a choice of what to eat for lunch. There were two sets of questions asked, A and B. The questions were alternated between groups due to the time restraint for each focus group. The focus
groups were open-ended and the students did not have to answer every question that was asked.

Table 6

*Themes from Student Focus Groups Regarding Perceptions of the School Lunches under the Revised Guidelines for the NSLP*

<table>
<thead>
<tr>
<th>Themes</th>
<th>Both Question Group A and B Frequency (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Favorite Foods (N=45)</strong></td>
<td></td>
</tr>
<tr>
<td>French Toast/Waffles/Pancakes</td>
<td>5</td>
</tr>
<tr>
<td>Pizza</td>
<td>10</td>
</tr>
<tr>
<td>Chicken</td>
<td>14</td>
</tr>
<tr>
<td>Cheesy Breadsticks</td>
<td>11</td>
</tr>
<tr>
<td><strong>Sight of Food Determines Food Choices (N=34)</strong></td>
<td></td>
</tr>
<tr>
<td>Which looks best</td>
<td>20</td>
</tr>
<tr>
<td>Looks bad/gross/nasty</td>
<td>7</td>
</tr>
<tr>
<td><strong>Kids Like Choice – Feel Empowered (N=40)</strong></td>
<td></td>
</tr>
<tr>
<td>I like it</td>
<td>28</td>
</tr>
<tr>
<td>If I don’t like one thing, I can always get the other thing</td>
<td>8</td>
</tr>
<tr>
<td>It is important to have a choice</td>
<td>4</td>
</tr>
<tr>
<td><strong>Kids are Unaware of NSLP Standard Changes but Seem to Like the Food Better (N=37)</strong></td>
<td></td>
</tr>
<tr>
<td>Aware that lunch has changed – “Yes”</td>
<td>10</td>
</tr>
<tr>
<td>Still want to purchase school lunch</td>
<td>7</td>
</tr>
<tr>
<td>Food is better</td>
<td>13</td>
</tr>
<tr>
<td><strong>Do not Understand Food – Lack of Knowledge and Diversity (N=34)</strong></td>
<td></td>
</tr>
<tr>
<td>Favorite fruit is the slushy</td>
<td>17</td>
</tr>
<tr>
<td>Favorite vegetable is a pickle</td>
<td>4</td>
</tr>
<tr>
<td>Do not know what refried beans are/have never tried</td>
<td>8</td>
</tr>
<tr>
<td>Unsure about hummus</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question Group A Frequency (n)</th>
<th>Question Group B Frequency(n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Opinion of School Lunch (N=23)</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>6</td>
</tr>
<tr>
<td>Better</td>
<td>6</td>
</tr>
<tr>
<td>Still want to buy lunch at school</td>
<td>3</td>
</tr>
<tr>
<td>Tasty</td>
<td>3</td>
</tr>
</tbody>
</table>
Note. There were 22 students who answered question set A and 23 students who answered question set B. The student participants did not have to answer every question that was asked during the focus group. The students may have also answered with a response that was not part of a theme, thus explaining the discrepancies in n values.

Parent Questionnaire Data Results

The online parent questionnaire was completed by forty parents (4% response rate), of these parents three had a student that participated in the focus groups. Forty-eight percent of the parents had a fifth grade student and fifty-two percent had a sixth grade student. No one was excluded from the data analysis. The results from the parent questionnaire were analyzed for frequencies, means and standard deviations. The quantitative data was analyzed for means and standard deviations for each question (Table 7 & 8).

Table 7 represents the data from the parent questionnaire regarding how the parents perceived the purpose of the National School Lunch Program and their opinion on healthy eating. Forty-three percent of the parents neither agreed nor disagreed that the purpose of the National School Lunch Program is to help families with food insecurity. However, the parents did agree (46%) that the program does provide affordable meals for students. The majority (54%) of parents strongly agreed that their students like fruits and 56% agreed their student likes vegetables. A large portion of the parents (38%) reported their student does not have enough time to go through the lunch line and eat their lunch due to the short lunch periods.
Table 7

Parents’ Perceptions of the Purpose of the National School Lunch Program

<table>
<thead>
<tr>
<th>How Strongly do you Agree or Disagree with the following</th>
<th>Strongly Agree&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Agree&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Neither Agree nor Disagree&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Disagree&lt;sup&gt;d&lt;/sup&gt;</th>
<th>Strongly Disagree&lt;sup&gt;e&lt;/sup&gt;</th>
<th>Do Not Know/Unsure&lt;sup&gt;f&lt;/sup&gt;</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helps with food insecurity (n=37)</td>
<td>2</td>
<td>7</td>
<td>16</td>
<td>0</td>
<td>3</td>
<td>9</td>
<td>2.135</td>
<td>0.153</td>
</tr>
<tr>
<td>Provides healthy foods for student participants (n=37)</td>
<td>5</td>
<td>15</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>2.865</td>
<td>0.109</td>
</tr>
<tr>
<td>Provides affordable meals (n=37)</td>
<td>6</td>
<td>17</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2.568</td>
<td>0.144</td>
</tr>
<tr>
<td>Makes lunch easy for parents (n=37)</td>
<td>10</td>
<td>17</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2.324</td>
<td>0.164</td>
</tr>
<tr>
<td>Educates students on healthy meals (n=37)</td>
<td>5</td>
<td>9</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>4</td>
<td>3.351</td>
<td>0.037</td>
</tr>
<tr>
<td>Your student eating healthy foods (n=38)</td>
<td>27</td>
<td>10</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.316</td>
<td>0.274</td>
</tr>
<tr>
<td>Your student being active and healthy (n=38)</td>
<td>28</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.263</td>
<td>0.287</td>
</tr>
<tr>
<td>Your student has choices at lunch (n=38)</td>
<td>19</td>
<td>14</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1.711</td>
<td>0.197</td>
</tr>
<tr>
<td>Foods are not processed (n=38)</td>
<td>18</td>
<td>9</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1.947</td>
<td>0.166</td>
</tr>
<tr>
<td>Locally grown (n=38)</td>
<td>13</td>
<td>11</td>
<td>12</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2.132</td>
<td>0.149</td>
</tr>
<tr>
<td>Milk is an important part of the students healthy meal (n=38)</td>
<td>18</td>
<td>15</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1.789</td>
<td>0.194</td>
</tr>
<tr>
<td>Unhealthy foods are most appealing to students (n=37)</td>
<td>6</td>
<td>21</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>2.351</td>
<td>0.188</td>
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<tr>
<td>Description</td>
<td>Count</td>
<td>Total</td>
<td>Mean</td>
<td>Standard Deviation</td>
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<tr>
<td>My students is too busy to eat healthy (n=37)</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>20</td>
<td>13</td>
<td>0</td>
<td>4.243</td>
<td>0.213</td>
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<tr>
<td>My student likes fruits (n=37)</td>
<td>20</td>
<td>13</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1.649</td>
<td>0.210</td>
</tr>
<tr>
<td>My student likes vegetables (n=37)</td>
<td>10</td>
<td>21</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2.000</td>
<td>0.203</td>
</tr>
<tr>
<td>My student enjoys whole grain bread (n=37)</td>
<td>9</td>
<td>13</td>
<td>6</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>2.459</td>
<td>0.098</td>
</tr>
<tr>
<td>My student is a &quot;picky&quot; eater (n=37)</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>11</td>
<td>5</td>
<td>0</td>
<td>3.108</td>
<td>0.063</td>
</tr>
<tr>
<td>My student typically likes the foods offered as part of the school lunch (n=37)</td>
<td>3</td>
<td>15</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>0</td>
<td>2.973</td>
<td>0.109</td>
</tr>
<tr>
<td>The meals offered at school are healthy (n=35)</td>
<td>3</td>
<td>12</td>
<td>8</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>3.143</td>
<td>0.093</td>
</tr>
<tr>
<td>A variety of fresh fruits and vegetables should be available daily (n=41)</td>
<td>23</td>
<td>13</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1.659</td>
<td>0.249</td>
</tr>
<tr>
<td>Portions are too small (n=37)</td>
<td>3</td>
<td>7</td>
<td>14</td>
<td>7</td>
<td>1</td>
<td>5</td>
<td>3.297</td>
<td>0.120</td>
</tr>
<tr>
<td>Cafeteria line is too long (n=37)</td>
<td>6</td>
<td>10</td>
<td>9</td>
<td>7</td>
<td>0</td>
<td>5</td>
<td>3.000</td>
<td>0.095</td>
</tr>
<tr>
<td>There is not enough variety (n=37)</td>
<td>5</td>
<td>14</td>
<td>7</td>
<td>9</td>
<td>0</td>
<td>2</td>
<td>2.757</td>
<td>0.124</td>
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<td>Poor food quality (n=37)</td>
<td>5</td>
<td>11</td>
<td>5</td>
<td>13</td>
<td>0</td>
<td>3</td>
<td>3.027</td>
<td>0.126</td>
</tr>
<tr>
<td>Student does not like the foods available (n=37)</td>
<td>5</td>
<td>16</td>
<td>5</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>2.595</td>
<td>0.150</td>
</tr>
<tr>
<td>There is enough food and the student is not hungry after lunch (n=37)</td>
<td>3</td>
<td>7</td>
<td>12</td>
<td>8</td>
<td>3</td>
<td>4</td>
<td>3.351</td>
<td>0.091</td>
</tr>
<tr>
<td>Student has enough time to eat his/her lunch</td>
<td>2</td>
<td>9</td>
<td>3</td>
<td>14</td>
<td>9</td>
<td>0</td>
<td>3.514</td>
<td>0.119</td>
</tr>
<tr>
<td>--------------------------------------------</td>
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<td>----</td>
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<td>-------</td>
</tr>
</tbody>
</table>

*Note.* The columns were assigned numerical values for data analysis of the mean and SD.

*Strongly Agree = 1;  *Agree = 2;  *Neither Agree nor Disagree = 3;  *Disagree = 4;  *Strongly Disagree = 5;  *Do Not Know/Unsure = 0

The parents indicated their student ate lunch at school an average of 3.6 ± 7.5 times during the previous school week. The parents also indicated that their student(s) brought his/her lunch to school an average of 1.8 ± 6.6 days during the previous school week. This data showed that the students of the parents who completed the questionnaire ate lunch at school approximately 3 days per week.

Sixty-two percent of parents reported that their student does purchase lunch at school. The parents of the thirty-eight percent of the students who do not eat lunch at school commented that it was due to the student not liking the food (36%), not having enough time to eat (14%) or packing a lunch is healthier (14%).

The parents also reported how many times in the last week an after-school meal or snack included a vegetable or a fruit. This information was gathered to in order to examine the food environment at home because the home environment can have an impact on food choices at school (Hearn et al., 2013). A vegetable was included in 5.5 ± 3.07 dinners and/or snacks in the past week; while a fruit was included in 5.05 ± 2.08 dinners and/or snacks.

There was one parent who had a student that was a vegetarian and one parent that had a child with an anaphylactic food allergy. Thus, there were very few dietary needs for the students whose parents participated in the questionnaire research.
The parent participants were asked if they noticed any changes made to the school lunch menu for the 2013 to 2014 school year. If they answered yes, they were asked what they had noticed. The themes that emerged were more choices (15%, n=13), less calories (46%, n=13), unappealing foods (23%, n=13) and more fruits and vegetables (15%, n=13). The parents were also asked what food they wished were offered and which ones they wish were not offered (Table 8). Not all of the parents responded to what foods they want and do not want to see offered at lunch, thus explaining the discrepancy in the frequency and total n value.

Table 8

*Foods Parents Want and Do Not Want Offered at Lunch*

<table>
<thead>
<tr>
<th>Foods parents wished would be offered at lunch (N = 13)</th>
<th>Frequency (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh fruits and vegetables</td>
<td>22% (4)</td>
</tr>
<tr>
<td>Peanut butter items</td>
<td>11% (2)</td>
</tr>
<tr>
<td>More meats</td>
<td>17% (3)</td>
</tr>
<tr>
<td>Salad bar</td>
<td>17% (3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Foods parents wished would not be offered at lunch (N = 13)</th>
<th>Frequency (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processed foods</td>
<td>80% (8)</td>
</tr>
<tr>
<td>A la carte items</td>
<td>40% (4)</td>
</tr>
</tbody>
</table>

**Discussion**
The main objective of this research study was to examine the perceptions of fifth and sixth grade students and their parents regarding the lunches served under the revised guidelines to the NLSP. The focus groups were designed to allow the students to give the school foodservice director feedback about the changes made to the menu while offering an opportunity to try new foods. The students and the parents both had thoughts about the National School Lunch Program and expectations for the foods provided at lunch.

The students seemed to be satisfied the foods offered under the revised guidelines to the NSLP. The students commented the food was better than last year and liked the new menu choices being offered. The students did not have the stereotypical view of “lunch ladies” (i.e. kitchen staff serving the meals), as is culturally popular. However, there was a lack of knowledge about foods and diversity in food choices. The students thought the slushy offered at lunch was made from whole fruit and that pickles were a serving of vegetables as opposed to a condiment. Some of the students had never seen or tried hummus before and were unsure of whether or not they wanted to try refried beans. They commented these were not foods that they normally had offered at home and they had just been introduced this year for lunch at school. The legumes, in general, seem to be one ethnic item that students are hesitant to try. The lack of diversity showed a typical “Midwest diet” of meat and potatoes as staple foods. The students did like the cheesy items such as pizza and cheesy breadsticks but commented that they did not like the items that they deemed as being “too cheesy.” The students favorite foods were pancakes/waffles/French toast, pizza, chicken and cheesy breadsticks. These are carbohydrate-rich foods and the types of food that are typically appealing to children.
These foods are also the items that the students like to eat at home, which reiterates the idea that the food environment and foods offered at home have an impact on food choices at school. These findings are similar to other studies that also found that students choose familiar foods, regardless of the environment (Bevans, Sanchez, Teneralli & Forrest, 2011; Briefel, Wilson & Gleason, 2009; Marlette, Templeton & Panemangalore, 2005).

The students are making food choices primarily based upon the appearance of the food (Neumark-Sztainer, Wall, Perry, & Story, 2003; Wind et al., 2006). An example was when the students commented that the triangle pizza was much better than the square pizza and that the oven smiles just tasted better than regular fries. These items are the same foods from the same manufacturer; however the different appearances of these foods this school year changed the students’ perception of how the food tasted. This finding is similar to those in the study by Nazlin (1999).

The students seemed unaware of the changes made to the school lunches since the revised guidelines to the NSLP were implemented in the 2012 to 2013 school year. However, the students are accepting of the foods being offered and even seem to like the new foods better than the foods that were previously offered at lunch. The students commented that they like having a choice as to what foods they wanted to have for lunch. The students can choice their lunch under the offer versus serve meal option, which was available at this school before the revised guidelines were implemented in the 2012 to 2013 school year. These findings show that students are not completely opposed to change and can be accepting of new foods especially when they get a choice of what foods to eat.
There have been very few studies utilizing focus groups in order to assess students’ perceptions of the lunches served under the revised NSLP guidelines (Burgess-Champoux, Marquart, Vickers & Reicks, 2006; Cullen et al., 2007; Bailey-Davis, Virus, McCoy, Wojtanowski, Veur & Foster, 2013). The majority of the qualitative studies were conducted prior to the major guideline revisions for the 2012 to 2013 school year. The emphasis of these studies was looking at the students’ fruit and vegetable consumption and how they choose foods at lunch. The current study focused on how the students perceived the changes made to the school lunches in the past school year. The utilization of student focus groups allowed for open-ended questions and gave the students an opportunity to ask questions about the foods offered at lunch. The taste tests are also an effective means of allowing students to see, taste and smell new foods and try them without the commitment of having to eat a food for lunch they may not like. The data collected from focus groups is important because the students are the primary customers of the school lunches and they need to be offered foods they are willing to eat that are also nutritious (USDA, 2013c).

The quantitative and qualitative data collected from the parent questionnaire also showed that the parents, much like their students, are not dissatisfied with the lunches served at school based on the majority agreeing that school lunches are affordable, convenient and provide healthy meals. However, there was a lack of knowledge regarding the purpose the National School Lunch Program and the foods offered to the students at school. The parents saw the convenience and affordability of participating in the National School Lunch Program. There was a disconnection between the parents and
students with how they view the school lunches. Some of the parents still believed that school lunches were the unhealthy lunches served previously at schools due to culturally accepted norms. However, the parents in this study were overall satisfied with the changes made their students’ lunches. These results were different from previous studies that were conducted prior to the revised guidelines implementation that examined how parents viewed school lunches (Burgess-Champoux, Marquart, Vickers & Reicks, 2006; Robinson-O’Brien, Neumark-Sztainer, Hannan, Burgess-Champoux & Haines, 2009). These studies found that parents tend to be dissatisfied with the meals served at school. The healthier meals being served at school may have impacted the parents’ overall view of school lunches. The discrepancy in findings could also be attributed to communication between parent, students and the foodservice department and/or a positive view of this school district’s foodservice department.

**Limitations**

The limitations of this study included focus groups with a convenience sample of only selected fifth and sixth grade students from one, rural school in northeast Ohio. Another limitation was the small percentage of parents that completed the online questionnaire due to self-selection. This was also a retrospective study that utilized data collected by the foodservice director as part of research to examine how the students are responding to the lunches served under the updated guidelines to the National School Lunch Program. In spite of these limitations, the findings of this study provide insight to the perceptions of students and parents regarding the lunches served under the National School Lunch Program.
Implications and Applications

The findings of this study showed the importance of taking time to introduce new foods to the students and receiving feedback about the meals being served at lunch. The students were willing to try new foods once they had an opportunity in the taste test and focus group to ask questions about the foods, such as with a student that commented “it looks gross but tastes good.” The utilization of focus groups could allow school foodservice directors an opportunity to receive direct feedback from the students about the lunches being served. The feedback from the students could aid in menu development by informing the foodservice director about which foods the kids like and are willing to eat.

The parents’ perspective of the school lunches is also a critical piece of the puzzle for foodservice directors. The parents are the ones who choose whether or not their students purchase lunch at school. Thus, the parents also need to be satisfied with the meals being offered so that they have their students purchase lunch at school.

The cafeteria staff could also explain the new offerings to the kids while they are in the lunch line. The kids may not be against trying more new foods once they know more about the foods. This knowledge about food could empower the students to not be afraid to try new foods and not make choices solely based on appearance, similar to the findings in Nazlin (1999). The school cafeteria is one place that has the potential to educate students about food and nutrition and encourage them to try new foods (Neumark-Sztainer, Wall, Perry, & Story, 2003; Wind et al., 2006; Zabinski et al., 2006). Teaching students healthy eating behaviors and habits early on is important because
behavioral patterns are difficult to modify, especially after sixth grade (Kelder, Perry, Klepp, & Lytle, 1994).

A positive view of school foodservice could change the overall opinion of what school lunches are. The environment is what drives choice for the students when selecting healthy versus unhealthy options (Hearn et al., 2013). Gaining parent and student input regarding the school lunches is a way for school foodservice departments to balance profit while providing nutritious meals for the students.

**Conclusion**

The findings of this study suggest that students and parents are satisfied overall with the lunches provided; but lack understanding of why these changes to the lunches have occurred. The student focus groups and parent questionnaire gave insight to the perceptions of the lunches and provided feedback for school foodservice department on how to further improve the lunches. After all, the students are the primary customers but their parents ultimately determine if the student purchases school meals.
APPENDICES
APPENDIX A

LETTER OF CONSENT
Appendix A

Letter of Consent

Informed Consent Form
Students’ Perception of the National School Lunch Program Meals Provided Under the 2010 USDA Guidelines

Principal Investigator: Jennifer Rex, Plain Local Food Service Director

Your student is being invited to participate in a focus group study. The consent form will provide you with information on the research project, what you will need to do, and the associated risks and benefits of the focus group research. Your student’s participation is voluntary. Please read this form carefully.

Purpose: The purpose of the focus group study is to assess student perception and acceptance of the changes made to the National School Lunch Program meals.

Procedures
The students who are randomly chosen to participate in the focus group will be asked to answer a few questions in a group setting related to the school lunch program meals they eat at school. The students’ answers to the questions will be recorded for the food service director and school principal in order to assess student perception and acceptance of the school meals.

Audio Recording
The students participating in the focus group will be audio taped for future use. There will be no names disclosed during the audio recording. The audio recordings may be used in future research to assess student perception and acceptance of the school meals provided. The student’s parent/guardian retains the right to hear the audio recording prior to use.

Benefits
This focus group will provide the food service director, principal and research community data on the students’ perception and acceptance of the school lunch program. The individual student will receive no direct benefit from taking part in the focus group. However, the student’s participation will help the food service director and principal to better understand students’ thoughts and acceptance of the lunches served at school.

Risks and Discomfort
There are no anticipated risks beyond those encountered in everyday life.

Privacy and Confidentiality
The students who participate in the focus group will not be named
through notes taken or through the audio recording taken during the focus group. The audio recording will stay in the possession of the principal and food service director. The students will remain anonymous, thus the data collected cannot be linked to the individual student. No identifying information will be collected. Your signed consent will kept separate and responses will not be linked to your student. However, the research information may, in certain circumstances, be disclosed for future research studies.

Compensation
Students who are chosen to participate in the focus group study will be offered potential new menu items to sample and give feedback on whether the items should or should not be incorporated in the school lunch menu.

Voluntary Participation
Your student’s participation in the focus group is entirely up to you as the parent/guardian. You may choose to have your student not participate in the focus group without any consequence to the student.

Contact Information
If you have any questions or concerns regarding this focus group study, you may contact

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**STUDENTS’ PERCEPTION OF THE NATIONAL SCHOOL LUNCH PROGRAM MEALS PROVIDED UNDER THE 2010 USDA GUIDELINES**

I have read this consent form and have had the opportunity to have my questions answered to my satisfaction. I voluntarily agree for my student _______ to participate in this focus group study. I understand that a copy of this consent form can be provided upon my request for future reference.

Parent/Guardian Signature __________________________ Date ____________
APPENDIX B

PARENT QUESTIONNAIRE
Appendix B

Parent Questionnaire

Parent Perception of the New USDA School Lunches

Welcome to the “Parent Perception of the New USDA School Lunches,” a web-based questionnaire that examines parents’ perceptions of the new lunches served under the National School Lunch Program. Before taking part in this study, please read the consent form below and click on the "I Agree" button at the bottom of the page if you understand the statements and freely consent to participate in the study.

Consent Form

This study involves a web-based questionnaire designed to understand parents’ perceptions of the new school lunches being provided under the National School Lunch Program. The study is being conducted by Professor Natalie Caine-Bish and co-investigator Sara Carlson of Kent State University, and it has been approved by the Kent State University Institutional Review Board. No deception is involved, and the study involves no more than minimal risk to participants (i.e., the level of risk encountered in daily life). Participation in the study typically takes 15-20 minutes and is strictly anonymous. Participants will be asked to answer questions regarding school lunches and meal patterns of their students. The data provided will help the foodservice director understand the parents’ perceptions of the school lunches provided to their students and the students’ meal patterns.

All responses are treated as confidential, and in no case will responses from individual participants be identified. The questionnaires will be anonymous. Identifying information will not be requested. All data will be pooled and published in aggregate form only. Participants should be aware; however, that the experiment is not being run from a “secure” https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers).

Participation in this study will allow the foodservice director to have insight to the parents’ perceptions of the school lunches. The data collected will be analyzed as part of a Master's thesis at Kent State University that is examining student and parent perceptions of the school lunches provided under the USDA National School Lunch Program. Participation is voluntary; refusal to take part in the study involves no penalty or loss of benefits to which participants are otherwise entitled.

If participants have further questions about this study or their rights, or if they wish to lodge a complaint or concern, they may contact the Plain Local Foodservice Director, Jennifer Rex, at (330) 493-5568; or the Kent State University Institutional Review Board, at (330) 672-2704.

If you are 18 years of age or older, understand the statements above, and freely consent to participate in the study, click on the “Agree” button to begin the questionnaire.
Student and Parent Perception of School Lunchees

- The following questionnaire is assessing parents’ perceptions of the school lunches served under the National School Lunch Program (NSLP). This brief questionnaire should take approximately 15-20 minutes to complete and will provide valuable information for the foodservice department of Plain Local Schools.
- Please read and answer each question carefully.
- Your name will not be included on the survey so answer as honestly as possible and to the best of your knowledge.
- Please complete the questionnaire by February 23, 2014.
- If you have any questions or concerns please contact Jennifer Rex, foodservice director at Plan Local Schools at 330-493-5569 or email rexj@plainlocal.org.

Did your student participate in the “Tastings with Jen” focus groups at school this year?

- a. Yes
- b. No

During the past week, how many times has your student eaten lunch at school?

- 0
- 1
- 2
- 3
- 4
- 5

During the past week, how many times did your student bring his/her lunch to school?

- 0
- 1
- 2
- 3
- 4
- 5
Section 1 Directions: Circle the one answer that best applies.

What grade is (are) your student(s) in? If both, please answer questionnaire according to fifth grade student.

- a. Fifth
- b. Sixth
- c. Both

Section 2 Directions: Please check one box that best applies for questions 5-9.

The purpose of the National School Lunch Program

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Do not Know/Unsure</th>
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</thead>
<tbody>
<tr>
<td>a. Helps with food insecurity</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>b. Provides healthy foods for student participants</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>c. Provides affordable meals</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>d. Makes lunch easy for parents</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>e. Educates students on healthy meals</td>
<td>○</td>
<td>○</td>
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<td>○</td>
<td>○</td>
<td>○</td>
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</table>

How important/unimportant are the following to you...

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<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Do not Know/Unsure</th>
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</thead>
<tbody>
<tr>
<td>a. Your student eating healthy foods</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>b. Your student being active and healthy</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>c. Your student has choices at lunch</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>d. Not processed</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>e. Locally grown</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
How strongly do you agree or disagree with the following statements? If you are unsure, please mark “Do not Know/Unsure”.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Do not Know/Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Milk is an important part of a student’s healthy meal</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>b. Unhealthy foods are most appealing to students</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>c. My student is too busy to eat healthy</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>d. My student likes fruits</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>e. My student likes vegetables</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>f. My student enjoys whole grain bread</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>g. My student is a “picky” eater</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>h. My student typically likes the foods offered as part of the school lunch</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>i. The meals offered at school are healthy</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>j. A variety of fresh fruits and vegetables should be available daily at school</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

How much do you agree or disagree with the following reasons for your student choosing not to eat lunch at school or dissatisfied with the lunches offered…

<table>
<thead>
<tr>
<th>Reason</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Do not Know/Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Portions are too small</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>b. The cafeteria line is too long</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>c. There is not enough variety</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>d. Poor food quality</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>e. Student does not like the foods available</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>f. There is enough food and student is not hungry after lunch</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>g. Student has enough time to eat his/her lunch</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
When considering the lunches provided for your student how satisfied are you with... (if you are unsure or do not know, please mark “Do not Know/Unsure”)

<table>
<thead>
<tr>
<th></th>
<th>Very Satisfied</th>
<th>Satisfied</th>
<th>Somewhat Satisfied</th>
<th>Neutral</th>
<th>Somewhat Dissatisfied</th>
<th>Dissatisfied</th>
<th>Do not Know/Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. The meals provided for</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>the students at lunch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. The changes made to</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>the meals since the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012-2013 school year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

My student is a vegetarian

- [ ] Yes
- [ ] No

My student has a food allergy [i.e. anaphylaxis when consuming certain food(s)]

- [ ] Yes
- [ ] No

Does your student purchase school lunches?

- [ ] Yes
- [ ] No (If no, why doesn’t your student purchase lunch at school?)
Section 3 Directions: Please write your answers for each question in the space provided.

During the past week, how many meals (meals and snacks provided after school) have included a vegetable?
- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- More than 7

During the past week, how many meals (meals and snacks provided after school) have included a fruit?
- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- More than 7

Have noticed any changes made the school lunch menu for the 2013—2014 school year?
- Yes (if yes, what have you noticed?)
- No

Are there foods you wish were not offered for lunch at school, if so what are they?
Are there foods you wish the school offered for lunch, if so what are they?
APPENDIX C

FOCUS GROUP QUESTIONS
## Appendix C

### Focus Group Questions

**Focus Groups Questions**

<table>
<thead>
<tr>
<th>Question Set A</th>
<th>Question Set B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Let’s get started by going around the table one at a time. Tell the room what your favorite meal is and what is your least favorite meal is from the school cafeteria.</td>
<td>Let’s get started by going around the table one at a time. Tell the room what your favorite meal is and what is your least favorite meal is from the school cafeteria.</td>
</tr>
<tr>
<td>What do you like about the meals provided at school and what do you not like about the school lunches?</td>
<td>The government has made new rules for your school lunches. Have you noticed that school lunches are different? Have the changes to school changed your attitude toward buying lunch at school?</td>
</tr>
<tr>
<td>Possible probes:</td>
<td>Possible probes:</td>
</tr>
<tr>
<td>• How do you choose what you would like for lunch out of the options provided?</td>
<td>• What, if any, are your favorite new foods?</td>
</tr>
<tr>
<td>• How often do you eat the school lunch?</td>
<td>• What, if any, are your least favorite foods?</td>
</tr>
<tr>
<td>• Are there meals you like that the school provides?</td>
<td>• Do you like lunch better this year compared to the lunches that were served last year at school?</td>
</tr>
<tr>
<td>• Are there meals you do not like at school?</td>
<td>• Are there any foods you wish were still offered at school for lunch?</td>
</tr>
<tr>
<td>Think about if you have ever tried a new</td>
<td></td>
</tr>
<tr>
<td>What do you think of having to take a fruit</td>
<td></td>
</tr>
</tbody>
</table>


food at school. If you did, describe what you have tried.

Possible probes:
- What made you want to try to the new food?
- How did you feel about the new food?
- If you did not want to try a new the food, what kept you from trying the food?
- Is there any food you would not want to try?

<table>
<thead>
<tr>
<th>Possible probes:</th>
<th>and/or vegetable as part of your lunch?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What is your favorite fruit?</td>
<td></td>
</tr>
<tr>
<td>• What is your favorite vegetable?</td>
<td></td>
</tr>
<tr>
<td>• Have you tried any of the new items like hummus, sweet potatoes, or legumes (refried beans, baked beans, and hummus)?</td>
<td></td>
</tr>
<tr>
<td>• What do you think of the hummus, sweet potatoes and legumes?</td>
<td></td>
</tr>
</tbody>
</table>

What do you think about having options of which foods you would like to eat for lunch?
- Do you like having options for entrees, fruits, vegetables and beverages?
- What do you like best about the lunch food choices?

What do you think about having options of which foods you would like to eat for lunch?
- Do you like having options for entrees, fruits, vegetables and beverages?
- What do you like best about the lunch food choices?
- What healthy options would want to see that you do not get?
- Do you want to have input on what is offered for lunch at school?
TABLES
Tables

Table 1

*Type A and B Lunches for the National School Lunch Program*

<table>
<thead>
<tr>
<th></th>
<th>Type A</th>
<th>Type B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk, whole</td>
<td>½ pint</td>
<td>2 pints</td>
</tr>
<tr>
<td>Protein-rich food consisting of any of the following or a combination thereof:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--Fresh or processed meat, poultry meat, cheese, cooked or canned fish</td>
<td>2 ounces</td>
<td>1 ounce</td>
</tr>
<tr>
<td>--Dry peas or beans or soybeans, cooked</td>
<td>½ cup</td>
<td>¼ cup</td>
</tr>
<tr>
<td>--Peanut Butter</td>
<td>4 tbsp.</td>
<td>2 tbsp.</td>
</tr>
<tr>
<td>--Eggs</td>
<td>1 item</td>
<td>½ item</td>
</tr>
<tr>
<td>Raw, cooked or canned vegetables, or fruits or both</td>
<td>¾ cup</td>
<td>½ cup</td>
</tr>
<tr>
<td>Bread, muffins, or hot bread made of whole grain cereal or enriched flour</td>
<td>1 portion</td>
<td>1 portion</td>
</tr>
<tr>
<td>Butter or Fortified Margarine</td>
<td>2 tsp.</td>
<td>1 tsp.</td>
</tr>
</tbody>
</table>

Table 2

*Sodium Criteria for National School Lunch Program Meals*

<table>
<thead>
<tr>
<th>Age/grade group</th>
<th>Baseline: Average current sodium levels in meals as offered¹ (milligrams)</th>
<th>Target 1: July 1, 2014 (School Year 2014-2015) (milligrams)</th>
<th>Target 2: July 1, 2017 (School Year 2017-2018) (milligrams)</th>
<th>Final Target: July 1, 2022 (School Year 2022-2023) (milligrams)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-5 (elementary)</td>
<td>1,377</td>
<td>≤ 1,230</td>
<td>≤ 935</td>
<td>≤ 640</td>
</tr>
<tr>
<td>6-8 (middle)</td>
<td>1,520</td>
<td>≤ 1,360</td>
<td>≤ 1,035</td>
<td>≤ 710</td>
</tr>
<tr>
<td>9-12 (high)</td>
<td>1,588</td>
<td>≤ 1,420</td>
<td>≤ 1,080</td>
<td>≤ 740</td>
</tr>
</tbody>
</table>

¹SNA-III.


Table 3

*RDAs for Students Age 9-13*

<table>
<thead>
<tr>
<th></th>
<th>Calcium milligrams/day</th>
<th>Protein Gram/kilogram/day</th>
<th>Vitamin A Microgram/day</th>
<th>Vitamin C Milligram/day</th>
<th>Iron Milligram/day</th>
<th>Total Fat Gram/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>1100</td>
<td>0.76</td>
<td>445</td>
<td>39</td>
<td>5.9</td>
<td>25-35 *AMDR</td>
</tr>
<tr>
<td>9-13 yrs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>1100</td>
<td>0.76</td>
<td>420</td>
<td>39</td>
<td>5.7</td>
<td>25-35 *AMDR</td>
</tr>
<tr>
<td>9-13 yrs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. (*) AMDR- Acceptable Macronutrient Distribution Range: range of intakes for a particular energy source that is associated with reduced risk of chronic disease while providing intakes of essential nutrients (IOM, 2005).*

*Table adapted from: “Dietary Reference Intakes”. Retrieved from [http://www.iom.edu](http://www.iom.edu)*
Table 4

*Focus Group Participants*

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>Five 5&lt;sup&gt;th&lt;/sup&gt; grade students</td>
</tr>
<tr>
<td>Group 2</td>
<td>Six 5&lt;sup&gt;th&lt;/sup&gt; grade students</td>
</tr>
<tr>
<td>Group 3</td>
<td>Five 5&lt;sup&gt;th&lt;/sup&gt; grade students</td>
</tr>
<tr>
<td>Group 4</td>
<td>Six 5&lt;sup&gt;th&lt;/sup&gt; grade students</td>
</tr>
<tr>
<td>Group 5</td>
<td>Six 6&lt;sup&gt;th&lt;/sup&gt; grade students</td>
</tr>
<tr>
<td>Group 6</td>
<td>Seven 6&lt;sup&gt;th&lt;/sup&gt; grade students</td>
</tr>
<tr>
<td>Group 7</td>
<td>Two 6&lt;sup&gt;th&lt;/sup&gt; grade students</td>
</tr>
<tr>
<td>Group 8</td>
<td>Four 6&lt;sup&gt;th&lt;/sup&gt; grade students</td>
</tr>
<tr>
<td>Group 9</td>
<td>Four 6&lt;sup&gt;th&lt;/sup&gt; grade students</td>
</tr>
</tbody>
</table>
REFERENCES
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children receiving free or reduced-price school lunches. *Amber Waves*. Retrieved
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affect-the-share-of-children-receiving-free-or-reduced-price.aspx#.UfWyd43VDoI.

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