# USING NUTRITIONAL LABELING WITH PREORDERING METHODS TO INFLUENCE STUDENT ENTRÉE SELECTION

by

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## ABSTRACT

Children learn about foods and eating habits at an early age (Birch and Fisher, 1998). The school cafeteria is an ideal place to provide healthy food options, as 70 percent of kindergarten through 12th grade children eat a school lunch approximately three times a week (Hanks et al., 2012). Schools have used electronic preordering systems to help students choose healthier entrées in the lunchroom thus eliminating the sensory cues, which may influence entrée selection. Initial findings have shown advantageous results, as 29.4 percent of students chose healthier entrées versus 15.3 percent of students who had no preordering system (Hanks, Just, and Wansink, 2013). Preordering aids in eliminating the sensory cues which may influence lunch choices. Within this study, low cost preordering methods are coupled with nutritional information in an elementary school setting. Results indicate that the presence of nutritional labeling had negligible influence on entrée selection. Across days in which identical entrées were available, older grades (3rd and 4th) increased consumption of healthier entrées 50 percent of the time, while grades Kindergarten and 1st showed no clear indication to order healthier entrées. Further research is merited to determine alternative methods in which entrée selection can be positively impacted.

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# CHAPTER I

# INTRODUCTION

Obesity continues to be a problem in the United States, as there are approximately 64 percent of American adults who are classified as either overweight or obese (Burton, et al., 2006). Overweight and obese Americans are at an increased risk of numerous medical problems which range from diabetes to heart disease. Simply, obesity leads to a lower quality of life (Rock, et al., 2010). Children are also at risk for becoming obese or overweight. In the United States, the prevalence of obesity in adolescents and children averaged 16.9 percent from 2009 to 2010 (Ogden, et al., 2012). According to Burton, et al. (2006), improving the nutritional quality of the American diet has become a national health priority, as a result of the obesity epidemic.

Local, state, and national governments are pushing for legislation to encourage healthy diets among Americans. The 2010 healthcare bill mandated chain restaurants provide caloric information on their menus, subsequently, restaurants with 20 or more locations now provide nutritional information on all menu items (Ellison, Lusk, and Davis, 2013). New York City started implementing calorie labeling on menus in restaurants in 2006 and began enforcement of calorie labeling on menus in 2008 (Swartz, Braxton, and Viera, 2011). While the general public is affected by legislation regarding healthy eating, local school districts are also impacted.

School districts are pressured to offer healthier foods not only from the government, but also from parents (Just and Wansink, 2009). Due to these pressures, school nutrition standards have changed. School districts are now required to offer fruits and vegetables daily, eliminate milk that is greater than one percent fat content, and put constraints on contents of the foods offered (such as fat, sodium, and calorie content) (Hanks, Just, and Wansink, 2012). Implementation of these changes is challenging in itself, and becomes even more burdensom when coupled with budget limitations.

Children learn about foods and eating habits at an early age from their parents and teachers. Much of a child's eating habits develop between the transition of drinking milk as an infant to consuming an omnivorous diet (Birch and Fisher, 1998). Childhood obseity can lead to social stigmatization, adult obesity, and long term diseases; therefore, adopting healthy behaviors at a young age can have significant positive impacts (Birch and Fisher, 1998). The school cafeteria is an ideal place to provide healthy food options, as 70 percent of kindergarten through 12$^{th}$ grade children eat a school lunch approximately three times a week (Hanks et al., 2012). On average, over 31 million children participated in the National School Lunch Program each day from 2008 to 2012 (USDA, Food and Nutrition Service, 2013). With many children eating a school lunch, the cafeteria is an optimal place to implement healthy eating habits. A healthy diet and adequate physical activity are crucial components for a healthy lifestyle. Currently, a portion of children are not achieving national recommended guidelines for physical activity, thus making nutrition even more important (Metcalf, Henley, and Wilkin, 2012).

Healthy foods often cost more than non healthy options, which can be challenging to school districts facing budget limiations (Just and Wansink, 2009). Many schools have adopted preordering methods to reduce waste in the lunchroom. Previous work has examined electronic preordering methods and their influence on healthier eating habits. Electronic preordering methods can be costly; therefore a low-cost preordering system might be favorable to school administrators as minimal additional expenses would be incurred. Communicating nutritional information to children helps them to understand the importance of a healthy lifestyle, and with time, could prove to have a positive impact on individual dietary choices. Healthier children may in turn lead to healthier adults, which can ultimately lead to a healthier future.

A variety of preordering methods exist, ranging in cost and technology requirements. Previous work has primarily focused on technology intensive preordering methods. This study builds on the literature by assessing four low-cost preorder methods at an elementary school in Canyon, Texas. Currently, the elementary school has entrée preordering systems in place; however, each teacher has his or her own preordering method. A nutritional labeling system is also in place; however, it is not being coupled with the entrée preordering methods in each classroom, nor has it been fully explained to students.

In this study, nutritional labeling is coupled with preordering lunch entrée choices to determine the effect of nutritional information on entrée selection. Students are assigned to one of four preordering treatments based on grade. In the initial nine weeks, students preorder entrées, and no nutritional information is present, which serves as the base. In the subsequent five weeks, nutritional labels are coupled with entrée choices. The objectives of this study are:

- To assess low-cost alternatives of preordering entrées in school lunchrooms; and
- To determine if coupling nutritional information with low-cost preorder methods impacts entrée choice.

It is hypothesized that the introduction of nutritional information will initially have a positive effect on entrée selection; however, it is further hypothesized that the students will revert back to previous choices as time from the nutritional seminar increases.

# CHAPTER II

# LITERATURE REVIEW

Who should be held responsible for the rise in obesity? In a report by Lusk and Ellison (2013), they examined this question by conducting an online survey. Of the respondents that believed individuals were to blame, the results showed that 80 percent believed individuals were first to blame for their obesity. Moreover, 14 percent felt individuals were somewhat to blame, and six percent felt that individuals were not to blame. Second to individuals, survey respondents held parents responsible. Among the respondents who chose parents to blame, 59 percent believed parents were primarily to blame, while 32 percent suggested that parents were somewhat to blame. Food manufacturers and restaurants came in third and fourth, respectively. Interestingly, the government was ranked fifth out of seven as the responsible party for the rise in obesity. Many efforts have been put into place to change the food environment in an effort to reduce obesity, however, individuals did not respond well when restrictions were imposed on food items, such as taxes on sodas. Results from this study confirmed that the primary responsible party for the obesity epidemic is not the government, but is instead the individuals themselves.

While adults are concerned with obesity, many forget children are also at risk. In a study performed by Ogden et al. (2012), United States children and adolescents were examined to determine the prevalence of obesity and the trend of body mass index.

Using the body mass index, obesity was determined for children and adolescents ages two through 19. For a child or adolescent to be considered overweight, he or she must be at or above the $85^{th}$ percentile on the Center for Disease Control and Prevention growth chart and if the child was at or above the $95^{th}$ percentile, the individual was considered obese. Of the children and adolescents who participated in the survey, 88.6 percent were interviewed and 86 percent were interviewed and examined. Results showed that 31.8 percent of children and adolescents, ages two through 19 years of age, were either obese or overweight while 16.9 percent were considered obese. The study also indicated males had a higher rate of obesity than females and obesity differences existed among race and ethnicity. Hispanic children and non-Hispanic black children were found to be more obese compared to non-Hispanic white children. Lastly, the authors estimated that obesity in United States' children will climb to an alarming 30 percent by the year 2030 (Ogden et al., 2012).

Eating out of the home (at restaurants and fast service food businesses) is a major contributor for the rise in obesity. Burton et al. (2006) conducted two studies. The first study, a survey, examined a difference between expected and objective levels of calories, fat, sodium, and saturated fats and how those levels varied based on the nutrient level of the food items. Study two, an experiment, investigated how the nutrient information provided on a menu affected the attitudes and purchase intents of consumers. This was examined when the objective caloric intake met or exceeded the consumers' expectations of intake.

In 2006, Burton et al. hypothesized that most consumers do not know how to accurately judge caloric intake and may underestimate the calories they are consuming.

Results indicated that consumers underestimated the calorie levels of the less healthy items on the menu, while consumers only slightly underestimated the calorie levels of healthy food items. Consumers also misjudged the nutrient content of the items on the menu, such as the fats, saturated fats and sodium. When nutrient information is provided, results showed a significant influence on the choice, purchase intent, and product attitude when the actual nutrient information exceeded the estimation of the consumers. The study concluded that consumers must become more familiar with the nutrient content of the foods they order in restaurants (Burton et al., 2006). Delivery of nutrient content could help the public consume less unhealthy foods when eating out.

Swartz, Braxton, and Viera estimated that eating out at restaurants accounted for 30 percent of an individual's caloric intake in 2011. It is partly due to the Patient Protection and Affordable Care Act of 2010, which required all restaurants with 20 or more locations to include calorie labeling on their menus. In 2008, Harnack and French reviewed previous work in the area of calorie labeling in chain restaurants, and its associated effectiveness. Of the six papers analyzed, five determined that providing calorie information on restaurant menus influenced food selection.

It is clear the goal of the government is to improve the health of Americans, as laws have recently passed requiring calorie labels on restaurant menus. However, do Americans respond to the nutritional information provided on restaurant menus? The objective of a study, conducted by Ellison, Lusk, and Davis (2013), was to understand why restaurant goers choose certain food items with different nutrition labels. Furthermore, they also examined which types of people responded to nutrition labeling. Survey data was collected at a restaurant on the campus of Oklahoma State University.

Diners were placed in one of three treatment areas: the control group which received no nutritional information, a treatment group which was given menus containing the calories of the food items, and lastly a group which was given caloric information as well as a visual traffic light symbol. This symbol was green, yellow, or red and also indicated the level of calories in that food choice.

The results showed that the third treatment group had the greatest impact on caloric intake and furthermore, the greatest impact on those who were not considered health conscious. Providing only caloric information did impact the food orders of diners, however, also including the symbolic calorie label could have further lessened caloric intake. Interestingly, although calorie labeling had an influence on the main entrées, it did not have an impact on dessert or beverage selections. The study concluded that a symbolic calorie label is more beneficial to reach those who are less health conscious (Ellison, Lusk, and Davis, 2013).

One study, "Trigger Foods: The Influence of "Irrelevant" Alternatives in School Lunchrooms", conducted by Hanks, Just, and Wansink (2012), examined how different side dishes in a lunch line trigger the selection of starchy foods or competitive foods. A trigger food was defined as a food that could increase or decrease the selection of other foods available. Trigger foods could have led students to subconsciously decide whether or not to choose a fruit, vegetable, or sugary snack with their lunches. The objective was to examine how the availability of specific side dishes in the school cafeteria influenced the selection of competitive foods such as starchy sides. Competitive foods included cookies, ice cream, and snack foods. Purchase data was examined at two schools in upstate New York.

Trained assistants were sent to the schools to measure waste on the students' trays and determine whether the starchy foods, fruits, or vegetables were completely eaten, half eaten, or not eaten. Results showed that the availability of sides did determine the amount of starchy foods selected. Certain sides (such as, tomato soup) increased the amount of fruits and vegetables selected; whereas, other sides (such as green beans) decreased the amount of fruits and vegetables selected, but increased the amount of starchy foods and snack foods selected. This study identified that there are both positive and negative trigger foods (Hanks, Just, and Wansink, 2012). Food service directors may better understand what caused individuals to choose a fruit or vegetable over a starchy or sweet food item by realizing that food options may trigger a subconscious response to a healthy or unhealthy item.

Numerous studies have shown that visibility of foods increased the student's choice of those items. Instead of drastically changing food items in the lunchroom, schools can simply rearrange the choices to make the healthier choices more accessible. A study performed by Hanks et al. (2012) looked at making healthy foods more convenient over the unhealthier choices. In a high school cafeteria, a convenience line was made that contained only healthy food options. Over a 16 week period, the first eight weeks served as the control period and the second eight weeks had two lunch lines: the convenience line with the healthy food choices and the line with the unhealthier options. Results showed that, by offering more convenient healthy food, sales of healthy food options increased while unhealthy food items consumed decreased by 28 percent.

In another study, simply closing the lid to the ice cream freezer decreased the number of ice creams chosen from 30 percent to 14 percent. Similar results may be obtained by moving vending machines to the back of the lunchroom (Hanks et al., 2012). Looking at numerous schools across the United States, one school moved the fruit near the cash register which increased fruit sales and consumption due to impulse buys (Just and Wansink, 2009). This reduced the sales of unhealthy snacks that were previously placed near the cash registers. Another school moved a salad bar from the side of the cafeteria to the middle of the cafeteria where all of the students purchasing lunch from the cafeteria passed by it. This increased salad sales and profitability. A summer 4-H program at Cornell gave junior high participants the option to choose a vegetable. This study showed that giving students the option between two vegetables increased consumption of vegetables (Just and Wansink, 2009). The locational and logistical differences could all be options for school lunchrooms to encourage healthier eating habits for students.

In an effort to reduce selection based on convenience or trigger foods, some schools have implemented preordering lunches. Preordering of school lunches has been used to help school children choose a healthier entrée in the lunchroom. This omitted sensory cues that could have caused the children to order the unhealthy choices based on smell and sight. Hanks, Just, and Wansink (2013) used an electronic preordering system in two elementary schools in New York. In this study, grades 1$^{st}$ through 5$^{th}$ were evaluated between 14 classrooms within a four week period. The 14 classrooms were randomly assigned to one of three preordering conditions. In the first two weeks, all classrooms preordered as normal. In the second two weeks, five classrooms continued to preorder and five classrooms stopped preordering. Four classrooms stopped preordering in week three and then began preordering again in week four (Hanks, Just, and Wansink, 2013).

Data was recorded on which daily entrée choice was chosen by grade, classroom, school, and student. Entrées were either coded as healthy or unhealthy. This data was analyzed using a mixed-effects logistics model in Stata 12. The results showed that students who preordered their lunches were more likely to choose a healthier lunch. When students did not preorder and chose their lunch while in the lunch line, the students were more apt to choosing an unhealthy lunch (Hanks, Just, and Wansink, 2013). Preordering can prompt students to choose a healthier entrée when not influenced by the aromas and sights of the unhealthier choices.

The aforementioned literature was expanded upon for this study. This research combines the works of Hanks, Just, and Wansink (2013) and Ellison, Lusk, and Davis (2013). However, where the previous literature had a treatment group that stopped preordering their lunches and just ordered their lunches when they got to the lunch room, the elementary school children, in Canyon, Texas, continue preordering throughout the research. This research also differs from Hanks, Just, and Wansink (2013) in affordability. Whereas their study used iPads, this study evaluates very affordable preordering methods. The current study, at Crestview Elementary in Canyon, Texas, varied from Ellison, Lusk, and Davis (2013) by only providing the colored label to the lunch menu instead of also including the caloric information. Caloric information was not provided to children because numeric information is not as easily understood by children as color coded information. This research is aimed at using the information in the nutritional labeling with the preordering method to impact entrée choice in a cost effective manner.

## CHAPTER III

## DATA AND METHODS

Currently, Canyon Independent School District (CISD) utilizes a menu labeling system, which communicates nutritional information to children and parents through a monthly calendar. Each day lists the entrée choices, followed by a small green, yellow, or red dot indicating "Go", "Slow", or "Whoa" respectively.  Daily choice sets include a minimum of one green and one yellow entrée choice.  Items with a green dot beside them are healthy food options and are labeled "Go", those with a yellow dot are considered "Slow", and should be consumed in moderation; while entrées labeled with a red dot are considered "Whoa", as these foods contain higher levels of calories from grams of fat.

Crestview Elementary is one of eight elementary schools in CISD; however, it is one of only two elementary schools located in the city of Canyon, Texas.  With a population of 13,857, Canyon is comprised of primarily White, non-Hispanic, residents at 77.1 percent followed by Hispanic residents at 17.3 percent and non-Hispanic, black, at 2.3 percent (Texas Association of Counties, 2014).

Home to an average of 525 students, Crestview Elementary accommodates kindergarten through 4$^{th}$ grade, with approximately five classes per grade level.  The average class size is 21 students.  This study assessed 25 classrooms over a 14 week time period.  All classes in grades kindergarten through 4th were included in the study.  On average, 47 percent of the students purchase their lunches from the cafeteria daily.  In 2nd grade, 40 percent purchase a school lunch on average, while over 55 percent of 3rd grade students purchase a school lunch (summary statistics are presented in table 1).  Each classroom was assigned one of four low cost preorder treatments.  During the 14 week period, data was collected regarding student identifiers (gender and grade), preorder entrée choice, and self-reported lunch room choices (food journal entries).

Sixty-six observational days were included in the study period.  Negatively numbered days (day -42 through day 0) are indicative of the control (no nutritional information present), while positively numbered days (day 1 through day 23) are representative of nutritional labeling present in the preordering systems.  A presentation regarding nutritional labeling and the associated nutritional information communicated by the labels was presented on day zero to all students.  Each grade level was assigned a treatment, which were reflective of grade level ability.  The following paragraphs discuss each treatment, along with an explanation of the nutritional labeling modifications.

*Treatment 1, Magnetic Whiteboard*

The magnetic whiteboard was representative of a mid-cost method.  This treatment was user friendly to younger age groups and was implemented in 1st grade classrooms.  The magnetic whiteboard listed the students' names on the left-hand side of the board with the daily lunch choices across the top (figure 1).  Each student was required to place a magnet under the entrée choice for the day next to his or her name.  During the first nine weeks, all of the students were given a single blue magnet.

*Nutritional Labeling:* During the second phase of the study, information from nutritional labeling was applied to the magnetic whiteboards. Each student was given a red, yellow, and green magnet. If the student packed his or her lunch, then he or she continued to use the blue magnet. Entrée choices were color coded by the nutritional label color for the entrée it represented on a given day (figure 2). Each student individually moved his or her magnet (of corresponding color) to the entrée choice selected. For example, if a yellow entrée was selected, then the students would move their yellow magnet to that entrée box.

*Treatment 2, Box System*

Adolescents can be highly influenced by choices of their peers; therefore, anonymity in entrée selection was included in treatment two. The box system was implemented in 2$^{nd}$ grade. Each 2$^{nd}$ grade classroom was equipped with five small voting boxes. Each student was given a token with his or her name on it, and the token was kept at the front of the classroom alongside the voting boxes. The entrée choices were listed on the top of each box for the day (figure 3). Each student individually placed his or her token into the box for the entrée he or she had chosen that morning. For the first nine weeks, no nutritional information was provided.

*Nutritional Labeling:* For the subsequent five weeks, each voting box was color coded by the nutritional labeling color for the entrée it represented each day. Every student was given four individually identified tokens (one: red, yellow, green, and purple) (figure 4). Each day, students individually placed their token in the box of the entrée selected.

*Treatment 3, Clip Treatment*

Implemented in both kindergarten and 3rd grade, each student had an individually labeled clothespin, and would move the clothespin to his or her entrée selection. The choices were listed, with no nutritional labeling, vertically on a poster board for ease and convenience (figure 5).

*Nutritional Labeling:* For the last five weeks, each lunch choice was color coded to match the nutritional labeling color for the entrée it represented (figure 6). As before, the students placed their clothespins on the lunch entrées they selected for that day.

*Treatment 4, Recording Sheet Table (RST)*

Arguably the lowest cost system analyzed, the recording sheet table was a daily recording sheet where students' names were listed along the left-hand side and the daily entrée choices were listed across the top of the table, and was implemented in 4th grade (figure 7). Each student individually marked his or her choice using a black marker. As noted before, during the first nine weeks, no nutritional labeling or distinctive color was present.

*Nutritional Labeling:* For the subsequent five weeks, the recording sheet table was altered to match the nutritional labels for the entrées on a given day. When each student made his or her food choice, he or she would choose a red, yellow, or green marker to correspond with the nutritional labeling color of the entrée he or she selected. On the recording sheet table, the choices were color coded with red, yellow, or green stickers next to the lunch choice (figure 8). For example, the pepperoni pizza column had a yellow dot next to the description, and each student choosing pepperoni pizza used the yellow marker to 'check' the pizza column on his or her row.

It is important to note that although students are asked to preorder their lunch entrées, CISD allows students to alter their preorder choices while going through the lunch line. Data collection of actual choices made in the lunch room was merited due to the fact that children could alter their choices. Therefore, the following description outlines the post-lunch data collection method and procedure.

*Food Journals*

All students were provided with a journal to document their daily entrée choices. Although self-reported data is not ideal, daily lunchroom observational data was not feasible due to the strict time schedule of the school. The food journals were beneficial to both parties (researcher and teachers) as they provided daily entrée information and also aided educational objectives in writing and communication skill sets. After lunch, each student recorded what he or she had for lunch. In an effort to validate the food journal information, a graduate student, from West Texas University, stood in the lunch line with a student roster and documented what the students selected in the lunch line. The graduate student collected 672 observations in the lunch line. Food journals were collected weekly, and food journal entries were then cross-checked with the days where lunchroom data was collected. Of the cross-checked days, 99.4 percent of the students accurately self-reported entrée chosen. This result gives validity and confidence to the self-reported food journal data.

*Nutritional Orientation*

Prior to the introduction of the colored nutritional labeling system, it was imperative the students understand the nutritional meaning of the labels. During the physical education class on day zero, the nutritional administrator of CISD gave a presentation on healthy eating and provided information regarding the colors on the lunch menu. This ensured each student received consistent, accurate information prior to implementation of nutritional labels.

Over the study period, data was collected on 66 days, resulting in 10,465 observations. During the study, 66.7 percent of the days offered two or more green (Go) choices, while 81.8 percent of the days offered two or more yellow (Slow) choices. Red (Whoa) choices were only offered on six days (nine percent). The maximum number of lunches sold occurred on day 10 with 298 students eating the school cafeteria entrées. The minimum number of lunches sold occurred on day -42 where 170 students ate in the school cafeteria. Over the 66 day study, identical entrée choice sets were present on 38 days, thus resulting in 14 sets of days with identical entrées. A set is defined as days which offered the same lunch menu items. For example, day -42, day -18, and day 7 each offered chicken and veggie pasta, country steak with mashed potatoes, ham and cheese sub, and Baja chicken fajita salad. The data collected was analyzed using Statistical Analysis Software (SAS) 9.3 (2011).

*Chi-square*

The sets of days with identical entrée choice sets were analyzed using chi-square tests of frequency distributions. This helped to determine if there was a change in entrée selection distribution after implementation of nutritional labeling. The chi-square tests provide tests of homogeneity or independence, depending on the data being analyzed. In this study, observations were analyzed, before and after the nutritional labeling, in order to determine if the nutritional labeling impacted entrée selection. To obtain an accurate account of this impact, the days with the same set of entrée choices presented were analyzed. The chi-square equation used is represented in equation one.

$$(1)\ Q^p = \sum_{i=1}^{C} \left( \frac{(f_i - e_i)^2}{e_i} \right)$$

Four entrée choices were available for lunch each day. This was represented by *C*. Each entrée choice was counted in order to determine how many students preordered each lunch option. This number was represented by $f_i$. The variable $e_i$ was the expected frequency. Analyzed by grade then across the school, the chi-square test was used to determine if there was a difference in the sets of days that offered the same entrée choices.

*Probit Model*

Recommended for variables that are binary and ordinal, the probit model was used to compute the maximum likelihood estimates of regression limitations (SAS Institute Inc., 2008). In this research, ordinal variables were analyzed as there were four choices from which students can pick. The choices were also organized based on color from healthy (green=1), moderately healthy (yellow=2), and unhealthy (red=3). The index used for the probit model is represented in equation two.

$$(2)\ y_i^* = x'\beta + u_i$$

$$\text{where } y_i = j \text{ if } \alpha_{j-1} < y_i^* \leq \alpha_j.$$

In this index model, $y^*$ is indicative of the dependent variable. The dependent variables are the red, yellow, and green entrées. The star (*) indicates that the variable is only observed when crossing the threshold. For example, this study cannot measure how a student is feeling when he or she chooses a red, yellow, or green entrée, therefore, only the entrée can be measured. The population parameters are denoted by β. In this model, *u* is indicative of the population mean. The threshold is where the students make their decisions of choosing a red, yellow, or green lunch item, which is represented by α. For example, a student may choose a green entrée until he or she crosses the threshold and that green entrée may then be a yellow entrée. Since the students have three categories of lunch entrées, this equation will have two intercepts. The intercepts are represented by $j-1$. In this model, probability needs to be considered since the nutritional labeling colors appear a different percentage each day. For example, there may be a day where there are 50 percent yellow choices, 50 percent green choices, and no red choices available. The probability the observation *i* (the student) will select alternative *j* (the entrée choice) is shown in equation three.

$$(3)\ p_{ij} = p(\alpha_{j-1} < y_i^* \leq \alpha_j)$$

The ordered choice model is recognized by the multiple intercepts. The probability is represented by *p*. Each grade was analyzed to determine if there was statistical significance in what was being preordered in the classroom. As each grade had its own treatment, each treatment is also analyzed. The effect of the nutritional labeling is analyzed using the probit model. Descriptions of all independent variables examined are defined in table 2. Overall, the chi-square tests were used to analyze data gathered in this study to determine if changes occurred in entrée selection after nutritional labels were introduced on days where students had the same entrée choices available to determine the effect of nutritional labels.

# CHAPTER IV

# RESULTS

Over the 66 days, there are 14 sets of days where entrée choices were identical. There were two sets of days where one red, one yellow, and two green labeled choices are offered, nine sets offered 50 percent yellow choices and 50 percent green, and two sets which contain three green labeled entrées and one yellow labeled entrée. The remaining set offered three yellow entrées and one green entrée. Of the 14 sets analyzed, only 21 percent yielded a statistically significant difference in entrée selection after nutritional labeling was presented. Examination by grade level yielded a slightly higher difference as eight sets yielded significant differences in entrée selection subsequent to presenting nutritional labeling.

Across all grades, set one, 12, and 13 yielded significant differences. Set one increased in green entrée selection by approximately three percent, whereas red entrées decreased by about five percent (table 3). Yellow entrées decreased from day -42 to day -18; however, after nutritional labels were introduced yellow entrée selection increased by two percent.

In set 12, 75 percent of the choices offered are green entrées. During the control period, green entrées increased by six percent. When comparing green entrées overall, selection of green entrées decreased from 91.8 percent to 87 percent after nutritional labeling was presented, while selection of yellow entrées increased by four percent (table 14). Within set 13, there are 50 percent yellow entrées and 50 percent green entrées available to students. Green entrée choice selection increased by over five percent and yellow entrée selection decreased by five percent (table 15).

Examination of the nine choice sets with 50 percent yellow entrées and 50 percent green entrées yielded only 33 percent where a significant difference was observed. Those sets included set two, 10, and 13. After analyzing all nine sets combined, there was an overall decrease in yellow entrées ordered by over five percent. Nutritional labels did encourage students to choose healthier entrées.

When analyzing choice sets by grade, the power of the results decreases as there are not as many students per grade level purchasing a school lunch when compared to the entire school. Again, there are eight sets of days with significance. In the first set of identical entrées, grades 1st and 4th show significant differences between the days before and after labeling (table 17). In 1st grade, red entrée selection increased during the control period and then decreased after nutritional labeling was introduced. Fourth grade yielded an decrease in red entrée selections by one percent and a decrease in yellow entrée selections by two percent, while the selection of the green entrée choice increased from day -18 to day 7 by 3.8 percent. In set two, a significant difference was observed in 3rd grade after nutritional labeling was presented, as the salad entrée increased from 2 percent to 17.1 percent (table 18), while the number of yellow entrées selected decreased from 98.1 percent to 81.5 percent.

Set four yielded differences in 4th grade as students increased red entrée selection by 14.2 percent from day -15 to day 10 (table 20). Yellow entrée selections decreased by approximately 18 percent during the control period. After the nutritional labeling modifications, yellow entrée selection decreased by 14 percent.

In set six, kindergarteners increased their selection of yellow labeled entrées from day -13 to day 12 by 24.4 percent, while 4th graders increased their selection of green labeled entrées by 10.3 percent and decreased their selection of yellow labeled entrées by 10 percent (table 22). Set eight yielded differences in both kindergarten and 3rd grade. Kindergarten increased their selection of yellow entrées from 77.8 percent to 82.5 percent, while green entrées decreased by five percent (table 24). In 3rd grade, yellow entrée selection increased from 98.6 percent to 100 percent, while green entrées decreased to zero percent. Set nine yielded differences in both kindergarten and 1st grade (table 25). Kindergarten increased their selection of yellow labeled entrées by five percent. Meanwhile, they decreased their selection of green entrées from six percent to over one percent. In 1st grade, there was a decrease in yellow entrées selected and an increase in green entrées selected by five percent.

Set 12 and 14 have significant differences noted in kindergarten. Set 12 decreased in green entrée choices being chosen by approximately eight percent (table 28). Yellow labeled entrées decreased from 51.4 percent on day -27 to 3 percent on day -2. This is an indication that the students were trying to figure out what they liked to eat in the cafeteria. There is an increase of yellow entrées selected on day 23 of 7 percent compared to day -2 after the nutritional labeling was present. It is important to note that set 12 offered three green entrées and only one yellow entrée.

Set 14 showed an increase in the second yellow entrée choice (table 30); however, overall, kindergarten showed that yellow entrées decreased by one percent. In set 14, entrée choices labeled green increased by approximately one percent. Appendix A displays a side by side comparison of each grade and the entire school of the days where entrée choices were identical.

The results of the probit model showed a minimal behavior response to the preordering methods and the nutritional labeling (table 31). The model results indicate that several variables such as age, gender, and time from nutritional orientation are not impactful on entrée selection; however, the number of green, yellow, and red choices is statistically significant. As the number of green choices increased, students were less likely to choose a red or yellow labeled entrée. If the school offers more green entrées, then students are more likely to choose a green entrée. The likelihood of students making a yellow entrée selection tended to increase as yellow options became available. During this study, all 66 days offered at least one yellow entrée daily. The number of red entrées showed a likelihood of students selecting a red entrée, although red entrées were only available nine percent of the time during this study.

Overall, there is minimal behavioral response to coupling nutritional labeling with low-cost preorder methods. However, there are observations of students changing their lunch entrée choices. Some students improved their dietary habits by preordering yellow labeled entrées instead of red labeled entrées, while others made improvements to their nutrition by preordering more green entrées rather than yellow. Is the behavior modification of a few students enough to justify schools coupling nutritional labeling with preorder methods? Further research is needed to adequately address the aforementioned question. In the next chapter, an estimate of each treatment's cost is presented, followed by discussion and conclusion.

# CHAPTER V

# COST ANALYSIS

A low-cost preordering method is beneficial to a large percentage of schools, as it not only aids in minimizing waste in the lunchroom, but it also provides a way to educate children about healthy eating. As school districts continue to face budget challenges, finding low-cost preordering systems is imperative. Although electronic preordering systems are extremely efficient and have yielded positive results, not all schools are able to afford systems such as iPads or smartboards. The average cost for a smartboard is approximately $5,000 per classroom while iPads are approximately $600 per classroom (Smartboards.com, 2015; Apple Inc., 2015). These preordering systems are far more expensive than the ones examined in this study.

The cost of the four preordering systems examined in this study range from $43 to $276 per classroom, with the recording sheet table, being the least expensive and magnetic whiteboard, being the most. In this chapter, the alternative preorder methods are examined from a monetary cost and time perspective. Initial set up time range from three minutes for the clip treatment to an hour and fifteen minutes for the box system. Daily time required to change each treatment ranges from 20 seconds to two minutes and

45 seconds. The recording sheet table takes the least amount of time change daily, while the clip treatment takes the longest to change daily.

When looking at all four treatments, the magnetic whiteboard treatment is the most expensive at $276.13 per classroom. The initial set up costs are largely comprised of the magnets and board (table 32). The magnetic whiteboard treatment takes approximately 15 minutes for the initial setup; however, once the treatment is setup, it only takes approximately one minute and 20 seconds to change daily entrée choice set with no nutritional labeling, and one minute and 30 seconds with the addition of labels. Although the most expensive, this treatment does have added benefits. At the onset of the study, student classroom assignments changed (to create a balanced distribution across all classrooms), and this treatment required little adjustment. Teachers simply add or remove students from the whiteboard. The flexibility provided by this treatment is welcomed by teachers as it does not prove to be an additional burden on their time. Despite these advantages, the magnetic whiteboard treatment requires the most time for initial set up due to using the art tape to create a grid pattern on the whiteboard and it costs the most per classroom out of the four treatments examined.

When examining the remaining three treatments, the cost comparison shows a range of only five dollars. The clip treatment is the most expensive of these three with a cost of $48.13 per classroom (table 33). This is largely comprised of the card stock paper and the vinyl ($25.53). Cut to fit six pieces (the top piece has the teacher's information followed by a piece for each lunch entrée including lunch boxes), the vinyl is key to durability for this treatment. From a time perspective, the majority of set up time is allotted to identifying each clothespin with student names. From a daily time perspective, approximately two minutes are needed when no nutritional information is present, while two minutes and 45 seconds are needed to present nutritional labeling. One disadvantage to this treatment is finding adequate space on a wall or cabinet to accommodate the vinyl. Overall, the clip treatment provides many advantages, such as minimal time and monetary requirements, for the teachers, as long as space permits.

The box system treatment comes in second in terms of the lowest cost out of the three comparable treatments examined. The box system follows close behind the clip treatment with a per classroom cost of $45.86 (table 34). The most expensive items needed for this treatment include the tape used in the label maker and the tokens. When examining initial setup time for this treatment, it is the most time consuming, taking an hour and 15 minutes to initially setup. Depending on the data collection, individual identification of each chip is unnecessary, and would save the teacher six minutes for a 23 student classroom. However, if a teacher is using this treatment every day, the teacher may want to put the students' names on each chip, which would increase the additional setup time required. Each chip takes about 15 seconds to label. When changing the daily lunch entrée choices without nutritional labeling, teachers will spend about one minute and fifteen seconds, versus one minute thirty seconds with nutritional labeling. Advantageous as it is relatively inexpensive, the box system also is user friendly for teachers. If teachers do not label the individual chips with student names, then this treatment also provides flexibility as students are added to or removed from a classroom. Furthermore, this treatment gives students the chance to choose a healthy lunch entrée without the influence of their friends, as this is the only anonymous treatment. One disadvantage of this treatment is the difficulty of initial set up. Boxes purchased for use had to be modified in the following two ways. First, a slit had to be cut into the tops of the boxes using a drill and a craft knife; secondly, the bottom of the clear boxes had to be wrapped in duck tape so the tokens could not be seen. Overall, the box system is far less costly than the magnetic whiteboard; however, it is time consuming.

Lastly, the least expensive treatment is the recording sheet table at $43.39 per classroom (table 35). Not only is this treatment the lowest cost, but also has minimal set up time. The initial setup time for the recording sheet table is approximately four minutes, and daily adjustments require approximately seven seconds changing out for the next day, as the sheets are preprinted with entrée choice. Once nutritional labels are added, this treatment takes approximately 20 seconds to change for the next day, due to the placement of the colored stickers of red, yellow, or green next to the entrée choice.

Convenience is an advantage of the recording sheet treatment as the daily sheets are preprinted with entrée choice set for an extended time period. However, this treatment is not as flexible for the adjustment of students in the classroom and it is advised that blanks be placed at the bottom of the sheet if a student should be added. Overall, the recording sheet table is the lowest cost system examined and has the lowest daily change out time, but is also less flexible for adjustments to classroom role.

In this study, the least expensive preordering system is the recording sheet table treatment, and the most expensive preordering system is the magnetic whiteboard treatment. Although the recording sheet tables are the least costly, the box system and the clip treatment costs only five dollars more, making them just as feasible from a monetary standpoint. The two most time consuming treatments include box system and the magnetic whiteboards, and the clip treatment takes the least amount of time to setup initially; however, the recording sheet tables take the least amount of time for the teachers to change out on a daily basis. Overall, these treatments provide low-cost preorder entrée systems which could easily be implemented and incorporated in the classroom. Although the presence of nutritional labeling provides little adjustment to student entrée choice, the addition comes at a relatively minimal cost, and could have the potential to positively impact students' knowledge of nutrition and the associated impact food choices have on their health.

# CHAPTER VI

# DISCUSSION AND CONCLUSION

Advantageous changes were observed within the study, although somewhat minimal. Students made improvements in their entrée selection by shifting preordering selections from red to yellow entrées, yellow to green entrées, or red to green entrées. In this study, students were observed for 66 days and results could be expanded and built upon in a variety of ways.

Over the 14 entrée sets analyzed, the percentage of green entrées selected increased 43 percent of the time. Red entrée selection decreased by seven percent after the presentation of nutritional labels. There were three sets of days which showed no change in preordered choices after nutritional labeling was in place.

Results from the probit model showed that the more green labeled entrées are offered, then the probability of selecting a yellow or red entrée decreases. The model also indicates that when more yellow and red entrées are offered the probability of a student selecting a yellow or red entrée will increase. Had more red choices been offered, the study would have been more successful at determining the impact of the nutritional labeling. However, in the interest of the health of the students, red entrées are not offered in excess. According to the nutritional specialist at Crestview Elementary, some entrées that would historically have been labeled red are actually labeled yellow because they are made with healthier ingredients. For example, hotdogs would normally be labeled red; however, the hotdogs are actually made from turkey, which is a leaner meat and the buns are wheat buns (K. Robinson, personal communication, October 23, 2014). These types of changes provide healthier benefits to the students.

*Limitations*

There are ways which this study could be expanded; however, there were limitations that discouraged some of these expansions. One option would be for researchers to follow the students throughout their elementary school careers. The older grade levels, such as 3rd and 4th grades, already have an idea of what they do and do not like to eat in school cafeterias. However, the younger grade levels are still learning what they like and dislike in the cafeteria. Following the current students at Crestview Elementary throughout their elementary school careers would provide more data on how nutritional labels influence children's food selections. Younger grades may choose more green or yellow entrée choices and less red entrées as they progress through elementary school since they have been introduced to the nutritional labeling of the lunch menu at an early age.

An improvement to the research process could have been placing each treatment within each grade. In this study, each grade had its own treatment with the exception of kindergarten and 3rd grades, which had the same treatment. For example, 2nd grade has five classes. Each class in 2nd grade would have a different preorder treatment. Implementing various treatments throughout the school would provide a better assessment of which treatments could be more effective in each grade level. Furthermore, the inclusion of a control within each grade level would have been beneficial. Having a control group in each grade would have enabled the researchers to determine if seasonality played a role in what students were preordering for lunch.

*Conclusion*

Children make decisions regarding nutrition every day. Parents are trying to teach their children to eat healthy because poor eating habits at a young age could lead to health challenges and a lower quality of life. Improving the nutritional quality of the American diet has become a national health priority due to the obesity epidemic, as evident by the upgrades to the Food Guide Pyramid and changes to the National School Lunch Program (Burton, et al., 2006). In an effort to provide healthier meals for the students in schools, the school community (parents, teachers, and administrators) is focusing on helping students make healthy choices.

To help schools create more nutritious meals for their students, administrators must make it a priority to research cost effective preorder methods in schools. If the children in America are taught at a young age to eat nutritious foods, then they may potentially make healthier choices to lower their chances of becoming obese, which could lead to increased health risk.

Although the study at Crestview Elementary yields minimal significant differences when comparing the grades, it does demonstrate that some students have started choosing healthier options. If the presence of nutritional labeling can change students from consuming entrées that are labeled yellow or red to increasing their intake of entrées that are labeled green, then nutritional labeling is a step students are taking to improve their eating habits. Nutritional labels come with little or no additional costs, provide beneficial information for students, and influence students to make more positive entrée choices. Implementing low cost preorder methods with nutritional labels in schools may aid students in choosing healthier entrées.

Further research is needed to adequately assess how nutritional labeling can positively influence a student's daily entrée choice at school. Future research may examine multiple schools and/or multiple school districts. Different school districts may have different varieties of students which could influence lunch entrée selection. Although a profound increase in healthy entrée selection is not observed, positive differences noted make the presence of nutritional labels worthwhile.

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Table 1. Summary Statistics

| Grade | K | $1^{st}$ | $2^{nd}$ | $3^{rd}$ | $4^{th}$ | Total |
|---|---|---|---|---|---|---|
| Males | 51 | 52 | 58 | 58 | 56 | 275 |
| Females | 40 | 50 | 53 | 55 | 49 | 247 |
| Average class size | 18 | 21 | 22 | 23 | 21 | 21 |
| Total number of students | 91 | 102 | 111 | 113 | 105 | 522 |
| Average percent purchasing a school lunch | 46% | 44% | 40% | 55% | 49% | 47% |

Table 2. Description of Independent Variables

| Abbreviation | Definition |
|---|---|
| *labeling* | Indicates if nutritional labeling was present |
| *M* | Male, to determine if gender had an effect on lunch choices |
| *age* | The age of the students |
| *magnetic* | The magnetic whiteboard treatment |
| *anonymous* | The box system treatment |
| *cliptrt* | The clip treatment |
| *time* | Days from the nutritional labeling orientation |
| *numberofgreen* | Number of green entrée choices offered |
| *numberofyellow* | Number of yellow entrée choices offered |
| *numberofred* | Number of red entrée choices offered |

Table 3. Entrée Choice across all Grades, Set 1**

| Day | | -42 | -18 | 7 |
|---|---|---|---|---|
| Green[1,2] | # | 22 | 16 | 19 |
| | % | (12.9) | (7.6) | (8.4) |
| Red | # | 98 | 158 | 159 |
| | % | (57.7) | (75.2) | (70.4) |
| Yellow | # | 35 | 24 | 31 |
| | % | (20.6) | (11.4) | (13.7) |
| Green | # | 15 | 12 | 17 |
| | % | (8.8) | (5.7) | (7.5) |

[1]Choice Set = Green: Chicken and Veggie Pasta, Red: Country Steak with Mashed Potatoes and Country Gravy, Yellow: Ham and Cheese Sub, Green: Baja Chicken Fajita Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 4. Entrée Choice across all Grades, Set 2

| Day | | -41 | -17 | 8 |
|---|---|---|---|---|
| Yellow[1,2] | # | 9 | 18 | 24 |
| | % | (4.8) | (7.8) | (8.8) |
| Yellow | # | 160 | 196 | 214 |
| | % | (84.7) | (85.2) | (78.7) |
| Green | # | 2 | 3 | 3 |
| | % | (1.1) | (1.3) | (1.1) |
| Green | # | 18 | 13 | 31 |
| | % | (9.5) | (5.7) | (11.4) |

[1]Choice Set = Yellow: Philly Cheesteak, Yellow: Corn Dog, Green: Roasted Veggie Wrap, Green: Chicken Nacho Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 5. Entrée Choice across all Grades, Set 3

| Day | | -40 | -16 | 9 |
|---|---|---|---|---|
| Yellow[1,2] | # | 25 | 24 | 34 |
| | % | (10.9) | (11.2) | (11.9) |
| Green | # | 181 | 175 | 228 |
| | % | (79.0) | (81.8) | (79.4) |
| Green | # | 5 | 1 | 2 |
| | % | (2.2) | (0.5) | (0.7) |
| Green | # | 18 | 14 | 23 |
| | % | (7.9) | (6.5) | (8.0) |

[1]Choice Set = Yellow: Chicken Quesadilla, Green: Popcorn Chicken, Green: Chicken Salad Sub, Green: Fruit Yogurt Cheese Plate.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 6. Entrée Choice across all Grades, Set 4

| Day | | -39 | -15 | 10 |
|---|---|---|---|---|
| Red[1,2] | # | 34 | 53 | 62 |
| | % | (15.7) | (20.2) | (20.8) |
| Yellow | # | 176 | 201 | 221 |
| | % | (81.5) | (76.7) | (74.2) |
| Green | # | 2 | 2 | 7 |
| | % | (0.9) | (0.8) | (2.4) |
| Green | # | 4 | 6 | 6 |
| | % | (1.9) | (2.3) | (2.7) |

[1]Choice Set = Red: Bacon and Cheese Baked Potato, Yellow: Chicken Nuggets, Green: Turkey and Cheese Wrap, Green: Chicken Caesar Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 7. Entrée Choice across all Grades, Set 5

| Day | | -37 | -12 | 13 |
|---|---|---|---|---|
| Yellow[1,2] | # | 55 | 47 | 51 |
| | % | (24.0) | (16.5) | (18) |
| Yellow | # | 166 | 214 | 213 |
| | % | (72.5) | (75.1) | (75) |
| Green | # | 2 | 4 | 3 |
| | % | (0.9) | (1.4) | (1.1) |
| Green | # | 6 | 20 | 17 |
| | % | (2.6) | (7) | (6) |

[1]Choice Set = Yellow: Cheeseburger Snack, Yellow: Chicken Nuggets, Green: Ham and Cheese Wrap, Green: Popcorn Chicken Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 8. Entrée Choice across all Grades, Set 6

| Day | | -13 | 12 |
|---|---|---|---|
| Yellow[1,2] | # | 79 | 87 |
| | % | (35.8) | (38.2) |
| Yellow | # | 108 | 114 |
| | % | (48.9) | (50) |
| Green | # | 17 | 19 |
| | % | (7.7) | (8.3) |
| Green | # | 17 | 8 |
| | % | (7.7) | (3.5) |

[1]Choice Set = Yellow: Cheese Ravioli, Yellow: BBQ Pork Riblet Sandwich, Green: Chicken and Cheddar Wrap, Green: Tuna Salad with Carrots and Celery.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 9. Entrée Choice across all Grades, Set 7

| Day | | -34 | 16 |
|---|---|---|---|
| Yellow[1,2] | # | 15 | 17 |
| | % | (6) | (6.5) |
| Yellow | # | 219 | 231 |
| | % | (87.6) | (88.9) |
| Green | # | 6 | 5 |
| | % | (2.4) | (1.9) |
| Green | # | 10 | 7 |
| | % | (4) | (2.7) |

[1]Choice Set = Yellow: Chili Mac, Yellow: Cheese Pizza, Green: Santa Fe Turkey Wrap, Green: Buffalo Chicken Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 10. Entrée Choice across all Grades, Set 8

| Day | | -33 | -8 | 17 |
|---|---|---|---|---|
| Yellow[1,2] | # | 39 | 43 | 45 |
| | % | (21.3) | (16.8) | (17.7) |
| Yellow | # | 128 | 193 | 192 |
| | % | (70) | (75.4) | (75.6) |
| Green | # | 5 | 4 | 3 |
| | % | (2.7) | (1.6) | (1.2) |
| Green | # | 11 | 16 | 14 |
| | % | (6) | (6.3) | (5.5) |

[1]Choice Set = Yellow: Chicken Parmesan with Spaghetti, Yellow: Hamburger/Cheeseburger, Green: Turkey and Cheese Wrap, Green: Fruit Yogurt Cheese Plate.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 11. Entrée Choice across all Grades, Set 9

| Day | | -32 | -7 | 18 |
|---|---|---|---|---|
| Yellow[1,2] | # | 130 | 122 | 136 |
| | % | (50.4) | (42.8) | (49.3) |
| Yellow | # | 123 | 156 | 134 |
| | % | (47.7) | (54.7) | (48.6) |
| Green | # | 1 | 2 | 3 |
| | % | (0.4) | (0.7) | (1.1) |
| Green | # | 4 | 5 | 3 |
| | % | (1.6) | (1.8) | (1.1) |

[1]Choice Set = Yellow: Pizza Sticks with Marinara, Yellow: Chicken Nuggets, Green: Chicken Salad Sub, Green: Turkey and Cheese Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 12. Entrée Choice across all Grades, Set 10

| Day | | -30 | -5 | 20 |
|---|---|---|---|---|
| Yellow[1,2] | # | 26 | 27 | 19 |
| | % | (11.4) | (10.6) | (7.2) |
| Yellow | # | 194 | 221 | 231 |
| | % | (84.7) | (86.7) | (87.5) |
| Green | # | 2 | 2 | 1 |
| | % | (0.9) | (0.8) | (0.4) |
| Green | # | 7 | 5 | 13 |
| | % | (3.1) | (2) | (4.9) |

[1]Choice Set = Yellow: Orange Chicken and Broccoli with Veggie Rice, Yellow: Hot Dog on a Bun, Green: Roasted Veggie Wrap, Green: Baja Chicken Fajita Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 13. Entrée Choice across all Grades, Set 11

| Day | | -28 | -3 | 22 |
|---|---|---|---|---|
| Yellow[1,2] | # | 60 | 57 | 60 |
| | % | (30.6) | (25.2) | (27) |
| Yellow | # | 99 | 142 | 132 |
| | % | (50.5) | (62.8) | (59.5) |
| Yellow | # | 16 | 15 | 12 |
| | % | (8.2) | (6.6) | (5.4) |
| Green | # | 21 | 12 | 18 |
| | % | (10.7) | (5.3) | (8.1) |

[1]Choice Set = Yellow: Chicken Pot Pie, Yellow: Meatball Pizza Sub, Yellow: Ham and Cheese Sub, Green: Chicken Salad with Celery and Carrots.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 14. Entrée Choice across all Grades, Set 12**

| Day | | -27 | -2 | 23 |
|---|---|---|---|---|
| Yellow[1,2] | # | 32 | 19 | 34 |
| | % | (14.6) | (8.2) | (13) |
| Green | # | 128 | 163 | 152 |
| | % | (58.2) | (70.6) | (58) |
| Green | # | 10 | 6 | 4 |
| | % | (4.6) | (2.6) | (1.5) |
| Green | # | 50 | 43 | 72 |
| | % | (22.7) | (18.6) | (27.5) |

[1]Choice Set = Yellow: Chili Con Carne, Green: Chicken Sandwich, Green: Turkey and Cheese Wrap, Green: Popcorn Chicken Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 15. Entrée Choice across all Grades, Set 13**

| Day | | -23 | 2 |
|---|---|---|---|
| Yellow[1,2] | # | 31 | 30 |
| | % | (12.9) | (11.5) |
| Yellow | # | 195 | 201 |
| | % | (81.3) | (77.3) |
| Green | # | 2 | 13 |
| | % | (0.8) | (5) |
| Green | # | 12 | 16 |
| | % | (5) | (6.2) |

[1]Choice Set = Yellow: Salisbury Steak and Gravy, Yellow: Pizza Sticks and Marinara, Green: Chicken Salad Sub, Green: Buffalo Chicken Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 16. Entrée Choice across all Grades, Set 14

| Day | | -20 | 5 |
|---|---|---|---|
| Yellow[1,2] | # | 30 | 24 |
| | % | (10.5) | (8.8) |
| Yellow | # | 235 | 228 |
| | % | (82.5) | (83.8) |
| Green | # | 10 | 9 |
| | % | (3.5) | (3.3) |
| Green | # | 10 | 11 |
| | % | (3.5) | (4) |

[1]Choice Set = Yellow: Sloppy Joe, Yellow: Chicken Nuggets, Green: Turkey and Cheese Sub, Green: Spicy Popcorn Chicken Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 17. Entrée Choice by Grade, Set 1

| | | Kindergarten | | | First* | | | Second | | | Third | | | Fourth*** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -42 | -18 | 7 | -42 | -18 | 7 | -42 | -18 | 7 | -42 | -18 | 7 | -42 | -18 | 7 |
| Green[1,2] | # | 5 | 3 | 4 | 5 | 7 | 7 | 3 | 0 | 3 | 4 | 5 | 2 | 5 | 1 | 3 |
| | % | (19.2) | (9.1) | (10.3) | (17.9) | (18) | (18.4) | (10) | (0) | (7.7) | (9.3) | (9.4) | (3.3) | (11.6) | (2.2) | (6) |
| Red | # | 7 | 16 | 17 | 9 | 26 | 20 | 20 | 31 | 24 | 35 | 44 | 54 | 27 | 41 | 44 |
| | % | (26.9) | (48.5) | (43.6) | (32.1) | (66.7) | (52.6) | (66.7) | (79.5) | (61.5) | (81.4) | (83) | (90) | (62.8) | (89.1) | (88) |
| Yellow | # | 8 | 8 | 10 | 8 | 5 | 7 | 7 | 6 | 11 | 4 | 4 | 3 | 8 | 1 | 0 |
| | % | (30.8) | (24.2) | (25.6) | (28.6) | (12.8) | (18.4) | (23.3) | (15.4) | (28.2) | (9.3) | (7.6) | (5) | (18.6) | (2.2) | (0) |
| Green | # | 6 | 6 | 8 | 6 | 1 | 4 | 0 | 2 | 1 | 0 | 0 | 1 | 3 | 3 | 3 |
| | % | (23.1) | (18.2) | (20.5) | (21.4) | (2.6) | (10.5) | (0) | (5.1) | (2.6) | (0) | (0) | (1.7) | (7) | (6.5) | (6) |

[1]Choice Set = Green: Chicken and Veggie Pasta, Red: Country Steak with Mashed Potatoes and Country Gravy, Yellow: Ham and Cheese Sub, Green: Baja Chicken Fajita Salad.
[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 18. Entrée Choice by Grade, Set 2

| | | Kindergarten | | | First | | | Second | | | Third** | | | Fourth | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -41 | -17 | 8 | -41 | -17 | 8 | -41 | -17 | 8 | -41 | -17 | 8 | -41 | -17 | 8 |
| Yellow[1,2] | # | 1 | 1 | 3 | 1 | 5 | 4 | 0 | 1 | 2 | 4 | 5 | 6 | 3 | 6 | 9 |
| | % | (3) | (2.6) | (5.9) | (3.3) | (10.9) | (8) | (0) | (2.2) | (3.9) | (8) | (9.4) | (8.6) | (6.5) | (12.8) | (18) |
| Yellow | # | 26 | 33 | 42 | 26 | 40 | 40 | 24 | 41 | 45 | 45 | 47 | 51 | 39 | 35 | 36 |
| | % | (78.8) | (84.6) | (82.4) | (86.7) | (87) | (80) | (80) | (91.1) | (88.2) | (90) | (88.7) | (72.9) | (84.8) | (74.5) | (72) |
| Green | # | 2 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| | % | (6.1) | (5.1) | (2.3) | (0) | (0) | (2) | (0) | (0) | (0) | (0) | (0) | (1.4) | (0) | (2.1) | (0) |
| Green | # | 4 | 3 | 5 | 3 | 1 | 5 | 6 | 3 | 4 | 1 | 1 | 12 | 4 | 5 | 5 |
| | % | (12.1) | (7.7) | (9.8) | (10) | (2.2) | (10) | (20) | (6.7) | (7.8) | (2) | (1.9) | (17.1) | (8.7) | (10.6) | (10) |

[1]Choice Set = Yellow: Philly Cheesteak, Yellow: Corn Dog, Green: Roasted Veggie Wrap, Green: Chicken Nacho Salad.
[2]The second row of each color indicates column percentages.
*Significant mean difference in chi-square at 0.1 significance level.
**Significant mean difference in chi-square at 0.05 significance level.
***Significant mean difference in chi-square at 0.01 significance level.

Table 19. Entrée Choice by Grade, Set 3

| | | Kindergarten | | | First | | | Second | | | Third | | | Fourth | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -40 | -16 | 9 | -40 | -16 | 9 | -40 | -16[3] | 9 | -40 | -16 | 9 | -40 | -16 | 9 |
| Yellow[1,2] | # | 4 | 4 | 4 | 1 | 7 | 5 | 3 | 0 | 2 | 11 | 5 | 6 | 6 | 8 | 17 |
| | % | (12.9) | (10) | (7.7) | (2.8) | (13.2) | (10.2) | (7.7) | (0) | (4.2) | (16.2) | (7) | (7.6) | (10.9) | (16) | (28.8) |
| Green | # | 22 | 30 | 36 | 28 | 42 | 39 | 32 | 0 | 42 | 54 | 64 | 72 | 45 | 39 | 39 |
| | % | (71) | (75) | (69.2) | (77.8) | (79.3) | (79.6) | (82.1) | (0) | (87.5) | (79.4) | (90.1) | (91.1) | (81.8) | (78) | (66.1) |
| Green | # | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| | % | (3.2) | (0) | (3.9) | (2.8) | (1.9) | (0) | (2.6) | (0) | (0) | (1.5) | (0) | (0) | (1.8) | (0) | (0) |
| Green | # | 4 | 6 | 10 | 6 | 3 | 5 | 3 | 0 | 4 | 2 | 2 | 1 | 3 | 3 | 3 |
| | % | (12.9) | (15) | (19.2) | (16.7) | (5.7) | (10.2) | (7.7) | (0) | (8.3) | (2.9) | (2.8) | (1.3) | (5.5) | (6) | (5.1) |

[1]Choice Set = Yellow: Chicken Quesadilla, Green: Popcorn Chicken, Green: Chicken Salad Sub, Green: Fruit Yogurt Cheese Plate.

[2]The second row of each color indicates column percentages.

[3]Second grade had a field trip on Day -16.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 20. Entrée Choice by Grade, Set 4

| | | Kindergarten | | | First | | | Second | | | Third | | | Fourth** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -39 | -15 | 10 | -39 | -15 | 10 | -39 | -15 | 10 | -39 | -15 | 10 | -39 | -15 | 10 |
| Red[1,2] | # | 2 | 7 | 7 | 7 | 8 | 10 | 3 | 6 | 4 | 11 | 11 | 11 | 11 | 21 | 30 |
| | % | (6.5) | (16.3) | (11.9) | (18.9) | (14.3) | (16.4) | (7.1) | (12) | (7.6) | (20) | (18) | (15.7) | (21.6) | (40.4) | (54.6) |
| Yellow | # | 27 | 34 | 47 | 29 | 47 | 47 | 38 | 42 | 47 | 44 | 49 | 57 | 38 | 29 | 23 |
| | % | (87.1) | (79.1) | (80) | (78.4) | (83.9) | (77.1) | (90.5) | (84.0) | (88.7) | (80.0) | (80.3) | (81.4) | (74.5) | (55.8) | (41.8) |
| Green | # | 2 | 1 | 2 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 |
| | % | (6.5) | (2.3) | (3.4) | (0) | (1.8) | (3.3) | (0) | (0) | (1.9) | (0) | (0) | (2.9) | (0) | (0) | (0) |
| Green | # | 0 | 1 | 3 | 1 | 0 | 2 | 1 | 2 | 1 | 0 | 1 | 0 | 2 | 2 | 2 |
| | % | (0) | (2.3) | (5.1) | (2.7) | (0) | (3.3) | (2.4) | (4) | (1.9) | (0) | (1.6) | (0) | (3.9) | (3.9) | (3.6) |

[1]Choice Set == Red: Bacon and Cheese Baked Potato, Yellow: Chicken Nuggets, Green: Turkey and Cheese Wrap, Green: Chicken Caesar Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 21. Entrée Choice by Grade, Set 5

| | | Kindergarten | | | First | | | Second | | | Third | | | Fourth | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -37 | -12 | 13 | -37 | -12 | 13 | -37 | -12 | 13 | -37 | -12 | 13 | -37 | -12 | 13 |
| Yellow[1,2] | # | 8 | 9 | 11 | 11 | 9 | 8 | 9 | 5 | 5 | 15 | 16 | 18 | 12 | 8 | 9 |
| | % | (22.9) | (17.7) | (23.9) | (28.2) | (17.7) | (15.1) | (18.4) | (8.5) | (8.9) | (27.8) | (22.5) | (24) | (23.1) | (15.1) | (16.7) |
| Yellow | # | 25 | 40 | 33 | 25 | 34 | 41 | 39 | 47 | 44 | 38 | 49 | 55 | 39 | 44 | 40 |
| | % | (71.4) | (78.4) | (71.7) | (64.1) | (66.7) | (77.4) | (79.6) | (79.7) | (78.6) | (70.4) | (69.0) | (73.3) | (75) | (83.0) | (74.1) |
| Green | # | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| | % | (2.9) | (3.9) | (2.2) | (2.6) | (0) | (0) | (0) | (3.4) | (1.8) | (0) | (0) | (0) | (0) | (0) | (1.9) |
| Green | # | 1 | 0 | 1 | 2 | 8 | 4 | 1 | 5 | 6 | 1 | 6 | 2 | 1 | 1 | 4 |
| | % | (2.9) | (0) | (2.2) | (5.1) | (15.7) | (7.6) | (2) | (8.5) | (10.7) | (1.9) | (8.5) | (2.7) | (1.9) | (1.9) | (7.4) |

[1]Choice Set = Yellow: Cheeseburger Snack, Yellow: Chicken Nuggets, Green: Ham and Cheese Wrap, Green: Popcorn Chicken Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 22. Entrée Choice by Grade, Set 6

| | | Kindergarten* | | First | | Second | | Third | | Fourth* | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -13 | 12 | -13 | 12 | -13 | 12 | -13 | 12 | -13 | 12 |
| Yellow[1,2] | # | 10 | 12 | 20 | 18 | 16 | 10 | 17 | 22 | 16 | 25 |
| | % | (32.3) | (34.3) | (50.0) | (43.9) | (41.0) | (28.6) | (27.4) | (36.1) | (32.7) | (44.6) |
| Yellow | # | 9 | 18 | 10 | 18 | 15 | 18 | 43 | 37 | 31 | 23 |
| | % | (29.0) | (51.4) | (25.0) | (43.9) | (38.5) | (51.4) | (69.4) | (60.7) | (63.3) | (41.1) |
| Green | # | 6 | 4 | 4 | 2 | 5 | 5 | 1 | 1 | 1 | 7 |
| | % | (19.4) | (11.4) | (10.0) | (4.9) | (12.8) | (14.3) | (1.6) | (1.6) | (2.0) | (12.5) |
| Green | # | 6 | 1 | 6 | 3 | 3 | 2 | 1 | 1 | 1 | 1 |
| | % | (19.4) | (2.9) | (15.0) | (7.3) | (7.7) | (5.7) | (1.6) | (1.6) | (2.0) | (1.8) |

[1]Choice Set = Yellow: Cheese Ravioli, Yellow: BBQ Pork Riblet Sandwich, Green: Chicken and Cheddar Wrap, Green: Tuna Salad with Carrots and Celery.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 23. Entrée Choice by Grade, Set 7

| | | Kindergarten | | First | | Second | | Third | | Fourth | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -34 | 16 | -34 | 16 | -34 | 16 | -34 | 16 | -34 | 16 |
| Yellow[1,2] | # | 2 | 2 | 1 | 2 | 5 | 2 | 6 | 2 | 1 | 9 |
| | % | (4.4) | (3.8) | (2.4) | (4.1) | (10.9) | (4.1) | (8.9) | (3.6) | (2.0) | (17.0) |
| Yellow | # | 38 | 48 | 39 | 44 | 40 | 45 | 57 | 54 | 45 | 40 |
| | % | (84.4) | (90.6) | (93) | (89.8) | (87.0) | (91.8) | (85.1) | (96.4) | (90.0) | (75.5) |
| Green | # | 2 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 1 |
| | % | (4.4) | (5.7) | (2) | (2) | (0) | (0) | (0) | (0) | (6.0) | (1.9) |
| Green | # | 3 | 0 | 1 | 2 | 1 | 2 | 4 | 0 | 1 | 3 |
| | % | (6.7) | (0) | (2) | (4.2) | (2.2) | (4.1) | (6.0) | (0.0) | (2.0) | (5.7) |

[1]Choice Set = Yellow: Chili Mac, Yellow: Cheese Pizza, Green: Santa Fe Turkey Wrap, Green: Buffalo Chicken Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 24. Entrée Choice by Grade, Set 8

| | | Kindergarten* | | | First | | | Second | | | Third** | | | Fourth | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -33 | -8 | 17 | -33 | -8 | 17 | -33 | -8 | 17 | -33 | -8 | 17 | -33 | -8 | 17 |
| Yellow[1,2] | # | 8 | 8 | 3 | 5 | 8 | 10 | 5 | 8 | 8 | 16 | 10 | 8 | 5 | 9 | 16 |
| | % | (29.6) | (17.8) | (7.5) | (17.2) | (20.0) | (23.3) | (15.6) | (17.8) | (15.4) | (32.0) | (14.5) | (11.8) | (11.1) | (15.8) | (31.4) |
| Yellow | # | 12 | 27 | 30 | 21 | 28 | 31 | 25 | 36 | 38 | 33 | 58 | 60 | 37 | 44 | 33 |
| | % | (44.4) | (60.0) | (75.0) | (72.4) | (70.0) | (72.1) | (78.1) | (80.0) | (73.1) | (66.0) | (84.1) | (88.2) | (82.2) | (77.2) | (64.7) |
| Green | # | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 2 | 1 |
| | % | (7.4) | (2.2) | (0) | (3.5) | (2.5) | (0) | (0) | (0) | (3.9) | (0) | (0) | (0) | (4.4) | (3.5) | (2.0) |
| Green | # | 5 | 9 | 7 | 2 | 3 | 2 | 2 | 1 | 4 | 1 | 1 | 0 | 1 | 2 | 1 |
| | % | (18.5) | (20.0) | (17.5) | (6.9) | (7.5) | (4.7) | (6.3) | (2.2) | (7.7) | (2.0) | (1.5) | (0) | (2.2) | (3.5) | (2.0) |

[1]Choice Set = Yellow: Chicken Parmesan with Spaghetti, Yellow: Hamburger/Cheeseburger, Green: Turkey and Cheese Wrap, Green: Fruit Yogurt Cheese Plate.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 25. Entrée Choice by Grade, Set 9

| | | Kindergarten** | | | First* | | | Second | | | Third | | | Fourth | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -32 | -7 | 18 | -32 | -7 | 18 | -32 | -7 | 18 | -32 | -7 | 18 | -32 | -7 | 18 |
| Yellow[1,2] | # | 17 | 5 | 13 | 18 | 29 | 25 | 30 | 28 | 35 | 33 | 36 | 33 | 32 | 24 | 30 |
| | % | (40.5) | (11.1) | (23.6) | (36.7) | (51.8) | (61.0) | (61.2) | (48.3) | (62.5) | (50.8) | (53.7) | (47.8) | (60.4) | (40.7) | (54.6) |
| Yellow | # | 22 | 37 | 41 | 31 | 27 | 14 | 19 | 29 | 19 | 31 | 30 | 36 | 20 | 33 | 24 |
| | % | (52.4) | (82.2) | (74.6) | (63.3) | (48.2) | (34.2) | (38.7) | (50.0) | (33.9) | (47.7) | (44.8) | (52.2) | (37.7) | (55.9) | (43.6) |
| Green | # | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| | % | (0) | (2.2) | (1.8) | (0) | (0) | (2.4) | (0) | (0) | (1.8) | (1.5) | (1.5) | (0) | (0) | (0) | (0) |
| Green | # | 3 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 2 | 1 |
| | % | (7.1) | (4.4) | (0) | (0) | (0) | (2.4) | (0) | (1.7) | (1.8) | (0) | (0) | (0) | (1.9) | (3.4) | (1.8) |

[1]Choice Set = Yellow: Pizza Sticks with Marinara, Yellow: Chicken Nuggets, Green: Chicken Salad Sub, Green: Turkey and Cheese Salad.
[2]The second row of each color indicates column percentages.
*Significant mean difference in chi-square at 0.1 significance level.
**Significant mean difference in chi-square at 0.05 significance level.
***Significant mean difference in chi-square at 0.01 significance level.

Table 26. Entrée Choice by Grade, Set 10

| | | Kindergarten | | | First | | | Second | | | Third | | | Fourth | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -30 | -5 | 20 | -30 | -5 | 20 | -30 | -5 | 20 | -30 | -5 | 20 | -30 | -5 | 20 |
| Yellow[1,2] | # | 7 | 5 | 4 | 7 | 7 | 4 | 4 | 4 | 1 | 3 | 4 | 1 | 5 | 7 | 9 |
| | % | (21.9) | (12.2) | (8.2) | (15.9) | (13.7) | (7.3) | (8.5) | (8.5) | (2.2) | (5.5) | (6.4) | (1.6) | (9.8) | (13.2) | (17.3) |
| Yellow | # | 24 | 33 | 40 | 36 | 43 | 51 | 38 | 42 | 43 | 52 | 59 | 59 | 44 | 44 | 38 |
| | % | (75.0) | (80.5) | (81.6) | (81.8) | (84.3) | (92.7) | (80.9) | (89.4) | (95.6) | (94.6) | (93.7) | (93.7) | (86.3) | (83.0) | (73.1) |
| Green | # | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | % | (0) | (4.9) | (0) | (0) | (0) | (0) | (4.3) | (0) | (0) | (0) | (0) | (1.6) | (0) | (0) | (0) |
| Green | # | 1 | 1 | 5 | 1 | 1 | 0 | 3 | 1 | 1 | 0 | 0 | 2 | 2 | 2 | 5 |
| | % | (3.1) | (2.4) | (10.2) | (2.3) | (2.0) | (0) | (6.4) | (2.1) | (2.2) | (0) | (0) | (3.2) | (3.9) | (3.8) | (9.6) |

[1]Choice Set = Yellow: Orange Chicken and Broccoli with Veggie Rice, Yellow: Hot Dog on a Bun, Green: Roasted Veggie Wrap, Green: Baja Chicken Fajita Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 27. Entrée Choice by Grade, Set 11

| | | Kindergarten | | | First | | | Second | | | Third | | | Fourth | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -28 | -3 | 22 | -28 | -3 | 22 | -28 | -3 | 22 | -28 | -3 | 22 | -28 | -3 | 22 |
| Yellow[1,2] | # | 12 | 12 | 18 | 13 | 15 | 16 | 5 | 5 | 6 | 9 | 7 | 5 | 21 | 18 | 15 |
| | % | (37.5) | (34.3) | (41.9) | (38.2) | (35.7) | (40.0) | (15.6) | (14.3) | (17.7) | (18.4) | (11.5) | (9.4) | (42.9) | (34.0) | (28.9) |
| Yellow | # | 10 | 14 | 13 | 16 | 22 | 21 | 18 | 25 | 24 | 33 | 51 | 43 | 22 | 30 | 31 |
| | % | (31.3) | (40.0) | (30.2) | (47.1) | (52.4) | (52.5) | (56.3) | (71.4) | (70.6) | (67.4) | (83.6) | (81.1) | (44.9) | (56.6) | (59.6) |
| Yellow | # | 4 | 6 | 5 | 2 | 2 | 2 | 7 | 1 | 1 | 2 | 2 | 2 | 1 | 4 | 2 |
| | % | (12.5) | (17.1) | (11.6) | (5.9) | (4.8) | (5.0) | (21.9) | (2.9) | (2.9) | (4.1) | (3.3) | (3.8) | (2.0) | (7.6) | (3.9) |
| Green | # | 6 | 3 | 7 | 3 | 3 | 1 | 2 | 4 | 3 | 5 | 1 | 3 | 5 | 1 | 4 |
| | % | (18.8) | (8.6) | (16.3) | (8.8) | (7.1) | (2.5) | (6.3) | (11.4) | (8.8) | (10.2) | (1.6) | (5.7) | (10.2) | (1.9) | (7.7) |

[1]Choice Set = Yellow: Chicken Pot Pie, Yellow: Meatball Pizza Sub, Yellow: Ham and Cheese Sub, Green: Chicken Salad with Celery and Carrots.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 28. Entrée Choice by Grade, Set 12

| | | Kindergarten*** | | | First | | | Second | | | Third | | | Fourth | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -27 | -2 | 23 | -27 | -2 | 23 | -27 | -2 | 23 | -27 | -2 | 23 | -27 | -2 | 23 |
| Yellow[1,2] | # | 18 | 1 | 5 | 5 | 5 | 9 | 1 | 0 | 5 | 5 | 7 | 12 | 3 | 6 | 3 |
| | % | (51.4) | (3.0) | (10.9) | (12.2) | (12.2) | (18.8) | (2.8) | (0.0) | (11.1) | (8.9) | (10.6) | (16.9) | (5.8) | (12.5) | (5.8) |
| Green | # | 7 | 22 | 16 | 13 | 19 | 14 | 19 | 27 | 28 | 50 | 56 | 53 | 39 | 39 | 41 |
| | % | (20.0) | (66.7) | (34.8) | (31.7) | (46.3) | (29.2) | (52.8) | (62.8) | (62.2) | (89.3) | (84.9) | (74.7) | (75.0) | (81.3) | (78.9) |
| Green | # | 2 | 2 | 1 | 3 | 2 | 0 | 2 | 2 | 1 | 0 | 0 | 1 | 3 | 0 | 1 |
| | % | (5.7) | (6.1) | (2.2) | (7.3) | (4.9) | (0) | (5.6) | (4.7) | (2.2) | (0) | (0) | (1.4) | (5.8) | (0) | (1.9) |
| Green | # | 8 | 8 | 24 | 20 | 15 | 25 | 14 | 14 | 11 | 1 | 3 | 5 | 7 | 3 | 7 |
| | % | (22.9) | (24.2) | (52.2) | (48.8) | (36.6) | (52.1) | (38.9) | (32.6) | (24.4) | (1.8) | (4.6) | (7.0) | (13.5) | (6.3) | (13.5) |

[1]Choice Set = Yellow: Chili Con Carne, Green: Chicken Sandwich, Green: Turkey and Cheese Wrap, Green: Popcorn Chicken Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 29. Entrée Choice by Grade, Set 13

| | | Kindergarten | | First | | Second | | Third | | Fourth | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -23 | 2 | -23 | 2 | -23 | 2 | -23 | 2 | -23 | 2 |
| Yellow[1,2] | # | 4 | 5 | 4 | 5 | 5 | 2 | 8 | 10 | 10 | 8 |
| | % | (10.5) | (11.4) | (11.8) | (10.9) | (8.9) | (3.9) | (12.9) | (15.9) | (20.0) | (14.6) |
| Yellow | # | 28 | 32 | 28 | 35 | 49 | 41 | 52 | 50 | 38 | 43 |
| | % | (73.7) | (72.7) | (82.4) | (76.1) | (87.5) | (78.9) | (83.9) | (79.4) | (76.0) | (78.2) |
| Green | # | 0 | 2 | 0 | 3 | 1 | 5 | 0 | 1 | 1 | 2 |
| | % | (0) | (4.6) | (0) | (6.5) | (1.8) | (9.6) | (0) | (1.6) | (2.0) | (3.6) |
| Green | # | 6 | 5 | 2 | 3 | 1 | 4 | 2 | 2 | 1 | 2 |
| | % | (15.8) | (11.4) | (5.9) | (6.5) | (1.8) | (7.7) | (3.2) | (3.2) | (2.0) | (3.6) |

[1]Choice Set = Yellow: Salisbury Steak and Gravy, Yellow: Pizza Sticks and Marinara, Green: Chicken Salad Sub, Green: Buffalo Chicken Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 30. Choice of Entrée chosen by Grade, Set 14

| | | Kindergarten* | | First | | Second | | Third | | Fourth | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | | -20 | 5 | -20 | 5 | -20 | 5 | -20 | 5 | -20 | 5 |
| Yellow[1,2] | # | 6 | 6 | 6 | 3 | 3 | 3 | 10 | 5 | 5 | 7 |
| | % | (14.0) | (11.3) | (9.5) | (5.5) | (5.5) | (6.0) | (14.3) | (8.2) | (9.3) | (13.2) |
| Yellow | # | 31 | 39 | 54 | 44 | 46 | 45 | 59 | 54 | 45 | 46 |
| | % | (72.1) | (73.6) | (85.7) | (80.0) | (83.7) | (90.0) | (84.3) | (88.5) | (83.3) | (86.8) |
| Green | # | 4 | 0 | 2 | 6 | 3 | 1 | 1 | 2 | 0 | 0 |
| | % | (9.3) | (0) | (3.2) | (10.9) | (5.5) | (2.0) | (1.4) | (3.3) | (0) | (0) |
| Green | # | 2 | 8 | 1 | 2 | 3 | 1 | 0 | 0 | 4 | 0 |
| | % | (4.7) | (15.1) | (1.6) | (3.6) | (5.5) | (2.0) | (0) | (0) | (7.4) | (0) |

[1]Choice Set = Yellow: Sloppy Joe, Yellow: Chicken Nuggets, Green: Turkey and Cheese Sub, Green: Spicy Popcorn Chicken Salad.

[2]The second row of each color indicates column percentages.

*Significant mean difference in chi-square at 0.1 significance level.

**Significant mean difference in chi-square at 0.05 significance level.

***Significant mean difference in chi-square at 0.01 significance level.

Table 31. Results of Effect on Lunchroom Entrée Choice

| Variable | Probit Estimation |
|---|---|
| *Intercept 3* | -6.1487*** |
| | (1.3857)[a] |
| *Intercept 2* | 1.9166* |
| | (1.0062) |
| *labeling* | 0.7473 |
| | (0.6336) |
| *M* | -0.0490 |
| | (0.2935) |
| *age* | 0.0545 |
| | (0.1520) |
| *magnetic* | 0.1994 |
| | (0.6510) |
| *anonymous* | 0.1316 |
| | (0.5568) |
| *cliptrt* | 0.1768 |
| | (0.5534) |
| *time* | -0.0509 |
| | (0.0378) |
| *numberofgreen* | -3.5562*** |
| | (0.6278) |
| *numberofyellow* | 0.8940** |
| | (0.3952) |
| *numberofred* | 9.7723*** |
| | (2.0180) |

[a] Numbers in parentheses are standard error.

*Significance levels where α=0.1.

**Significance levels where α=0.05.

***Significance levels where α=0.01.

Table 32. Costs for Magnetic Whiteboard Treatment

| Item | Cost | Quantity | Classroom[2] Total for School Year |
|---|---|---|---|
| Art Tape | $ 3.19 | 1 roll | $ 6.38 |
| Expo Markers | $ 5.92 | 1 pack | $ 5.92 |
| Dry Erase Board | $24.99 | 1 board | $ 24.99 |
| Construction Paper | $ 5.99 | 1 pack | $ 5.99 |
| Magnets | $56.35 | 23 magnets[1] | $ 225.40 |
| Drawer Organizer | $ 7.45 | 1 set | $ 7.45 |
| | | Classroom Total | $ 276.13 |
| Time | | | |
| Initial Time to Set Up | 0:15:00 | minutes/board | |
| Time to Change no Nutritional Labels | 0:01:22 | minutes/day | |
| Time to Change with Nutritional Labels | 0:01:30 | minutes/day | |

[1]There are 23 magnets needed per classroom per color.

[2]Average class size is 23 students.

Table 33. Costs for Clip Treatment

| Item | Cost | Quantity | Classroom[1] Total for School Year |
|---|---|---|---|
| Label Maker Tape | $ 6.97 | 1 roll | $ 6.97 |
| Construction Paper | $ 5.99 | 1 pack | $ 5.99 |
| Stock Paper | $15.99 | 1 pack | $ 15.99 |
| Clothespins | $ 0.97 | 1 pack | $ 0.97 |
| Vinyl | $ 9.54 | 1 pack | $ 9.54 |
| Velcro | $ 2.75 | 1 pack | $ 2.75 |
| Expo Markers | $ 5.92 | 1 pack | $ 5.92 |
| | | Classroom Total | $ 48.13 |
| Time | | | |
| Initial Time to Set Up | 0:03:00 | minutes/sheet | |
| Time to Individually Identify Clips | 0:06:00 | seconds/treatment | |
| Time to Change no Nutritional Labels | 0:02:00 | minutes/day | |
| Time to Change with Nutritional Labels | 0:02:45 | minutes/day | |

[1]Average class size is 23 students.

Table 34. Costs for Box System Treatment

| Item | Cost | Quantity | Classroom[2] Total for School Year |
|---|---|---|---|
| Card Box | $ 9.40 | 5 boxes | $ 9.40 |
| Jewelry Organizer | $ 2.97 | 1 set | $ 2.97 |
| Label Maker Tape | $ 6.97 | 1 pack | $ 6.97 |
| Counting Chips | $ 6.60 | 240 chips[1] | $ 6.60 |
| Construction Paper | $ 5.99 | 1 pack | $ 5.99 |
| Stock Paper | $ 5.99 | 1 pack | $ 5.99 |
| Craft Knife | $ 2.97 | 1 knife | $ 2.97 |
| Duck Tape | $ 3.00 | 1 roll | $ 3.00 |
| Knife Blades | $ 1.97 | 1 pack | $ 1.97 |
| | | Classroom Total | $ 45.86 |
| Time | | | |
| Initial Time to Set Up | 1:15:25 | minutes/treatment | |
| Time to Individually Identify Chips | 0:06:00 | minutes/treatment | |
| Time to Change no Nutritional Labels | 0:06:15 | minutes/day | |
| Time to Change with Nutritional Labels | 0:06:30 | minutes/day | |

[1]There are 240 chips needed per classroom. The set includes purple, red, green, and yellow.

[2]Average class size is 23 students.

Table 35. Costs for Recording Sheet Table Treatment

| Item | Cost | Quantity | Classroom[1] Total for School Year |
|---|---|---|---|
| Sharpies | $ 4.00 | 1 pack | $ 4.00 |
| Color Stickers | $ 6.99 | 1 pack | $ 6.99 |
| Posters | $ 0.18 | 1 page | $ 32.40 |
| | | Classroom Total | $ 43.39 |
| Time | | | |
| Initial Time to Set Up | 0:04:07 | minutes/sheet | |
| Time to Change no Nutritional Labels | 0:00:07 | seconds/day | |
| Time to Change with Nutritional Labels | 0:00:20 | seconds/day | |

[1]Average class size is 23 students.

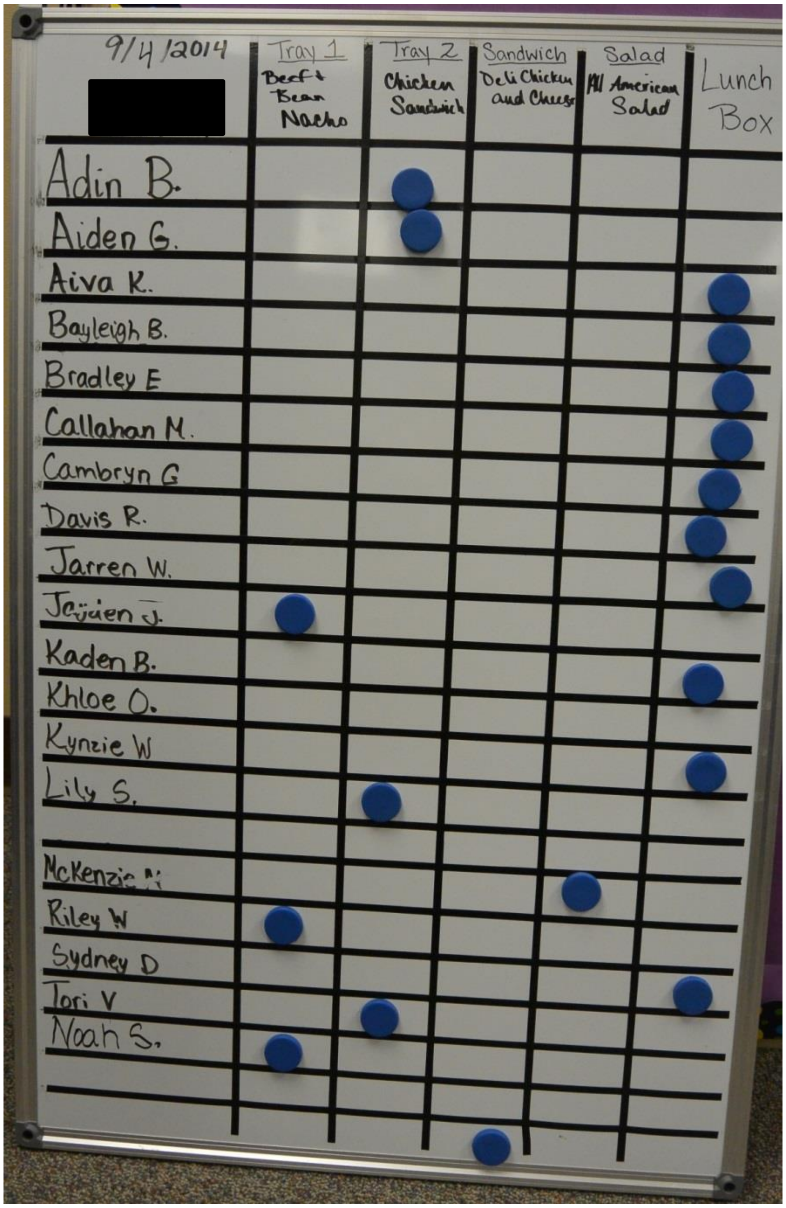



Figure 1. Magnetic board treatment, control


Figure 2. Magnetic board treatment, nutritional labels present


Figure 3. Box system treatment, control

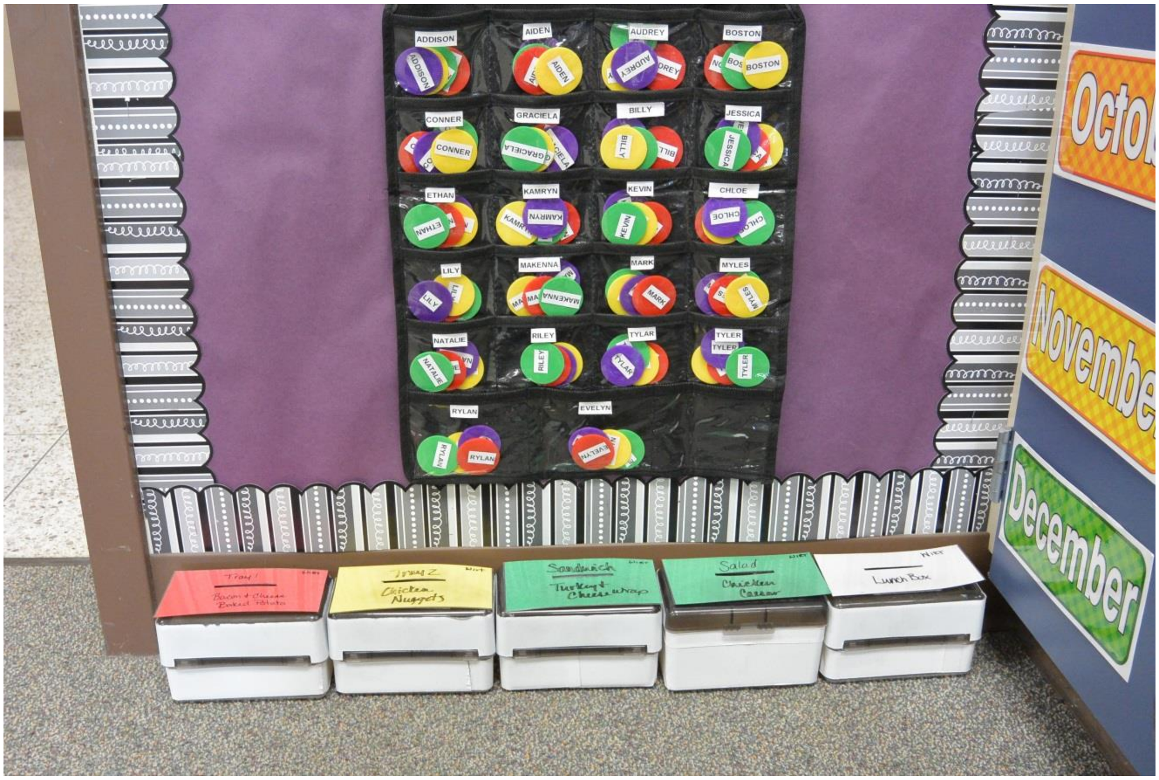



Figure 4. Box system treatment, nutritional labels present

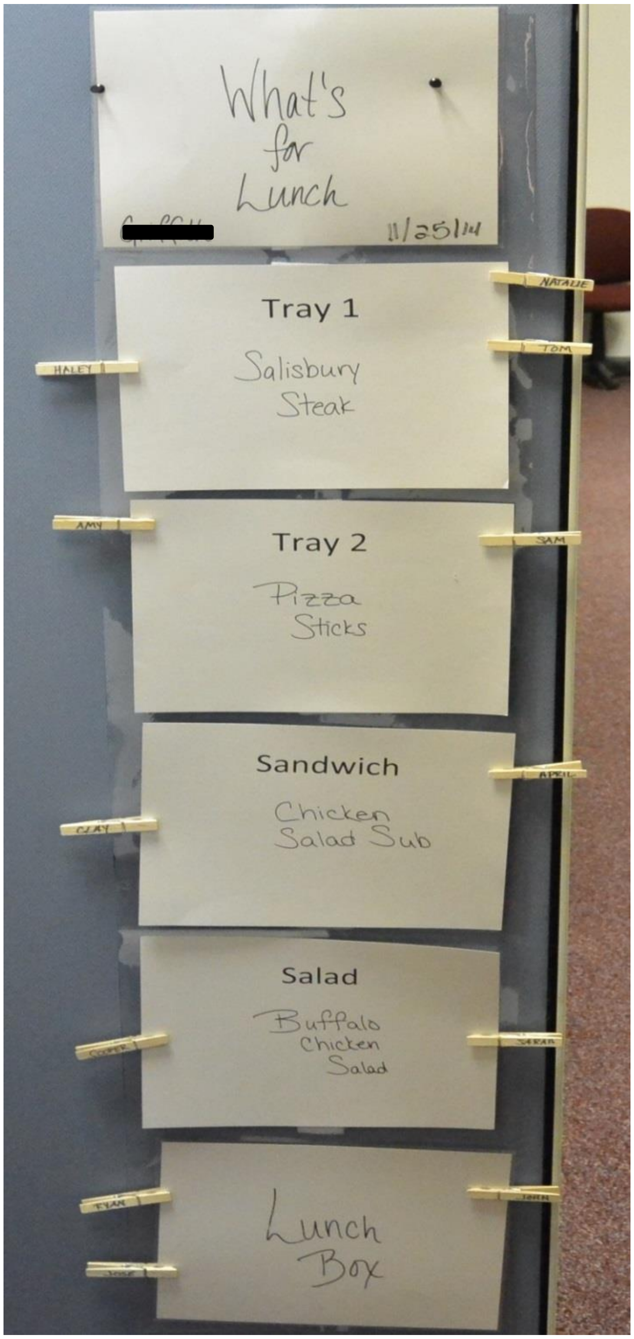
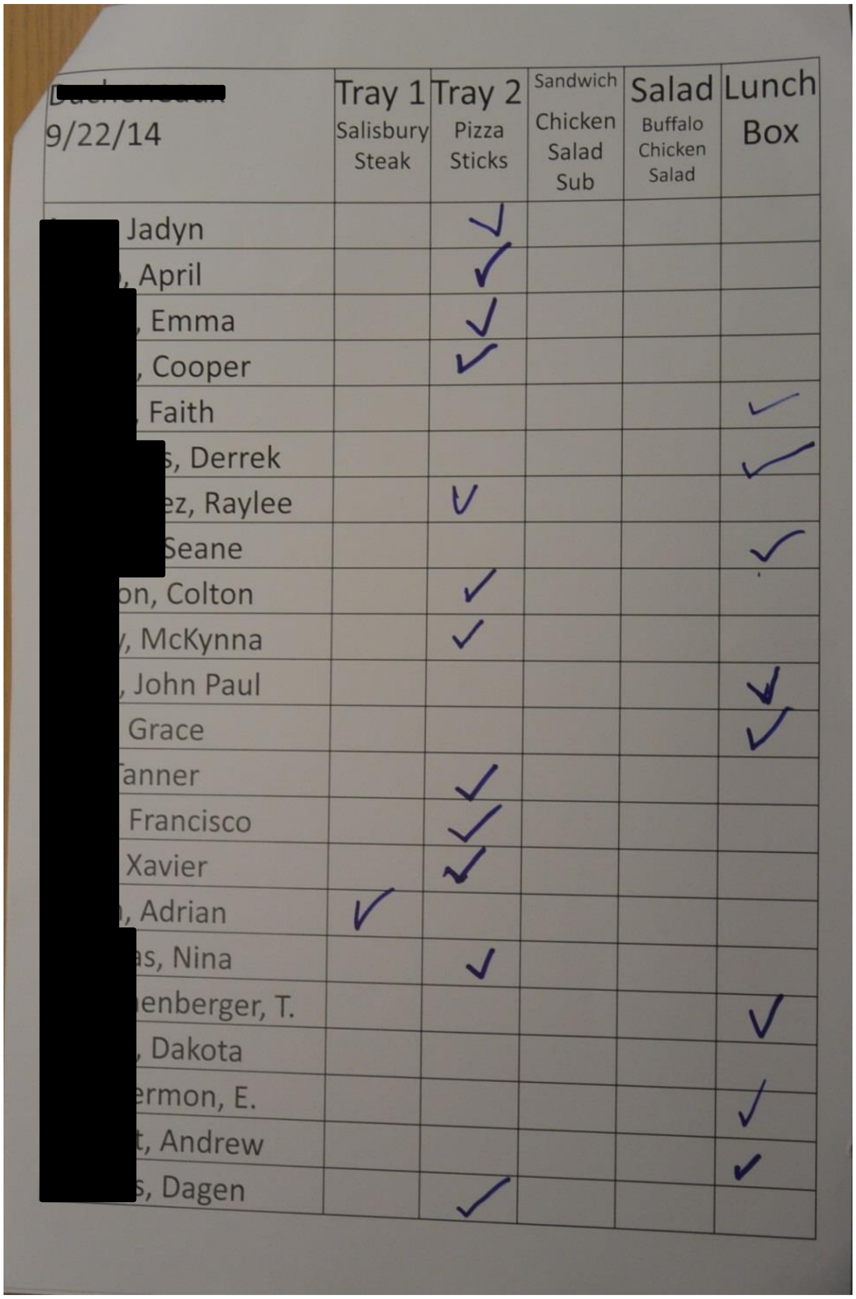


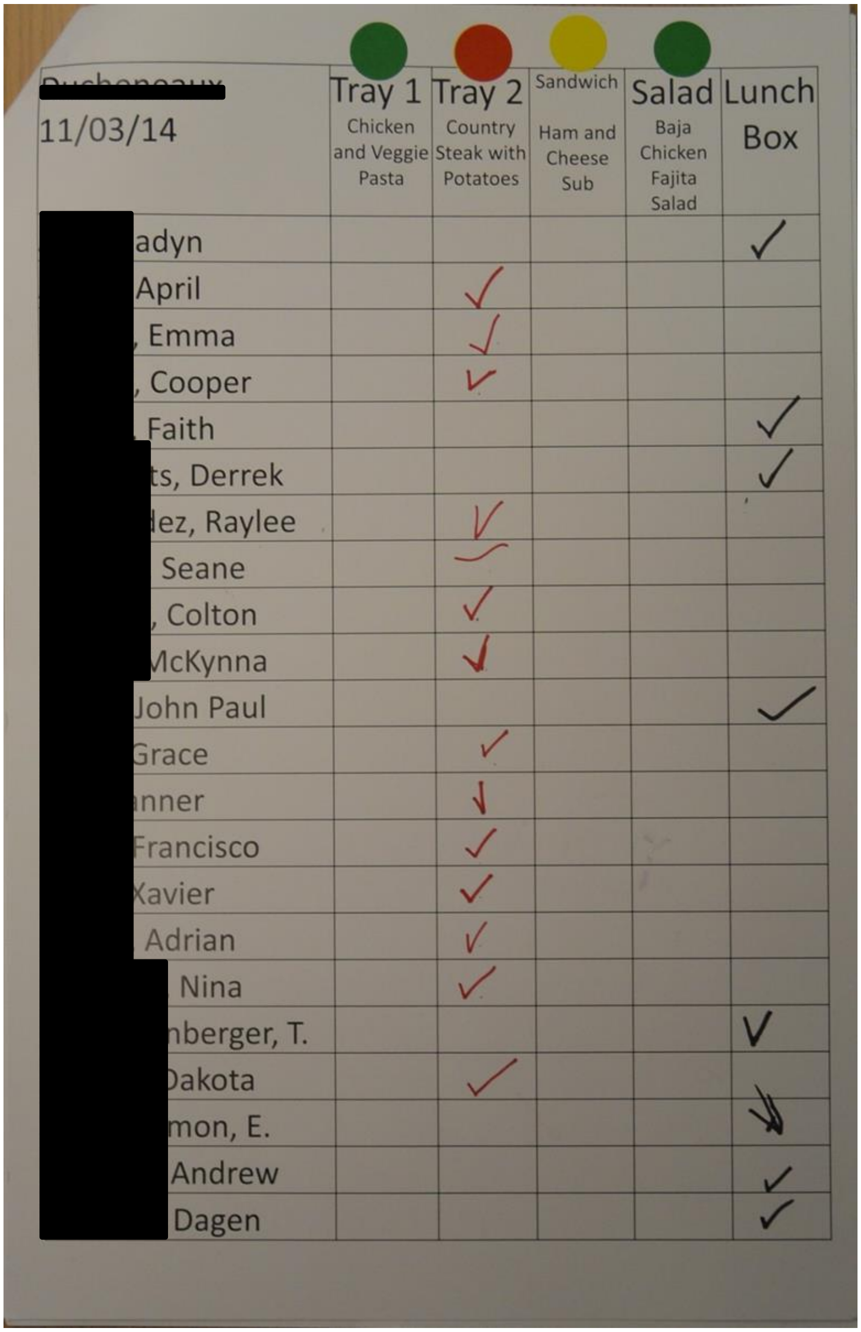

Figure 5.  Clip treatment, control


Figure 6. Clip treatment, nutritional labels present



| [redacted] 9/22/14 | Tray 1 Salisbury Steak | Tray 2 Pizza Sticks | Sandwich Chicken Salad Sub | Salad Buffalo Chicken Salad | Lunch Box |
|---|---|---|---|---|---|
| [redacted] Jadyn | | ✓ | | | |
| [redacted], April | | ✓ | | | |
| [redacted], Emma | | ✓ | | | |
| [redacted], Cooper | | ✓ | | | |
| [redacted] Faith | | | | | ✓ |
| [redacted]s, Derrek | | | | | ✓ |
| [redacted]ez, Raylee | | ✓ | | | |
| [redacted]Seane | | | | | ✓ |
| [redacted]on, Colton | | ✓ | | | |
| [redacted], McKynna | | ✓ | | | |
| [redacted], John Paul | | | | | ✓ |
| [redacted] Grace | | | | | ✓ |
| [redacted]anner | | ✓ | | | |
| [redacted] Francisco | | ✓ | | | |
| [redacted] Xavier | | ✓ | | | |
| [redacted], Adrian | ✓ | | | | |
| [redacted]as, Nina | | ✓ | | | |
| [redacted]enberger, T. | | | | | ✓ |
| [redacted], Dakota | | | | | |
| [redacted]ermon, E. | | | | | ✓ |
| [redacted]t, Andrew | | | | | ✓ |
| [redacted]s, Dagen | | ✓ | | | |

Figure 7.  Recording sheet table treatment, contol



| [redacted] 11/03/14 | Tray 1 Chicken and Veggie Pasta | Tray 2 Country Steak with Potatoes | Sandwich Ham and Cheese Sub | Salad Baja Chicken Fajita Salad | Lunch Box |
|---|---|---|---|---|---|
| [redacted]adyn | | | | | ✓ |
| [redacted] April | | ✓ | | | |
| [redacted], Emma | | ✓ | | | |
| [redacted], Cooper | | ✓ | | | |
| [redacted] Faith | | | | | ✓ |
| [redacted]ts, Derrek | | | | | ✓ |
| [redacted]dez, Raylee | | ✓ | | | |
| [redacted] Seane | | ✓ | | | |
| [redacted], Colton | | ✓ | | | |
| [redacted]McKynna | | ✓ | | | |
| [redacted]John Paul | | | | | ✓ |
| [redacted]Grace | | ✓ | | | |
| [redacted]anner | | ✓ | | | |
| [redacted]Francisco | | ✓ | | | |
| [redacted]Xavier | | ✓ | | | |
| [redacted] Adrian | | ✓ | | | |
| [redacted] Nina | | ✓ | | | |
| [redacted]nberger, T. | | | | | V |
| [redacted]Dakota | | ✓ | | | |
| [redacted]mon, E. | | | | | ✓ |
| [redacted] Andrew | | | | | ✓ |
| [redacted] Dagen | | | | | ✓ |

Figure 8. Recording sheet table treatment, nutritional labels present

APPENDIX A

Set 1, Identical Menu Choices

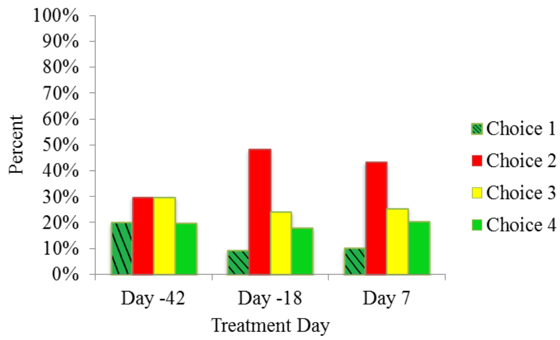



Figure A1. Percent of Choices Ordered by Kindergarten - Clip Treatment

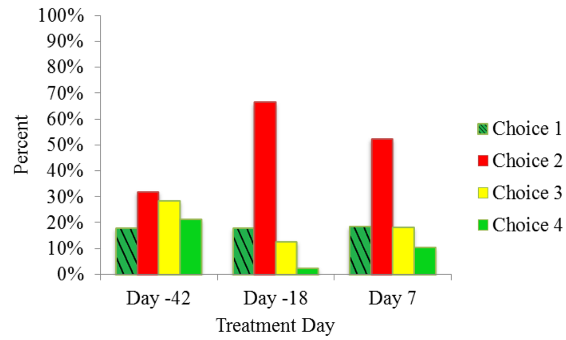



Figure A2. Percent of Choices Ordered by 1st Grade - Magnetic Board

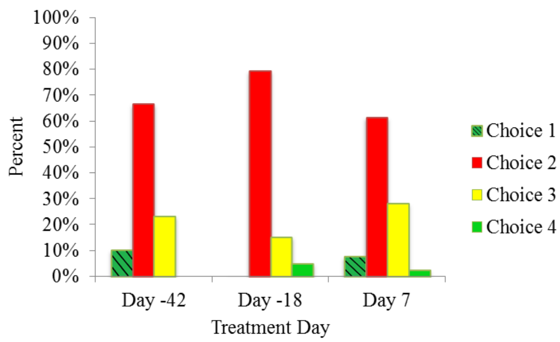



Figure A3. Percent of Choices Ordered by 2nd Grade - Box Treatment

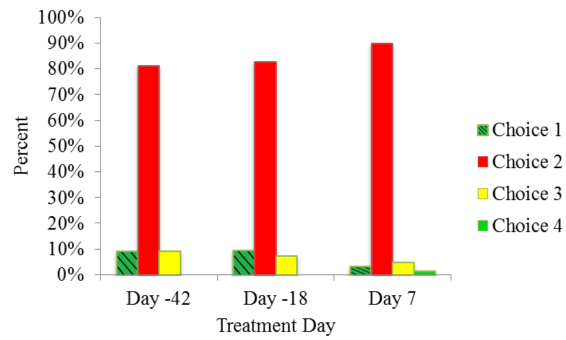



Figure A4. Percent of Choices Ordered by 3rd Grade - Clip Treatment

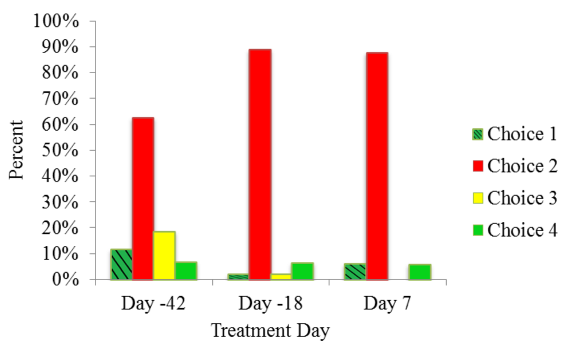



Figure A5. Percent of Choices Ordered by 4th Grade - RST Treatment

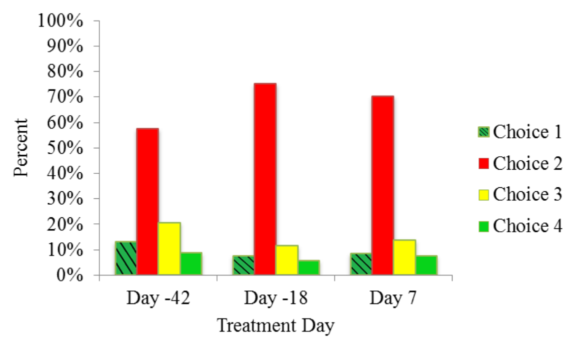



Figure A6. Percent of Choices Ordered Total

Choice 1 - (Green) Chicken and Veggie Pasta
Choice 2 - (Red) Country Steak with Mashed Potatoes and Country Gravy
Choice 3 - (Yellow) Ham and Cheese Sub
Choice 4 - (Green) Baja Chicken Fajita Salad

Set 2, Identical Menu Choices

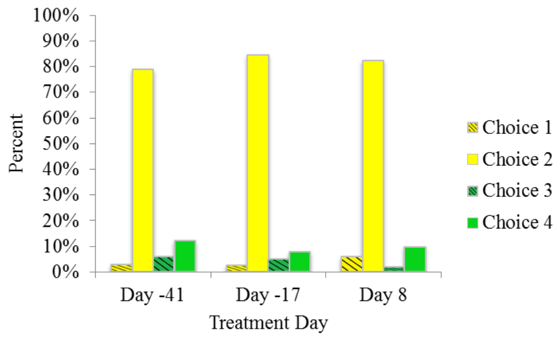



Figure A7. Percent of Choices Ordered by Kindergarten - Clip Treatment

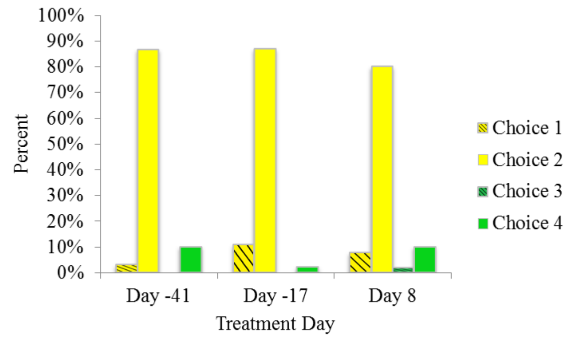



Figure A8. Percent of Choices Ordered by 1st Grade - Magnetic Board

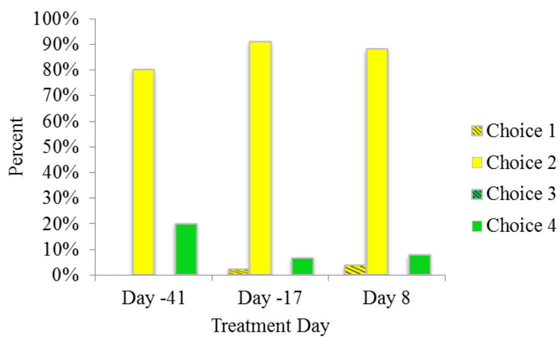



Figure A9. Percent of Choices Ordered by 2nd Grade - Box Treatment

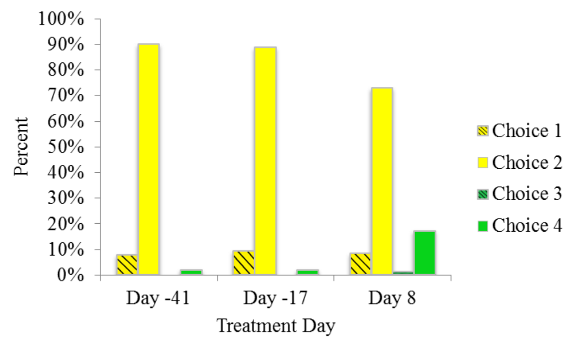



Figure A10. Percent of Choices Ordered by 3rd Grade - Clip Treatment

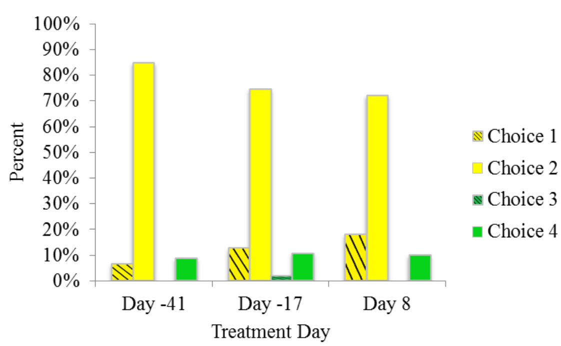



Figure A11. Percent of Choices Ordered by 4th Grade - RST Treatment

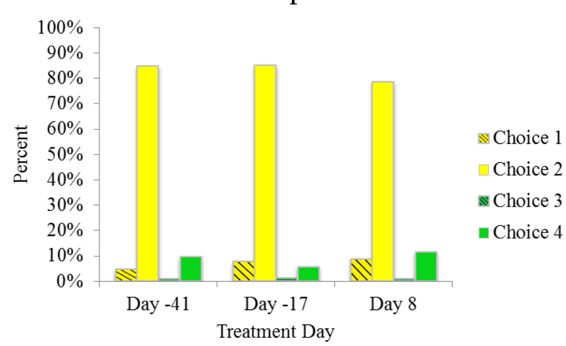



Figure A12. Percent of Choices Ordered Total

Choice 1 - (Yellow) Philly Cheesesteak
Choice 2 - (Yellow) Corn Dog
Choice 3 - (Green) Roasted Veggie Wrap
Choice 4 - (Green) Chicken Nacho Salad

Set 3, Identical Menu Choices

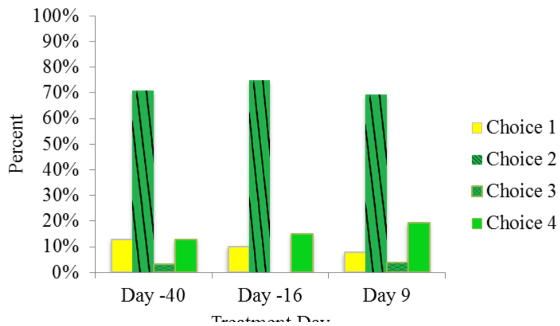



Figure A13. Percent of Choices Ordered by Kindergarten - Clip Treatment

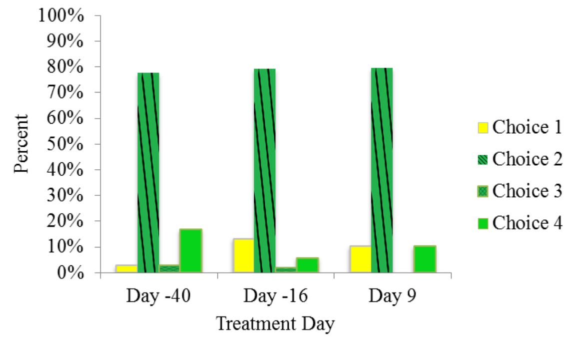



Figure A14. Percent of Choices Ordered by 1st Grade - Magnetic Board

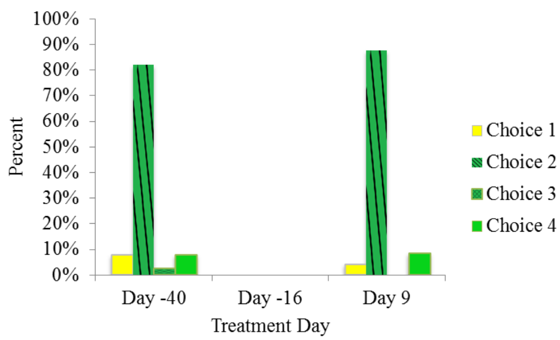



Figure A15. Percent of Choices Ordered by 2nd Grade - Box Treatment

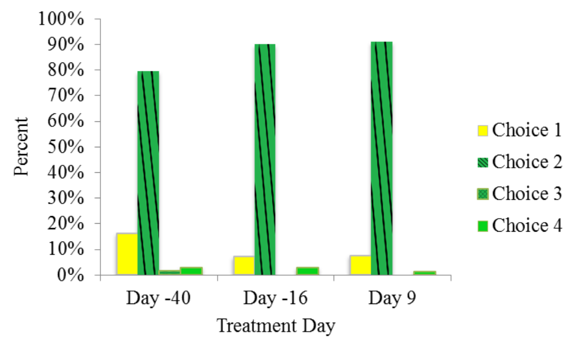



Figure A16. Percent of Choices Ordered by 3rd Grade - Clip Treatment

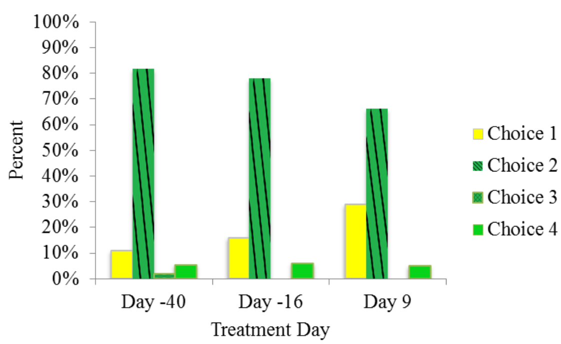



Figure A17. Percent of Choices Ordered by 4th Grade - RST Treatment

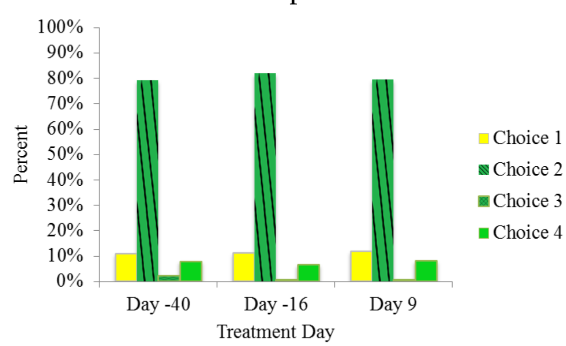



Figure A18. Percent of Choices Ordered Total

Choice 1 - (Yellow) Chicken Quesadilla
Choice 2 - (Green) Popcorn Chicken
Choice 3 - (Green) Chicken Salad Sub
Choice 4 - (Green) Fruit, Yogurt and Cheese Plate

Set 4, Identical Menu Choices

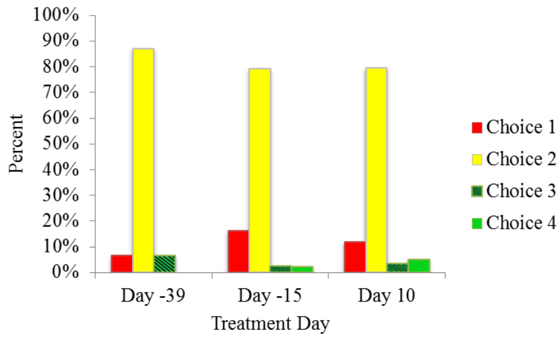



Figure A19. Percent of Choices Ordered by Kindergarten - Clip Treatment

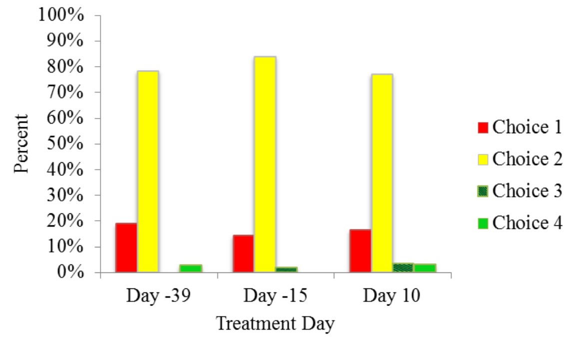



Figure A20. Percent of Choices Ordered by 1st Grade - Magnetic Board

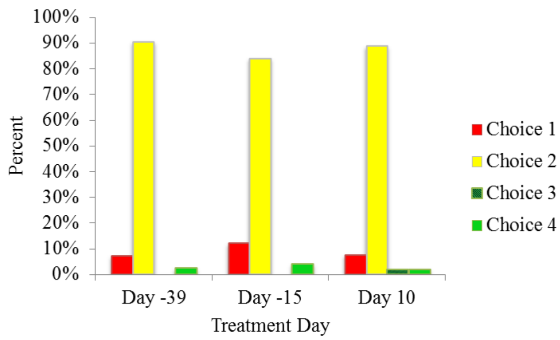



Figure A21. Percent of Choices Ordered by 2nd Grade - Box Treatment

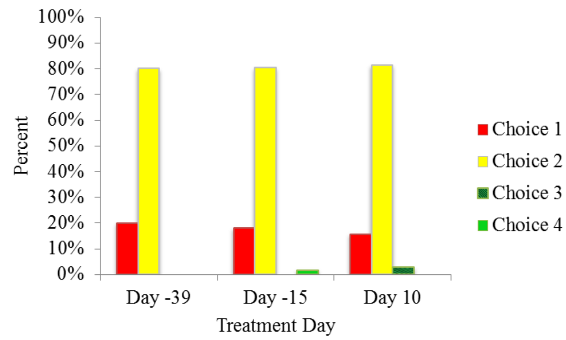



Figure A22. Percent of Choices Ordered by 3rd Grade - Clip Treatment

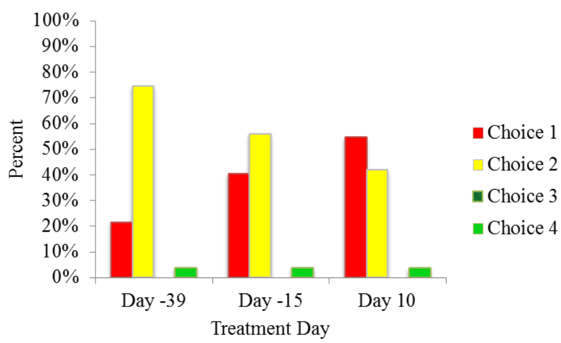



Figure A23. Percent of Choices Ordered by 4th Grade - RST Treatment

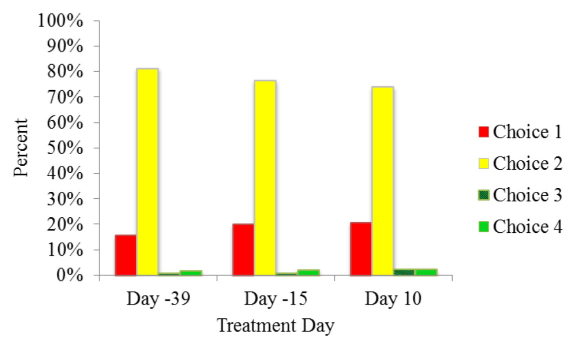



Figure A24. Percent of Choices Ordered Total

Choice 1 - (Red) Bacon and Cheese Baked Potato
Choice 2 - (Yellow) Chicken Nuggets
Choice 3 - (Green) Turkey and Cheese Wrap
Choice 4 - (Green) Chicken Caesar Salad

Set 5, Identical Menu Choices

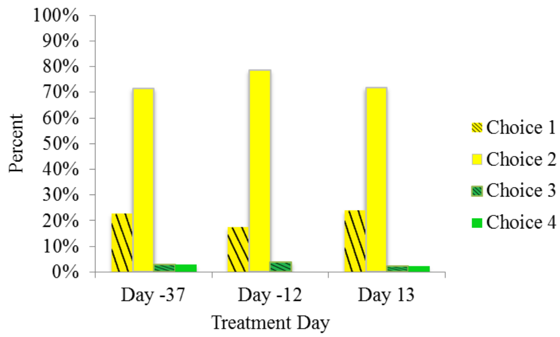



Figure A25. Percent of Choices Ordered by Kindergarten - Clip Treatment

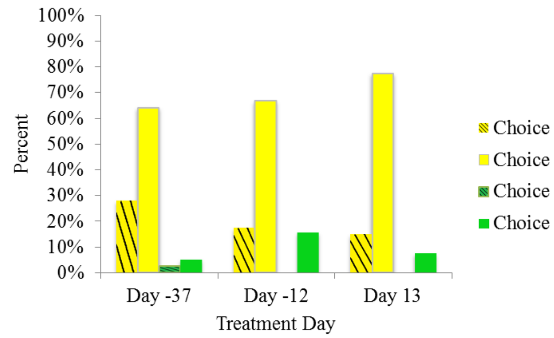



Figure A26. Percent of Choices Ordered by 1st Grade - Magnetic Board

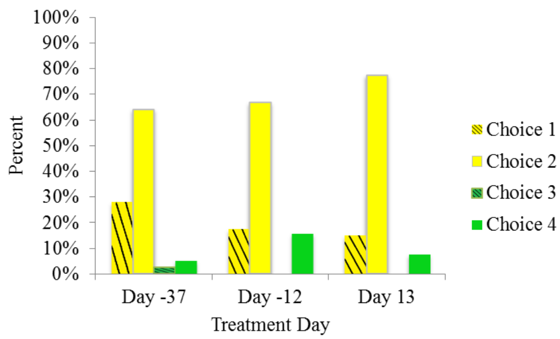



Figure A27. Percent of Choices Ordered by 2nd Grade - Box Treatment

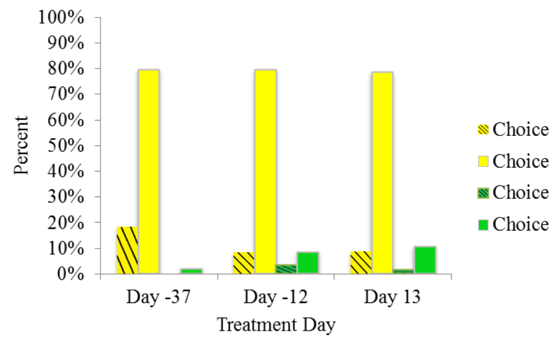



Figure A28. Percent of Choices Ordered by 3rd Grade - Clip Treatment

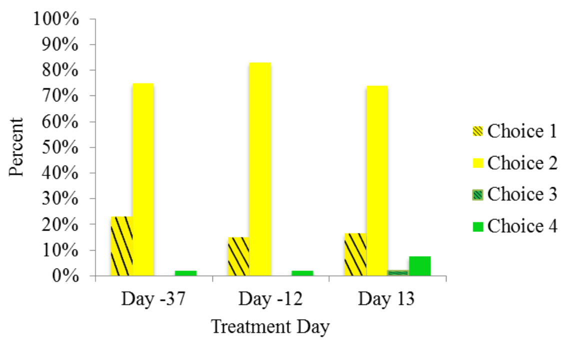



Figure A29. Percent of Choices Ordered by 4th Grade - RST Treatment

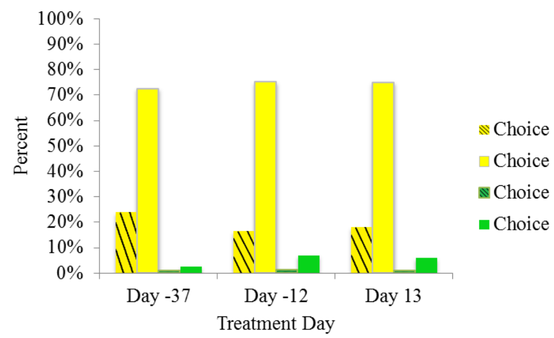



Figure A30. Percent of Choices Ordered Total

Choice 1 - (Yellow) Cheeseburger Snack
Choice 2 - (Yellow) Chicken Nuggets
Choice 3 - (Green) Ham and Cheese Wrap
Choice 4 - (Green) Popcorn Chicken Salad

Set 6, Identical Menu Choices

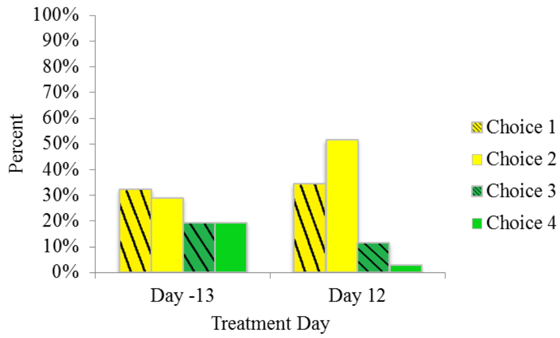



Figure A31. Percent of Choices Ordered by Kindergarten - Clip Treatment

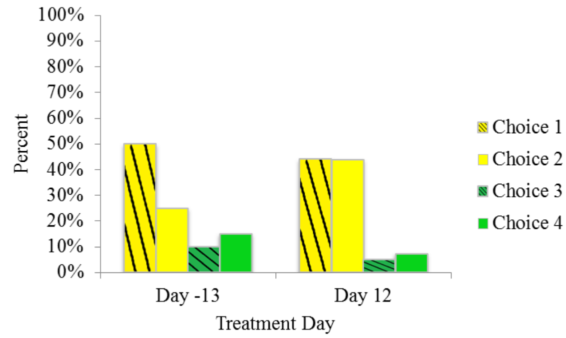



Figure A32. Percent of Choices Ordered by 1st Grade - Magnetic Board

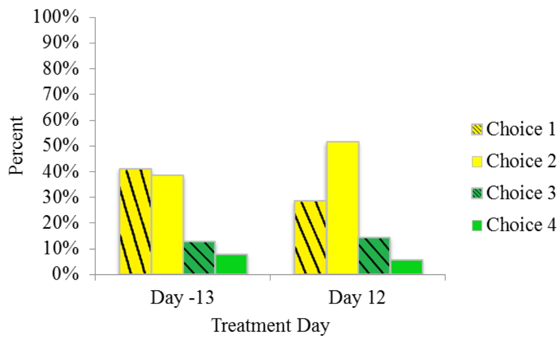



Figure A33. Percent of Choices Ordered by 2nd Grade - Box Treatment

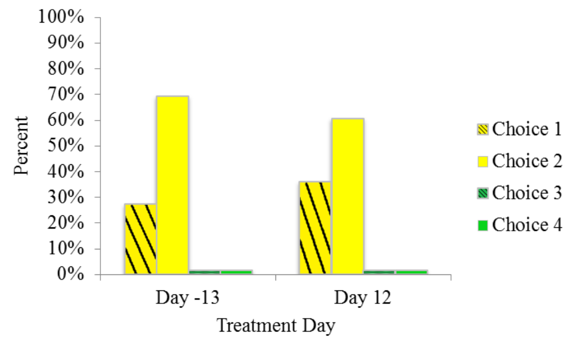



Figure A34. Percent of Choices Ordered by 3rd Grade - Clip Treatment

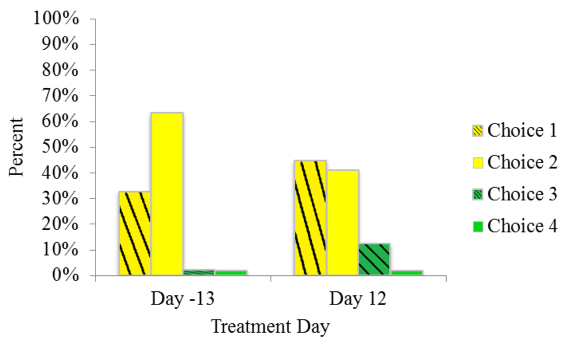



Figure A35. Percent of Choices Ordered by 4th Grade - RST Treatment

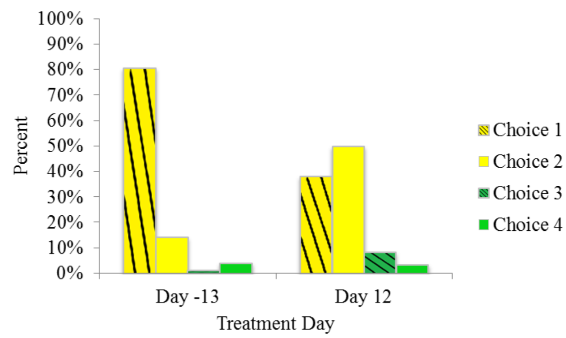



Figure A36. Percent of Choices Ordered Total

Choice 1 - (Yellow) Cheese Ravioli and Marinara
Choice 2 - (Yellow) BBQ Pork Riblet Sandwich
Choice 3 - (Green) Chicken and Cheddar Wrap
Choice 4 - (Green) Tuna Salad

Set 7, Identical Menu Choices

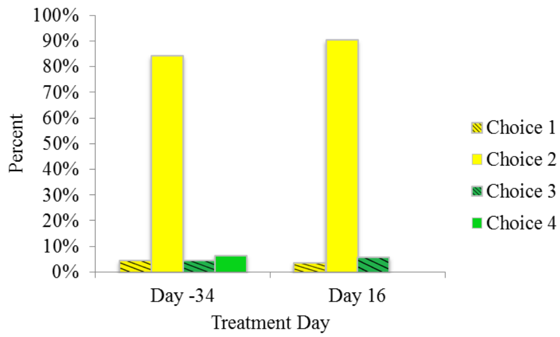



Figure A37. Percent of Choices Ordered by Kindergarten - Clip Treatment

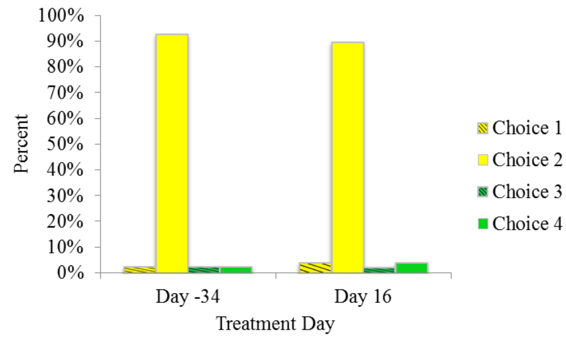



Figure A38. Percent of Choices Ordered by 1st Grade - Magnetic Board

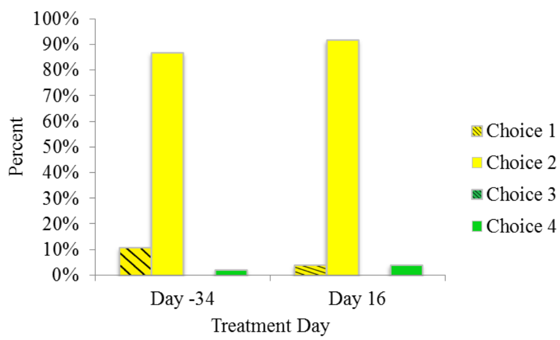



Figure A39. Percent of Choices Ordered by 2nd Grade - Box Treatment

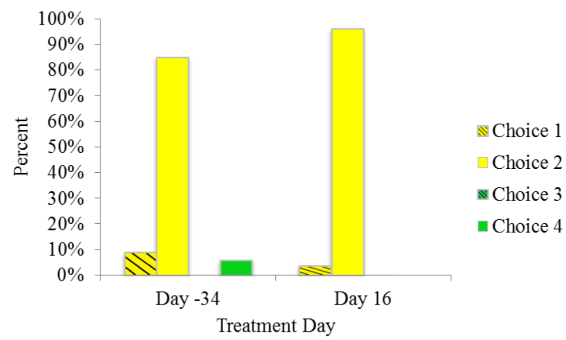



Figure A40. Percent of Choices Ordered by 3rd Grade - Clip Treatment

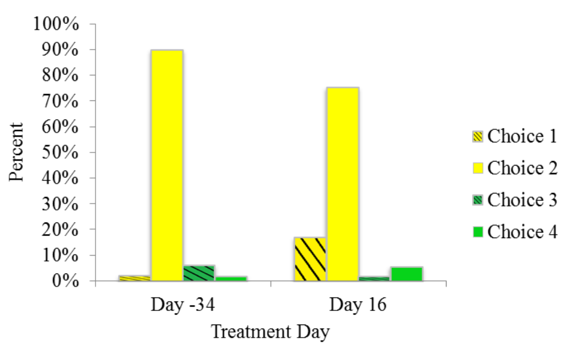



Figure A41. Percent of Choices Ordered by 4th Grade - RST Treatment

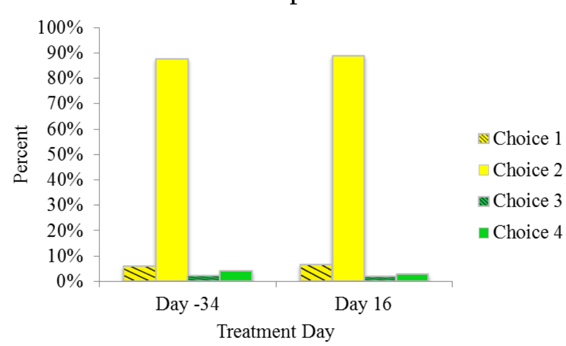



Figure A42. Percent of Choices Ordered Total

Choice 1 - (Yellow) Chili Mac
Choice 2 - (Yellow) Cheese Pizza
Choice 3 - (Green) Santa Fe Turkey Wrap
Choice 4 - (Green) Buffalo Chicken Salad

Set 8, Identical Menu Choices

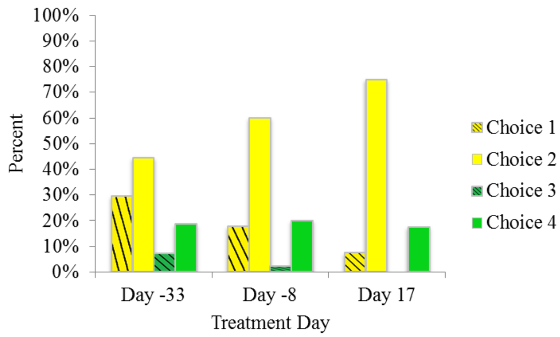



Figure A43. Percent of Choices Ordered by Kindergarten - Clip Treatment

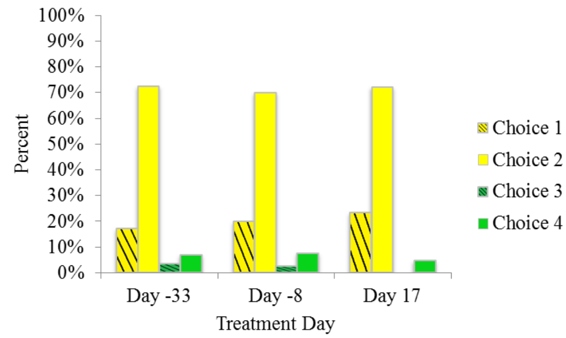



Figure A44. Percent of Choices Ordered by 1st Grade - Magnetic Board

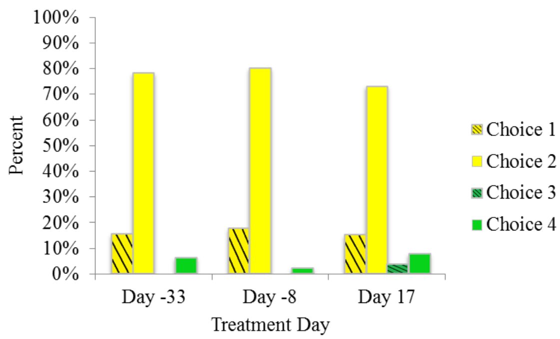



Figure A45. Percent of Choices Ordered by 2nd Grade - Box Treatment

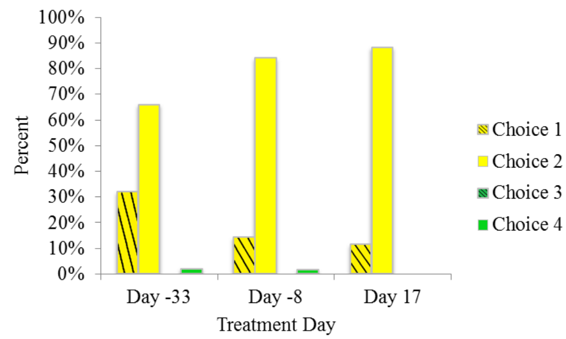



Figure A46. Percent of Choices Ordered by 3rd Grade - Clip Treatment

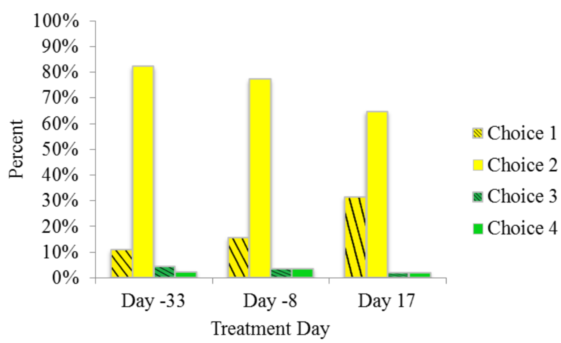



Figure A47. Percent of Choices Ordered by 4th Grade - RST Treatment

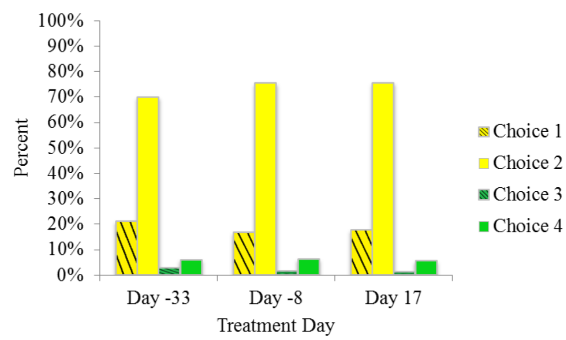



Figure A48. Percent of Choices Ordered Total

Choice 1 - (Yellow) Chicken Parmesan
Choice 2 - (Yellow) Hamburger/Cheeseburger
Choice 3 - (Green) Turkey and Cheese Wrap
Choice 4 - (Green) Fruit, Yogurt and Cheese Plate

Set 9, Identical Menu Choices

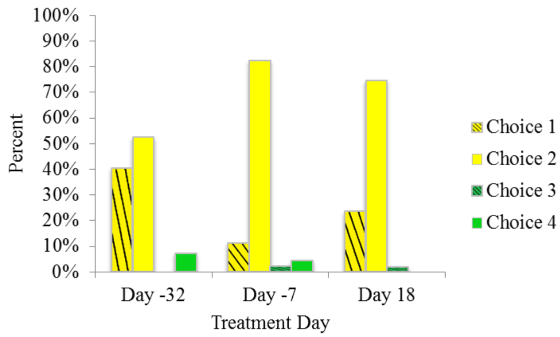



Figure A49. Percent of Choices Ordered by Kindergarten - Clip Treatment

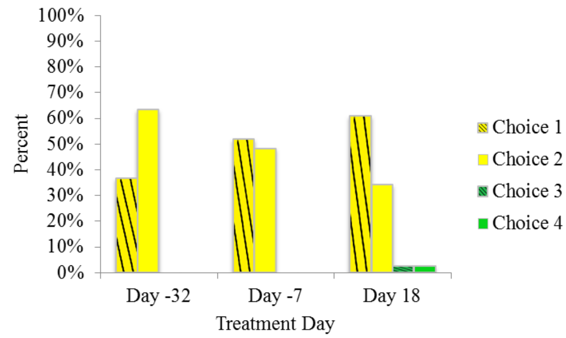



Figure A50. Percent of Choices Ordered by 1st Grade - Magnetic Board

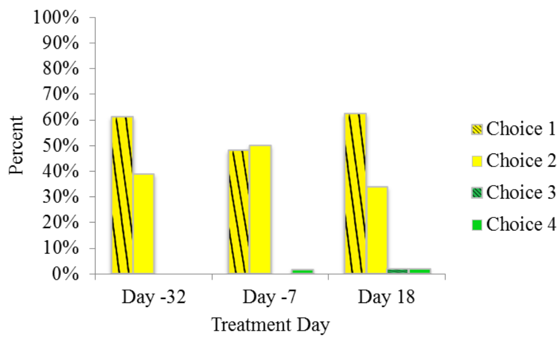



Figure A51. Percent of Choices Ordered by 2nd Grade - Box Treatment

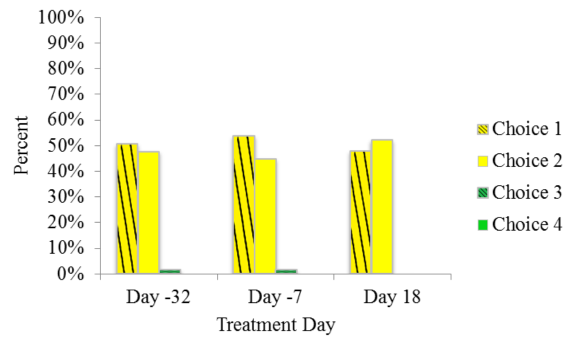



Figure A52. Percent of Choices Ordered by 3rd Grade - Clip Treatment

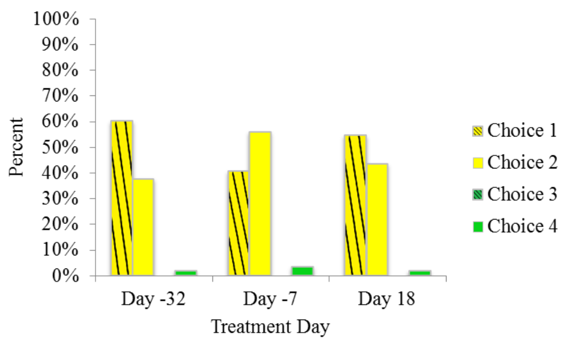



Figure A53. Percent of Choices Ordered by 4th Grade - RST Treatment

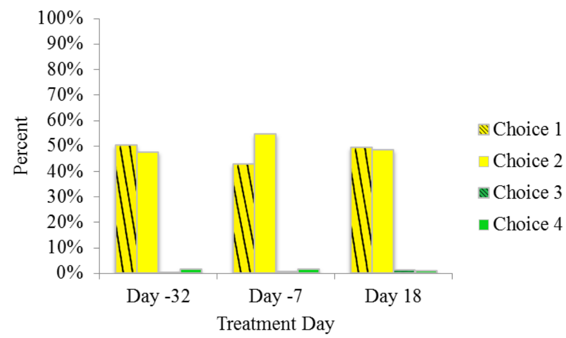



Figure A54. Percent of Choices Ordered Total

Choice 1 - (Yellow) Pizza Sticks with Marinara
Choice 2 - (Yellow) Chicken Nuggets
Choice 3 - (Green) Chicken Salad Sub
Choice 4 - (Green) Turkey and Cheese Salad

Set 10, Identical Menu Choices

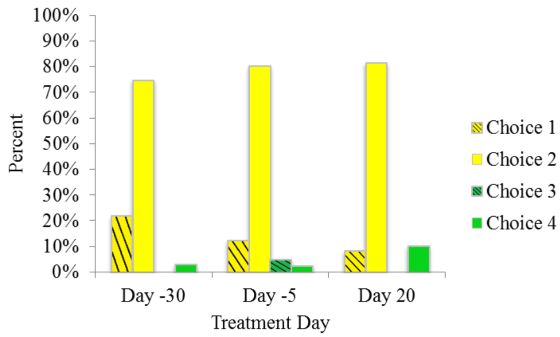



Figure A55. Percent of Choices Ordered by Kindergarten - Clip Treatment

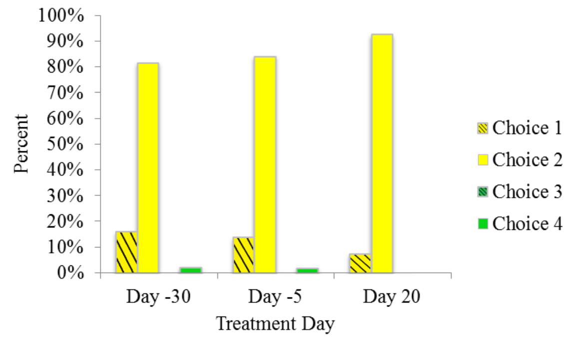



Figure A56. Percent of Choices Ordered by 1st Grade - Magnetic Board

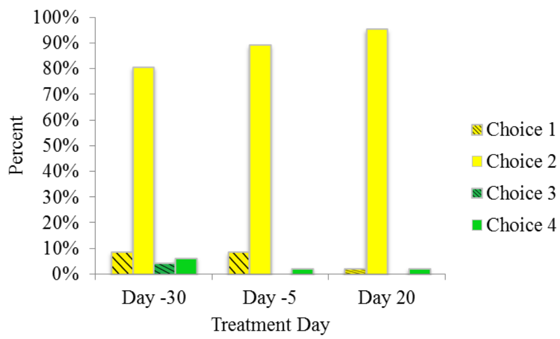



Figure A57. Percent of Choices Ordered by 2nd Grade - Box Treatment

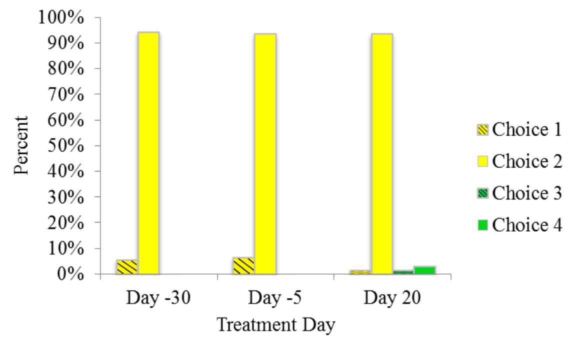



Figure A58. Percent of Choices Ordered by 3rd Grade - Clip Treatment

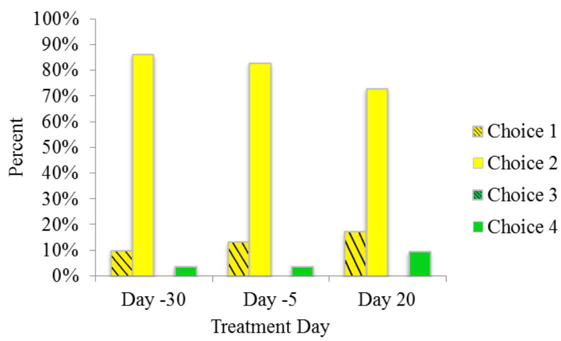



Figure A59. Percent of Choices Ordered by 4th Grade - RST Treatment

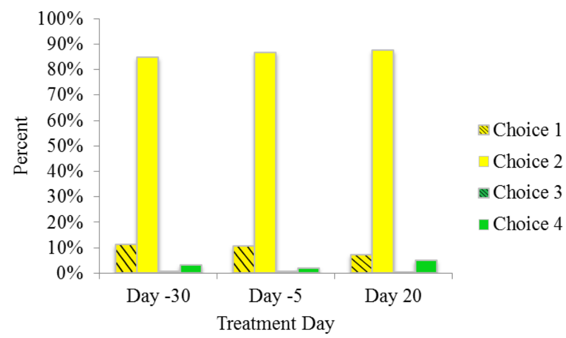



Figure A60. Percent of Choices Ordered Total

Choice 1 - (Yellow) Orange Chicken and Broccoli with Veggie Rice
Choice 2 - (Yellow) Hot Dog on a Bun
Choice 3 - (Green) Roasted Veggie Wrap
Choice 4 - (Green) Baja Chicken Fajita Salad

Set 11, Identical Menu Choices

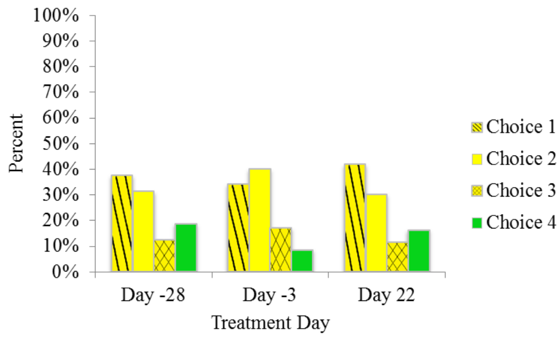



Figure A61. Percent of Choices Ordered by Kindergarten - Clip Treatment

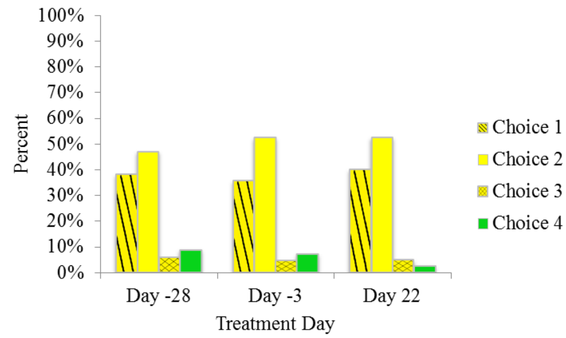



Figure A62. Percent of Choices Ordered by 1st Grade - Magnetic Board

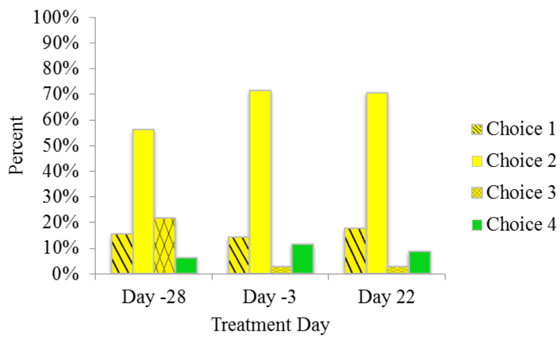



Figure A63. Percent of Choices Ordered by 2nd Grade - Box Treatment

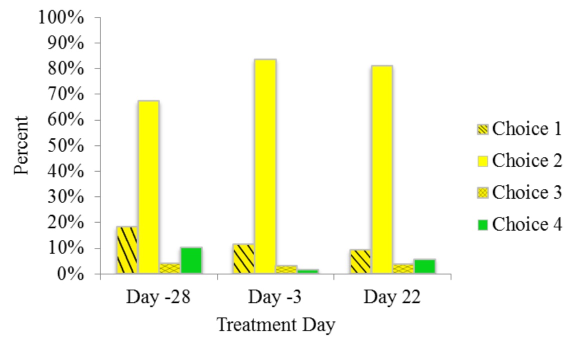



Figure A64. Percent of Choices Ordered by 3rd Grade - Clip Treatment

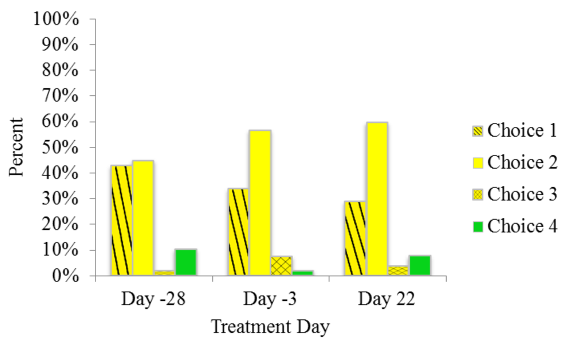



Figure A65. Percent of Choices Ordered by 4th Grade - RST Treatment

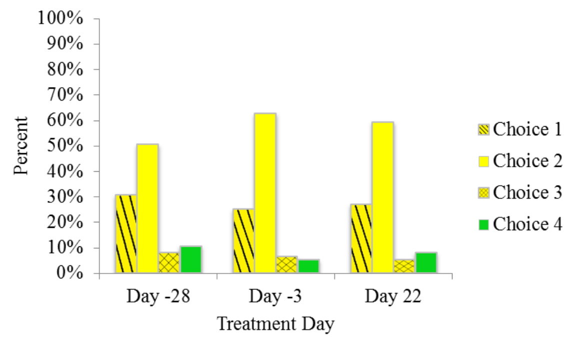



Figure A66. Percent of Choices Ordered Total

Choice 1 – (Yellow) Chicken Pot Pie
Choice 2 – (Yellow) Meatball Pizza Sub
Choice 3 – (Yellow) Ham and Cheese Sub
Choice 4 – (Green) Chicken Salad

Set 12, Identical Menu Choices

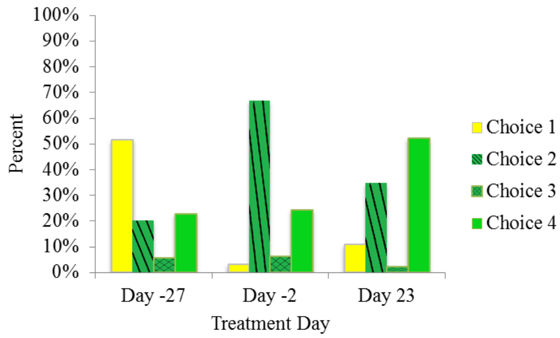



Figure A67. Percent of Choices Ordered by Kindergarten - Clip Treatment

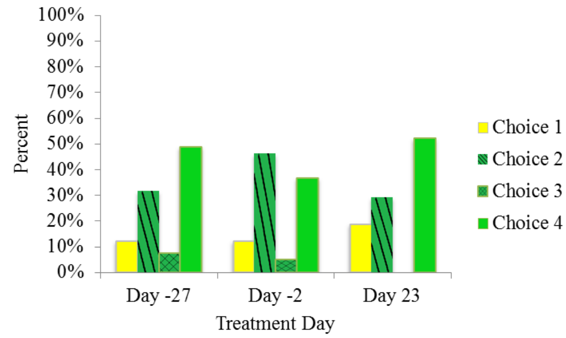



Figure A68. Percent of Choices Ordered by 1st Grade - Magnetic Board

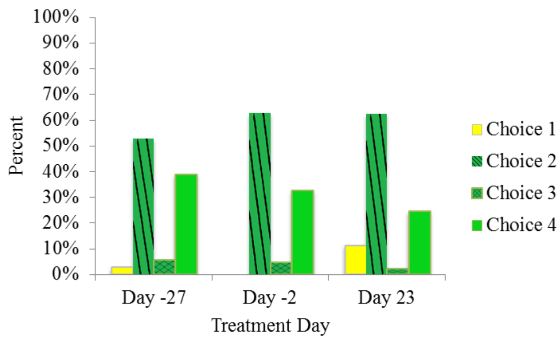



Figure A69. Percent of Choices Ordered by 2nd Grade - Box Treatment

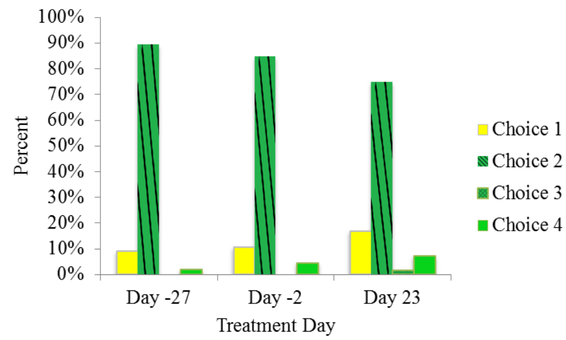



Figure A70. Percent of Choices Ordered by 3rd Grade - Clip Treatment

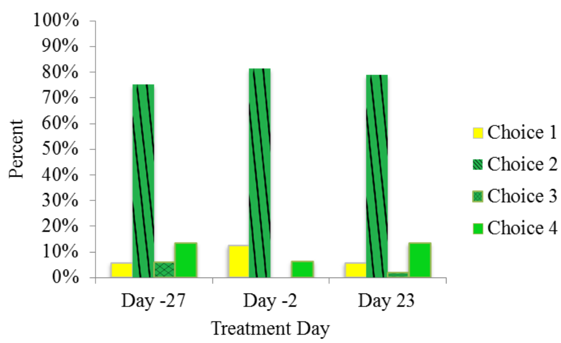



Figure A71. Percent of Choices Ordered by 4th Grade - RST Treatment

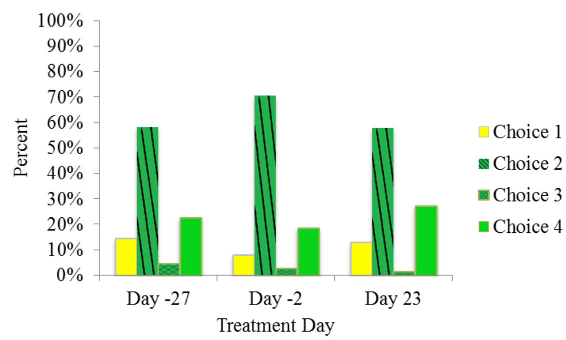



Figure A72. Percent of Choices Ordered Total

Choice 1 – (Yellow) Chili Con Carne
Choice 2 – (Green) Chicken Sandwich
Choice 3 – (Green) Turkey and Cheese Wrap
Choice 4 – (Green) Popcorn Chicken Salad

Set 13, Identical Menu Choices

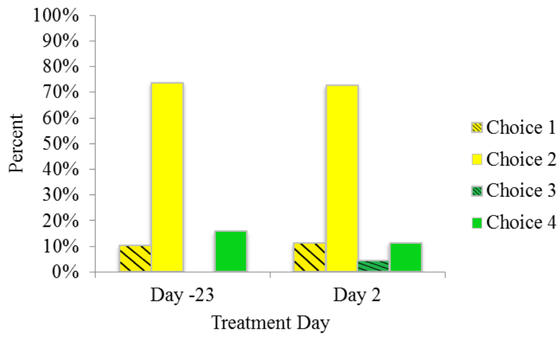



Figure A73. Percent of Choices Ordered by Kindergarten - Clip Treatment

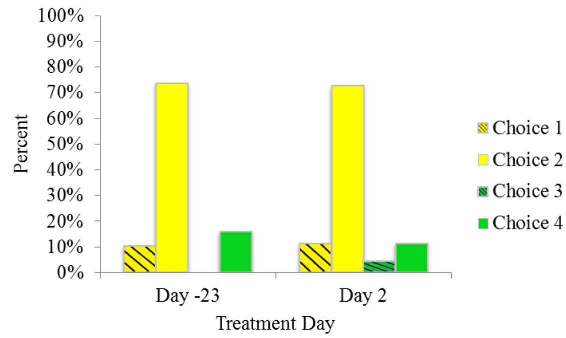



Figure A74. Percent of Choices Ordered by 1st Grade - Magnetic Board

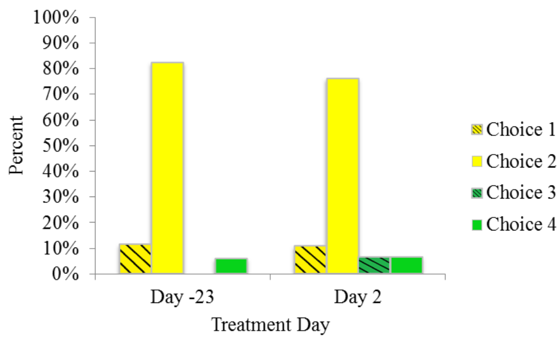



Figure A75. Percent of Choices Ordered by 2nd Grade - Box Treatment

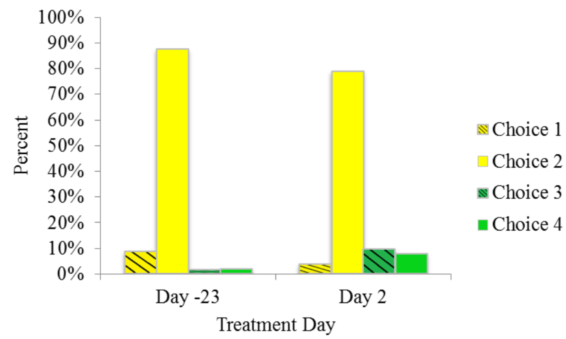



Figure A76. Percent of Choices Ordered by 3rd Grade - Clip Treatment

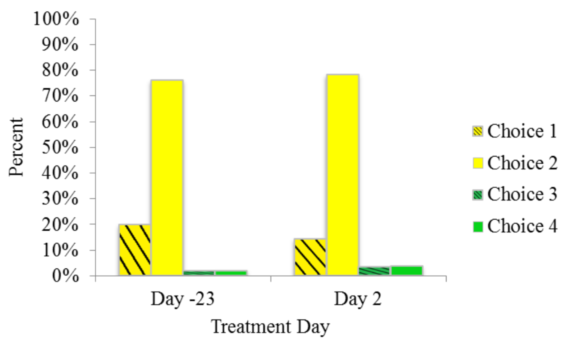



Figure A77. Percent of Choices Ordered by 4th Grade - RST Treatment

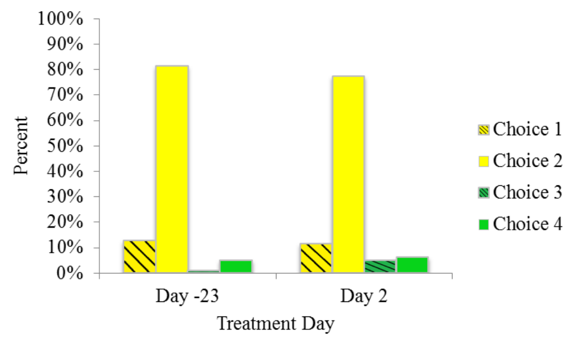



Figure A78. Percent of Choices Ordered Total

Choice 1 – (Yellow) Salisbury Steak and Gravy
Choice 2 – (Yellow) Pizza Sticks and Marinara
Choice 3 – (Green) Chicken Salad Sub
Choice 4 – (Green) Buffalo Chicken Salad

Set 14, Identical Menu Choices

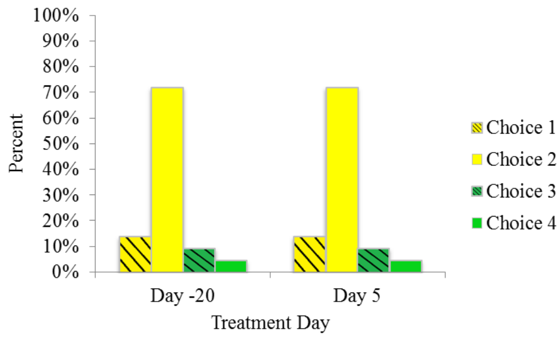



Figure A79. Percent of Choices Ordered by Kindergarten - Clip Treatment

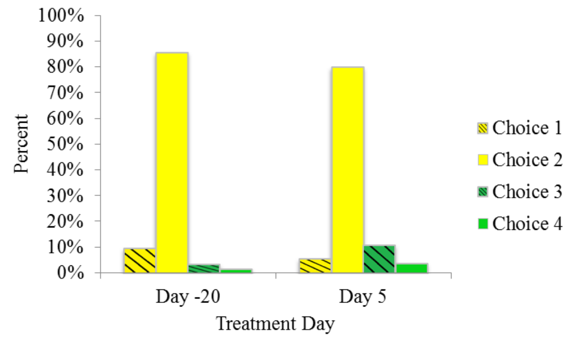



Figure A80. Percent of Choices Ordered by 1st Grade - Magnetic Board

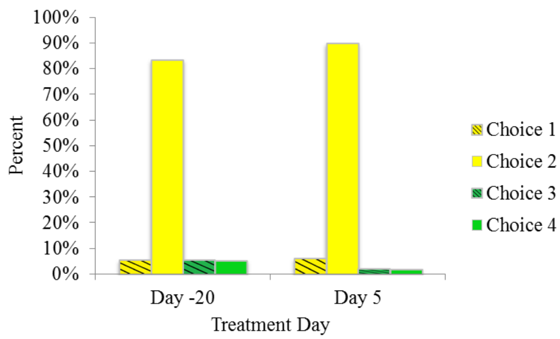



Figure A81. Percent of Choices Ordered by 2nd Grade - Box Treatment

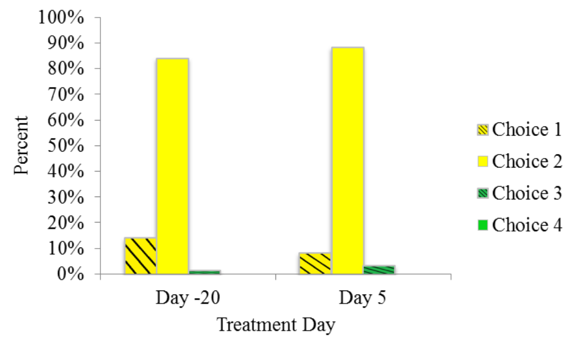



Figure A82. Percent of Choices Ordered by 3rd Grade - Clip Treatment

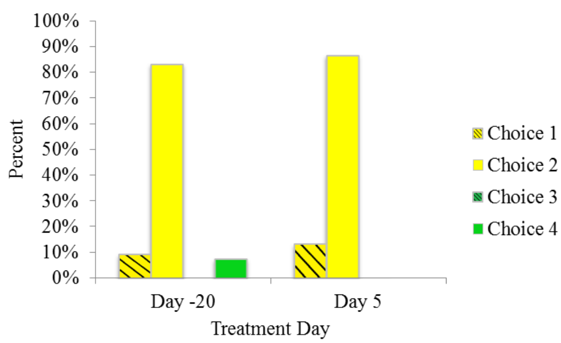



Figure A83. Percent of Choices Ordered by 4th Grade - RST Treatment

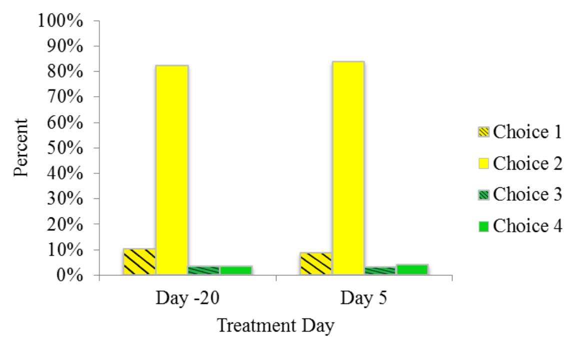



Figure A84. Percent of Choices Ordered Total

Choice 1 – (Yellow) Sloppy Joe
Choice 2 – (Yellow) Chicken Nuggets
Choice 3 – (Green) Turkey and Cheese Sub
Choice 4 – (Green) Spicy Popcorn Chicken Salad