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# Assessing the Impact of Pre-Meal To-Go Containers on Consumption and Satiety

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BY

Claudia Bueno

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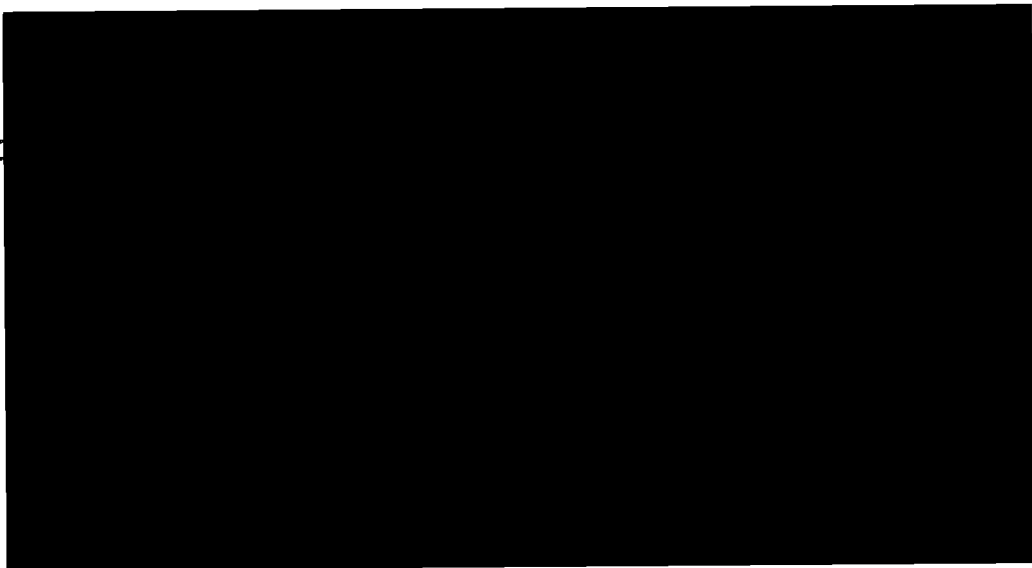
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## Abstract

Lack of portion control is one of the main causes of obesity. Restaurants offer portions larger than recommended by the USDA. This can lead to portion distortion among consumers and increased consumption. The purpose of this study was to evaluate the effect of offering a to-go box before a meal on reducing consumption.

In this quasi-experimentally designed study, a convenience sample of diners ( $N=35$ ) served as subjects. The experimental group ( $n=18$ ) was offered a to-go box before the meal, and the control group ( $n=17$ ) was offered a to-go box after the meal. The food was weighed before and after the dining occasions to measure consumption, and a survey was administered to measure satiety, portion size awareness, and health awareness.

There were no significant differences between groups in the amount consumed during of the meal ( $p=0.06$ ) and their feelings of satiation ( $p=0.20$ ), although there were minor correlations established between consumption in relation to portion size awareness and health awareness.

The results of the study did not support the hypothesis that offering a to-go box before a meal would decrease consumption. This could have been due to confounding factors, such as the significant difference in age ( $p=0.007$ ) between the cohorts and diners' unfamiliarity with receiving a box before the meal. Replicating the study with a better representative sample could possibly yield significant results.

## **Dedication**

I dedicate this to my friends and family for their support, encouragement, and prayers throughout the process.

### **Acknowledgments**

I am thankful to God for empowering me with wisdom and determination to complete this project and for blessing me with a supportive team.

I would like to express my gratitude to each member of my committee for each playing a vital role in the completion of the project: Dr. Painter for providing me with the opportunity and for his guidance and support throughout the entire process, Dr. Wilkinson for his advice and consciousness, Dr. Brooks for her genuine interest in the success of the project, Dr. Hugo for her dependability, and Dr. Kennedy- Hagan for always being so motivational and encouraging.

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## **Chapter 1**

### **Introduction**

It is evident that obesity is a matter of concern in America. According to the Centers for Disease Control and Prevention (2014), more than one third of adults in the United States are obese. As weight increases, risk for diseases such as coronary heart disease, type II diabetes, hypertension, stroke, and certain cancers increase as well. Obesity is caused by an imbalance in energy. Taking in too many calories and leading a sedentary lifestyle are both contributing factors (National Heart..., 2014). One of the major roles of nutritionists and dietitians is to provide education on appropriate portion sizes to their patients and clients. Unfortunately, it is a challenge for practitioners to reach the entire population due to the typical portion sizes provided in most restaurants that contradict the epitome encouraged by healthcare professionals. The portion sizes provided in restaurants are significantly larger than the portion sizes recommended by dietitians.

#### **Efforts from the Restaurant Industry**

Legislation has been proposed to address the issue and restaurants have aimed to provide smaller portions to correct the problem, but obesity remains an issue nonetheless; restaurant portion sizes continue to be significantly larger than recommended and their consumption is associated with a greater caloric intake and obesity (Factors influencing restaurant..., 2007). Furthermore, despite these legislative efforts, diet-related diseases continue to be among the leading causes of preventable death in the United States.

Some restaurants have also taken steps to address the issue. For instance, McDonald's eliminated their supersized options. Unfortunately, there are other

restaurants that have increased their portion sizes, such as Burger King and Wendy's (Young & Nestle, 2007). Many fast food chains have also eliminated descriptors, such as Supersize, but maintained the large sizes which may be more misleading for consumers when conceptualizing the appropriate portion size. Other restaurants have added larger sizes of items to their menus and their medium sized items have become their small sized items. Also, many restaurants have not demonstrated efforts to reduce their portion sizes since 2002; increases in portion sizes are more apparent than attempts to reduce consumption (Young & Nestle, 2007).

The Food and Drug Administration (FDA) created the Nutrition Facts Label guidelines in 1993 and used consumption data from the 1970s and 1980s to determine the serving sizes used by manufacturers. Recent data indicates that consumption today differs from consumption patterns from the past; consumption has increased over the years. Regardless, serving sizes listed on packages are not indicative of the recommended serving size; they are created by assessing consumption behaviors and reflect the amounts people actually eat (United States..., 2014; Herring, Britten, Davis, & Tuepker, 2002).

### **The Impact of Portion Sizes**

According to Scourboutakos and Abbe (2012) portion sizes have a higher impact on individuals' weight than the types of foods they choose to eat. In 2010, MyPlate replaced the Food Guide Pyramid to help people visualize correct portion sizes after research indicated the need. Messages for consumers were created based on the 2010 Dietary Guidelines and include recommendations such as, "enjoy what you eat, just eat less of it" signifying the importance of portion control (United States Department..., 2011). MyPlate serves as a model of correct portion sizes in contrast to the Food Guide

Pyramid which presents a hierarchy of food groups categorized by the groups that should be consumed in larger quantities or more frequently.

Although the impact of portion sizes on weight and obesity is known, foodservice establishments are hesitant to decrease their portion sizes due to the profits they gain and the satisfaction consumers obtain from getting an optimum unit price. The increase in portion size has led to the evolution of a distorted view on portion sizes. Moreover, it creates a barrier in mending the distorted perception at a large scale. An effort has been placed by many sectors to decrease consumption, and it has been found that removing food out of sight and out of reach decreases consumption (Diliberti, Bordi, Conklin, Roe, & Rolls, 2004).

### **The Current Study**

The purpose of this study was to investigate approaches that may assist in reducing consumption and eliminating the distorted portion size perception while fulfilling the expectations of consumers and foodservice establishments.

#### **Need for the study.**

A need for this study has been established due to the continuous increase in portion sizes and obesity rates. The results of this study can be used to assess if consumers are willing to place food out sight before the meal and if placing it out of sight decreases consumption. Consumers may be able to habituate themselves into eating appropriate portion sizes by placing food in a container prior to consuming a meal.

**Definition of terms.**

- Body Mass Index (BMI) is the quotient of weight and height and is used to categorize weight into normal, underweight, overweight, and different classes of obesity (Centers for Disease Control..., 2015).
- Obesity is defined as a BMI greater than 30 and is categorized into obesity I, obesity II , and obesity III depending on the severity (Centers for Disease Control..., 2015).
- Full- service restaurant is defined to be an establishment where customers are seated and meals are brought to the table by a server (Larson, Neumark-Sztainer, Laska, & Story, 2011).
- Amorphous food is defined as a food that takes the shape of its container, such as pastas or soup (Kleef, Shimizu, & Wansink, 2012).
- In this study, an appropriate portion size is a serving size recommended by the United States Department of Agriculture (USDA) and established by the Dietary Guidelines.
- Taring scale is defined as a scale that has the ability to subtract the weight of an object, so it is not considered in the weight calculated (Merriam-Webster Dictionary, n.d.).
- Pre-meal container, in this study, is defined as offering the container with the entrée and before the consumption of the entrée or dessert.
- Post-meal container, in this study, is defined as offering the to-go box after the entrée has been consumed.

- In this study, health awareness is defined as the amount of attention and concern placed on the health and nutrition content of food when dining.
- In this study, portion size awareness is defined as the acknowledgment and concern placed on the sizes of servings of foods when dining.

### **Research questions.**

The purpose of this study was to determine if asking participants to voluntarily place a portion of their meal in a take-away container before eating would reduce consumption. The research questions that guided this study include:

- Is there a statistically significant difference in consumption between the group offered a to-go box before the meal and the group offered a to-go box after the meal?
- Is there a statistically significant difference in satiety between the group offered a to-go box before the meal and the group offered a to-go box after the meal?
- Is there a correlation between health awareness when dining out and overall consumption?
- Is there a correlation between portion size awareness and overall consumption?

Consumption was measured by weighing the plates before the meal and after the meal and weighing the containers; the difference between the weight of the plates and the containers prior to the meal and the plates' weight after the meal was calculated to determine consumption. Satiety was measured using survey questions that measured the participants' feelings of fullness and their satisfaction with the meal, and health and

portion size awareness were measured by using the survey which contained questions that asked participants if they acknowledge portion sizes when at restaurants and if they try to eat healthy when eating at restaurants.

**Limitations.**

The meal was advertised as a free meal which could have served as a limitation to the study. Furthermore, all subjects were provided the same food, which eliminates the presentation of options that could have impacted the amount consumed.

**Hypotheses.**

It was hypothesized that there would be a significant difference in consumption between the experimental and control group; there would be no significant difference in satiety between both groups; and, there would be a positive correlation between those that consume less and health awareness and portion size awareness. The objective of this study was to present a method for restaurants to reduce consumption while maintaining their current portion sizes and profits. Chapter two will include a review of the literature.



## Chapter 2

### Literature Review

Obesity is a well-known issue in the United States. It has also become a global issue since it is also prevalent in other industrialized countries. Many factors have been assessed to determine the cause of this epidemic. Associations have been made with obesity and the increase of saturated fat intake and convenience foods. There are multiple groups that are responsible for the increased prevalence of obesity and those that have contributed need to take action to counter the consequences. Among those include the school systems, marketers, the foodservice industry, and the government. The government has taken steps to correct the issue by implementing new laws on labeling, providing education and healthcare, and enforcing schools to provide nutritionally adequate lunches. The foodservice industry has listed nutritional content on their menus and food items; however more effort is necessary from this sector for an improvement in the obesity rate to be evident. The prevalence of obesity, the role the foodservice industry in consumers' health, and consumers' expectations and dining practices will be reviewed.

#### **Prevalence of Obesity**

Obesity in the United States exceeds 30% in most age groups with the age adjusted prevalence of overweight and obesity at 68% (Flegal, Carroll, Ogden, & Curtin, 2010). Furthermore, childhood obesity has more than tripled over the past generation; parents and caregivers are the most influential in the determination of children's diets. They provide the resources and serve as role models for young children (Newman, Howlett, & Burton, 2014). Obesity is an issue that affects multiple populations, and it is a risk factor for various diseases such as hypertension, hypercholesterolemia, stroke, heart

disease, some cancers, and arthritis (Centers for Disease..., 2014). There is a significant association, especially, between obesity and diabetes. The high prevalence of these diseases has made it a nationwide issue that is more challenging to address. However, preventative interventions that are aimed at the entire population may exhibit benefits, not only for those that are obese, but for the nation as a whole (Newman et al., 2014).

Most restaurants serve foods in quantities that place consumers at risk for chronic diseases such as obesity (Cohen & Story, 2014). Food portion sizes may be a potential contributor of obesity (Zlatevska, Dubelaar, & Holden, 2014). In urbanized communities and communities of low socioeconomic status there are significant associations between the number of fast food restaurants and the childhood obesity rate (Flegal et al., 2013). Each meal eaten away from home is estimated to add an additional 130 calories daily and cause a decrease in the intake of nutritious foods. Furthermore, eating one meal away from home a day can result in two extra pounds of weight gain per year. Eating lunch and dinner away from home has the largest impact on the total calories consumed. However, eating breakfast away from home leads to the unhealthiest choices. Eating foods away from home generates greater consequences for those that are obese; consuming a meal outside the home is estimated to add 240 calories to an obese person's intake and only 90 calories to a non-overweight person's intake. On the contrary, overweight individuals have a higher quality diet which demonstrates they may choose healthier choices but larger portions (Mancino, Todd, & Lin, 2009). Nonetheless, both overweight and non-overweight individuals add unnecessary calories to their diets by dining at foodservice establishments.

## **Governmental Efforts and the Role of the Foodservice Industry**

The foodservice industry plays a significant role in the health of all people. Including nutrition information on food items has been beneficial for consumers to understand the caloric content of their foods and has increased awareness (Burton, Creyer, Kees, & Huggins, 2006). More is needed from restaurants to correct the obesity issue. Increasing taxes on foods with low nutritional value has been proposed but has not been adopted in a significant manner. Banning supersized items may lead vendors to raise prices of regular sized items or label their supersized items as regular sized (Dobson & Gerstner, 2010; Young & Nestle, 2007). A major issue for the lack of action is the fear of losing profits during the process. This has made it difficult to instill many standards and regulations to food service (Cohen & Story, 2014).

### **Portion sizes and profits.**

According to Dobson & Gerstner (2010), offering larger portion sizes for a minimal price increase has led popular food brands to gain customers and profits. Larger packages are typically priced less per ounce compared to smaller packages of the same item, and consumers are aware of this strategy and typically assume the larger package is less costly than the smaller one (French, 2003; Wansink, 1996). Therefore, product size can be used as a competition strategy by food vendors. The number of servings listed on a product can also be used as sales strategy. By listing small serving sizes on products packages appear to contain a larger quantity of the product and appear to have reduced fat and sugar (Bryant & Dundes, 2005).

**Portion sizes and social class.**

Individuals often associate product size with status; higher status consumers are associated with purchasing larger products of which food is included. Those of lower-status are also more inclined to purchase larger items possibly to relate to those of higher status (Dubois, Rucker, & Galinsky, 2011). Regardless of the reasoning, the food service industry uses purchasing trends to gain larger profits. Proportional pricing, on the other hand, is a method not often used that reduces the likelihood of overweight and obese individuals to choose larger sizes and makes them more inclined to choose the reference sizes (Vermeer, Alting, Steenhuis, & Seidell, 2009).

There are more fast food and table service restaurants located in areas of low socioeconomic status. These areas are often associated with minority groups and a higher incidence of diet-related diseases, such as obesity. Fast-food restaurants tend to have lower prices and more foods that lack nutrients. Furthermore, fast-food restaurants have more promotions that may be considered obesity promoting. A study also demonstrated that fountain beverages are about half the price of more nutritious drinks such as milk or juice. Moreover, fountain drinks are more widely available in restaurants which may lead consumers to be more inclined to order fountain beverages due to the certainty that they will be available (Lee, Heinrich, Reese-Smith, Regan, & Adamus-Leach, 2014).

An important consideration for restaurants is pricing; consumers expect to receive large quantities for low prices. When a consumer is faced with choosing between a larger meal and a smaller one, the cheaper the larger meal is relative to the small one the more inclined the consumer is to purchase the larger one even when at a state of low hunger (Jeitschko & Pecchenino, 2006). In fact, how much or how little a customer pays for a

product can affect how much enjoyment is derived from it (Lee & Tsai, 2014; Siniver, Mealem, & Yaniv, 2013). Consumers may even reduce their consumption when paying after a meal in comparison to paying before; if consumers pay before a meal they may feel inclined to attain the most satisfaction from what they have invested in; therefore, portion sizes need to be attractive to consumers by providing a product that satisfies consumers' demands at a reasonable price (Edwards, Engstrom, & Gustafsson, 2008; Siniver et al., 2013).

#### **Caloric content of restaurant food.**

Scourboutakos & Abbe (2012) examined the food items of 20 sit-down restaurants and 65 fast-food restaurants and found that all establishments had items that exceeded 1000 calories per serving which is almost half of the daily recommended amount for an average individual. Sit-down restaurants, in particular, had higher calories per serving in all of their food categories compared to fast-food restaurants. A typical side of fries in a sit-down restaurant can reach up to 690 calories and will have the highest caloric content in comparison to other side dishes. A correlation that was found in this study was that as calories increased serving sizes increased as well, whereas caloric density did not. This demonstrates that serving size may have a larger influence on obesity than the nutritive quality of the foods consumed. In fact, 50% of salads, which are often ordered by consumers intending to lose weight, contained more calories than a rib meal or a stir fry (Scourboutakos & Abbe, 2012).

#### **Promotional methods.**

Promotional methods used by food service include making an indulgence appeal and manipulating names on the menus. Research shows that creating an indulgence

appeal is an effective promotion strategy used by restaurants, because an indulgence food motive is a strong predictor of impulse buying in a restaurant. Therefore, including an emotional appeal is a useful tactic (Miao & Mattila, 2013). Creating appropriate names for menu items, and even the restaurant, can be beneficial for restaurants in terms of sales. The names given to food items can influence consumers' choice of side orders. It is common for restaurants to make health claims on items; the items with health claims typically contain 50% more calories than the ones without health claims (Chandon & Wansink, 2007).

### **Chefs and portion size perception.**

Interestingly, the chefs who prepare the foods for these establishments also have a distorted perception of portion sizes. The majority of chefs surveyed indicated that they served regular portions of food in their facilities. Less than 20% of chefs believed they served large or extra large portions to consumers. However, the majority of chefs were aware that they served portions larger than those recommended by the US government. The chefs reported that the portion size served is dependent on the presentation of food, cost, customer expectations, caloric content, and competition with other restaurants.

Furthermore, this study indicated that chefs who were over 50 years old served significantly smaller portions than the younger chefs surveyed (Factors influencing restaurant portion..., 2007). The differences in opinion between age groups can indicate that portion distortion is an issue more prevalent among the younger generations. Inaccurate perceptions on portion size are not only evident in chefs but are especially evident among consumers.

## **Consumer Expectations and Dining Practices**

Studies have examined participants' perceptions on appropriate portion sizes and participants have indicated larger portion sizes to be typical. Portion sizes provided in restaurants do not coincide with portion sizes advised by the United States Department of Agriculture (USDA). Single portion sizes are larger than reference portion sizes. For instance, bottles of drinks are larger than the recommended amount and plates and bowls hold more than the recommended servings. This can have a detrimental effect on health, because individuals may be guided to consume a certain amount of serving sizes by healthcare professionals but may have a different definition of a serving size as a result of what they have been exposed to in restaurants. Unfortunately, consumers have acclimated to the larger portions and will exhibit dissatisfaction when receiving standard portion sizes of foods and beverages (Edwards et al., 2008).

On average, people fill 70% of their dinnerware and consider that to be the norm and view it as appropriate for others (Wansink & Van Ittersum, 2013). In a study, 79% of subjects claimed to look at the space taken up on the plate with less subjects stating that they looked at the quantity of food and the height of the food (Ramsay & Wise, 2009).

### **Consumer awareness.**

Consumers are aware that they are overeating, but they are unaware how much they are overeating due to their distortion of an adequate portion size. When consumers are presented with larger packages they are more inclined to pour more of the contents, and they are somewhat mindful of that (Schwartz & Byrd-Bredbenner, 2006). In spite of their awareness, individuals are unable to distinguish appropriate portion sizes which may inhibit them from controlling their intake (Cohen & Story, 2014). Bryant & Dundes

(2005) found that more than one third of subjects consumed at least 200% of the standard serving size of certain foods and beverages. When 150% portion sizes were offered to participants they consumed 43% more energy from the entrée and also ate more of the accompaniments (Diliberti et al., 2004). Likewise, when portion sizes are doubled, consumption increases an average of 35% as demonstrated by Zlatevska et al. (2014). When a portion is tripled participants may consume almost 70% more (Kerameas, Vartanian, Herman, & Polivy, 2014). The correlation between container size and consumption remains true even with products of low quality that may be perceived as undesirable (Wansink & Kim, 2005).

Even experts in the field of nutrition consumed 31% more when using larger bowls and 14.5% when using a larger utensil, and diners selecting larger plates served themselves 52% more and therefore consumed 45% more than those using smaller plates (Wansink & Van Ittersum, 2013; Wansink, Van Ittersum, & Painter, 2006). This increase in consumption can be a result of external cues which may have a larger impact on intake than internal cues, such as satiety. Scheibehenne, Todd, & Wansink (2010) further support that theory; they demonstrated that participants dining in the dark ate larger portions than those eating with light and guided by visual cues. Moreover, the amount of dessert the participants served themselves was independent of the amount of food they had previously consumed which shows that lack of visual cues hinder satiation. In a different study, consumers receiving different sized portions claimed to be equally satiated which demonstrates again that visual cues are more powerful than internal cues of satiation (Diliberti et al., 2004).



Portion distortion may be more prevalent in ambiguous foods that are amorphous, such as pasta and soup, because their unit size is not clear (Kleef, Shimizu, & Wansink, 2012). In a study conducted by Wansink, Painter, & North (2005), participants ate 73% more from refillable soup bowl than participants eating soup from a normal bowl. The participants eating from the refillable bowls also indicated the same level of satiation as those eating soup from the normal bowls regardless of their body mass index (BMI). Another study, focusing on pasta intake yielded similar results; participants that were provided with the larger plate had an increased intake of more than 300 grams regardless of their awareness that they would be served dessert (Kleef Shimizu, & Wansink, 2012).

#### **Smaller packages' effects on consumption.**

Unfortunately, smaller servings and packages may also encourage overconsumption despite the consumers' beliefs that small packages help regulate consumption (Coelho do Vale, Pieters, & Zeelenberg, 2008). To begin with, consumers may feel more inclined to eat an additional package, because the size of the package is too small (Spence et al., 2013). Smaller packages and health claims may cause consumers to increase energy intake; according to Scott, Nowlis, Mandel, & Morales (2008), consumers classify smaller packages as diet food, because larger portions have become the societal norm. Consuming food in small packages consistently leads to decreased awareness and an inability to track and predict consumption. In another study, consumers eating a smaller meal were more likely to have a starter before the meal (Vermeer, Steenhuis, Leeuwis, Heymans, & Seidell, 2011).

### **Effects of health claims on packages and menus.**

Consumers take into account the nutritional value and healthfulness of foods when making their purchases. Participants in a study expressed interest in having nutrition information easily accessible to them at restaurants. However, taste and convenience may outweigh healthful eating (Lando & Labiner-Wolfe, 2007).

Consumers choosing entrees with health claims were more likely to choose side dishes, desserts, and beverages containing up to 131% more calories. As stated earlier, items labeled as healthy may contain more calories than those without health claims, so the calories consumed during a meal defined as healthy can be significant.

Underestimating the calories, saturated fat, and sodium level in unhealthy options is another commonality. Consumers underestimate the number of servings they eat, and the underestimation of unhealthy items can be by more than 600 calories (Abramvotich et al., 2012; Ovaskainen et al., 2008; Vermeer et al., 2011).

Health conscious consumers may go into foodservice establishments with the motive of purchasing healthy low calorie items, such as salads, but as indicated previously, those items may be more calorically dense. Furthermore, that fixation may prevent consumers from shifting their focus to portion sizes. Croker, Sweetman, & Cooke (2009) found that participants in their study were not only unconcerned about portion sizes but were also unlikely to welcome any guidance. Moreover, this study exhibited consumers' lack of awareness regarding recommended portion sizes, particularly those of children. Other studies examining the consumption behaviors of children support the positive correlation of portion size and consumption (Fisher, Birch, Zhang, Grusak, & Hughes, 2013; Ittersum & Wansink, 2013).

Larger portions may be beneficial since individuals are more likely to choose the healthier option when presented with larger assortments. This was evident in Sela, Berger, & Liu's (2009) study when 76% of participants selected from a larger assortment of fruit instead of the cookie assortment. Participants were also more likely to choose reduced fat options when choosing from a larger assortment indicating the participants are health conscious. In a similar study, consumption was reduced by 50 calories when bags of granola were labeled as containing two servings. Labeling the servings was even more impactful on overweight individuals reducing consumption by 74 calories (Wansink & Chandon, 2006). This demonstrates that consumers have some awareness in label reading. Another important aspect to consider is consumer expectations. Consumers who purchased larger meals rated their meals as offering greater value (Diliberti et al., 2004). This perception was especially common among consumers over the age of 35 years. The meal ratings can affect restaurants and can lead them to manipulate the portion sizes provided.

### **Conclusion**

It has become clear that portion sizes have increased over the years which has been associated with an increase in consumption. The foodservice industry provides a large part of peoples' calories. Teenagers and young adults eat at a restaurants multiple times during the week accounting for approximately 40% of their meal intake, and children are guided by promotions aimed at their age group (Larson et al., 2011; Lee et al., 2014). Larger portions have become familiar to consumers and are perceived as typical portion sizes (Schwartz & Byrd-Bredbenner, 2006). The review of the literature demonstrates that obesity is a problem, the foodservice industry provides large portion

sizes with unreliable health claims, and consumers expect to receive large portions and are misled by the various portion sizes and health claims presented to them. Restaurants can provide sufficient servings of fruits and vegetables if the proper items are chosen (Larson et al., 2011).

A decrease in portion size can reduce profits for the foodservice industry and be a drastic change for consumers due to the current expectations. However, it is clear that placing food out of sight reduces consumption. A recent study indicated that serving food in a take-away box may decrease consumption (Schuster, Brooks, Painter, & Honselman, 2014). Serving food in take-away boxes may not be accessible to restaurants or may not be perceived as appropriate by consumers. Providing consumers with a take-away container before their meal allows them to place their food out of sight which, as previously stated, may help them regulate their intake. It can also enable restaurants to continue to serve large portion sizes and aim their marketing towards take-away options. The purpose of this study was to assess if the use of a pre-meal container would impact consumption and satiety and to measure consumers' consciousness on portion sizes. The next chapter will review the methodology of the current study.

## **Chapter 3**

### **Methodology**

This empirical quasi-experimental study took place at a student-run restaurant at a Midwestern university. A quantitative design was used to measure the difference in consumption and satiety of consumers given the option to place food in a to-go box before the meal and those given the option to use a container after the meal and the relationships between health consciousness and consumption and portion size awareness and consumption. The methodology used in this study was similar to the methodology used by Schuster et al., (2014), a previous study measuring consumption using take-away boxes. In that study, the researchers had a control group that was served food on plates and an experimental group that was served a portion of their meal on a plate and the other portion in a to-go box. The results indicated that participants with a portion of their meal served in the box prior to the meal consumed significantly less. This study differed in that participants had the option of choosing to place a portion of their food in box before the meal. Similarly, consumption and satiety were measured in this study.

### **Recruitment**

After obtaining approval from the university's Institutional Review Board (IRB) (Appendix A) subjects were recruited using an e-mail list used by students in a quantity foods course to invite guests to their meals. A convenience sample was used in this study. An e-mail was sent to 120 previous diners two weeks prior to the meal (Appendix B). The meal was advertised as a free meal and the purpose of the meal was presented, the components of the meal were provided, the time and location were stated, and a response to make a reservation within a week was requested. Subjects were given the option of

attending the meal at two different times. Research assistants were also recruited from the quantity foods course to assist in meal preparation, serving, and data collection. A reminder message was sent via e-mail three days before the meal to those who made a reservation, and their time preference was verified. Those who made a reservation for the first group were assigned to be offered the to-go boxes before the meal, and those who made a reservation for the second time slot were offered the to-go boxes after the meal.

### **Research Questions**

- Is there a statistically significant difference in consumption between the group offered a to-go box before the meal and the group offered a to-go box after the meal?
- Is there a statistically significant difference in satiety between the group offered a to-go box before the meal and the group offered a to-go box after the meal?
- Is there a correlation between health awareness when dining out and overall consumption?
- Is there a correlation between portion size awareness and overall consumption?

### **Procedure**

The meal was prepared in a foods' laboratory in the university. The researcher and six student assistants prepared and assembled the meals; three students were assigned to seat the guests and were trained by the researcher to offer the box while providing the main entrée and two students assisted in serving the meals. The researcher and another trained student recorded the weight of each course. Each plate was numbered in a hidden

manner on the bottom of the plate. The environment resembled a full-service restaurant which is an establishment where customers are seated and meals are brought to the table by server (Larson et al., 2011). The meal consisted of a salad, an entrée, a dessert, and a beverage. Participants were served approximately three cups (24 ounces) of Chicken Fettuccine Alfredo Pasta, which is the average serving size in Italian restaurants, such as Olive Garden, Joe's Italian Restaurant, Johnny Carino's and others according to Eidson et al. (2010). The meal also included a breadstick, a two ounce spinach salad, a two ounce slice of cake, and the choices of coffee, tea, or water as beverages. Each plate was weighed using a tared scale and the weights were recorded in a form created by the researcher (Appendix C). Take-away containers were numbered on the bottom identically to the plates they were accompanying.

Participants were provided with an informed consent form prior to participating (Appendix D). The subjects were first given their salad. The entrée and the take-away container were presented to the participants in the experimental group simultaneously. The participants were asked by the servers if they would like to place part of their meal in the take-away container before they began eating if they were assigned to the experimental group. A protocol similar to restaurants' was implemented in the control group; subjects were asked if they would like to use a take-away box at the end of the meal. The subjects in both groups had control over how much food was placed in the container. If subjects chose to use a container prior to the meal their box was taken away to be weighed and was returned. At the end of the meal, the plates and containers were taken by the student assistants to be weighed (Appendix C), take-away containers were returned to those who chose to place food in the containers, and participants were

presented with a short survey that was validated by three professors, and its face validity was assessed by 14 students after they consumed a small meal (Appendix E).

The survey collected demographical information such as gender and age, and it consisted of six statements that measured satiety, health awareness, and portion size awareness using a seven-point Likert-type scale ranging from 1= strongly disagree to 7= strongly agree. Participants were provided with writing utensils to answer the survey questions, and forms were collected from participants following their completion by the researcher and assistants.

Consumption was measured by weighing the plates and containers, using a tared scale, before the meal and after the meal. Satiety was measured using survey questions that asked the participants how full and satisfied they felt, and health awareness and portion size awareness were each measured by survey questions that asked participants if they acknowledge portion sizes when at restaurants and if they try to make healthful choices when eating at restaurants. It was hypothesized that consumption would decrease significantly if participants were offered a container before the meal, and those consuming less would express more portion size awareness and be more concerned about the health value of their food.

### **Statistical Analyses**

The amount consumed was formulated by calculating the difference between the pre-meal weight of the plate and container and the post-meal weight of the plates. The data gathered from the surveys was used to analyze health consciousness, portion size consciousness, and satiety. The data was analyzed using Excel 2007 and IBM SPSS Statistics 21 software. Separate two-tailed t- tests and bivariate correlations were



conducted to test for the differences between consumers who were offered the opportunity to place their food in a container prior to the meal and those offered the container after the meal as well as their health and portion size awareness.

- A two-tailed t-test was used to assess if there was a significant difference in consumption between participants offered a container before the meal and those offered a container after the meal.
- A two-tailed t-test was used to assess if there was a significant difference in satiety between the experimental and control group.
- A bivariate correlation was used to determine if there was a relationship between health awareness and consumption.
- A bivariate correlation was used to determine if there was a relationship between portion size awareness and consumption.

## Chapter 4

### Results

This section contains demographical information about the participants and the results of the study regarding the difference in consumption between the experimental and control groups and their responses to the survey pertaining to satiety, portion size awareness, and health awareness. The data presented in this section was analyzed using Excel 2007 and IBM SPSS 21 Software.

#### Demographic Data

The subjects in this study were a convenience sample of thirty-five adults at a Midwestern university. Approximately 51% ( $n=18$ ) of participants were in the experimental group, and 49% ( $n=17$ ) were assigned to the control group. In terms of gender, 31% ( $n=11$ ) were males and 69% ( $n=24$ ) were females. In the group offered the pre-meal container, 33.3% ( $n=6$ ) of the participants were males whereas 66.7% ( $n=12$ ) were females. In the group offered the post-meal container 29.4% ( $n=5$ ) were males, and 70.6% ( $n=12$ ) were females, as depicted in Table 1.

Table 1

*Gender of Participants (N= 35)*

	<u>Male</u>	<u>Female</u>
Pre-meal container	6 (33.3%)	12 (66.7%)
Post- meal container	5 (29.4%)	12 (70.6%)

Overall, the ages of the participants ranged from 29 to 91 years of age ( $M= 64$ ,  $SD=14.7$ ). In the group offered the container prior to the meal, the ages of participants ranged from 29-83 years of age ( $M=58$ ,  $SD= 13.2$ ), and in the group offered the post-

meal container the ages of the participants ranged from 38 to 91 years of age ( $M=71$ ,  $SD=12.3$ ). There was a significant difference  $t(33) = -2.89, p=0.007$ , in the ages of the participants between both groups. Figure 1 reflects the age ranges of participants in each group.

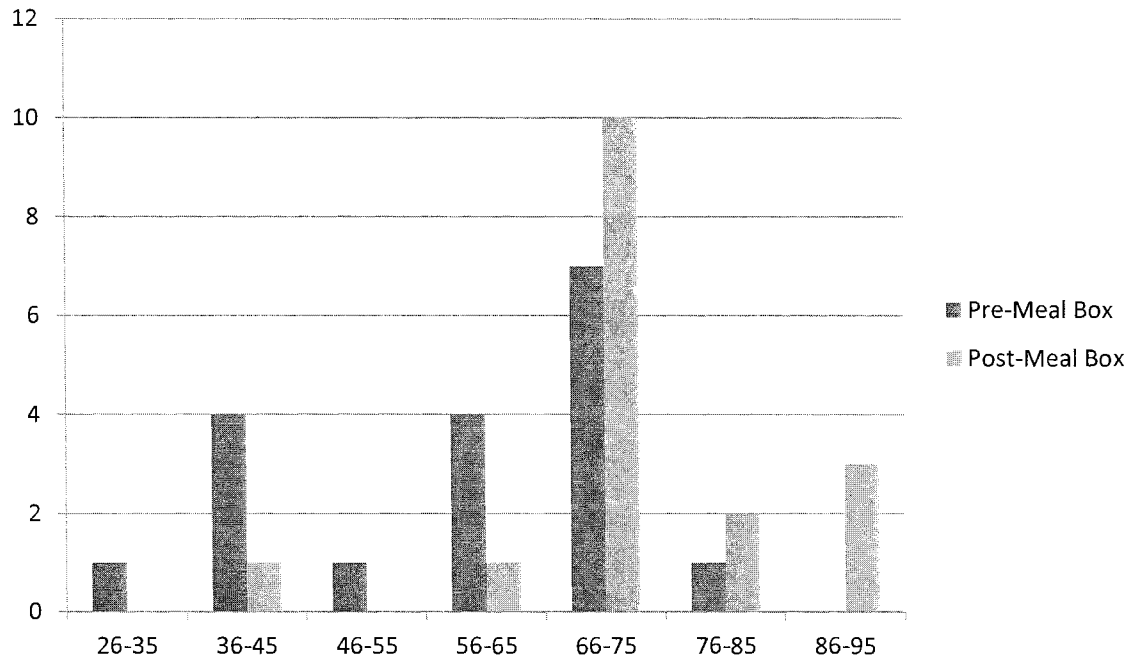


Figure 1. Bar graph showing ages of participants offered a pre-meal box in contrast to participants offered a post-meal box.

### Consumption

The participants offered the container before they began their meal ate less ( $M=11.7, SD=5.9$ ) than their counterparts ( $M=8.3, SD=4.5$ ). The intake of the experimental cohort, offered the pre-meal to-go container, ranged from 1.8 ounces of the entrée to 24.1 ounces. The intake of the control group, who was offered the boxes after the meal, ranged from 0.7 ounces to 19.4 ounces of pasta. As indicated in Table 2, there

were no significant differences  $t(33) = 2.38, p=0.06$  in the consumption of the meal between the two cohorts.

Table 2

*Average Total Consumption in Ounces (N=35)*

	Pre-Meal Group (n=18)		Post-Meal Group (n=17)		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Pasta Consumption	11.7	5.9	8.3	4.5	2.4	0.06
Total Consumption	15.2	6.1	11.2	5.0	2.5	0.04*

\* $p < 0.05$ , two tailed, two sample unequal variance

However, there was a significant difference,  $t(33) = 2.53, p=0.04$ , in the consumption of the total food served, including the salad, pasta, and cake, between the cohort offered the container before the meal ( $M=15.2, SD= 6.1$ ) and the cohort offered the container after the meal ( $M= 11.2, SD= 5.0$ ). Pasta consumption and total food consumption, for both cohorts, are depicted in Table 2.

### **Satiety**

Satiety was measured using a 7-point Likert-Scale. There was no significant difference,  $t(17) = 3.92, p=0.20$ , in the responses of the first question measuring satiety, “I feel full after this meal.” Similarly, there was no significant difference  $t(17) = 4.16, p=0.18$ , in the second survey question measuring satiety, “Overall, I was satisfied with this meal.” Therefore, there was no significant difference in the feelings of satiation between both cohorts despite the higher total consumption of the cohort receiving the pre-meal container prior the pasta. The averages of the rankings measuring satiety are presented in Table 3.

Table 3

*Survey Questions: Averages Measuring Satiety on a 7-Point Likert Scale (N=35)*

	<u>Pre-Meal (n=18)</u>		<u>Post-Meal (n=17)</u>		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Q4	6.4	1.5	6.9	0.2	1.24	p= 0.20
Q6	5.8	1.5	4.9	2.1	2.91	p= 0.18

\* $p < 0.05$ , two tailed, two sample unequal variance  
 Q4: I feel full after this meal.  
 Q6: Overall, I was satisfied with this meal.

### **Portion Size Awareness**

Two questions surveyed participants' perceptions of portion size awareness. A bivariate correlation test was run to measure the association between consumption and portion size awareness. In the group receiving a box before the meal, no correlations were found between consumption and portion size awareness with the statement "I think the amount of food served for this meal is inadequate (not enough)",  $r(17) = -0.11$ ,  $p = 0.65$ , nor the statement "I think the portion of most menu items served in restaurants is excessive",  $r(17) = 0.11$ ,  $p = .67$ . There were weak negative correlations between portion size awareness and consumption in control cohort in both statements, "I think the amount of food served for this meal is inadequate (not enough)",  $r(16) = -0.36$ ,  $p = 0.15$ , and "I think the portion of most menu items served in restaurants is excessive",  $r(16) = -0.15$ ,  $p = 0.57$ . However, the correlations were insignificant and do not signify the presence of a relationship. The means and correlations are presented in Table 4.

Table 4

*Survey Questions: Averages and Consumption Correlations for Portion Size Awareness and Health Awareness on a 7-Point Likert Scale (N=35)*

Question	Pre-Meal Group (n=18)				Post-Meal Group (n=17)			
	M	r	R <sup>2</sup>	p	M	r	R <sup>2</sup>	p
Q1	1.6	-0.11	0.01	0.65	1.7	-0.36	0.13	0.15
Q2	4.5	0.32	0.10	0.20	4.7	-0.06	0.00	0.81
Q3	5.7	0.11	0.01	0.67	4.8	-0.15	0.02	0.57
Q5	4.8	0.21	0.04	0.40	5.7	0.03	0.00	0.90

Portion Size Awareness:  
 Q1: I think the amount of food served for this meal is inadequate (not enough).  
 Q3: I think the portion sizes of most menu items served in restaurants is excessive.  
 Health Awareness:  
 Q2: I order healthful menu items when eating out at restaurants.  
 Q5: The nutritional value of my food is important to me when I eat out.

### Health Awareness

Two questions surveyed participants' perceptions on health awareness. A bivariate correlation test was also run to assess the association between the amount of consumption and the amount health awareness as evidenced by their level of agreement to the statements presented on the survey. In the cohort receiving a box before the meal very weak positive correlations were exhibited in the statements "I order healthful menu items when eating out at restaurants",  $r(17) = 0.32, p = 0.20$ , and "The nutritional value of my food is important to me when I eat out",  $r(17) = 0.21, p = 0.40$ . The control cohort exhibited no correlations in either statement "I order healthful menu items when eating out at restaurants",  $r(16) = -0.06, p = 0.81$  and "The nutritional value of my food is important to me when I eat out",  $r(16) = 0.03, p = 0.90$ . Like with portion size awareness,

the correlations were not strong enough to dictate an association. The means and correlations for each question are represented in Table 4.

## Chapter 5

### Discussion and Conclusion

This section contains the discussion and conclusions derived from this study. Limitations, recommendations for future research, and practical implications are also presented in this section.

#### Consumption

The results indicate that there are no significant differences,  $t(33) = 2.38, p=0.06$ , in the consumption of the meal when given the opportunity to place a portion of the meal away before eating. The results did not support the hypothesis of reduced consumption in the experimental group. However, it is important to note that only eight out of 18 participants (44.4%) offered a pre-meal to go container actually placed a portion of their meal in the box before eating the meal. Furthermore, four of the 18 (22.2%) subjects in the same group accepted a to-go container before the meal but did not place any food in it until after the end of the meal. Similarly to the socially expected behavior of finishing everything on a plate, consumers may be accustomed to the tradition of receiving a to-go box after the meal and may feel that placing food in a container prior to the meal is not as socially acceptable as the common practice of using the container after (Zlatevska et al., 2014). Also, there was no significant difference,  $t(23) = -1.50, p=0.41$ , between the consumption of the eight participants who placed food in a container before the meal and the control group. Out of those eight subjects one person placed more food in the container at the end of the meal and another person took some food out and ate it. This does not support the research that states that placing food out of sight may hinder



consumption. However, placing it both out of sight and out of reach may be more beneficial in reducing consumption (Diliberti et al., 2004).

### **Satiety**

As expected, there was no significant difference in the feelings of satiation between both groups as reported in the survey questions. This supports previous research on satiation, because although there was a significant difference in the total consumption, including the salad, entrée, and dessert, of both cohorts there was no significant difference in the feeling of satiation (Diliberti et al., 2004; Wansink, Painter, & North, 2005).

### **Portion Size Awareness**

The correlations for portion size awareness were too weak to establish any relationship. This lack of association between consumption and portion size awareness does not support the hypothesis; however the weak correlations found in this study support previous research that indicates that the perception of consuming a smaller meal leads to consumption of other items such as appetizers or dessert (Vermeer et al., 2011). In this study, the group offered the pre-meal box had a significantly higher total consumption of the total meal including the appetizer salad and dessert. The averages, for both cohorts, indicate that subjects in this study were also aware that the portion sizes provided in restaurants are excessive which supports the research that states that some excessive portions are acknowledged by consumers (Schwartz & Byrd-Bredbenner, 2006). Some subjects in the control cohort indicated that the meal was low quality. The consumption behaviors of the meal support previous studies, because even when served

low quality foods overconsumption may still occur, and there were no significant differences in the consumption of the entrée in this study (Wansink & Kim, 2005).

### **Health Awareness**

Furthermore, subjects in the pre-meal box cohort exhibited very weak correlations between consumption and health awareness as evidenced by their responses on the survey questions. On the contrary, the post-meal box cohort exhibited no relationships. The results did not support the hypothesis that the group consuming less would present more awareness, because the correlations were not strong enough to indicate a direct association. When diners believe they are eating healthier meals they may actually choose more calorically dense side dishes. This finding was not assessed in this study, because all subjects was served the same meal and were not provided with choices (Chandon & Wansink, 2007; Scourboutakos & Abbe, 2012).

### **Limitations**

There were other limitations in addition to the lack of menu options that are typically provided in a foodservice establishment. To begin with, the dining environment did not provide sufficient space for the placement of the boxes on the tables which could have influenced the decision of accepting a to-go container before the meal. Also, the size of the container provided was a meal box, which could have made the participants feel forced to place a large quantity in the box. Offering a smaller container, like a dessert to-go box, could have led more participants to be inclined to place food away and could have also amended the lack of space situation.

Another limitation that could have influenced the outcome of the study is the different seating times. The pre-meal cohort was assigned during the first hour, and the

post-meal cohort had dinner half an hour later. All participants were aware they were participating in the study and had previously participated in a similar study, which could have influenced their actions.

Furthermore, the meal was advertised as a free meal which could have served as another limitation. Research suggests that pricing may have a larger influence on consumption and food choices than other factors such as taste and nutrition (French, 2003; Jeitschko & Pecchenino, 2006; Lando & Labiner-Wolfe, 2007). Pricing strategies may be more effective for certain individuals, for instance, pricing strategies influence overweight individuals more than normal weight consumers (Vermeer et al., 2009). This can be taken into account in future studies.

Lastly, another confounding factor that could have influenced the results is the significant difference,  $t(33) = -2.89, p=0.007$ , in age between the two cohorts. The pre-meal cohort was significantly younger in age than the control group. Previous research indicates that age has an influence on consumption. In fact, chefs who were at least 51 years of age served significantly smaller portions compared to younger chefs, and consumers over the age of 35 did not take portion size into consideration when evaluating the quality of the food (Diliberti et al., 2004; Factors influencing restaurant..., 2007).

### **Future Studies**

The study should be replicated in the future with a more suitable representative sample. Including other attributing factors, such as BMI, into the design of the study may be beneficial in providing impactful results that could isolate other determinants involved in consumption. Moreover, measuring consumers' acceptance or perceptions associated

with receiving a to-go box before a meal may be beneficial by providing information about consumers' dining expectations.

### **Practical Implications**

Being knowledgeable of consumers' perceptions and expectations is important when providing nutrition education in weight management. Understanding factors, such as the difference in portion size perception among ages, the difference in consumption in differing personality types, and the mindset that larger portion sizes are more valuable is necessary when considering how to implement a nutrition program on portion control (Diliberti et al., 2004; Factors influencing restaurant..., 2007; Ittersum & Wansink, 2013; Zlatevska et al., 2014).

Another method that may yield meaningful results would be the incorporation of nutrition education in restaurants. Dietitians may work alongside restaurant chefs to create nutritious, satiating, and appealing meals of adequate sizes that meet the recommendations. Advertising such meals as healthy and relating them to resources, such as MyPlate, could assist in dispersing official portion size information and reducing consumption.

Overall, one-third of people continue to eat double or more of the recommended serving sizes of food (Bryant & Dundes, 2005). Restaurants have made improvements by eliminating terms such as "supersize" and reducing the portions of their menu items (Young & Nestle, 2007). However, portion sizes continue to be larger than recommended. Overweight individuals may consume healthy items; however the issue is the excessive intake of food that is commonly provided in large portions when dining out (Mancino et al., 2009). It is evident that the larger portion sizes are the issue. The

growing commonality of dining out makes it crucial for restaurants to work alongside food and healthcare professionals to reduce overconsumption and the incidence of obesity. Although the use of a to-go container prior to the meal did not yield significant differences in the consumption of the meal, this study can serve as a foundation for future studies to find a method that is effective in reducing consumption and beneficial for both consumers and the restaurant industry.

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## Appendix A

January 20, 2015

Claudia Bueno  
Family & Consumer Sciences

Thank you for submitting the research protocol titled, “Consumers' Willingness to Use Pre-Meal To-Go Containers and the Impact of Their Usage on Consumption and Satiety” for review by the Eastern Illinois University Institutional Review Board (IRB). The IRB has approved this research protocol following an expedited review procedure. IRB review has determined that the protocol involves no more than minimal risk to subjects and satisfies all of the criteria for approval of research.

This protocol has been given the IRB number 14-164. You may proceed with this study from 1/19/2015 to 1/18/2016. You must submit Form E, Continuation Request, to the IRB by 12/18/2015 if you wish to continue the project beyond the approval expiration date. Upon completion of your research project, please submit Form G, Completion of Research Activities, to the IRB, c/o the Office of Research and Sponsored Programs.

This approval is valid only for the research activities, timeline, and subjects described in the above named protocol. IRB policy requires that any changes to this protocol be reported to, and approved by, the IRB before being implemented. You are also required to inform the IRB immediately of any problems encountered that could adversely affect the health or welfare of the subjects in this study. Please contact me, or the Compliance Coordinator at 581-8576, in the event of an emergency. All correspondence should be sent to:

Institutional Review Board  
c/o Office of Research and Sponsored Programs  
Telephone: 581-8576  
Fax: 217-581-7181  
Email: [eiuirb@www.eiu.edu](mailto:eiuirb@www.eiu.edu)

Thank you for your assistance, and the best of success with your research.

## Appendix B

Hello all!

You are invited to attend a **free** meal as part of my master's thesis!

The meal will consist of a Chicken Alfredo Pasta, garlic bread, a Caesar salad, and a slice of chocolate cake.

The dinner will be held on Friday, February 6th in Klehm Hall 1414.

You have the option of attending the meal from **5pm-6pm or 6:30pm- 7:30pm**.

I would appreciate your participation!

If you would like to attend please RSVP to [cbueno@eiu.edu](mailto:cbueno@eiu.edu) with your name, preferred time, and number of guests by Sunday, February 1st. Also, please indicate if you have any food allergies or let me know if you have any questions!

Thank you and I hope to hear from you soon!

Claudia

**Claudia Bueno**

M.S Candidate/Dietetic Intern  
Family and Consumer Sciences  
Eastern Illinois University

### Appendix C

Weight subtracted:

Salad Plate-

Entrée plate-

Dessert Plate-

Box-

	<b>Pre-Meal Plate Weight (oz)</b>	<b>Box Weight (oz)</b>	<b>Post-Meal Plate Weight (oz)</b>	<b>Amount Consumed (oz)</b>
1Before	Salad Entrée Dessert	Beginning: End :	Salad Entrée Dessert	
2B	Salad Entrée Dessert		Salad Entrée Dessert	
3B	Salad Entrée Dessert		Salad Entrée Dessert	
4B	Salad Entrée Dessert		Salad Entrée Dessert	
5B	Salad Entrée Dessert		Salad Entrée Dessert	
6B	Salad Entrée Dessert		Salad Entrée Dessert	
7B	Salad Entrée Dessert		Salad Entrée Dessert	



8B	Salad Entrée Dessert		Salad Entrée Dessert	
9B	Salad Entrée Dessert		Salad Entrée Dessert	
10B	Salad Entrée Dessert		Salad Entrée Dessert	
11B	Salad Entrée Dessert		Salad Entrée Dessert	
12B	Salad Entrée Dessert		Salad Entrée Dessert	
13B	Salad Entrée Dessert		Salad Entrée Dessert	
14B	Salad Entrée Dessert		Salad Entrée Dessert	
15B	Salad Entrée Dessert		Salad Entrée Dessert	
16B	Salad Entrée Dessert		Salad Entrée Dessert	
17B				

	Salad Entrée Dessert		Salad Entrée Dessert	
18	Salad Entrée Dessert		Salad Entrée Dessert	
1 After	Salad Entrée Dessert		Salad Entrée Dessert	
2A	Salad Entrée Dessert		Salad Entrée Dessert	
3A	Salad Entrée Dessert		Salad Entrée Dessert	
4A	Salad Entrée Dessert		Salad Entrée Dessert	
5A	Salad Entrée Dessert		Salad Entrée Dessert	
6A	Salad Entrée Dessert		Salad Entrée Dessert	
7A	Salad Entrée Dessert		Salad Entrée Dessert	
8A	Salad		Salad	

	Entrée Dessert		Entrée Dessert	
9A	Salad Entrée Dessert		Salad Entrée Dessert	
10A	Salad Entrée Dessert		Salad Entrée Dessert	
11A	Salad Entrée Dessert		Salad Entrée Dessert	
12A	Salad Entrée Dessert		Salad Entrée Dessert	
13A	Salad Entrée Dessert		Salad Entrée Dessert	
14A	Salad Entrée Dessert		Salad Entrée Dessert	
15A	Salad Entrée Dessert		Salad Entrée Dessert	
16A	Salad Entrée Dessert		Salad Entrée Dessert	
17A	Salad Entrée Dessert		Salad Entrée Dessert	

## **Appendix D**

### **CONSENT TO PARTICIPATE IN RESEARCH**

#### The Effect of Pre-Meal Containers on Consumption and Satiety

You are invited to participate in a research study conducted by Claudia Bueno and Jim Painter, Ph.D., RD, from the Department of Family and Consumer Sciences at Eastern Illinois University.

Your participation in this study is entirely voluntary. Please ask questions about anything you do not understand, before deciding whether or not to participate.

You have been asked to participate in this study because we would like to gather information on the consumption behaviors of adults. The data gathered will only be used if you are 18 years or older.

#### **• PURPOSE OF THE STUDY**

The purpose of the study is to assess the consumption norms and expected behaviors of people in an eating environment and search for methods that can be used by the foodservice industry to reduce consumption.

#### **• PROCEDURES**

If you volunteer to participate in this study, you will be asked to:

Take part in a meal that will mimic one served at a full service restaurant. The study will take place in Klehm Hall. The meal will last about an hour, and you will be provided with a survey at the end that will take about three minutes to complete.

#### **• POTENTIAL RISKS AND DISCOMFORTS**

There are minimal risks and discomforts involved in this study. Participants may feel uncomfortable eating their food in front of others and/or may dislike the food served.

#### **• POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY**

This study may assist in distinguishing a different method that can be used by foodservice establishments to impact the health and weight of their patrons.

- **CONFIDENTIALITY**

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of tracking data numerically and collecting anonymous surveys. No identifiable information will be collected, and records will be secured in Klehm Hall and will only be accessible by the researchers.

- **PARTICIPATION AND WITHDRAWAL**

Participation in this research study is voluntary and not a requirement or a condition for being the recipient of benefits or services from Eastern Illinois University or any other organization sponsoring the research project. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind or loss of benefits or services to which you are otherwise entitled.

There is no penalty if you withdraw from the study and you will not lose any benefits to which you are otherwise entitled.

- **IDENTIFICATION OF INVESTIGATORS**

If you have any questions or concerns about this research, please contact:

Claudia Bueno  
(630) 401-2457  
[cbueno@eiu.edu](mailto:cbueno@eiu.edu)

Jim Painter, Ph.D, RD  
(217) 549- 3275  
[jepainter@eiu.edu](mailto:jepainter@eiu.edu)

- **RIGHTS OF RESEARCH SUBJECTS**

If you have any questions or concerns about the treatment of human participants in this study, you may call or write:

Institutional Review Board  
Eastern Illinois University  
600 Lincoln Ave.  
Charleston, IL 61920  
Telephone: (217) 581-8576  
E-mail: [eiuirb@www.eiu.edu](mailto:eiuirb@www.eiu.edu)

You will be given the opportunity to discuss any questions about your rights as a research subject with a member of the IRB. The IRB is an independent committee composed of members of the University community, as well as lay members of the community not connected with EIU. The IRB has reviewed and approved this study.

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I voluntarily agree to participate in this study. I understand that I am free to withdraw my consent and discontinue my participation at any time. I have been given a copy of this form.

---

Printed Name of Participant

---

Signature of Participant

---

Date

## Appendix E

### Consumer Survey

Circle the option that applies to you and fill in the blank.

**Gender:**      M      F                      **Age:** \_\_\_\_\_

Circle the number that best matches your opinion.

1. I think the amount of food served was inadequate (not enough).

Strongly Disagree    1    2    3    4    5    6    7    Strongly Agree

2. I try to eat healthful menu items when eating out at restaurants.

Strongly Disagree    1    2    3    4    5    6    7    Strongly Agree

3. I think the portion sizes of most menu items served in restaurants is excessive.

Strongly Disagree    1    2    3    4    5    6    7    Strongly Agree

4. I feel full after this meal.

Strongly Disagree    1    2    3    4    5    6    7    Strongly Agree

5. The nutritional value of my food is important to me when I eat out.

Strongly Disagree    1    2    3    4    5    6    7    Strongly Agree

6. Overall, I was satisfied with the meal.

Strongly Disagree    1    2    3    4    5    6    7    Strongly Agree