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Students' consumption of healthy food items using a social marketing intervention

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Eastern Illinois University
This research is a product of the graduate program in Counseling and Student Development at Eastern Illinois University. Find out more about the program.

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Students' Consumption of Healthy Food Items

Using a Social Marketing Intervention

(TITLE)

BY

Kayla Autumn Dalton

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF Master of Science in College Student Affairs

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY

CHARLESTON, ILLINOIS

February 2013

YEAR

I HEREBY RECOMMEND THAT THIS THESIS BE ACCEPTED AS FULFILLING THIS PART OF THE GRADUATE DEGREE CITED ABOVE

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Students' Consumption of Healthy Food Items Using a Social Marketing Intervention

Kayla A. Dalton

Thesis

Submitted to the Department of Counseling and Student Development in partial fulfillment of the requirements for the degree of Master of Science in College Student Affairs

Eastern Illinois University

Charleston, Illinois

February 2013
ABSTRACT

This study was an analysis of student eating habits in an “all-you-care-to-eat” dining center at a mid-size, four year, Midwest residential institution. The present, quantitative study was replicated based off a study conducted in 2008 at a similar Midwest university by Diana Poovey Duncan. The present study examined college students’ (n = 218) eating habits and consumption patterns over a nine-week study period. Participants were solicited to take the pre-intervention survey in person with incentives during the second week of the study while a post-intervention survey was sent electronically during the seventh week only to those whom provided an e-mail address from the pre-intervention survey. From the forth through six weeks, a marketing intervention that included table tents, benefit-based posters using picture and humor, food item indicator cards that identified the ten targeted food items among other items. All marketing items included “The Right Stuff” slogan and logo of a plate and silverware place setting.

The study concluded that eating habits did change while at college and that they have changed due to a lack of time, laziness, increased stress, studying late hours, and having no parent or guardian to prepare meals for them. The effect of the marketing intervention was tested by analyzed participants’ perceptions of healthy food items offered within the dining center. The study concluded that participants had positive perceptions that the dining center offered a variety of food items, healthy food items were easily identified and possible for them to select. The social marketing intervention produced no change though in participants’ perceptions. Lastly, ten food items were focused on to measure participants’ consumption patterns. Results demonstrated an overall correlation between student consumption and the presence of nutritional information at point-of-selection. A reduced amount of consumption
was observed for whole wheat bread while not change in consumption was observed for the
nine other targeted food items.

Keywords: student, consumption, university, dining center, nutrition
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"The Right Stuff" Logo
CHAPTER I

Introduction

Entering college brings about numerous life changes which are typically experienced en masse. One of the changes experienced in particular involves food selection. While entering college, many students no longer have the parental supervision to monitor food consumption for the first time in their life. Many students also have to manage their own finances and need to be mindful of spending money for food, which can be stressful for those on a budget. A correlation between higher levels of perceived stress and unhealthy dietary practices has been found among college students (Cousineau, Goldstein, & Franko, 2004). Thus, some students may be making food choices which are influenced by their current stress levels. Cousineau et al. (2004) found that more than 35% of college students are overweight or obese, and almost half (46%) report trying to lose weight through exercise or diet. Students must balance their newly adapted college behaviors with a realization that their current actions will affect them throughout their entire life. Stress-induced dietary changes may increase the risks for serious health issues in adulthood (Cousineau et al., 2004; Freedman, 2010). In 2006, over 65% of the adult population was overweight or obese (Ogden et al., 2006). Due to the growing concern about the obesity epidemic and other serious health issues in adults, students are being targeted to help combat these issues for themselves by getting educated about a healthy and balanced lifestyle (University of Illinois at Chicago, 2012; Wardle, Rapoport, Miles, Afuape, & Duman, 2001).

Since the Child Nutrition Act of 1966, institutional dining services have been required to serve items that make a well-balanced meal based on the United States Department of Agriculture (USDA) standards (2010). However, it has been found that few college students eat five or more servings of fruits and vegetables per day (Peterson, Duncan, Null, Roth, & Gill,
In 1990, the Nutrition Labeling and Education Act mandated food manufactures to disclose the nutritional content of packaged foods, but this mandate exempted any business that sold food for immediate consumption (Chu, Frongillo, Jones, & Kaye, 2009). Policymakers in 2008 proposed the Menu Education and Labeling (MEAL) Act which would require food-service operations to disclose nutrition labeling (Chu et al., 2009); however, the MEAL Act has been stuck in and ultimately has died in legislative committee. Nutritional content is provided to the food service operations through labeling, however, it is not often directly passed down to the customers. Thus customers who dine at on-campus dining facilities may not see what ingredients go into their food items or the nutritional labeling of the food products. Food service operations, like restaurants, are providing nutritional information to its customers to a degree without legal obligation (Pulos & Leng, 2010; Roberto et al., 2010). About 50% of United States chain restaurants provide nutrition information materials either on premise or on the restaurant’s website, but this information is often inconspicuously displayed and is largely unnoticed by customers (Pulos & Leng, 2010). Only .01% of customers seek out nutritional information made available via in-store brochures, posters, and the internet (Roberto et al., 2010). Customers must seek out this information so the knowledge required for making healthier choices is not conveyed to the customer at the time of purchase or consumption.

Today in many dining settings, the product's price, convenience, and taste are the driving forces in food choice rather than nutritional content (Kolodinsky, Green, Michahelles, & Harvey-Berino, 2008; O'Dougherty et al., 2006). This holds true for students too. The most important driving force across all age groups is taste (Ruetzler, 2008). But when does the importance of nutrition rival the desire for taste when selecting food? Dining facility owners and managers could be proactive to present nutritional information as a means to positively increase healthy eating habits however their main focus is to make money by selling food that tastes
2010; Dinkgrave, 2005; Shive & Neyman, 2006). This statistic is disheartening because though institutions are providing the appropriate food items to meet nutritional needs for a healthy lifestyle, students aren’t choosing to consume the current recommended nutritional guidelines of four cups of fruits and vegetables (USDA, 2011).

Making the transition for college students more difficult is the extensive variety of options offered from fast food to home-style cooking to various ethnic cuisines at on-and off-campus locations. “All-you-care-to-eat” buffet-style dining offers access to a wide variety of foods and beverages on-campus which may lead to excess caloric intake (Conklin, Lambert, & Cranage, 2005). Many people, including trained nutritionists, have great difficulty estimating the calories in restaurant meals (Roberto, Larsen, Agnew, Baik, & Brownell, 2010; Pulos & Leng, 2010). Two important aspects of a healthy diet are the number of calories and the amount of fat consumed (Normand & Osborne, 2010). According to the USDA (2010), the estimated daily calorie requirement is 2400-2600 calories for sedentary males between the ages of 19-30, and 1800-2000 calories for sedentary females of the same ages. Fat consumption should be limited to 25-30% of the total calories consumed (USDA, 2010). The top four most calorie rich items consumed for adults age 19 and over are grain-based desserts, yeast breads, and chicken mixed in dishes followed by soda/energy/sport drinks (USDA, 2010). Food manufacturers in Europe are now analyzing all ingredients put into their products which results in determining if the product itself is fit for consumption with respect to health (Hagenmeyer, 2009). That ensures every food service operation knows each individual ingredient’s nutritional content. However, operations often fail to take nutritional content reporting a step further by summing up all of the ingredients’ nutritional components to determine if the whole food item is considered healthy or unhealthy.
good; it could be considered a bonus if it is nutritionally healthy too. The challenge is making nutritious food tasteful and desirable enough to motivate consumers towards a constant healthy eating lifestyle. This challenge often does not effectively meet food service operations' goal to make a profit.

Purpose of the Study

The focus of this research was to study students' eating habits at college and to evaluate perceptions of nutritionally healthy options available in a university dining center. In addition, the study measured possible food consumption changes due to exposure of healthy item indicators and benefit based messages of ten targeted healthy food items.

Hypothesis

The “all-you-care-to-eat” dining centers at a mid-size, four year, Midwest residential institution presented an environment of opportunity to examine students' consumption habits. It was hypothesized that students' eating habits changed while at college. Not only was it hypothesized that students' eating habits changed when coming to college, but that they would negatively change due to having eaten more unhealthy foods such as fast food and junk food. However, students' eating habits would positively change when they were provided nutritionally healthy food item indicators along with benefit-based messages throughout the dining center during the academic year (Freedman, 2011; Peterson et al., 2010; Duncan, 2008). It was hypothesized that participants exposed to healthy food item indicators at point-of-selection and benefit-based messages would increase the perception of healthy food items available as well as show increased selection of the ten targeted healthy food items.
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Research Questions

The following research questions were developed to guide the study:

1. Do college students' eating habits change while at college?

2. How do college students' eating habits change?
   2.1 How have college students' eating habits changed?
   2.2 Why have college students' eating habits changed?

3. Do healthy choice indicators at point-of-selection combined with benefits-based messages increase perception of healthy food items at a university dining center?
   3.1 Does Lily Dining Center offer a variety of healthy food choices?
   3.2 Are healthy food choices easily identified at Lily Dining Center?
   3.3 Is it possible for you to select healthy food choices at Lily Dining Center?

4. Do healthy choice indicators at point-of-selection combined with benefits-based messages increase the selection of targeted healthy food items at a university dining center?

Significance of the Study

This study attempted to replicate a previous study by Duncan (2008) which suggested that if healthy food item indicators combined with benefit-based messages were provided at the point-of-selection, then eating behaviors of college students would be altered to include making healthier food selections for consumption. By making healthy eating options more easily identifiable, it was hypothesized that participants would be more informed to make healthier choices which would play a factor in reducing unhealthy calorie intake to reduce obesity in society. Another reason for the significance of the study is that the mid-size, four year, Midwest residential institution, where the present study is being conducted is very similar to the institution where Duncan conducted her study. The institutions are similar based on population
Due to the variety of dining centers available on-campus, the consistency of evaluating a specific selection of subjects throughout the entire study was difficult. The study generalized consumption habits for the entire student body that ate at Lily Dining Center throughout the intervention. Lily Dining Center was chosen as the location for this study for a variety of reasons.

One reason was because of the consistent food selections available every day. Another reason was due to researcher bias that Lily Dining Center offered the least healthy food options on-campus. The researcher's bias was based upon the prominent entrée and side item featured every day: chicken and potatoes. In addition, consumers could also choose a breading or battered coating on the item which further decreased the nutritional value. These options came in a processed form which was most commonly prepared by frying. Lily Dining Center is an all-you-care-to-eat dining center that students, faculty and staff alike can use to eat breakfast, lunch and dinner five days a week. At every lunch and dinner meal time, a variation of chicken and potatoes were served along with an assortment of main entrée, sides, beverages and dessert items. There were two manned serving lines along with three separate self-service buffets. One buffet bar partially acted as a salad bar and another buffet bar's role was as a toppings and condiments bar. The researcher believed however that though there were a variety of items to select from, the buffet bars only offered complimentary items to the main entrees which reinforced the selection of unhealthy variations of chicken and potatoes.

Another limitation was the consistency of food items available on each given day. Dining services used a rotating menu that offered a specific food item once every four weeks. There were some specific food items that were analyzed every day and other food items that were
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analyzed based on a category of food it represented. Thus, this research was limited to observing the daily consumption of a few specific food items and food items that fit into a category.

Furthermore, the eating habits of the sample size could have been affected by numerous outside factors occurring in the student's lives. Factors could include: body image perceptions, cultural influence during meal time, understandings of what constitutes a healthy lifestyle, knowledge of portion control, social norms of eating, stress levels, and countless more. The outside factors were not constants in each of the participants nor would they affect participants in the same ways; therefore, could not be measured in an objective manner.

An additional limitation included the participant's response level to the researchers. Since students were eating, they may have felt bothered when approached during the pre-intervention to participate in the study. The participants could have felt pressured to take the survey and or felt guilty for turning down the survey. Students have busy schedules so they might not have had time or not be in the right company to take the survey. Participants might respond differently based upon the researcher's perceived characteristics and potential participant's biases against the characteristics. In an effort to help minimize student's perceptions of the researcher and the assistants, the researcher was intentional in inviting assistants to help with soliciting participants. Furthermore, researcher's and assistants' biases could have played a factor. These limitations could have affected the response rate of those who agreed to participate in the study.
Definition of Terms

*Healthy.* A food item is considered healthy based upon its nutritional value. A variety of components were considered when evaluating nutritional value. These components included but are not limited to: caloric intake, sugar, sodium, cholesterol, protein, fat content, and amount of vitamins within the ingredient or food item. A food item that wasn’t overly favored in one particular nutrient component is considered a healthy item. There should be a positive amount of nutrients such as fiber, low amount of calories from fat, and low levels in trans fat and cholesterol which results in few calories (FDA, 2008).

*Unhealthy.* A surplus of nutrient components such as calories, sugar, sodium, low-density lipoprotein cholesterol, and fat content in food items along with extensive consumption can cause disease which classifies them as unhealthy (Washington State Department of Health, 2012).

*Eating Habits/Behaviors.* For the purpose of this study, the terms eating habits and eating behaviors were defined as the intake of food items and or beverages that were trends in the participant’s daily and or weekly eating pattern and lifestyle. Eating habits or behaviors were more regular and traditional eating patterns (Gatenby, 1997).

*Campus Dining Department.* This is the food service operations department within the mid-size, four year, Midwest residential institution. It is a self-operated department that provides meals within all of the campus dining facilities.

*Lily Dining Center.* This is the food service “all-you-care-to-eat” buffet-style dining center in which the study was conducted at. It is a dining facility within the Campus Dining Department. Lily Dining Center is a pseudo name for the actual dining center.

*Benefit-based message.* “Benefit-based messages are positive phrases that address specific motivations of the target population such as taste, body leanness, having more energy, or
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overall health” (Peterson et al., 2010). For the purpose of this study, a benefit based message was a statement that blanketed the health benefits a food item gave individuals. The benefit based messages commonly mentioned protein, calcium, energy boosting, and positive descriptors within the messages. These messages encouraged those exposed to the message to incorporate the highlighted food item into their diet.

Overview of the Study

The present study was designed to measure if, why, and how students’ eating habits changed while at college. By knowing if students’ eating habits change, university administrators will be able to better understand the nutritional needs of college students. By understanding college students’ needs better, administrators could be more informed in making decisions that affect students’ life while at college. The second component to the present study was designed to see if a social marketing intervention would have caused a change in student’s eating habits towards ten targeted food items and if their perceptions of those food items would change. In addition to knowing students’ eating habits toward the ten targeted items, the university dining management will be able to understand better students’ perceptions, awareness and habits towards consuming healthy food items. Furthermore, the present study could provide a look into the influence current marketing strategies have on influencing change.

Summary

Chapter I contained the introduction to the study, a statement of purpose, research questions that guided the present study along with the researcher’s hypothesis for the study, statement of significance, a list of limitations, definitions of terms as they relate to the present study and an overview of the study. Chapter II contains a review of related literature regarding nutrition, transitioning to college, and social marketing. Specific attention is given towards social
marketing campaigns and their positive effects as they relate to nutrition and a university dining setting.
CHAPTER II

Review of Literature

Chapter II will introduce literature related to the study regarding nutrition, transitioning to college, and social marketing. Additional focus is given towards social marketing campaigns and their positive effects as they relate to nutrition and a university dining setting.

Nutrition

Obesity rates in the United States have dramatically increased over the past 30 years (LaCaille, Nichols, Krambeer, & Peterson, 2011). In 2010, data showed that 33.8% of American adults were considered obese while a total of 68% of society were considered overweight or obese (Flegal, Carroll, Ogden & Curtin, 2010). The age of greatest weight increase occurs between the ages of 18 to 29 (Gordon-Larsen, Adair, Nelson & Popkin, 2004; Mokdad et al., 1999). Overweight and obesity in the late adolescents has been seen to strongly predict obesity later in life (Freedman et. al, 2005; Kindblom et al., 2009; Sinaiko, Donahue, Jacobs, & Prineas, 1999). Feher & Boros (2011) concluded that the majority of deaths in the United States are due to illnesses related to nutrition and lifestyles. The large number of obesity, cancer and cardiovascular diseases as well as reported deaths in association with diseases has drawn attention to the importance of nutrition and healthy lifestyles (Feher & Boros, 2011).

Many individuals in the United States rely on food during lunch and dinner time to provide the most nutrition for the day (Burton, Creyer, Kees, & Huggins, 2006). Foods eaten away from home during lunch and dinner time account for nearly a third of the calories Americans consume each day (Gutherie, Bing-Hwan, & Franzao, 2002). Many foodservice operations, such as restaurants and cafeterias, do not often provide nutritional information for the foods they serve, thus individuals are unable to make informed decisions concerning what
they consume which could result in increased calories that turns into weight gain (Guthrie, Bing-Hwan, & Franzao, 2002; USDA Economic Research Service, 2003).

Thoughts about looking fit or gaining weight are often at the forefront of young adults' minds. The need and security to fit into society's norms of having a lean and fit body are a constant reminder of what to be or what to look like. Even societal pressures for individuals to seek a college education experience new levels of pressures and stresses appear to be more prone to weight gain than someone who does not attend college according to Vella-Zarb & Elgar (2009). Media suggests that freshman gain at least 15 pounds within their first year at college while research indicates that most only gain four to six pounds each year (Brown, 2008; Graham & Jones, 2002; Anderson, Shapiro & Lundgren, 2003; Delinsky & Wilson, 2008). Data suggests that more than half of young adults consume diets excessive in fat and inadequate servings of calcium-rich foods, fruits, deep-yellow and green vegetables, and whole grains (Larson, Neumark-Sztainer, Hannan & Story, 2007; Larson, Perry, Story, & Neumark-Sztainer, 2006; Burke, Reilly, Morrell, & Lofgren, 2009). College students have self-reported in a study by Morse & Driskell (2009) that they thought they ate too much sugar, processed foods, and fats. Research focusing on Caucasian females living on-campus in university settings have identified factors associated with weight gain including all-you-can-eat dining halls, snacking, and consumption of high-fat foods (Pliner & Saunders, 2008; Levitsky, Halbmaier, & Mrdjenovic, 2004).

Many college students do not have healthful, well-balanced diets (American College Health Association, 2009b; Anding, Suminski, & Boss, 2001; Brown, Dresen, & Eggett, 2005; Debate, Topping, & Sargent, 2001). Unhealthy diets can take a toll on college students by bringing their energy levels down, which is a common link to decreased academic performance (Sabia, 2007). Maintaining an energy balance throughout the day is easier when diets are high in nutrient dense foods such as fruits and vegetables, whole grains, and dairy products (Kennedy,
There is a high prevalence of dieting among college women in an effort to avoid fat calories (Liebman, Cameron, Carson, Brown, & Meyer, 2001).

Transitioning to College

A new chapter in many individual’s lives is often college. College has many new experiences: a new environment, a new culture, a new social group and social life, a new education, new responsibilities, and an overall new life for many. Student development theorist Nancy Schlossberg explained how crucial a transition for a student can be through her Transitional Theory. Students constantly transition in, through, and out of experiences all awhile dealing with each experience in a variety of ways (Evans, Forney, Guido, Patton & Renn, 2010). Because of the multitude of new experiences and the multitude of reactions from them, students’ life habits will change to adjust to the new experiences to which they are exposed. A successful transition to college means managing the new experiences in a healthy fashion. Without a successful transition to college, students can face numerous additional issues and stressors which to deal with (Monheit, 2012). One of those issues could be “not being academically successful which could lead to dropping out” (Enochs & Roland, 2006). “Nearly 30-40% of college students drop out without obtaining a college degree, and many of these students never return to college to complete degrees” (Consolvo, 2002). College students are expected to balance their social life and schoolwork which can be a lot to handle. Sometimes this lack of structure may lead to frequent unexcused absences, late assignments, inefficient study habits, and poor sleeping patterns (Cleary, Walter, & Jackson, 2011).

Another stressor in transitioning to college is finding a social group. Social support is a leading factor in enhancing student success during the first year when most transition to college (Pascarella & Terenzini, 2005). Many institutions provide orientations and foundational courses as a way to ease the transition for students academically and socially (Barefoot et al., 2005;
Upcraft, Gardner, & Barefood, 2005; Mattanah et al., 2010). Students who can successfully manage their independence, newfound freedoms, and responsibilities are able to make new relationships while maintaining old relationships, aiding in making the transition to college less difficult (Holmbeck & Leake, 1999; Enochs & Roland, 2006).

In addition to the stresses of academics and finding a peer group, the rise of mental health issues found in college students compiles the stresses of the new experiences even more when transitioning to college. In 2005, 39% of students between the ages of 15-21 years old had the highest rate of mental health illness across age groups which corresponded with the traditional college years (Cleary, Walter, & Jackson, 2011). About 12–18% of students on campuses have a diagnosable mental health illness (Mowbray et al., 2006). According the Cleary, Walter, & Jackson (2011), the students that enter college whom have a “lack motivation, energy or interest, restless, irritable, moody, distracted or tired, and experience changes in sleep or appetite” could be demonstrating signs of a mental health illness if they are severe enough. Common coping methods used among college students, especially females, are eating disorders such as bulimia and anorexia (Gaku et al., 2000; Abrams, Allen, & Gray, 2009).

All of these issues in addition to several others could affect the health and wellness of a student while transitioning to college. Academic, social and mental health issues can have an effect on how students cope with stress which can ultimately affect their nutritional health as well. Food consumption itself is another change that students experience when transitioning to college. One of the food changes is that the overall dietary quality declines due to the vast majority of college students not meeting recommended dietary guidelines (Butler, Black, Blue, & Gretebeck, 2004; Huang et al., 2003; Demory-Luce et al., 2004; American College Health Association, 2009). Students do not have the ability to look to their parents for guidance in every meal decision while they are at college. Students are offered an abundance of food items
and options through on-campus cafeteria meal plans and at off-campus restaurants or grocery stores (Brevard & Ricketts, 1996).

While away at college students can become more independent by making decisions for their own life no matter if it is good or bad. A student’s decision made in the present time can quickly form habits. Habits established during the university period can have a great impact on health and their overall wellness later on in their adult life. In the new environment, students are changing their previous habits and in particular habits surrounding the quality and quantity of food consumed (Felinic, Nola, & Matanic, 2008). Health risks that are often developed through habits formed in college are obesity, diabetes, cardiovascular disease, and cancer (Hasse, Steptoe, Sallis, & Wardle, 2004). Opportunities such as exercise to reduce these health risks though aren’t being taken advantage of. Studies have found decreased physical activity through the college years (Bray & Born, 2004; Serlachius, Hamer, & Wardle, 2007; Huang, Harris, Lee, Nazir, Born, & Kaur, 2003). New, less healthy habits, combined with reduced use of healthy habits can have a ripple effect onto a student’s way of life from overall nutritional health and wellness to their academic performance and stress levels.

A new life in college brings stressors that further play a factor in a student’s wellness. Normative stressors such as course load and examination stress may further influence students’ dietary habits (Weider, Kohlman, Dotzauer, & Burns, 1996; Pollard, Steptoe, Canaan, Davies, & Wardle, 1995). According to Cartwright et al. (2003) “adolescents who perceive greater levels of stress exhibit acute changes in dietary practices, such as skipping breakfast and increased consumption of fatty foods.” If students become stressed they could turn to food for support, potentially leading to health risks showing up earlier in life. Being overweight and or obese in young adulthood has been linked to decreased academic performance (Sabia, 2007). Decreased academic performance when linked to being overweight or obese is an extreme concern when
more than one third (35%) of college student are overweight or obese (Lowry, Galuska, Fulton, Wechsler, & Kahn, 2000; American College Health Association, 2009).

The cyclical effect of experiences and changing habits can feed off of each other to create a bigger issue not only with stressors and academics, but worsens one’s overall health and wellness. Because of these factors, students have become an important target group for nutrition education and obesity prevention efforts (Coursineau, Goldstein, & Franko, 2004).

There are initiatives available to help break the cycle; initiatives that use the power of social influences to help change bad habits into positive ones. During the past few years, being health conscious has become a trend that evokes a calling for large social change (Feher & Boros, 2011).

Social Marketing

When it comes to reaching out to society to address their eating habits and nutrition social marketing has shown effectiveness in taking commercial marketing techniques and applying them to influence change of social and health problems (O’Conner & Lundstrom, 2011).

Marketing techniques such as computer-tailored print materials have been effective in producing change to more healthful eating behaviors (Campbell et al., 1994; Oenema, Brug, & Lechner, 2001). Additionally, Bruen, Pollock, Zirpolo, Vieira & Herbold (2007) suggest that pictures are an effective marketing tool especially when it comes to behavioral change. To further the influence of pictures and print materials, particular colors can be used to enhance product desirability (Lane, 1991).

Social marketing has become increasingly more common in society especially social marketing geared towards young adults because of the effect social influences has on them. The four principles of marketing: product, price, place and promotion are critical components of a social marketing campaign in order to reach their target market: young adults (Centers for
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According to the Centers for Disease Control and Prevention (2010) the word product refers to the desired behavior followed by price which refers to barriers to the desired behavior change. Location, location, location is the cliche to marketing. This holds true in the social marketing principles by finding the place and timing of the desired behavior change. Lastly, the promotion of behaviors and activities that encourage behavioral change should be saturated into society. Examples of promotion range in creativity and forms of outlets. All of these principles should be met to formulate an effective social marketing. Numerous pieces of literature, reviews and research have concluded that social marketing interventions are effective not matter if they are in the broad or narrow focus (Crawford & Feldt, 2007; Gordon, McDermott, Stead, & Angus, 2006; O’Conner & Lundstrom, 2011). In particular “social marketing is very promising for health behavior intervention approaches” (Gordon et al., 2006).

Campaigns & Their Positive Effects

General Nutrition Campaigns

One of the first major social marketing campaigns to take off was the 5-A-Day for Better Health campaign launched in conjunction with the National Cancer Institute, Center for Disease Control and Prevention and the World Health Organization. “It was the first national nutrition education effort in the United States to be developed using a social marketing framework” (Loughrey, Balch, Lefebvre, Doner, Johnston, Eisner, & Hadley, 1997). The 5-A-Day for Better Health campaign was one component to the Healthy People 2000 initiative by the Department of Health and Human Services which was further pursued in the Healthy People 2010 initiative (2005). The premise of the 5-A-Day for Better Health campaign was to increase consumption of fruits and vegetables from 2.5 to 5 servings a day. Balch, Loughrey, Weinberg, Lurie, & Eisner (1997) noted that the campaign geared its promotion efforts towards expressing the benefits of
increasing one's fruit and vegetable intake in order to be successful. Keeping the benefits central in all of its marketing was a bridge to the goal of having society be influential in helping create the healthy behavior change which was rooted in social cognitive theory. Healthful benefit-based messages used to promote food in restaurants and food products have been shown to positively influence attitudes about the marketed products (Bruen et al., 2007).

Research conducted by Dr. Pauline Ashfield-Watt showed the awareness and effectiveness of the 5-A-Day for Better Health program (2006). The researcher found that a clear and direct message of eating more fruit and vegetables through media outlets helped contribute to the campaigns' success. The National Cancer Institute's data demonstrated a significant increase in awareness of the campaign of 15.8% over six years (2001). Though statistics show the whole goal of increasing consumption to 5 servings a day was not met, the campaign itself proved successful at increasing consumption all together from two and a half to four servings (Ashfield-Watt, 2006).

A more recent nationwide health related social marketing campaign was orchestrated by the current First Lady of the United States, Michelle Obama. According to a press release on February 9, 2010 by The White House, her goal of solving the challenge of childhood obesity was to be achieved through the Let's Move campaign. The campaign was based on working with public and private partners, schools, families, and communities. The framework of the campaign was to use simple tools to educate kids to be more active, eat better and get healthy. Obama led the campaign by creating a garden for the White House in which children from an area elementary school learned about proper nutrition and the role food plays in living a healthy life. Other components of the campaign included calorie labeling on beverages and other food items, a refreshed and updated version of the food pyramid called “MyPyramid”, numerous Public Service Announcements, special programming, marketing with support from cultural icons, and
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educating food service workers on nutrition to decrease sugar, fat and salt in school meals while increasing grains and produce. Obama’s campaign initiatives ask for adjusted marketing and labeling laws on food item packaging that would include identifying illness awareness notices and healthy benefits of the food items. Once marketing and labeling laws were enforced, research would further prove the nation’s desire to buy items that were properly labeled (Feher & Boros, 2011). By identifying items through labeling standardization such as ‘healthy’, customers’ perceptions of the food’s quality would be positively influenced as well (Bruen et al., 2007). To support an overall healthy lifestyle, Obama’s Let’s Move campaign also supported other opportunities such as “60 Minutes of Play a Day” and established the “Presidential Active Lifestyle Award” (The White House, 2010; Wojcicki & Heyman, 2010). Since the campaign was still in its early stages, data to support its effectiveness is yet to be explored. This campaign showed another way of how holistic body health even through food consumption was vital to everyone and should begin at an early age to establish positive health and eating habits in order to reduce the risk of health issues later in life. Starting to influence young adults through the campaign would create healthy habits which they could rely on when making their own decisions even when transitioning into a new life at college.

Healthy Campus 2020 led by the American College Health Association (ACHA) is another social marketing campaign that is geared toward improving and encouraging a healthy lifestyle for college students. It is known as a “sister program” to the Healthy People 2020 campaign led by the U.S. Department of Health and Human Services (2012). The Healthy Campus 2020 campaign has narrowed down further the Healthy People 2020 campaign as it directly relates to college and university settings. Overarching goals of the campaign are to create environments that promote good health for all, attain high-quality, longer lives free of preventable diseases, improve the health of the entire campus community and promote quality of life, healthy
development and positive health behaviors for faculty, students, and staff. By 2020, the Healthy Campus campaign would like to see a 10% improvement in overall health on college campuses. Healthy Campus 2020 has outlined steps campuses can take in order to have an effective social marketing campaign aimed at improving health.

Healthy Campus 2020 has two targets for objectives in the campaign: students and faculty. The student based objectives included 11 topic areas with 54 specific objectives (ACHA, 2012). “The topics and objectives reflect the major public health concerns impacting college students in the United States”; stress, sleep difficulties, anxiety, illness and work were the focus of the objectives (ACHA, 2012). The faculty as well were targeted in setting objectives for the campaign. The objectives for faculty were about nutrition/weight status, physical activity/fitness, and stress management among a few others. It is with the objectives set by the campaign that institutions such as the University of North Dakota, Florida State University, Illinois State University are participating in Healthy Campus 2020. Each participating institution customizes a plan to achieve the objectives set guided by Healthy Campus 2020’s recommendations to track and assess students’ habits, create and implement an intervention plan then track progress(ACHA, 2012). Unfortunately there has been no national benchmark to which the Healthy Campus 2020 campaign and its participating institutions could be measured on.

The 5-A-Day for Better Health, Let’s Move and Healthy Campus 2020 campaigns were intentional on how they marketed their campaigns to their target markets. They were intentional that their marketing was based on research proven to be successful. Past research has shown for health communication campaigns to be successful, the marketing should be positive, use a light humorous approach, not arouse fear and educate while also entertaining using images according to the U.S. Department of Health and Human Services (2004). The 5-A-
Day for Better Health campaign featured a sun filled with fruits and vegetables while the Let’s Move campaign featured an apple and an outline of a youth child jumping forming an exclamation point. In the United States, health communication campaigns such as these that included mass media and avoid coercion has an average effect size of about 5% (Snyder, 2001). Both 5-A-Day for Better Health and Let’s Move used colors to play off each other along with their positive message that didn’t invoke fear. Because Americans in 2005 consumed nearly 70 billion commercially prepared meals and snacks, foodservice establishments have the opportunity to influence how people eat each week (Economic Research Service, 2003). These campaigns targeted locations such as school cafeterias and dining settings where they could influence individuals in mass. Campaigns have progressed further by reaching out to target individuals past the kindergarten through high school education system and into the college education systems. They are reaching into university dining settings in hopes of influencing college age students’ eating habits as well.

Campaigns in University Dining Hall Settings

Freedman (2011) examined effects of point-of-selection nutrition information of student’s consumption of French fries, nacho cheese, milk, and salad dressings. The quasi-experimental study was conducted over a five week observational period at San Jose State University (SJSU). The study was conducted within an “all-you-care-to-eat” dining hall located on SJSU’s campus were students could select from a wide variety of food items for a meal purchase on their meal plan. During the first week of the study, students were observed in their selection of French fries and salad dressing to create a baseline. During the next four weeks, a marketing intervention occurred where signs were displayed at the point-of-selection for four targeted foods. The signs showed pictures of a “large” and “small” portion size along with corresponding nutritional information for the portion size of each item. In addition, each sign
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included a slogan that eluded to portion size or making a change. “Portion Distortion” posters were also presented at the entrance to the dining halls through the study.

One week after the marketing intervention students were randomly selected to answer a 10-questions survey designated to determine whether posted nutrition signs and slogans were noticed and, if so, whether respondents used the posted information to help make consumption decisions. Freedman (2011) found that 17% of students self-reported to eat the smaller portion of French Fries rather than the large portion. From the baseline observations, 20% of students served themselves a “large” portion of French fries over a “small” portion (Freedman, 2011). During the intervention however selection of portion sizes were reversed when 57% of students selected a “small” portion size for French fries. No effect was found however for the selection of portion sizes in any of the salad dressings in the intervention. The results of the study showed that 99% of the respondents (n = 359) reported seeing the point-of-selection nutritional information and marketing at some point within the study. A question within the post-intervention survey asked if students noticed any of the marketing towards any of the listed food items to which French fries, salad dressing and milk reported the highest responses. While food items that weren’t used in the marketing intervention were listed as the lowest responses to the question. Another question posed in the post-intervention survey was if student’s selection of a food item changed in any way due to seeing the nutritional information posted around the dining hall. All four of the targeted food items did produce a change due the presence of nutritional information. This study showed a positive correlation between eating habits and the presence of nutritional information at the point-of-selection in a university “all-you-care-to-eat” dining setting.

In a study conducted by Duncan (2008), student perceptions and selections of healthful food choices in a dining hall at a large, Midwestern, public university were analyzed. The study
required participants to be between the ages of 18-23, have a meal plan and consume at least three meals per week at the targeted dining hall. Duncan emailed a pre-intervention survey one month prior to the three week intervention period which received a total of 272 responses. Healthy choice identifiers were positioned at the point-of-selection to identify 10 healthy foods available. In addition to the healthy choice indicators, a social marketing campaign intervention occurred comprised of informational table tents and flyers using humor, photos, and graphics were used to promote healthy eating behaviors. Following the three-week social marketing intervention, a post-intervention survey was emailed and accepted for 10 days following distribution. A 38% response rate from the pre-intervention to the post-intervention survey resulted in a 104 sample size made up of primarily Caucasian individuals. Results of the study showed 22% of participants reported becoming more aware of healthful food choices available. Increased awareness was cited by participants as the overall top reason for self-reported changes in consumption behaviors. “Students reported eating significantly more “junk” food, skipping more meals, and eating larger portion sizes since coming to college. They attributed the changes due to the abundance of food that surrounds them and their lack of time” (Duncan, 2008). Trends of significant increased consumption of fruit were reported along with cottage cheese and low-fat salad dressings. According to findings from Duncan’s study as well as through supportive literature, students’ eating habits would change towards a less healthful manner when transitioning to college. An effective social marketing campaign in an “all-you-care-to-eat” dining setting will decrease the negative, unhealthy eating behaviors college students have. Thus a social marketing campaign used to promote nutrition and healthy eating behaviors may be beneficial in improving the selection and consumption of healthy foods within a college student population.
Summary

Nutrition is a vital part to individual's overall health. In a society where obesity is an overwhelming portion of the population, the concern for better nutrition and eating habits should be a top priority in order to reduce the amount of diseases related to nutrition and health. Social marketing campaigns are one way to help change behaviors. Social marketing that uses key marketing concepts, that is positive in message, and targets age groups from the youth to college age students will have an impact on improving behaviors in society. Social marketing efforts help provide information directly to the consumer will allow for consumers to make a better educated choice when selecting what to eat.

Research has shown when nutritional information is available at point-of-selection, the students not only notice the information but approximately 33% of them reported making at least one behavior change because of seeing the nutritional information (Pulos et al.; Roberto et al.; Freedman, 2011). Also, participants responded having a statically significant positive change in overall awareness of identifying healthy food choices at a dining hall (Peterson et al., 2010). Furthermore, the perceived limited availability of healthful foods in the dining hall was commonly reported as a reason why students did not choose healthful foods (Peterson et al., 2010). By providing nutritional information at the point-of-selection students simply were made more aware of the nutritional content of food items.

By offering healthy dishes, in addition to promoting and marketing them, foodservice establishments can influence the diets of their customers to make better educated choices when selecting food (Bruen et al., 2007). The better educated decisions regarding food choice society makes, the likelihood that awareness of food items increase and the overall health wellness of society increases.
Chapter II contained a review of relevant literature about nutrition, transitioning to college and social marketing. Further literature was provided about various social marketing campaigns as they relate to nutrition and a university dining setting. This review of literature laid the foundation for the present study as they all play an intricate dimension in understanding the significance of the study. Chapter III will contain an explanation of the present study such as the design of the study, methodology for data collection and methodology for data analysis.
CHAPTER III

Methodology

Chapter III will discuss the research questions and their related hypotheses, details the design of the study including information about participants, incentives, the site: Lily Dining Center and instruments used. Furthermore Chapter III will identify the data collection process and plan for data analysis.

Research Questions

This study addressed the following research questions:

1. Do college students’ eating habits change while at college?

2. How do college students’ eating habits change?
   2.1 How have college students’ eating habits changed?
   2.2 Why have college students’ eating habits changed?

3. Do healthy choice indicators at point-of-selection combined with benefits-based messages increase perception of healthy food items at a university dining center?
   3.1 Does Lily Dining Center offer a variety of healthy food choices?
   3.2 Are healthy food choices easily identified at Lily Dining Center?
   3.3 Is it possible for you to select healthy food choices at Lily Dining Center?

4. Do healthy choice indicators at point-of-selection combined with benefits-based messages increase the selection of targeted healthy food items at a university dining center?

Based on the review of literature cited in Chapter II, it was expected that there would be a change between students’ eating habits and that a social marketing intervention would be a sources of that change.
Hypotheses

1. Do college students’ eating habits change while at college?

\[ H_0^1: H \neq 0 \]
\[ H_{a1}: H = 0 \]

For Research Question 1, the pre and post-intervention surveys were the independent variables while answering ‘yes’ or ‘no’ to question #11 (Have your eating habits changed since you came to Knightstown this past August?) in the pre-intervention survey and to question #2 (Have your eating habits changed since you came to Knightstown this past August?) in the post-intervention survey were the dependent variables. A McNemar Test for Significance of Change was used to determine the statistical significance with \( p \leq 0.05 \) between the participants whose responses changed in either direction from pre to post-intervention surveys.

2. How do college students’ eating habits change?

\[ H_0^2: H \neq 0 \]
\[ H_{a2}: H = 0 \]

Research Question 2, the pre and post-intervention surveys were the independent variables. The dependent variables were selecting ‘yes’ or ‘no’ to question #11 (Have your eating habits changed since you came to Knightstown this past August?) in the pre-intervention survey and selecting if an eating habit had applied to them in the both the pre and post-intervention survey questions #12 and #3 (How have your eating habits changed?) and to questions #13 and #4 (Why have your eating habits changed?) respectively. These questions utilized a “select all that apply” response option. 14 separate eating habits
related to how their overall eating habits had changed were all analyzed separately using McNemar’s Test for Significance of Change with $p \leq 0.05$.

2.1 How have college students’ eating habits changed?

The independent variables for all of the eating habits were the Pre and Post-Intervention Survey participation. The Null Hypothesis (Ho2.1) for each reason is that the proportion of individuals who indicated that they are fulfilling that eating habit since coming to Knightstown at the Post-Intervention Survey is the same as the proportion of individuals who indicated that they are fulfilling that same eating habit since coming to Knightstown in the Pre-Intervention Survey. The Alternative Hypothesis (Ha2.1) is that the proportion of individuals who indicate that they are fulfilling that eating habit since coming to Knightstown at the Post-Intervention Survey is not the same as the proportion of individuals who indicated that they are fulfilling that same eating habit since coming to Knightstown in the Pre-Intervention Survey.

2.2 Why have college students’ eating habits changed?

The independent variables for all of the reasons were the Pre and Post-Intervention Survey participation. The Null Hypothesis (Ho2.2) for each reason is that the proportion of individuals who indicated that that reason applies to them since coming to Knightstown at the Post-Intervention Survey is the same as the proportion of individuals who indicated that the same reason still applies to them since coming to Knightstown in the Pre-Intervention Survey. The Alternative Hypothesis (Ha2.2) for each reason is that the proportion of individuals who indicate that that reason applies to them since coming to Knightstown at the Post-Intervention Survey is not the same as the proportion
of individuals who indicated that the same reason still applies to them since coming to Knightstown in the Pre-Intervention Survey.

3. Do healthy choice indicators at point-of-selection combined with benefits-based messages increase perception of healthy food items at a university dining center?

**Ho3:** $H \neq 0$

**Ha3:** $H = 0$

McNemar’s Test of Significance of Change used a $p \leq 0.05$ was determined if the change in responses to each question was significant. All of the questions had the pre and post-intervention surveys as independent variables. The dependent variables are specific to their appropriate questions however are determined by ‘yes’ or ‘no’ responses.

3.1 Does Lily Dining Center offer a variety of healthy food choices?

The null hypothesis (Ho3.1) is that the proportion of individuals who indicated that Lily Dining Center does offer a variety of healthy food choices during the pre-intervention survey is the same as the proportion of individuals who indicated that Lily Dining Center does offer a variety of healthy food choices during the post-intervention survey. The alternative hypothesis (Ha3.1) is that the proportion of individuals who indicated that Lily Dining Center does offer a variety of healthy food choices during the pre-intervention survey is not the same as the proportion of individuals who indicated that Lily Dining Center does offer a variety of healthy choices during the post-intervention survey. The dependent variables were selecting ‘yes’ or ‘no’ to pre-intervention survey question #17 and post-intervention survey question #8.

3.2 Are healthy food choices easily identified at Lily Dining Center?
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The null hypothesis (Ho3.2) is that the proportion of individuals who indicated that healthy food choices are easily identified during the pre-intervention survey is the same as the proportion of individuals who indicated that healthy food choices are easily identified during the post-intervention survey. The alternative hypothesis (Ha3.2) is that the proportion of individuals who indicated that healthy food choices are easily identified during the pre-intervention survey is not the same as the proportion of individuals who indicated that healthy choices are easily identified during the post-intervention survey. The dependent variables were selecting 'yes' or 'no' to pre-intervention survey question #20 and post-intervention survey question #10.

3.3 Is it possible for you to select healthy food choices at Lily Dining Center?

The null hypothesis (Ho3.3) is that the proportion of individuals who indicated that it is possible to select healthy food choices at Lily Dining Center during the pre-intervention survey is the same as the proportion of individuals who indicated that it is possible to select healthy food choices in Lily Dining Center during the post-intervention survey. The alternative hypothesis (Ha3.3) is that the proportion of individuals who indicated that it is possible to select healthy food choices in Lily Dining Center during the pre-intervention survey is not the same as the proportion of individuals who indicated that it is possible to select healthy choices in Lily Dining Center during the post-intervention survey. The dependent variables were selecting 'yes' or 'no' to pre-intervention survey question #18 and post-intervention survey question #11.
4. Do healthy choice indicators at point-of-selection combined with benefits-based messages increase the selection of targeted healthy food items at a university dining center?

**Ho4**: $\mu_0 = \mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_6$

**Ha4**: $\mu_0 \neq \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5 \neq \mu_6$

Dependent Paired Sample t-tests were conducted for each of the ten targeted food items in order to compare the consumption levels by participants from the pre-intervention survey to the post-intervention survey. $p \leq 0.05$ was used to determine the significance. The null hypothesis for each food item is that the difference in means between pre-intervention survey and the post-intervention survey results for each food item is equal or less than zero. The alternative hypothesis (Ha4) is that the difference in means between the pre-intervention survey and the post-intervention survey results for each food item is greater than zero.

**Design of the Study**

The focus of the study was centered upon the perceptions college students at Knightstown University have of nutritionally healthy items in an on-campus dining center. Furthermore, the study examined student’s awareness of nutritional healthy food item indicators posted at point-of-selection. This was explored using a quantitative method of inquiry. “Quantitative research involves an analysis of numerical data” (Neill, 2007). Quantitative research uses prediction to form hypothesis then uses tools such as surveys during an experimentation to analyze the hypotheses concepts while translating the data into numerical units of measure to explain what was observed (Neill, 2007). A majority of both surveys asked for quantitative data with the exception of a few open-ended response options.
that were not analyzed for the purpose of this study. The study was conducted over a nine-week period. The study began on the first day of classes during the 2012/2013 academic year. The first week accounted for students to get adjusted to and explore the new campus environment as well as served a control period for the display of food items in the dining center. During the beginning of the second week, pre-intervention surveys were completed for three days at the peak trafficked times within the dining center. The pre-intervention survey was intended to gather the students’ perceptions and awareness of the food items before being exposed to the social marketing intervention. While students ate, they were approached by the researcher and or researching assistants to invite them to participate in the study. Students were explained the study and had the option to participate if they wish.

Participants

Participants of this study were customers of Lily Dining Center on Knightstown University's campus. The only restriction to participating in the study was that participants must be a Knightstown University student. No specific demographic of student was targeted to complete the present study.

Recruitment of participants was conducted by the researcher and or research assistants for the first data collection period by approaching students eating in the dining area and inviting them to participant. Participant recruitment took place over a span of three days (Monday, August 27, 2012 to Wednesday, August 29, 2012) during the most trafficked time of the week (11am-7pm) (Kohn, 2012). The researcher was aided by the support of research assistants who were graduate students or professionals within the campus Housing & Dining department. All of the research assistants had completed the Institutional Review Board’s Responsible Conduct of Research training prior to assisting in collecting data. The researcher and the research assistants explained the study and the incentive to students as well as presented them with pieces of
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technology to which they could use to complete the survey on. All participants were informed of the purpose of the study, explained the incentive stipulations, warned of risks and benefits, provided the researcher's contact information and agreed to the informed consent information by selecting to begin the surveys.

Incentive

Incentives for completing the surveys were entries into a drawing for three randomly selected participants to win $25 Dining Dollars that could be used in any of the on-campus dining facilities or for a Kindle Fire valued at $200. All of the incentives were donated by Lily Campus Dining. In order to be entered into the drawing, participants must have completed both the pre-intervention survey and the post-intervention survey. Responses to questions in the study did not disqualify any participant from being entered into the drawing. Participants were asked to provide an email address in which the participant would be contacted to take the post-intervention survey. Without an email address, participants could not be contacted to take the post-intervention survey which disqualified them to be entered into the drawing for the prize incentive. This also limited the researcher's ability to compare responses between the pre-intervention and post-intervention surveys for that participant. Winners of the drawing were contacted on Monday, October 21, 2012, via email after the completion deadline of the post-intervention survey.

Site

The study took place in Lily Dining Center, an all-you-can-eat dining center located on University's campus. Lily Dining Center was chosen as the location of the study for two reasons. One reason was because the menu cycle provided by Lily Campus Dining, showed the Lily Dining Center's menu was most consistent in offering the ten targeted foods everyday compared to other campus dining centers. During every service day and time, food options were served in
hot and cold service and self-service buffet lines. The second reason is that the researcher perceived Lily Dining Center to be the most unhealthy based on the menu items it consistently served as its' main food items (potatoes and a breaded form of chicken).

In an interview with the Interim Director of Lily Campus Dining at the time Susan Kahn, Kahn explained the service numbers, hours and customer demographics. Lily Dining Center served on an average week 1367 customers based on the customer counts from September 2011. Mondays consist of the most customers during the week based off of September 2011 statistics gathered from Lily Campus Dining. According to Kahn (2012), the customer demographics consisted of mostly students with university meal plans, though the facility does accept a variety of forms of payment including meal swipes, dining dollars and cash. Lily Dining Center was open from 7am to 8pm with breaks between 10:30 a.m. to 11:00 a.m. and 3:45 p.m. to 4:30 p.m. to switch out food. Students had the option to eat at any of the five on-campus dining center facilities using their meal plan swipes up to every two hours. This means that students have the option to eat at any of the locations and are not required to only eat at Lily Dining Center. The most frequented times for Lily Dining Center are from 11:01 a.m. to 1:15 p.m., 1:46 p.m. to 2:15 p.m. and 5:00 p.m. to 6:30 p.m. 60.43% of the entire, daily traffic are accounted for during those times (Kohn, 2012).

**Instrumentation**

Two surveys, a pre- and a post-intervention survey, were recreated based off of surveys created by Duncan in 2008. These surveys were adapted to fit offerings at Lily Dining Center and Knightstown University's culture. The pre-intervention survey (Appendix D) and post-intervention survey (Appendix E) were created using a private account on Zoomerang.com. The Lily University Housing & Dining Department had an account with Zoomerang.com that was used to create both surveys through. The researcher was given permission to use this account
for the purpose of this study free of charge. Access to the account and data information is protected through a departmental username and password. Digital documents of the data were stored on a password protected computers that only the researcher or the research committee members could access. Details of both surveys are described under the Data Collection section.

For the intervention period, several marketing techniques were used. The study’s main icon was “The Right Stuff” logo seen in Figure 1. This resembled a place setting with the words “This is The Right Stuff.” The logo was placed on every marketing item in the study. There were four marketing pieces that were placed throughout the dining center during the Intervention period.

![Figure 1. "The Right Stuff" logo](image)

As customers entered the facility, two 3’x 5’ large entrance signs (Appendix H) were placed near each register which each customer needed to pass by. This was to act as the first attention getter for the study. These signs asked customers what they are putting on their plates, if it was the right stuff. Furthermore a general benefit based message that encouraged customers to grab “The Right Stuff.”

A 3.5”x 4” item indicator card (Appendix G) with the name of the food item and study logo on it was placed above each targeted food item. There was at least one item indicator card
Students’ Consumption of Healthy Food Items Using a Social Marketing Intervention

per food item. In addition, a 8.5" x 14" benefit based message poster was placed above each targeted food item and throughout the dining center (Appendix J). The benefit based posters incorporated pictures of Knightstown University students and professionals with word bubble statements that used humor and excitement to grab attention. Below each picture stated a different benefit based message of each food item.

Lastly, tripod table tents (Appendix I) were randomly placed on dining tables within the dining room. There were three varieties of table tents that each highlighted three to four of the targeted food items. The table tents incorporated the benefit based messages, identified the location of each food item within Lily Dining Center and included “The Right Stuff” logo.

Data Collection

The data was collected using two electronic surveys through Zoomerang.com. Participants were able to access the surveys via a web link in a web browser. The first page of both surveys was a welcome and introduction page which stated the purpose of the study, incentive stipulations, a statement about informed consent, risks and benefits of participating in the study as well as the researcher’s contact information. In both surveys participants were asked to provide their last four digits to their cell phone number as a means of identifying sets of data. It is through these digits that pre and post-intervention surveys were matched for comparison. Various questions in both surveys were written with response options such as using a six point Likert scale, “Select all that Apply” and ‘Yes’, ‘No’, or ‘Sometimes’, and single select. Every question that had a response option of ‘yes’, ‘no’, or ‘sometimes’, responses ‘yes’ and ‘sometimes’ were combined in order to allow for a 2x2 McNemar Test of Significance of Change to be done.
Students’ Consumption of Healthy Food Items Using a Social Marketing Intervention

Pre-Intervention Survey

Participants were approached while eating in Lily Dining Center during the three pre-intervention data collection period (Monday, August 27, 2012 to Wednesday, August 29, 2012) during the most trafficked time of the week (11:00 a.m. – 7:00 p.m.) (Kohn, 2012). iPads and iPods were handed out for participants to use during the data collection period that had the survey already set up on it. Participants used the technology to complete the surveys which took about six to eight minutes to complete. Demographic questions such as age, gender, race/ethnicity, class rank, summer living status, enrollment status, campus meal plan status and dining dollars were asked in the beginning of the pre-intervention survey. A total of 22 questions were asked in the pre-intervention survey. The survey concluded by asking participants to submit their Knightstown University email address to which would be used to send them the post-intervention survey and would be kept confidential.

Post-Intervention Survey

Participants which provided a valid email address were sent an email from the researcher inviting them to complete post-intervention survey on Monday, October 8, 2012. The email described the incentive to completing the survey as well as contained a direct link to the post-intervention survey. Participants could take the survey whenever and wherever they chose without a restricted time allotment. The post-intervention survey data collection closed on Thursday, October 18, 2012 at 11:59 p.m. The post-intervention survey was estimated to take about three to five minutes to complete while answering 16 total questions. No demographic information was collected in the post-intervention survey. 11 out of the 16 questions were identical questions from the pre-intervention survey. The other five questions asked about marketing and exercise habits which were not analyzed for the present study.
To assist in collecting as much data as possible, participants were sent four reminder emails throughout the data collection period. These emails were sent out to only those who had not yet completed the post-intervention survey out of the pre-intervention sample. Each of the reminder emails stated the remaining number of days left to complete the survey, a link to the survey and statement about the incentives followed by thanking them for participating in the study.

**Data Analysis**

All of the data that was collected in both the pre and post-intervention surveys were downloaded into Microsoft Excel from Zoomerang.com in order to manipulate it. Prior to analyzing the data however, the data required cleaning. All of the data was first transformed into nominal data. Out of the pre-intervention survey responses, a data set was removed if an email address was not provided. This cleaned up data will be known as the pre-intervention sample. Following this the pre-intervention sample was transferred into Microsoft SPSS. Descriptive statistics were run on the pre-intervention sample using Microsoft SPSS for Windows (SPSS Inc., 2009) to show the sample size, mean, median and mode to all of the questions within the pre-intervention survey.

Out of all of the responses to the post-intervention survey, no responses were removed. This data will be known as the post-intervention sample. Demographic information for each data set in the post-intervention sample was then matched based on the last four digits provided of the participant’s cell phone number and added to each data set within the sample. This was needed in order to run descriptive statistic analysis within Microsoft SPSS for Windows (SPSS Inc., 2009) that included demographic information for the post-intervention sample.

Out of the post-intervention sample, data sets were then removed if the last four digit of the participant’s cell phone number that was provided does not have a match any of the four
Students' Consumption of Healthy Food Items Using a Social Marketing Intervention

digit cell phone numbers provided in the pre-intervention survey. Likewise data sets were
removed from the post-intervention sample if there were duplicates in four digit cell phone
numbers in order to avoid mismatching data sets together. This data will be known as the
comparative data sample. Descriptive statistics were then analyzed for the comparative data
sample. All of the data sets in the comparative data sample were matched to their counterpart
data sets within the pre-intervention sample. This was needed in order to compare responses
per each matched data set from the pre-intervention survey to the post-intervention survey.
Once the data had been cleaned up and descriptive statistics were analyzed, further tests were
ran that aimed at answering the four research questions.

**Research Question 1**

Do college students' eating habits change while at college?

For Research Question 1, the pre and post-intervention surveys were the independent
variables while answering 'yes' or 'no' to question #11 in the pre-intervention survey (“Have
your eating habits changed since you came to Knightstown this past August?”) and to question
#2 (“Have your eating habits changed since you came to Knightstown this past August?”) in the
post-intervention survey were the dependent variables. A McNemar Test for Significance of
Change was used to determine the statistical significance with \( p \leq 0.05 \) between the participants
whose responses changed in either direction from pre to post-intervention surveys.

**Research Question 2**

How do college students' eating habits change?

2.1 How have college students' eating habits changed?

2.2 Why have college students' eating habits changed?

For Research Question 2, the pre and post-intervention surveys were the independent
variables. The dependent variables were selecting 'yes' or 'no' to question #11 in the pre-
Students' Consumption of Healthy Food Items Using a Social Marketing Intervention

intervention survey and selecting if an eating habit had applied to them in the both the pre and post-intervention survey questions #12 and #3 respectively. 14 separate eating habits related to how their overall eating habits had changed were all analyzed separately using McNemar’s Test for Significance of Change with \( p \leq 0.05 \). Table 1 shows the data analysis plan for Research Question 2 for each eating habit tested.

Table 1

Data Analysis Plan for Research Question 2- How Have Eating Habits Changed?

<table>
<thead>
<tr>
<th>Eating Habit</th>
<th>Dependent Variable #1</th>
<th>Dependent Variable #2</th>
<th>Statistical Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>I'm eating MORE fast food</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;I'm eating MORE fast food&quot; to POST-I Question #3</td>
<td>McNemar's Test of Change</td>
</tr>
<tr>
<td>I'm eating MORE &quot;junk&quot; food</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;I'm eating MORE &quot;junk&quot; food&quot; to POST-I Question #3</td>
<td>McNemar's Test of Change</td>
</tr>
<tr>
<td>I'm eating MORE fruits and vegetables</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;I'm eating MORE fruits and vegetables&quot; to POST-I Question #3</td>
<td>McNemar's Test of Change</td>
</tr>
<tr>
<td>I'm eating MORE healthy foods</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;I'm eating MORE healthy foods&quot; to POST-I Question #3</td>
<td>McNemar's Test of Change</td>
</tr>
<tr>
<td>I'm drinking MORE soft drinks</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;I'm drinking MORE soft drinks&quot; to POST-I Question #3</td>
<td>McNemar's Test of Change</td>
</tr>
<tr>
<td>I'm eating LARGER portion sizes</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;I'm eating LARGER portion sizes&quot; to POST-I Question #3</td>
<td>McNemar's Test of Change</td>
</tr>
<tr>
<td>I'm eating LARGE meal per day</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;I'm eating 1 LARGE meal per day&quot; to POST-I Question #3</td>
<td>McNemar's Test of Change</td>
</tr>
<tr>
<td>I'm eating LESS fast food</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;I'm eating LESS fast food&quot; to POST-I Question #3</td>
<td>McNemar's Test of Change</td>
</tr>
<tr>
<td>I'm eating LESS &quot;junk&quot; food</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;I'm eating LESS &quot;junk&quot; food&quot; to POST-I Question #3</td>
<td>McNemar's Test of Change</td>
</tr>
</tbody>
</table>
To further answer Research Question 2, another McNemar Test for Significance of Change was analyzed with regard to reasons participants indicated why their eating habits had changed. The pre and post-intervention surveys were the independent variables. The dependent variables were selecting 'yes' or 'no' to question #11 in the pre-intervention survey and selecting if a reason had applied to them in the both the pre and post-intervention survey questions #12 and #4 respectively. 12 separate reasons related to why their overall eating habits had changed were all analyzed separately using McNemar's Test for Significance of Change with $p \leq 0.05$.

Table 2 shows the data analysis plan for Research Question 2 for each eating habit tested.

### Table 2: Data Analysis Plan for Research Question 2 - Why Have Eating Habits Changed?

<table>
<thead>
<tr>
<th>Reason</th>
<th>Dependent Variable #1</th>
<th>Dependent Variable #2</th>
<th>Statistical Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Time</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;Lack of Time&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
</tbody>
</table>
### Students' Consumption of Healthy Food Items Using a Social Marketing Intervention

<table>
<thead>
<tr>
<th>Topic</th>
<th>Pre-Intervention Question</th>
<th>Post-Intervention Question</th>
<th>McNemar's Test of Significance of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laziness</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;Laziness&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
<tr>
<td>Increased Stress</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;Increased Stress&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
<tr>
<td>Studying late hours</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;Studying late hours&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
<tr>
<td>No parent or guardian to prepare meals for me</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;No parent or guardian to prepare meals for me&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
<tr>
<td>Friends are influencing my eating habits</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;Friends are influencing my eating habits&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
<tr>
<td>Lack of knowledge about nutrition and healthy foods</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;Lack of knowledge about nutrition and healthy foods&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
<tr>
<td>Not wanting to eat alone at the dining hall</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;Not wanting to eat alone at the dining hall&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
<tr>
<td>More food choices are available to me</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;More food choices are available to me&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
<tr>
<td>I can't find anything healthy at Lily Dining Center</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;I can't find anything healthy at Lily Dining Center&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
<tr>
<td>When I serve myself, I take too much food</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;When I serve myself, I take too much food&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
<tr>
<td>I'm now more aware of healthy food choices in Lily Dining Center</td>
<td>Selecting 'yes' or 'no' to PRE-I Question #11</td>
<td>Selecting or not selecting &quot;I'm now more aware of healthy food choices in Lily Dining Center&quot; to POST-I Question #4</td>
<td>McNemar's Test of Significance of Change</td>
</tr>
</tbody>
</table>

*Note.* PRE-I = Pre-Intervention Survey, POST-I = Post-Intervention Survey. $p \leq 0.05$. 

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Research Question 3

Do healthy choice indicators at point-of-selection combined with benefits-based messages increase perception of healthy food items at a university dining center?

3.1 Does Lily Dining Center offer a variety of healthy food choices?

3.2 Are healthy food choices easily identified at Lily Dining Center?

3.3 Is it possible for you to select healthy food choices at Lily Dining Center?

For Research Question 3, three questions were inserted into both surveys in order to answer if student's perceptions of healthy food items increased due to healthy choice indicators at the point-of-selection combined with benefits-based messages in a university dining center. It was hypothesized overall that student's perceptions would increase. The plan to analyze research question 3 was to analyze each of the three questions separately. McNemar's Test of Significance of Change using a \( p \leq 0.05 \) was determined if the change in responses to each question was significant. All of the questions had the pre and post-intervention surveys as independent variables. The dependent variables are specific to their appropriate question. A table of Research Question 3's entire data analysis plan is listed in Table 3.

To begin to answer Research Question 3, the first question ("Does Lily Dining Center offer a variety of healthy food choices?") was analyzed. The null hypothesis (Ho3.1) is that the proportion of individuals who indicated that Lily Dining Center does offer a variety of healthy food choices during the pre-intervention survey is the same as the proportion of individuals who indicated that Lily Dining Center does offer a variety of healthy food choices during the post-intervention survey. The alternative hypothesis (Ha3.1) is that the proportion of individuals who indicated that Lily Dining Center does offer a variety of healthy food choices during the pre-intervention survey is not the same as the proportion of individuals who indicated that Lily Dining Center does offer a variety of healthy choices during the post-intervention survey. The
dependent variables were selecting ‘yes’ or ‘no’ to pre-intervention survey question #17 and post-intervention survey question #8.

To continue answering Research Question 3, the second question ("Are healthy food choices easily identified at Lily Dining Center?") was analyzed. The null hypothesis (Ho3.2) is that the proportion of individuals who indicated that healthy food choices are easily identified during the pre-intervention survey is the same as the proportion of individuals who indicated that healthy food choices are easily identified during the post-intervention survey. The alternative hypothesis (Ha3.2) is that the proportion of individuals who indicated that healthy food choices are easily identified during the pre-intervention survey is not the same as the proportion of individuals who indicated that healthy choices are easily identified during the post-intervention survey. The dependent variables were selecting ‘yes’ or ‘no’ to pre-intervention survey question #20 and post-intervention survey question #10.

Lastly the third question that was analyzed to answer Research Question 3 was “Is it possible to select healthy food choices in Lily Dining Center?” The null hypothesis (Ho3.3) is that the proportion of individuals who indicated that it is possible to select healthy food choices at Lily Dining Center during the pre-intervention survey is the same as the proportion of individuals who indicated that it is possible to select healthy food choices in Lily Dining Center during the post-intervention survey. The alternative hypothesis (Ha3.3) is that the proportion of individuals who indicated that it is possible to select healthy food choices in Lily Dining Center during the pre-intervention survey is not the same as the proportion of individuals who indicated that it is possible to select healthy choices in Lily Dining Center during the post-intervention survey. The dependent variables were selecting ‘yes’ or ‘no’ to pre-intervention survey question #18 and post-intervention survey question #11.


Students' Consumption of Healthy Food Items Using a Social Marketing Intervention

Table 3

Data Analysis Plan for Research Question 3

<table>
<thead>
<tr>
<th>Sub-questions</th>
<th>IV #1</th>
<th>IV #2</th>
<th>DV #1</th>
<th>DV #2</th>
<th>Null Hypothesis</th>
<th>Alternative Hypothesis</th>
<th>Statistical Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Does Lily Dining Center offer a variety of healthy food choices?</td>
<td>PRE-I</td>
<td>POST-I</td>
<td>Selecting</td>
<td>Selecting</td>
<td>'yes' or</td>
<td>'yes' or</td>
<td>McNemar's Test of Change of Change</td>
</tr>
<tr>
<td>3.2 Are healthy food choices easily identified at Lily Dining Center?</td>
<td>PRE-I</td>
<td>POST-I</td>
<td>Selecting</td>
<td>Selecting</td>
<td>'yes' or</td>
<td>'yes' or</td>
<td>McNemar's Test of Change of Change</td>
</tr>
<tr>
<td>3.3 Is it possible to select healthy food choices at Lily Dining Center?</td>
<td>PRE-I</td>
<td>POST-I</td>
<td>Selecting</td>
<td>Selecting</td>
<td>'yes' or</td>
<td>'yes' or</td>
<td>McNemar's Test of Change of Change</td>
</tr>
</tbody>
</table>

Note. PRE-I = Pre-Intervention Survey. POST-I = Post-Intervention Survey. IV = Independent Variable. DV = Dependent Variable. p ≤ 0.05.

Research Question 4

Do healthy choice indicators at point-of-selection combined with benefits-based messages increase the selection of targeted healthy food items at a university dining center?

Research Question 4 asks if healthy choice indicators at the point-of-selection combined with benefits-based messages increase the selection of targeted healthy food items at a university dining center. To answer this, Dependent Paired Sample t-tests were conducted for each of the ten targeted food items in order to compare the consumption levels by participants from the pre-intervention survey to the post-intervention survey. p ≤ 0.05 was used to
determine the significance. The null hypothesis for each food item is that the difference in means between pre-intervention survey and the post-intervention survey results for each food item is equal or less than zero. The alternative hypothesis (Ha4) is that the difference in means between the pre-intervention survey and the post-intervention survey results for each food item is greater than zero. Table 4 displays the data analysis plan for Research Question 4.

Table 4
Data Analysis Plan for Research Question 4-Do healthy choice indicators at the point-of-selection combined with benefit-based messages increase the selection of targeted healthy food items at a university dining center?

<table>
<thead>
<tr>
<th>Food Items</th>
<th>DV</th>
<th>Null Hypothesis</th>
<th>Alternative Hypothesis</th>
<th>Statistical Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Boiled Eggs</td>
<td>Selecting the number of times per week hard boiled eggs are consumed in the POST-I</td>
<td>Differences in means between PRE-I and POST-I is ≤ Zero</td>
<td>Difference in means between PRE-I and POST-I ≥ Zero</td>
<td>Dependent Paired Samples t-test</td>
</tr>
<tr>
<td>Baked Chicken Breast</td>
<td>Selecting the number of times per week baked chicken breast is consumed in the POST-I</td>
<td>Differences in means between PRE-I and POST-I is ≤ Zero</td>
<td>Difference in means between PRE-I and POST-I ≥ Zero</td>
<td>Dependent Paired Samples t-test</td>
</tr>
<tr>
<td>Tossed Salad</td>
<td>Selecting the number of times per week tossed salad is consumed in the POST-I</td>
<td>Differences in means between PRE-I and POST-I is ≤ Zero</td>
<td>Difference in means between PRE-I and POST-I ≥ Zero</td>
<td>Dependent Paired Samples t-test</td>
</tr>
<tr>
<td>Low-Fat Salad Dressing</td>
<td>Selecting the number of times per week Low-Fat Salad Dressing are consumed in the POST-I</td>
<td>Differences in means between PRE-I and POST-I is ≤ Zero</td>
<td>Difference in means between PRE-I and POST-I ≥ Zero</td>
<td>Dependent Paired Samples t-test</td>
</tr>
<tr>
<td>Steamed Vegetables</td>
<td>Selecting the number of times per week Steamed Vegetables are consumed in the POST-I</td>
<td>Differences in means between PRE-I and POST-I is ≤ Zero</td>
<td>Difference in means between PRE-I and POST-I ≥ Zero</td>
<td>Dependent Paired Samples t-test</td>
</tr>
<tr>
<td>Fresh Fruit</td>
<td>Selecting the number of times per week Fresh Fruit is consumed in the POST-I</td>
<td>Differences in means between PRE-I and POST-I is ≤ Zero</td>
<td>Difference in means between PRE-I and POST-I ≥ Zero</td>
<td>Dependent Paired Samples t-test</td>
</tr>
</tbody>
</table>
## Summary

In summary Chapter III discussed the research questions and their related hypotheses, described the design of the study including participants, incentives, the site and instruments used. Plus Chapter III identified the data collection process and stated the plan for data analysis. Statistics and results from the surveys are displayed in Chapter IV.
CHAPTER IV

Results

The ultimate goal of the present study was to figure out if a marketing intervention would change the eating habits of participants in an “all-you-care-to-eat” dining center (Lily Dining Center) at a mid-size, four year, Midwest residential institution. An additional goal was to measure the change of food consumption of ten healthy food items on which the marketing intervention focused. Furthermore the study was to evaluate perceptions of nutritionally healthy options available in a university dining center.

This chapter is a presentation of the results from the quantitative data collected from the pre and post-intervention surveys of a total of 182 matched, paired data sets. Both surveys were similar in layout and had identical in response options. The post-intervention survey did not ask for participants’ demographic information and included additional questions regarding the social marketing campaign and participant’s exercise habits. Participants provided the last four digits to their cell phone number which was used to match their responses in the pre- and post-intervention surveys.

Descriptive Statistics

Pre-Intervention Findings

A total of 551 participants completed the pre-intervention survey via a web-link accessed through iPads and iPod touches provided during the first data collection period, Monday, August 27, 2012 through Wednesday, August 29, 2012. A total of fifty-one participants were removed from the data set due to providing no or incomplete email addresses making the refined pre-intervention data set (n=500).

Descriptive statistics were processed for the pre-intervention sample and are shown in detail in Tables 1 and 2. Of the 500 reported participants, 190 (38.00%) were male, 299 (59.80%)
were female and 11 (2.20%) reported as other or had chosen not to identify. Participants further identified their class rank which reported 198 (39.60%) participants as freshman, 128 (25.60%) as sophomores, 85 (17.00%) as juniors, 70 (14.00%) as seniors and 10 (2.00%) as graduate students. A majority (65.20%) of participants were underclassmen (freshman and sophomore).

Seventy and eight tenths (n = 354) of participants identified their race and or ethnicity as Caucasian/White. 273 (54.60%) participants were new to the institution in some fashion while 223 (44.60%) reported as being a returning student to the institution. The mean age of participants was 19 years old and six months. 95.40% (n = 477) of participants had a meal plan while 97.60% (n = 488) had Dining Dollars.

**Post-Intervention Findings**

All 500 participants from the pre-intervention survey were emailed and sent reminder emails to complete the post-intervention survey via a web-link. A total of 210 (42.00%) participants completed the post-intervention survey during the second data collection period, Monday, October 8, 2012 through Thursday, October 18, 2012.

Descriptive statistics for the post-intervention sample were run and are shown in Tables 1 and 2. Of the 210 reported participants, 64 (30.48%) were male, 126 (60.00%) were female and 20 (9.53%) reported as other or chose not to identify. Of the post-intervention participants 68 (32.38%) were freshman, 41 (19.52%) were sophomores, 44 (20.95%) were juniors, 28 (13.33%) were seniors and 10 (4.76%) were graduate students. A majority of participants were underclassmen (freshman and sophomore) at 51.90% (n = 109). 73.33% (n = 73.33%) of post-intervention participants identified as Caucasian/White race and or ethnicity. 108 (51.44%) participants were new to the institution in some fashion while 85 (40.47%) reported as being a returning student to the institution. The average age of participants was 19 years and seven months. 98.52% (n = 188) of participants had a meal plan and Dining Dollars.
Comparative Findings

Twenty-eight (13.33%) data sets were eliminated out of the post-intervention sample due to having multiples of the same four digit number used to identify participants or having a four digit number that did not match to those in the pre-intervention data set. A total of 182 participants were matched together based off of the four digit phone number they provided in the pre- and post-intervention surveys. This comparative sample was analyzed further to learn of the participant’s demographics as well as to analyze their responses to the questions about their eating habits since the intervention was over. Tables 5 and 6 present the exact figure and percentage breakdown of the descriptive statistics analyzed.

The comparative sample was comprised of 64.84% \( (n = 118) \) females, 33.52% \( (n = 61) \) males and 1.65% \( (n = 3) \) whom responded as other or provided no response. Freshman and juniors responded the most out of the sample representing 34.62% \( (n = 63) \) and 24.18% \( (n = 44) \) respectively. Sophomores represented the next largest representation at 21.98% \( (n = 40) \). A majority of participants (80.22%, \( n = 146 \)) identified their race/ethnicity as being Caucasian/White. Individuals who identified as African American/Black represented the next largest racial/ethnic group at 11.54% \( (n = 21) \). Consistent through the pre- and post-intervention survey responses, students who were returners to the institution (45.60%, \( n = 83 \)) participated in the study higher than any other enrollment status options. The mean age of participants was 19 years and 7 months. One hundred and seventy-nine (98.35%) participants confirmed having a meal plan while 178 participants (97.80%) confirmed having dining dollars. The meal plan and dining dollars breakdown however was vastly skewed since the study was geared towards individuals eating in an on-campus dining location where meal plans and dining dollars were the primary sources of payment.
### Table 5

**Student Demographics by Gender, Class Rank, Race/Ethnicity, and Enrollment Status**

<table>
<thead>
<tr>
<th></th>
<th>Pre-Intervention Survey&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Post-Intervention Survey&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Comparative Data&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Institutional %&lt;sup&gt;d&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>n</strong></td>
<td><strong>%</strong></td>
<td><strong>N</strong></td>
<td><strong>%</strong></td>
<td><strong>%</strong></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>190</td>
<td>64</td>
<td>61</td>
<td>33.52%</td>
</tr>
<tr>
<td>Female</td>
<td>299</td>
<td>126</td>
<td>118</td>
<td>64.84%</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0.55%</td>
</tr>
<tr>
<td>No Response</td>
<td>10</td>
<td>19</td>
<td>2</td>
<td>1.10%</td>
</tr>
<tr>
<td><strong>Class Rank</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>198</td>
<td>68</td>
<td>63</td>
<td>34.62%</td>
</tr>
<tr>
<td>Sophomore</td>
<td>128</td>
<td>41</td>
<td>40</td>
<td>21.98%</td>
</tr>
<tr>
<td>Junior</td>
<td>85</td>
<td>44</td>
<td>44</td>
<td>24.18%</td>
</tr>
<tr>
<td>Senior</td>
<td>70</td>
<td>28</td>
<td>23</td>
<td>12.64%</td>
</tr>
<tr>
<td>Graduate Student</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>5.49%</td>
</tr>
<tr>
<td>No Response/Other</td>
<td>9</td>
<td>19</td>
<td>2</td>
<td>1.10%</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American/Black</td>
<td>92</td>
<td>24</td>
<td>21</td>
<td>11.54%</td>
</tr>
<tr>
<td>Asian American/Asian</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>0.55%</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>354</td>
<td>154</td>
<td>146</td>
<td>80.22%</td>
</tr>
<tr>
<td>Hispanic American</td>
<td>23</td>
<td>8</td>
<td>8</td>
<td>4.40%</td>
</tr>
<tr>
<td>Native American</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0.55%</td>
</tr>
<tr>
<td>Pacific Islander/Native Hawaiian</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiracial/Multiethnic</td>
<td>15</td>
<td>1</td>
<td>3</td>
<td>1.65%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>0.55%</td>
</tr>
<tr>
<td>No Response</td>
<td>N/A</td>
<td>N/A</td>
<td>17</td>
<td>8.10%</td>
</tr>
</tbody>
</table>

Note. <sup>a</sup>n = 500. <sup>b</sup>n = 210. <sup>c</sup>n = 182. <sup>d</sup>n = 10417.
## Table 6

**Student Demographics by Age, Meal Plan and Dining Dollars**

<table>
<thead>
<tr>
<th>Enrollment Status</th>
<th>Pre-Intervention Survey(a)</th>
<th>Post-Intervention Survey(b)</th>
<th>Comparative Data(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n)</td>
<td>%</td>
<td>(n)</td>
</tr>
<tr>
<td>New to the institution as a 1st Time College Student</td>
<td>201</td>
<td>40.20%</td>
<td>69</td>
</tr>
<tr>
<td>New to the institution as a Transfer Student</td>
<td>61</td>
<td>12.20%</td>
<td>30</td>
</tr>
<tr>
<td>New to the institution as a Graduate Student</td>
<td>11</td>
<td>2.20%</td>
<td>9</td>
</tr>
<tr>
<td>Returning Student to the institution</td>
<td>223</td>
<td>44.60%</td>
<td>85</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>0.80%</td>
<td>0</td>
</tr>
<tr>
<td>No Response</td>
<td>N/A</td>
<td>N/A</td>
<td>17</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>6</td>
<td>1.20%</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>180</td>
<td>36.00%</td>
<td>59</td>
</tr>
<tr>
<td>19</td>
<td>116</td>
<td>23.20%</td>
<td>39</td>
</tr>
<tr>
<td>20</td>
<td>87</td>
<td>17.40%</td>
<td>44</td>
</tr>
<tr>
<td>21</td>
<td>47</td>
<td>9.40%</td>
<td>19</td>
</tr>
<tr>
<td>22</td>
<td>39</td>
<td>7.80%</td>
<td>19</td>
</tr>
<tr>
<td>23</td>
<td>14</td>
<td>2.80%</td>
<td>9</td>
</tr>
<tr>
<td>24</td>
<td>3</td>
<td>0.60%</td>
<td>2</td>
</tr>
<tr>
<td>&gt;24</td>
<td>5</td>
<td>1.00%</td>
<td>1</td>
</tr>
<tr>
<td>No Response</td>
<td>3</td>
<td>0.60%</td>
<td>17</td>
</tr>
<tr>
<td>Meal Plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>477</td>
<td>95.40%</td>
<td>188</td>
</tr>
<tr>
<td>No</td>
<td>22</td>
<td>4.40%</td>
<td>4</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
<td>0.20%</td>
<td>18</td>
</tr>
<tr>
<td>Dining Dollars</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>488</td>
<td>97.60%</td>
<td>188</td>
</tr>
<tr>
<td>No</td>
<td>11</td>
<td>2.20%</td>
<td>4</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
<td>0.20%</td>
<td>18</td>
</tr>
</tbody>
</table>

Note. \(^a\) \(n = 500. \(^b\) \(n = 210. \(^c\) \(n = 182.\)
Survey Analysis

Results below are discussed in the order of the research questions proposed as listed in Chapter III. The first three research questions inquire about the significance of change in the participant's responses from the pre- and post-intervention surveys with regard to a variety of circumstances. McNemar's Significance of Change tests were ran to answer these questions. For research question four, within subjects paired sample t-tests were ran in order to see if there was a difference in means between the pre- and post-intervention survey responses for consumption of the ten healthy food items that were targeted.

Research Question 1

Do college students eating habits change while in college?

Research question one tested if there was significance in change in participant's responses based off of the question "Have your eating habits changed since you came to the institution this past August?" (listed in the Pre-Intervention survey question number 11 and Post-Intervention survey question number two). McNemar's Significant of Change test tested specifically the significance in change from those who reported a changed response from the pre- to post-intervention surveys based on if their eating habits changed since they arrived at the institution in August of 2012. Participants identified that their eating habits did change since they came to the institution throughout the intervention period \( \chi^2(1,182) = 4.414, p = 0.048 \). See Table 7 below.

Table 7

Paired Related Samples McNemar Test of if College Student's Eating Habits Changed

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>( P )</th>
<th>v-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The proportion of individuals who have indicated their eating habits have changed is the same from Pre to Post</td>
<td>0.048</td>
<td>4.414</td>
<td>Reject the Null Hypothesis</td>
</tr>
</tbody>
</table>
Research Question 2

How and or why do college students' eating habits change?

To answer research question two, many variables were analyzed to describe how college students' eating habits have changed. Research question one acts as a dependent variable for the responses to research question two. Findings of the variables are listed below.

Question number 12 in the pre-intervention survey and question number three in the post-intervention survey stated “How have your eating habits changed?” were tested using McNemar’s Significance of Change test. The null hypothesis for each of the response option states that the proportion of individuals who indicate that they are eating certain ways since coming to the institution at time of the post-intervention survey is the same as the proportion of individuals who indicated that they are eating in that same way since coming to the institution as the time of the pre-intervention survey. Table 8 displays the results of McNemar's test for the variables of how have students’ eating habits change.

Participants identified that their eating habits did not significantly change from eating more fast food. With $\chi^2(1,182) = 1.316, p = 0.359$ (Table 3). Participants identified that their eating habits did not significantly change more eating more "junk" food $\chi^2(1,182) = 0.556, p = 0.551$. Participants identified that their eating habits did not significantly change from eating more fruits and vegetables $\chi^2(1,182) = 3.130, p = 0.105$. Participants identified that their eating habits did not significantly change from eating more healthy food $\chi^2(1,182) = 0.024, p = 1.000$. Participants identified that their eating habits did not significantly change from drinking more soft drinks $\chi^2(1,182) = 0.030, p = 1.000$. Participants identified that their eating habits did not significantly change from eating larger portion sizes $\chi^2(1,182) = 0.364, p = 0.651$. Participants identified that their eating habits did not significantly change from eating 1 large meal per day $\chi^2(1,182) = 0.000, p = 1.000$. Participants identified that their eating habits did not significantly
change from eating less fast food ($\chi^2(1,182) = 1.976, p = 0.212$). Participants identified that their eating habits did not significantly change from eating less "junk" food ($\chi^2(1,182) = 0.000, p = 1.000$). Participants identified that their eating habits did not significantly change from eating less fruits and vegetables ($\chi^2(1,182) = 2.250, p = 0.210$). Participants identified that their eating habits did not significantly change from skipping fewer meals ($\chi^2(1,182) = 0.037, p = 1.000$). Participants identified that their eating habits did not significantly change from drinking less soft drinks ($\chi^2(1,182) = 0.026, p = 1.000$). Participants identified that their eating habits did not significantly change from eating smaller portion sizes ($\chi^2(1,182) = 1.385, p = 0.327$). Lastly, participants identified that their eating habits did not significantly change from eating 5-6 meals per day ($\chi^2(1,182) = 1.000, p = 0.625$). Overall participant’s eating habits in terms of eating more or less of food types or in different amounts had no statistical significance in effect of how their eating habits had changed.

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>$p$</th>
<th>$\chi$-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating More Fast Food</td>
<td>0.359</td>
<td>1.316</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Eating More &quot;Junk&quot; Food</td>
<td>0.551</td>
<td>0.556</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Eating More Fruits and Vegetables</td>
<td>0.105</td>
<td>3.130</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Eating More Healthy Foods</td>
<td>1.000</td>
<td>0.024</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Drinking More Soft Drinks</td>
<td>1.000</td>
<td>0.030</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Eating Larger Portion Sizes</td>
<td>0.651</td>
<td>0.364</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Eating 1 Large Meal Per Day</td>
<td>1.000</td>
<td>0.000</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Eating Less Fast Food</td>
<td>0.212</td>
<td>1.976</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Eating Less &quot;Junk&quot; Food</td>
<td>1.000</td>
<td>0.000</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Eating Less Fruits and Vegetables</td>
<td>0.210</td>
<td>2.250</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Skipping Fewer Meals</td>
<td>1.000</td>
<td>0.037</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Drinking Less Soft Drinks</td>
<td>1.000</td>
<td>0.026</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Eating Smaller Portion Sizes</td>
<td>0.327</td>
<td>1.385</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Eating 5-6 Meals Per Day</td>
<td>0.625</td>
<td>1.000</td>
<td>Retain the Null Hypothesis</td>
</tr>
</tbody>
</table>
Another survey question, "Why have your eating habits changed?" was asked to support research question two. McNemar's Significance of Change test was ran to evaluate the degree of change in reasons why students' eating habits had changed. The null hypothesis for each of the response option stated that the proportion of individuals who indicated that their eating habits had changed due to a certain reason during the pre-intervention survey was the same as the proportion of individuals who indicated that their eating habits had changed due to that same reason during the post-intervention survey. Table 9 displays the results of McNemar's Significance of Change test for the variables of why students' eating habits changed.

The participants identified that their eating habits significantly changed because of lack of time \( \chi^2(1, 182) = 6.480, p = 0.016 \). Participants identified that their eating habits significantly changed because of laziness \( \chi^2(1, 182) = 7.111, p = 0.012 \). Participants identified that their eating habits significantly changed because of increased stress \( \chi^2(1, 182) = 10.000, p = 0.003 \). Participants identified that their eating habits did significantly change because of studying late hours \( \chi^2(1, 182) = 6.818, p = 0.015 \).

Participants identified that their eating habits did significantly change because they had no parent or guardian to prepare meals for them \( \chi^2(1, 182) = 4.900, p = 0.040 \). Participants identified that their eating habits did not significantly change because their friends influenced their eating habits \( \chi^2(1, 182) = 2.778, p = 0.134 \). Participants identified that their eating habits did not significantly change because of their lack of knowledge about nutrition and healthy foods \( \chi^2(1, 182) = 1.600, p = 0.344 \). Participants identified that their eating habits did not significantly change because they did not want to eat alone in the dining center \( \chi^2(1, 182) = 1.059, p = 0.391 \). Participants identified that their eating habits did not significantly change because more foods were available to them \( \chi^2(1, 182) = 0.410, p = 0.609 \). Participants identified that their eating habits did not significantly change because they couldn't find anything healthy...
at Lily Dining Center \(\chi^2(1,182) = 1.800, p = 0.263\). Participants identified that their eating habits did not significantly change because when they served themselves, they took too much food \(\chi^2(1,182) = 1.385, p = 0.327\). Participants identified that their eating habits did not significantly change because they were now more aware of healthy food choices in Lily Dining Center \(\chi^2(1,182) = 1.087, p = 0.405\). Overall a majority of the reasons significantly did not change from the pre- to post-intervention surveys.

Table 9

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>(P)</th>
<th>(v)-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Time</td>
<td>0.016*</td>
<td>6.480</td>
<td>Reject the Null Hypothesis</td>
</tr>
<tr>
<td>Laziness</td>
<td>0.012*</td>
<td>7.111</td>
<td>Reject the Null Hypothesis</td>
</tr>
<tr>
<td>Increased Stress</td>
<td>0.003*</td>
<td>10.000</td>
<td>Reject the Null Hypothesis</td>
</tr>
<tr>
<td>Studying Late Hours</td>
<td>0.015*</td>
<td>6.818</td>
<td>Reject the Null Hypothesis</td>
</tr>
<tr>
<td>No Parent or Guardian to Prepare Meals for Me</td>
<td>0.040*</td>
<td>4.900</td>
<td>Reject the Null Hypothesis</td>
</tr>
<tr>
<td>Friends are Influencing My Eating Habits</td>
<td>0.134</td>
<td>2.778</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Lack of Knowledge about Nutrition and Healthy Foods</td>
<td>0.344</td>
<td>1.600</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>Not Wanting to Eat Alone at the Dining Center</td>
<td>0.391</td>
<td>1.059</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>More Foods Choices are Available to Me</td>
<td>0.609</td>
<td>0.410</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>I Can’t Find Anything Healthy at Lily Dining Center</td>
<td>0.263</td>
<td>1.800</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>When I Serve Myself, I Take Too Much Food</td>
<td>0.327</td>
<td>1.385</td>
<td>Retain the Null Hypothesis</td>
</tr>
<tr>
<td>I’m Now More Aware of Healthy Food Choices at Lily Dining Center</td>
<td>0.405</td>
<td>1.087</td>
<td>Retain the Null Hypothesis</td>
</tr>
</tbody>
</table>

\*\(p \leq 0.05\).
Research Question 3

Do healthy choice indicators at the point-of-selection combined with benefit-based messages increase perception of healthy food items at a university dining center?

Three questions were written into the pre- and post-intervention surveys that were used to support findings of research question three. Participants had the option to select from the following responses: “Yes”, “No” and “Sometimes”. Responses “Yes” and “Sometimes” were combined for these questions in order to find results based off of McNemar’s Significance of Change test.

The first supporting question asked was listed in the pre-intervention survey question number 17 and post-intervention survey question number eight, “Do you think that Lily Dining Center offers a variety of healthy food choices for Lunch and/or Dinner?” McNemar’s Significance of Change was tested to evaluate the null hypothesis that the proportion of individuals who indicated that Lily Dining Center offers a variety of healthy food choices at the time of the pre-intervention survey was the same as the proportion of individuals who indicated that Lily Dining Center offers a variety of healthy food choices during the time of the post-intervention survey. Table 10 displays the results that participants indicated that their awareness of Lily Dining Center offering a variety of healthy food choices did not significantly change over the intervention period \[x^2(1,182) = 0.037, p = 1.000\].

Table 10

<table>
<thead>
<tr>
<th>Does Lily Dining Center offer a variety of healthy food choices?</th>
<th>Null Hypothesis</th>
<th>Test</th>
<th>P</th>
<th>v-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The proportion of individuals who indicated that Lily Dining Center offers a variety of healthy food choices is the same from Pre to Post test.</td>
<td>Paired Related Samples</td>
<td>McNemar Test</td>
<td>1.000</td>
<td>0.037</td>
<td>Retain the Null Hypothesis</td>
</tr>
</tbody>
</table>
The next supporting question utilized to answer research question three was “Are healthy food choices easily identified at Lily Dining Center?” McNemar’s Significance of Change test was used to analyze the responses to this question based off of the null hypothesis. The null hypothesis stated that the proportion of individuals who indicated that healthy food choices were easily identified during pre-intervention survey was the same as the proportion of individuals who indicated that healthy food choices were easily identified during post-intervention survey. Participants identified that healthy food choices were easily identified in Lily Dining Center did not significantly change over the intervention period \[x^2(1,182) = 10.714, p = 1.000\] (Table 11).

Table 11

<table>
<thead>
<tr>
<th>Are healthy food items easily identified at Lily Dining Center?</th>
<th>Null Hypothesis</th>
<th>Test</th>
<th>( p )</th>
<th>( v\text{-value} )</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The proportion of individuals who indicated that healthy food items are easily identified is the same from Pre to Post test.</td>
<td>Paired Related Samples</td>
<td>McNemar Test</td>
<td>1.000</td>
<td>10.714</td>
<td>Retain the Null Hypothesis</td>
</tr>
</tbody>
</table>

The last question used to support research question three was “Is it possible for you to select healthy food choices at Lily Dining Center for Lunch and/or Dinner?” McNemar’s Significance of Change test was ran to test the significance in changes of responses from “Yes” to “No” and “No” to “Yes” (Table 12). The null hypothesis was that the proportion of individuals who indicated that it was possible to select healthy food choices at Lily Dining Center during pre-intervention survey was the same as the proportion of individuals who indicated that it was possible to select healthy food choices at Lily Dining Center during post-intervention survey. Participants identified that the possibility to select healthy food choices in Lily Dining Center did not significantly change over the intervention period \[x^2(1,182) = 5.143, p = 0.607\].
Table 12
Is it possible to select healthy food items at Lily Dining Center?

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test</th>
<th>P</th>
<th>v-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The proportion of individuals who indicated that it is possible to select healthy food items is the same from Pre to Post test.</td>
<td>Paired Related Samples</td>
<td>McNemar Test</td>
<td>0.607</td>
<td>5.143</td>
</tr>
</tbody>
</table>

Research Question 4

Do healthy choice indicators at the point-of-selection combined with benefits-based messages increase the selection of targeted healthy food items at a university dining center?

Research question four tested if there was a statistically significant difference in the consumption levels of participants based on their selection of any of the ten targeted healthy food items to eat over the course of the intervention period. Marketing items such as healthy choice food item indicators, as well as benefits-based messages through table tents and fliers all geared towards the ten targeted healthy food items, were posted around the dining center to see if they played a part in effecting students' eating habits. A dependent paired sample t-test analysis was used for each of the ten targeted healthy food items: hard boiled eggs, baked chicken breast, tossed salad, low-fat salad dressing, steamed vegetables, fresh fruit, yogurt, fat-free (skim) milk, cottage cheese and whole grain bread. The null hypothesis for each of the ten targeted items is that differences in means between the pre-intervention survey and post-intervention survey are equal to or less than zero. Tables 13 and 14 show the analysis results for the all of the targeted healthy food items.

There was no significant difference in the consumption levels of hard boiled eggs from the pre-intervention survey ($M = 0.66, SD = 1.337$) and post-intervention survey ($M=0.78, SD=1.465$) conditions; $t(159) = 1.531, p = 0.128$. There was no significant difference in the
consumption levels of baked chicken breast from the pre-intervention survey (M = 1.14, SD = 1.346) and post-intervention survey (M = 0.78, SD = 1.465) conditions; t(155) = 0.160, p = 0.873. There was no significant difference in the consumption levels of tossed salad from the pre-intervention survey (M = 2.05, SD = 1.987) and post-intervention survey (M = 2.07, SD = 1.885) conditions; t(161) = 0.151, p = 0.880. There was no significant difference in the consumption levels of low-fat salad dressing from the pre-intervention survey (M = 1.28, SD = 1.671) and post-intervention survey (M = 1.29, SD = 1.612) conditions; t(153) = 0.055, p = 0.956. There was no significant difference in the consumption levels of steamed vegetables from the pre-intervention survey (M = 1.26, SD = 1.617) and post-intervention survey (M = 1.18, SD = 1.474) conditions; t(152) = -0.764, p = 0.446. There was no significant difference in the consumption levels of fresh fruit from the pre-intervention survey (M = 2.68, SD = 1.929) and post-intervention survey (M = 2.47, SD = 1.732) conditions; t(160) = -1.683, p = 0.094. There was no significant difference in the consumption levels of yogurt from the pre-intervention survey (M = 0.85, SD = 1.497) and post-intervention survey (M = 0.96, SD = 1.477) conditions; t(141) = 0.921, p = 0.359. There was no significant difference in the consumption levels of fat-free (skim) milk from the pre-intervention survey (M = 0.73, SD = 1.359) and post-intervention survey (M = 0.80, SD = 1.502) conditions; t(148) = 0.629, p = 0.531. There was no significant difference in the consumption levels of cottage cheese from the pre-intervention survey (M = 0.47, SD = 1.064) and post-intervention survey (M = 0.58, SD = 1.244) conditions; t(152) = 1.239, p = 0.217. There was a significant difference in the consumption levels of whole grain bread from the pre-intervention survey (M = 1.16, SD = 1.670) and post-intervention survey (M = 0.86, SD = 1.460) conditions; t(153) = -2.327, p = 0.021.
Table 13
Dependent Paired Sample t-test Results for Consumption Levels of the 10 Targeted Healthy Food Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>n</th>
<th>SD</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE Hard Boiled Eggs</td>
<td>0.66</td>
<td>160</td>
<td>1.337</td>
<td>0.106</td>
</tr>
<tr>
<td>POST Hard Boiled Eggs</td>
<td>0.78</td>
<td>160</td>
<td>1.465</td>
<td>0.116</td>
</tr>
<tr>
<td>PRE Baked Chicken Breast</td>
<td>1.14</td>
<td>156</td>
<td>1.346</td>
<td>0.108</td>
</tr>
<tr>
<td>POST Baked Chicken Breast</td>
<td>1.16</td>
<td>156</td>
<td>1.380</td>
<td>0.110</td>
</tr>
<tr>
<td>PRE Tossed Salad</td>
<td>2.05</td>
<td>162</td>
<td>1.987</td>
<td>0.156</td>
</tr>
<tr>
<td>POST Tossed Salad</td>
<td>2.07</td>
<td>162</td>
<td>1.885</td>
<td>0.148</td>
</tr>
<tr>
<td>PRE Low-Fat Salad Dressing</td>
<td>1.28</td>
<td>154</td>
<td>1.671</td>
<td>0.135</td>
</tr>
<tr>
<td>POST Low-Fat Salad Dressing</td>
<td>1.29</td>
<td>154</td>
<td>1.612</td>
<td>0.130</td>
</tr>
<tr>
<td>PRE Steamed Vegetables</td>
<td>1.26</td>
<td>153</td>
<td>1.617</td>
<td>0.131</td>
</tr>
<tr>
<td>POST Steamed Vegetables</td>
<td>1.18</td>
<td>153</td>
<td>1.474</td>
<td>0.119</td>
</tr>
<tr>
<td>PRE Fresh Fruit</td>
<td>2.68</td>
<td>161</td>
<td>1.929</td>
<td>0.152</td>
</tr>
<tr>
<td>POST Fresh Fruit</td>
<td>2.47</td>
<td>161</td>
<td>1.732</td>
<td>0.137</td>
</tr>
<tr>
<td>PRE Yogurt</td>
<td>0.85</td>
<td>142</td>
<td>1.497</td>
<td>0.126</td>
</tr>
<tr>
<td>POST Yogurt</td>
<td>0.96</td>
<td>142</td>
<td>1.477</td>
<td>0.124</td>
</tr>
<tr>
<td>PRE Fat-Free (Skim) Milk</td>
<td>0.73</td>
<td>149</td>
<td>1.359</td>
<td>0.111</td>
</tr>
<tr>
<td>POST Fat-Free (Skim) Milk</td>
<td>0.80</td>
<td>149</td>
<td>1.502</td>
<td>0.123</td>
</tr>
<tr>
<td>PRE Cottage Cheese</td>
<td>0.47</td>
<td>153</td>
<td>1.064</td>
<td>0.086</td>
</tr>
<tr>
<td>POST Cottage Cheese</td>
<td>0.86</td>
<td>153</td>
<td>1.244</td>
<td>0.101</td>
</tr>
<tr>
<td>PRE Whole Grain Bread</td>
<td>1.16</td>
<td>154</td>
<td>1.670</td>
<td>0.135</td>
</tr>
<tr>
<td>POST Whole Grain Bread</td>
<td>0.86</td>
<td>154</td>
<td>1.460</td>
<td>0.118</td>
</tr>
</tbody>
</table>
Students' Consumption of Healthy Food Items Using a Social Marketing Intervention

Table 14
Dependent Paired Sample T-test Results for the Difference from Pre to Post-Intervention Consumption Levels of the 10 Targeted Healthy Food Items

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Boiled Eggs</td>
<td>0.125</td>
<td>1.032</td>
<td>1.531</td>
<td>159</td>
<td>0.128</td>
<td>Retain the Null</td>
</tr>
<tr>
<td>Baked Chicken Breast</td>
<td>0.019</td>
<td>1.505</td>
<td>0.160</td>
<td>155</td>
<td>0.873</td>
<td>Retain the Null</td>
</tr>
<tr>
<td>Tossed Salad</td>
<td>0.019</td>
<td>1.562</td>
<td>0.151</td>
<td>161</td>
<td>0.880</td>
<td>Retain the Null</td>
</tr>
<tr>
<td>Low-Fat Salad Dressing</td>
<td>0.006</td>
<td>1.466</td>
<td>0.055</td>
<td>153</td>
<td>0.956</td>
<td>Retain the Null</td>
</tr>
<tr>
<td>Steamed Vegetables</td>
<td>-0.085</td>
<td>1.376</td>
<td>-0.764</td>
<td>152</td>
<td>0.446</td>
<td>Retain the Null</td>
</tr>
<tr>
<td>Fresh Fruit</td>
<td>-0.205</td>
<td>1.546</td>
<td>-1.683</td>
<td>160</td>
<td>0.094</td>
<td>Retain the Null</td>
</tr>
<tr>
<td>Yogurt</td>
<td>0.106</td>
<td>1.367</td>
<td>0.921</td>
<td>141</td>
<td>0.359</td>
<td>Retain the Null</td>
</tr>
<tr>
<td>Fat-Free (Skim) Milk</td>
<td>0.067</td>
<td>1.303</td>
<td>0.629</td>
<td>148</td>
<td>0.531</td>
<td>Retain the Null</td>
</tr>
<tr>
<td>Cottage Cheese</td>
<td>0.111</td>
<td>1.110</td>
<td>1.239</td>
<td>152</td>
<td>0.217</td>
<td>Reject the Null</td>
</tr>
<tr>
<td>Whole Grain Bread</td>
<td>-0.299</td>
<td>1.593</td>
<td>-2.327</td>
<td>153</td>
<td>0.021*</td>
<td>Hypothesis</td>
</tr>
</tbody>
</table>

*p ≤ 0.05.

Summary

Chapter IV reported the results of the data analysis for the present study. It was found that there was a statistically significant difference of change in college students’ eating habits since they had arrived at the institution in August of 2012. The options as to how students’ eating habits had changed did not provide any significant data. However, the reasons as to why their eating habits had changed did provide to be statistically significant. There was no significance of change within participant’s responses as to if Lily Dining Center offered healthy food items, if the healthy food items were easily identified and if it was possible for them to select healthy food items. Lastly, of the ten targeted healthy food items that were highlighted in the marketing intervention, the only food item that had an overall change in consumption was eating less whole wheat bread. Chapter V will discuss what the results mean, as well as the
strengths and limitations of the research process. Finally there will be recommendations listed if this study were to be replicated.
CHAPTER V

Conclusion

The purpose of this study was to study students' eating habits at college and to evaluate students' perceptions of nutritionally healthy food options that were available in an on-campus dining center. The last purpose of this study was to the measure the effect a marketing intervention that incorporated healthy food item indicators and benefit-based messages had on college students' eating habits towards ten targeted healthy food items. Chapter V will discuss what the results of the study mean drawing from literature and similar studies, the strengths and limitations of the study and prescribe recommendations for further research.

Discussion

Research Hypothesis #1: Students’ eating habits do change while at college.

Vella-Zarb & Elgar (2009) suggested that individuals who seek higher education experience pressures and stressors that make them more prone to weight gain than individuals who don’t seek higher education. Health risk from weight gain and unhealthy lifestyles are frequently developed through habits formed while at college (Hasse, Steptoe, Sallis & Wardle, 2004) which further adds onto students’ stress. Social pressures to fit in and to succeed academically only fuel the stress levels to rise. To deal with stress, students many times turn to food. According to Cartwright et al. (2003) “people who perceive greater levels of stress exhibit changes in dietary practices such as skipping meals and increased consumption of fatty foods.”

In the present study, out of the total 182 paired responses of participants, 117 (64.29%) of them identified in the pre-intervention survey that their eating habits had changed while at college. Out of the same sample, in the post-intervention survey 132 (72.53%) participants responded at that time their eating habits had changed while at college. These results as well as the results found in Duncan’s 2008 study to which this was one was replicated after show
research hypothesis #1 was supported by the quantitative data that students' eating habits do change while at college.

**Research Hypothesis #2: Students' eating habits change while at college due to eating more unhealthy foods than they did prior to being at college.**

While being at college brings a new sense of independence for many students, it also brings higher academic standards that a student must become acclimated to. For many this can be difficult, especially when it comes to their eating habits because they are offered a wide variety of dining options both on- and off-campus to entice them (Brevard & Ricketts, 1996). Students are no longer under the direct supervision of a parent or guardians so meal options are left up to the student to decide. The American College Health Association (2009) has reported that college students do not have healthy well balanced diets which can take a toll on them by bringing their energy levels down and show decreased academic performance (Sabia, 2007). Furthermore students dining at both on- and off-campus locations are left to make their own decisions of what to eat. These decisions are often uninformed due to not having nutritional information available at the point of selection. Students may be eating food items that lower their energy levels and ultimately lower their academic performance and not even know it. Two important aspects of a healthy diet to promote growth and development are the number of calories and the amount of fat consumed (Normand & Osborne, 2010). It was hypothesized that students' eating habits would change while in college due to eating more unhealthy foods such as fast and junk food which are more times than not high in calories and fat content.

Results from this study found the contrary however. Participants identified that there was no significance of change with their consumption habits of eating more fast food ($p = 0.359$) or eating more “junk” food ($p = 0.551$). In fact, all of the options as to how students' eating habits had changed were not significant. There were several significant reasons as to why
students’ eating habits had changed. Lack of time \((p = 0.016)\), laziness \((p = 0.012)\), increased stress \((p = 0.003)\), studying late hours \((p = 0.015)\) and not having an adult or guardian to prepare meals for them \((p = 0.040)\) were all reasons participants identified why their eating habits had changed. Overall results from the present study find that the research hypothesis was not supported.

**Research Hypothesis #3:** Students exposed to healthy item indicators at the point-of-selection and benefit-based marketing items will report an increase in perception of healthy food items.

In a similar study conducted by M.R. Freedman in 2010, nutritional information was presented to participants at the point-of-selection when selecting their food items. Freedman found out that out of the three items she targeted, one item (French fries) showed a 17% change in eating a smaller portion size. This was due to influence of the marketing. According to O’Conner & Lundstrom (2011) when it comes to eating habits and nutrition, social marketing such as benefit-based messages, show effectiveness to influence change. Thus the marketing in Freedman’s (2011) & Duncan’s studies (2008) such as the point-of-selection indicators or benefit-based fliers that utilized humor would positively create change (Campbell et al., 1994; Oenema, Brug, & Lechner, 2001). Research hypothesis #3 was designed to test just that.

As seen in Tables 10, 11, & 12, all three questions were in the surveys to justify research hypothesis #3. Findings of the present study did just the opposite however. When participants were asked if Lily Dining Center offered a variety of healthy foods, based off of McNemar’s Significant of Change test there was no statistical significance. Moreover survey questions “Are healthy food items easily identified at Lily Dining Center” and “Is it possible to select healthy food items at Lily Dining Center,” both revealed to retain the null hypothesis with no significance of change.
Research Hypothesis #4: Students exposed to healthy item indicators at the point-of-selection and benefit-based marketing items will report an increased selection of the ten targeted healthy food items.

Bruen et al. (2007) related that healthful benefit-based messages used to promote food in restaurants and food products have shown a positive increase in influence to select those items. Duncan (2008) used a social marketing campaign to target ten healthful food items aiming to positively influence the selection of those items by using benefit-based messages and other social marketing strategies such as humor and pictures.

Of the ten targeted items used for the study, nine out of ten showed no significant change in consumption as seen in Table 14. The present study results were slightly different than that of Duncan’s study in which Duncan’s found low-fat dressing, cottage cheese and fresh fruit to have significantly increased. Both studies found that whole wheat bread did have significance in selection for consumption. Different though than Duncan’s study, the present study had a negative change in consumption for the whole wheat bread item. The present study found research hypothesis #4 was not supported by the data for nine out of the ten targeted items.

Strengths

A strength of this study was the amount of students that participated in the study due to access to technology. Participants were recruited to take the pre-intervention survey by having iPads and iPod touches readily available in the dining center. Students were approached while they were eating their food so they could easily satisfy their hunger and use the technology at the same time. The technology itself was an attractive aspect for potential participants. Anytime an iPad in particular became available it seemed as though they were the hot ticket items for participants to take. If a researcher assistant would approach potential
participants with an iPad in hand, they nearly all would agree to take the survey. Furthermore the technology made the surveys easy to take in a way that reached student's technology expectations and standards since they could just touch the screens to select their response. The speed of the technology further played an attractive piece for recruiting participants. The technology responded quickly to the commands of the participant which allowed them complete the survey in minutes. Thus when participants were approached not only did the ability to use the technology attract them but the quickness of completing the survey increased their likelihood of agreeing to participate. Lastly, because the technology was quick and attractive for potential participants, it allowed for the survey to reach over 551 participants within three days, which might not have been possible with another data collection format. One minor limitation to the technology that was noticed however was due to the format of the survey. The survey was accessed on a web link in an internet browser on the technology. The limitation laid in the fact that the dining center did not have internet access. The first day resulted in very little completed surveys because the technology was not usable since it didn't have internet access. Once internet access became available for the second and third day of data collection, the limitation was no longer an issue for the pre-intervention survey.

As the intervention progressed and ended, the second data collection period for the post-intervention survey had arrived. For this period, technology was a strength in collecting data. In the pre-intervention survey, participants provided their university email address to which they would be emailed a link to the post-intervention survey. Because all of the participants were students at the mid-size, four year, Midwest residential institution, every participant had access to their university email account to receive the link from. The availability to email technology provided great support in obtaining a total of 210 participants for the post-intervention survey. Receiving an initial invite to participate email as well as four follow-up
reminder emails that all directly were linked to the survey provided consistent enticement to complete the survey. Overall the use of and access to technology was one of the greatest strengths of study.

A strength of the study was the timing in which the study was conducted. On the tenth day of student arrival onto campus and the sixth full day that Lily Dining Center was open is when the first set of data collection began. The positive to the timing of the study is that students had only had ten days thus far to explore and adjust to life at the institution. This was a benefit because students still had fresh recollections of their eating habits from prior to arriving at the institution for the academic year (no matter if they were a new or returning student or not) which provided a strong frame of mind for responding to questions in the pre-intervention survey. There was little time in between arriving at the institution and taking the survey so they could easily recall how they ate over the summer when they were more than likely in a different environment that would affect their eating lifestyle. Factors such as having a parent or guardian provide meals for them, working a summer job or not having to deal with academic pressures among others could have accounted for how and or why their eating habits had changed while at the institution.

Additionally timing for the second data collection period was a strength. By the time of the post-intervention survey deployment, students had been exposed to Lily Dining Center for up to nine weeks. This means that they have had more time to get adjusted to campus living and dining to make a more accurate reporting on the post-interventions survey since they had probably established a solid living routine. Students had more time to explore food options and dining locations, began exploring food options to make meals more or less healthy and satisfying, as well as form opinions about them. This allowed participants to more knowledgeable selections for eating based on the perceptions they had created of the food
options served at the locations. Timing acted as a strength for the post-intervention survey in the opposite way it acted for the pre-intervention survey in terms of exposure.

Limitations

Timing was a strength of the study however it was also a limitation. Timing was a limitation for the notion that students might not have had enough time to fully form a new and potentially changed eating habit yet since they had only been on-campus for a maximum of ten in which on-campus food was offered. Students could have still been exploring food items available in Lily Dining Center as well as still learning about how to use the campus meal plan or dining dollars system. Due to the timing of the study being at the beginning of the academic year, students might not have discovered a routine for their life at college yet. Students could have still been exploring food items available in Lily Dining Center as well as still learning about how to use the campus meal plan or dining dollars system. If there was more time from the start of the academic year to when the study began then the participants would have established a more routine lifestyle for things such as sleeping, eating, studying and stress. With a more established routine for participants then responses could have differed from the standpoint that participants could report more accurate average consumption levels of the food items or the marketing intervention could have stood out more of the surroundings. Due to the timing, students might not have had enough time to fully form a new and potentially changed eating habit yet because of not having a more established lifestyle routine.

Another aspect of how timing was a limitation of the study was factored in during the second data collection period to which emails were sent out via as an initial invite to participate and reminders to participate in the post-intervention survey. These emails were sent out during the eighth and ninth week of the academic semester. During this time there were numerous survey invitations sent out to student’s university email accounts across campus. Even more so
there were midterm exams being conducted within the academic courses so students could have been overwhelmed with the stress of exams or projects. Students then might not have had time to participate in the study.

As a result of the timing to which the post-intervention was open for, during that time participants were being further bombarded with invitations to participate in many other surveys. The post-intervention survey was one of many open surveys that students were being invited to complete. Because of this some survey invite emails sent to participants could have been ignored or deleted which could have factored into receiving a 42% completion rate of the post-intervention survey that was deployed. The seemingly overload of survey inquires could have detracted students whom were also experiencing stress from midterms week.

Lastly a major limitation of the study was the surveys themselves. Both the pre- and post-intervention surveys were set up through a private account on Zoomerang.com and were adapted off of surveys used in Duncan's 2008 study. The survey questions in relation to this study's research questions were set up in a "select all that apply" or "select if it applies" response options. This format of response options was not well suited for proper data cleaning and analysis. Many times the raw data had to be coded and recoded in order to use Microsoft Excel and Microsoft SPSS. Moreover due to the question set up, it was difficult to decipher when a participant skipped over a question versus when the question did not apply to them. As a result, if data was missing for that question, then the assumption was made that it did not apply to that participant.

Recommendations

For the Study

In an effort to improve the effectiveness of this study for the future, some recommendations are suggested. One recommendation is to ensure that the location of data
collection must have internet access capabilities if the surveys are being accessed by a web link. This would assist in obtaining more participants to take part in the study. In addition to ensuring internet access a recommendation would be to reformat the questions within the surveys. The way the questions were set up, there could have been confusion or misunderstandings when knowing which questions to respond to versus skip because of a direction error. It would be valuable to set up questions in a way that participants could have selected that if a reason or response option did not apply to them. This would have alleviated confusion and reduced risk for error when analyzing the data.

Another recommendation would be to move the start date of the study later into the fall and early winter season. If the study were to begin in early October and go through the middle or end of December then participants would have had enough time to explore dining options on-campus and formed stronger opinions based on their experiences eating in on-campus dining center. Furthermore it is suggested that as the intervention progressed that students became more routine in their schedule thus their eating habits would be more regular. By moving the study to a time where students’ lives were more routine then an intervention could have greater impact on creating a positive change in consumption of healthy food items.

For the Campus Dining Center

Based off of the results of the study, the Campus Dining Department has been successful in offering a variety of healthy foods in Lily Dining Center. A recommendation would be to sustain the variety of healthy food item offered, because students are already satisfied with their abilities to select healthy options out of their menu. A recommendation would be to continue with their current labeling system for food items and to not use any special indicators or marketing towards certain food items.
A final recommendation for Campus Dining Department would be to capitalize on the concepts of why students’ eating habits had changed since arriving to the institution in August 2012. By providing food service and programs paired with other campus offices that focus on reasons why students’ eating habits had changed could prepare students to be overall more well. Focusing on offering foods that boost energy to aid in study late hours or laziness could help students become more well. Trying activities or programs while students eat in the dining centers that are geared toward time management or stress relief could also aid in students’ eating habits and holistic wellness.

Summary

The findings of the present study show that there is a significant change in students’ eating habits when they eat in a university all-you-care-to-eat dining center. An assumption of the increased availability of healthy food items in a dining center or that college students just eat unhealthy food was not supported by the findings of this study. In fact, students who participated in the study reported no change in eating more or less of unhealthy foods such as fast food or junk food, and no change in eating more or less of healthy food items such as fruits and vegetables. The same was true for eating in various portion sizes and meal times a day. It was found though through the present study that students’ eating habits did change due to laziness, lack of time, increased stress and being up late studying. These factors, as well as the factor that students didn’t have a parent or guardian preparing their meals for them, do make a case for why their eating habits changed since coming to college in August 2012. Pressures of academic life in higher education do alter a students’ eating lifestyle.

In fulfillment of research questions three and four, marketing items were introduced as an intervention that targeted ten healthy food items. The marketing intervention which included healthy food items indicators, table tents, an entrance poster and fliers that utilized
humor and benefit-based messages did have a slight effect on students’ eating habits towards one of the ten items. The effect however was not a positive one which what was hypothesized. Nine out of the ten items resulted in having no significant change in consumption. Whole wheat bread however with influence from the social marketing intervention had a change in decreased consumption. In conclusion, the social marketing intervention had no effect of nine of the items and a negative adverse effect on one of them thus a social marketing intervention is not needed for college students if you want to change their consumption of healthy food items.

In summary of the research findings, since coming to the institution in August 2012 students’ eating habits did change. They had changed due a new lifestyle while at college with high academic pressures. Other reasons such as eating more and less healthy and unhealthy food items did not have an effect as to how their eating habits had changed. This study showed that a social marketing intervention did have a 10% negative effect rate on student’s consumption of targeted healthy food items in addition to not affecting their perception of healthy food items.
Students’ Consumption of Healthy Food Items Using a Social Marketing Intervention

References


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Achieving and sustaining institutional excellence for the first year of college. San Francisco: Jossey-Bass


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Kohn, S. (2012). *An interview about Panther Dining with Susan Kohn/Interviewer: Kayla A. Dalton.* [Personal communication], Eastern Illinois University, Charleston, IL.


Doi:10.1093/her/16.6.647


Doi:10.1080/07448480903540457

Doi:10.1016/physbeh.2007.07.017


Doi:10.2105/AJPH.2009.174839
Students' Consumption of Healthy Food Items Using a Social Marketing Intervention


University of Illinois at Chicago (UIC) (2012). The Chicago partnership for health promotion:


Appendix

Appendix A- Department Thesis Proposal Approval Form

Approval of Thesis Proposal
Counseling and Student Development
Eastern Illinois University

Name: Kayla A. Dalton
Banner ID: E12392840

Title of Thesis:
Student's Consumption due to the Presence of Healthy Food Item Indicators in a Buffet Style Dining Hall

The thesis project is to be conducted in the manner described in the proposal with the following exception(s) and/or conditions:

Date of Approval: April 3, 2012

Daniel P. Nadler, Ph.D.
Chairperson, Thesis Committee

Member, Thesis Committee

Member, Thesis Committee

Member, Thesis Committee
Appendix B – IRB Approval Form

IRB Study Approval - Dalton, #12-104

From: EIU IRB <eirb@eiu.edu>
Subject: IRB Study Approval - Dalton, #12-104
To: Kayla A Dalton <karzalon@eiu.edu>
Cc: madha@eiu.edu

June 4, 2012

Kayla Dalton
Counseling and Student Development

Thank you for submitting the research protocol titled, "Students' Consumption of Healthy Food Items Using a Social Marketing Intervention" 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 12-104. You may proceed with this study from 6/4/2012 to 6/3/2013. You must submit Form E, Continuation Request, to the IRB by 5/3/2013 if you wish to continue the project beyond the approval expiration date.

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
Office of Research and Sponsored Programs
Telephone: 581-8576
Fax: 217-581-7181
Email: eirb@eiu.edu
Appendix C - Research Questions

1. Do college students' eating habits change while at college?

2. How do college students' eating habits change?
   2.1 How have college students' eating habits changed?
   2.2 Why have college students' eating habits changed?

3. Do healthy choice indicators at point-of-selection combined with benefits-based messages increase perception of healthy food items at a university dining center?
   3.1 Does Lily Dining Center offer a variety of healthy food choices?
   3.2 Are healthy food choices easily identified at Lily Dining Center?
   3.3 Is it possible for you to select healthy food choices at Lily Dining Center?

4. Do healthy choice indicators at point-of-selection combined with benefits-based messages increase the selection of targeted healthy food items at a university dining center?
Appendix D- Pre-Intervention Survey

Kayla Thesis Pre-Intervention Survey

Created: April 14 2012, 9:15 PM
Last Modified: May 15 2012, 7:27 PM
Design Theme: Clean
Language: English
Disable Browser "Back" Button: False

Pre-Intervention Survey

Page 1 - Question 1: Name and Address (U.S.)
What are the last four digit to your cell phone?

Page 2 - Question 2: Choice - One Answer (Bullet)
Do you have a campus dining meal plan?
☐ Yes
☐ No

Page 2 - Question 3: Choice - One Answer (Bullet)
Do you have campus Dining Dollars?
☐ Yes
☐ No

Page 3 - Question 4: Choice - One Answer (Bullet)
How many times a week do you eat at Taylor Dining Center on average?
☐ 0 Times
☐ 1-2 Times
☐ 3-4 Times
☐ 5 or More Times

Page 3 - Question 5: Choice - One Answer (Bullet)
What is your enrollment status? (Please select the best answer)
☐ I am a new EIU student this semester as a first time college student.
☐ I am a new EIU student this semester as a transfer student.
☐ I am a new EIU student this semester as a graduate student.
☐ I am a returning EIU student but I do not live in on-campus housing.
☐ I am a returning EIU student and I live in on-campus housing (residence halls, Greek Court, University Court or University Apartments).
☐ Other, please specify.
Students' Consumption of Healthy Food Items Using a Social Marketing Intervention

What is your age?

- &nbsp;

What is your gender?

- Male
- Female
- Other, please specify

What is your class rank?

- Freshman
- Sophomore
- Junior
- Senior
- Graduate Student

Which of the following best describes your ethnicity/racial background?

- African American/Black
- Asian American/Asian
- Caucasian/White
- Hispanic American
- Native American
- Pacific Islander/Native Hawaiian
- Multiracial/Multiethnic
- Other, please specify

Where did you live before coming to EIU this past Summer? (please select the best answer)

- At home with a parent, grandparent or legal guardian
- In another college residence hall.
- In an apartment or house, on my own or with a roommate.
- Other, please specify

Have your eating habits changed since you came to EIU this past August?

- No. my eating habits have not changed. (Please continue to question 15)
- Yes. (Please continue to question 13)
How have your eating habits changed? (Please select all that apply.)

- I'm eating MORE fast food.
- I'm eating MORE "junk" food.
- I'm eating MORE fruits and veggies.
- I'm eating MORE healthy foods.
- I'm drinking MORE soft drinks.
- I'm eating LARGER portion sizes.
- I'm eating 1 LARGE meal per day.
- I'm eating LESS fast food.
- I'm eating LESS "junk" food.
- I'm eating LESS fruits & veggies.
- I'm skipping FEWER meals.
- I'm drinking LESS soft drinks.
- I'm eating SMALLER portion sizes.
- I'm eating 5-6 SMALL meals per day.
- Other, please specify.

Why have your eating habits changed? (Please select all that apply.)

- Lack of Time.
- Laziness.
- Increased Stress.
- Studying late hours.
- No parent or guardian to prepare meals for me.
- Friends are influencing my eating habits.
- Lack of knowledge about nutrition and healthy foods.
- Not wanting to eat alone at the dining hall.
- More food choices are available to me.
- I can't find anything healthy at Taylor dining hall.
- When I serve myself, I take too much food.
- I'm now more aware of healthy food choices in Taylor dining hall.
- Other, please specify.

How many days per week do you typically eat LUNCH at Taylor Dining Center?

- No days
- 1 Day
- 2 Days
- 3 Days
- 4 Days
- 5 Days
- 6 Days

How many days per week do you typically eat DINNER at Taylor Dining Center?

- No days
- 1 Day
- 2 Days
- 3 Days
- 4 Days
- 5 Days
- 6 Days
Students' Consumption of Healthy Food Items Using a Social Marketing Intervention

Page 9 - Question 16 - Choice - Multiple Answers (Bullets)

Please select the THREE MOST IMPORTANT factors that influence your food choices when eating at Taylor Dining Center.

- Appearance
- Taste
- Food Safety
- Convenience
- Nutrient content / health
- Hunger level
- Calorie content
- Food cravings
- Other:

Page 10 - Question 17 - Choice - One Answer (Bullet)

Do you think that Taylor Dining Center offers a variety of healthy food choices for Lunch and/or Dinner?

- Yes
- No
- Sometimes

Page 11 - Question 18 - Choice - One Answer (Bullet)

Is it possible for you to select healthy food choices at Taylor Dining Center for Lunch and/or Dinner?

- Yes
- No
- Sometimes

Page 11 - Question 19 - Open Ended - Comments Box

What are your barriers, if any, to selecting healthy food choices at Taylor Dining Center?

Page 12 - Question 20 - Choice - One Answer (Bullet)

Are healthy food choices easily identified at Taylor Dining Center?

- Yes
- No
- Sometimes

Page 13 - Question 21 - Rating Scale - Matrix

When you eat at Taylor Dining Center, How many times a week do you eat the following items? (Select the answer that best suits each food choice)

<table>
<thead>
<tr>
<th>Item</th>
<th>0 Times</th>
<th>1 Time</th>
<th>2 Times</th>
<th>3 Times</th>
<th>4 Times</th>
<th>5 Times</th>
<th>6+ Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Boiled Eggs</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Baked Chicken Breast</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tossed Salad</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
What is your EIU email address? *Your email address will be kept confidential and it is only required to send you the follow-up post-intervention survey. You must complete the post-intervention survey in order to be entered into the prize drawing.

In a few weeks you will receive an email to take the post-intervention survey along with email reminders through the email address you provided. You must complete the post-intervention survey in order to be entered in the prize drawing. If you have any questions, comments or concerns, feel free to contact the researcher at kadalton@eiu.edu.
Appendix E- Post-Intervention Survey

Kayla Thesis Post-Intervention Survey

What are the last four digit to your cell phone?

Have your eating habits changed since you came to EU this past August?
- No, my eating habits have not changed. (Please continue to question 5)
- Yes. (Please continue to question 3)

How have your eating habits changed? (Please select all that apply.)
- I'm eating MORE fast food.
- I'm eating MORE "junk" food.
- I'm eating MORE fruits and veggies.
- I'm eating MORE healthy foods.
- I'm drinking MORE soft drinks.
- I'm eating LARGER portion sizes.
- I'm eating 1 LARGE meal per day.
- I'm eating LESS fast food.
- I'm eating LESS "junk" food.
- I'm eating LESS fruits & veggies.
- I'm skipping FEWER meals.
- I'm drinking LESS soft drinks.
- I'm eating SMALLER portion sizes.
- I'm eating 5-6 SMALL meals per day.
- Other, please specify.

Why have your eating habits changed? (Please select all that apply.)
- Lack of Time.
- Laziness.
- Increased Stressed.
- Studying late hours.
Students' Consumption of Healthy Food Items Using a Social Marketing Intervention

- No parent or guardian to prepare meals for me.
- Friends are influencing my eating habits.
- Lack of knowledge about nutrition and healthy foods.
- Not wanting to eat alone at the dining hall.
- More food choices are available to me.
- I can't find anything healthy at Taylor dining hall.
- When I serve myself, I take too much food.
- I'm now more aware of healthy food choices in Taylor dining hall.
- Other: please specify.

Page 4: Question 5 - Rating Scale - Matrix

| How many days per week do you typically eat LUNCH at Taylor Dining Center? |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| No days | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days |

Page 4: Question 6 - Rating Scale - Matrix

| How many days per week do you typically eat DINNER at Taylor Dining Center? |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| No days | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days |

Page 5: Question 7 - Choice - Multiple Answers (Rubric) [Exactly 3 Answers]

Please select the THREE MOST IMPORTANT factors that influence your food choices when eating at Taylor Dining Center.
- Appearance
- Taste
- Food Safety
- Convenience
- Nutrient content / health
- Hunger level
- Calorie content
- Food cravings
- Other:

Page 6: Question 8 - Choice - One Answer (Rubric)

Do you think that Taylor Dining Center offers a variety of healthy food choices for Lunch and/or Dinner?
- Yes
- No
- Sometimes

Page 6: Question 9 - Open Ended - Comments Box

What are your barriers, if any, to selecting healthy food choices at Taylor Dining Center?
Question 1: Are healthy food choices easily identified at Taylor Dining Center?

- Yes
- No
- Sometimes

Question 2: Is it possible for you to select healthy food choices at Taylor Dining Center for Lunch and/or Dinner?

- Yes
- No
- Sometimes

Question 12: When you eat at Taylor Dining Center, how many times a week do you eat the following items? (Select the answer that best suits each food choice)

<table>
<thead>
<tr>
<th>Item</th>
<th>6+ Times</th>
<th>5 Times</th>
<th>4 Times</th>
<th>3 Times</th>
<th>2 Times</th>
<th>1 Time</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Boiled Eggs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baked Chicken Breast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tossed Salad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-fat Salad Dressing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steamed Vegetables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fresh Fruit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yogurt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fat-Free (skim) Milk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cottage Cheese</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whole Grain Bread</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Question 15: Which one of the logos below is the one used in this study?

- This is the Right Stuff (place setting image)
Which marketing item helped you most identify healthy foods?

- Table tents
- Hanging flyers with pictures using humor
- Healthy food item indicator card placed above the item
- Scrolling messages on the TVs in the dining center
- Other, please specify

How many times a week, on average, do you engage in physical exercise via the following programs, activities or facilities?

<table>
<thead>
<tr>
<th>Program/Activity</th>
<th>6+ Times</th>
<th>5 Times</th>
<th>4 Times</th>
<th>3 Times</th>
<th>2 Times</th>
<th>1 Time</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation Center Weight Lifting Room</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rec Center Fitness Classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rec Center Open Courts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rec Center Cardio Fitness Equipment Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intramural Sports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lantz Pool Center</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Have your exercise habits changed since you came to EIU this past August?
Students' Consumption of Healthy Food Items Using a Social Marketing Intervention

If by participating in this study you have experienced uncomfortable thoughts or feelings, it is recommended that you seek advice from a licensed doctor for help.

You will be contacted if you are drawn as a prize winner no later than October 22, 2012.

You will be contacted if you are drawn as a prize winner no later than October 22, 2012.
Appendix F - Entrance Sign

What are you putting on your plate? Is it the Right Stuff?

This is The Right Stuff!

Be lean, be healthy, Be energized: fuel your body with The Right Stuff today!
Appendix G- Healthy Food Item Indicator

Whole Grain Bread

This is THE RIGHT STUFF

Cottage Cheese

This is THE RIGHT STUFF
Appendix H- Benefit-Based Message Table Tents

<table>
<thead>
<tr>
<th>Whole Grain Bread</th>
<th>What are you putting on your plate?</th>
<th>Is it the Right Stuff?</th>
<th>Why It's Right Stuff for You</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole grain bread really does make you feel whole and healthier. It fills you up better and even stays with you longer. When choosing bread pick the Right Stuff: Whole Grain. You can find it as the bread used by the insane &amp; dorky crowd.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cottage Cheese</td>
<td>Be lean, be healthy, be energized: fuel your body with the Right Stuff today!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cottage cheese is packed full of protein and calcium which is great for building a healthy and strong body. Also some as the Right Stuff! You can find it everyday on the lunch lady's bus.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fat-Free (Skim) Milk</td>
<td>What are you putting on your plate?</td>
<td>Is it the Right Stuff?</td>
<td>Why It's Right Stuff for You</td>
</tr>
<tr>
<td>Fat-free milk provides your body with all the protein and nutrients it needs to stay strong and healthy. So when you grab something to drink, be sure to grab the right stuff: skim milk!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yogurt</td>
<td>Be lean, be healthy, be energized: fuel your body with the Right Stuff today!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yogurt is sweet and satisfying. It packs a calcium &amp; protein punch! You can pack your plate at the South yogurt bar. Pick up the fresh yogurt for a fun and healthy snack to make it extra delicious!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fresh Fruit</td>
<td>What are you putting on your plate?</td>
<td>Is it the Right Stuff?</td>
<td>Why It's Right Stuff for You</td>
</tr>
<tr>
<td>Not only are fruits filling but you get energy you need to succeed. It can also make you a better planner. Help you set goals for yourself and think about what you're eating. Is it the right stuff?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You can find it everyday whole or prepared!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steamed Vegetables</td>
<td>What are you putting on your plate?</td>
<td>Is it the Right Stuff?</td>
<td>Why It's Right Stuff for You</td>
</tr>
<tr>
<td>As a student you don't have time to get sick. Make sure to pick the RIGHT STUFF like steamed vegetables which boost your immune system and keep your body strong and lean!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You can find a steamed vegetable everyday in the Variety Bar!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-Fat Dressing</td>
<td>What are you putting on your plate?</td>
<td>Is it the Right Stuff?</td>
<td>Why It's Right Stuff for You</td>
</tr>
<tr>
<td>Low-fat dressing serves as protection against binge eating: foods. They give even ordinary foods a new and exciting twist. Try it out!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is a wide variety on the menu. Try the bar!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tossed Salad</td>
<td>Be lean, be healthy, be energized: fuel your body with the Right Stuff today!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The salad bar is a great place to fill your plate with satisfying &amp; nourishing veggies that don't weigh you down and keep you healthy. Feel good about what you do. Pick up the Right Stuff!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard-Boiled Eggs</td>
<td>What are you putting on your plate?</td>
<td>Is it the Right Stuff?</td>
<td>Why It's Right Stuff for You</td>
</tr>
<tr>
<td>Hard-boiled eggs are a great snack! They are students' kid of the world. You can eat them as a snack or prepare an egg salad! It makes a great lunch! Just grab an egg salad from the Right Stuff store in your hall!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You can find hard-boiled eggs on the menu bar!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baked Chicken Breast</td>
<td>Be lean, be healthy, be energized: fuel your body with the Right Stuff today!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baked chicken: super lean tender &amp; chock-full of delicious flavor. Chicken breast is a delicious meal that supports the healthy eating habits you should build. Pick up your healthy lunch on the right path!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Chicken doesn't affect your overall calorie count! It can be a healthy and delicious addition to any meal!
Appendix I- Benefit-Based Message Posters

1. **Yogurt is sweet and satisfying. It packs a punch of calcium and protein! Pick one up today!**

2. **Healthy cereal is a great meal. Add it to your daily routine!**

3. **Whole grain bread does make your whole meal healthier and tastier—it fills you up faster and keeps you fuller longer.**

4. **As a student, you don’t have time to get sick...make sure to pick up...**

5. **Hard-boiled eggs add a lot of protein to a great meal.**

6. **Steamed vegetables which boost your immune system and keep your body strong and lean to cheer on our teams!**
Appendix J- Survey Invitation Emails

Win Dining Dollars or a Kindle Fire by taking a quick survey!

From: Kayla A Dalton <kadaton@eiu.edu>
Subject: Win Dining Dollars or a Kindle Fire by taking a quick survey!

To: Kayla Dalton <kadaton@eiu.edu>

You can be entered into a prize drawing to win one of two $25 Panther Dining Dollars gift cards or a Kindle Fire (valued at $200) simply by completing this survey! Plus you can help another student graduate!

Please complete the Post-Intervention survey! Here is the link to the survey: https://www.surveymonkey.com/s/PTIFAPI

The survey will be open for only 10 days so complete it by then to be entered into the prize drawing. It only takes a brief 3-5 minutes to complete.

Thank you for helping out another BU student graduate and for providing your thoughts to improve BU Panther Dining!

Kayla Dalton
Graduate Student
Primary Researcher
217-581-7695
kadaton@eiu.edu

7 Days Left to take a Survey & Win Dining Dollars or a Kindle Fire!

From: Kayla A Dalton <kadaton@eiu.edu>
Subject: 7 Days Left to take a Survey & Win Dining Dollars or a Kindle Fire!

To: Kayla Dalton <kadaton@eiu.edu>

Enter to win one of two $25 Panther Dining Dollars gift cards or a Kindle Fire (valued at $200)!

All you have to do is complete this survey! Plus you can help another student graduate by taking this survey!

Here is the link to the survey: https://www.surveymonkey.com/s/PTIFAPI

The survey will be open for only for 7 more days so complete it by October 17th at 11:59pm to be entered into the prize drawing. It only takes a brief 3-5 minutes to complete.

Thank you for helping out another BU student graduate and for providing your thoughts to improve BU Panther Dining!

Kayla Dalton
Graduate Student
Primary Researcher
217-581-7695
kadaton@eiu.edu
Fwd: Only 5 Days Left! Enter to Win Dining Dollars or a Kindle Fire!

From: Kayla A Dalton <kadalton@eiu.edu>  Sun, Oct 14, 2012 07:18 PM
Subject: Fwd: Only 5 Days Left! Enter to Win Dining Dollars or a Kindle Fire!
To: Kayla Dalton <kadalton@eiu.edu>

Only 5 days left to be entered to win!
Enter to win one of two $25 Panther Dining Dollars gift cards or a Kindle Fire (valued at $200)!
Just take this survey! http://www.surveymonkey.com/s/TPXWP

The survey will be open for only for 5 more days so complete it by October 17th at 11:59pm to be entered into the prize drawing. It only takes a brief 3-5 minutes to complete.

Thank you for helping out another EIU student graduate and for providing your thoughts to improve EIU Panther Dining!

Kayla Dalton
Graduate Student
Primary Researcher
217-581-7695
kadalton@eiu.edu

Win a Kindle Fire or Dining Dollars...Only 3 Days Left!

From: Kayla A Dalton <kadalton@eiu.edu>  Tue, Oct 23, 2012 12:31 AM
Subject: Win a Kindle Fire or Dining Dollars...Only 3 Days Left!
To: Kayla Dalton <kadalton@eiu.edu>

Only 3 days left to win! http://www.surveymonkey.com/s/TPXWP --- Take the survey to win!
Enter to win one of two $25 Panther Dining Dollars gift cards or a Kindle Fire (valued at $200)!

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Kayla Dalton
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217-581-7695
kadalton@eiu.edu
Today is your last chance to WIN a Kindle Fire or Dining Dollars!! Last day!

From : Kayla Dalton <kadalton@eiu.edu>
To : Kayla Dalton <kadalton@eiu.edu>

Subject: Today is your last chance to WIN a Kindle Fire or Dining Dollars!! Last day!

The survey closes tonight by 11:59 PM. So take this survey NOW! It only takes a brief 3-5 minutes to complete.

Kayla Dalton
Graduate Student
Primary Researcher
217-581-7695
kadalton@eiu.edu