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Perceptions and Satisfaction of Healthy Food Choices Among College-Aged Females in a Self-Serve Dining Facility Setting

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PERCEPTIONS & SATISFACTION OF HEALTHY FOOD CHOICES AMONG
COLLEGE-AGED FEMALES IN A SELF-SERVE DINING FACILITY SETTING

By

Kristin Timken

B.S., Food and Nutrition, Southern Illinois University, 2010

A Thesis

Submitted in Partial Fulfillment of the Requirements for the

Master of Science Degree

Department of Animal Science, Food and Nutrition

In the Graduate School

Southern Illinois University Carbondale

August 2012

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THESIS APPROVAL

PERCEPTIONS & SATISFACTION OF HEALTHY FOOD CHOICES AMONG
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By

Kristin Timken

A Thesis Submitted in Partial
Fulfillment of the Requirements
for the Degree of

Master of Science in Food & Nutrition
with a Concentration in Community Nutrition

Approved by:

Dr. Sara Long Roth, Chair

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Graduate School
Southern Illinois University Carbondale
May 23, 2012

AN ABSTRACT OF THE THESIS OF

Kristin Timken, for the Master of Science degree in Food & Nutrition, presented on November 21, 2011, at Southern Illinois University Carbondale.

TITLE: PERCEPTIONS & SATISFACTION OF HEALTHY FOOD CHOICES AMONG COLLEGE-AGED FEMALES IN A SELF-SERVE DINING FACILITY SETTING

MAJOR PROFESSOR: Dr. Sara Long Roth

Objective: The purpose of this study was to measure perceptions of healthy food choices and satisfaction of menu choices among members of a sorority house.

Design: Three surveys were used in this experiment, two pre-tests and one post-test.

Subjects and Setting: The study consisted of a self-selected sample of 38 females aged 18-23 who were living in Stein Hall.

Intervention: Food and menu items were changed to incorporate healthier food items and healthier recipes along with addition of more fresh fruits, vegetables, and whole grains

Statistical Analysis: One-way ANOVA tests were used to test for significance. Post-hoc tests were used to compare the three surveys.

Results: Almost 90% of the participants reported being dissatisfied, to some extent, with menu items served at meals on the first survey. Residents' reported satisfaction of menu changes changed significantly throughout duration of the study.

Conclusions: Results of this study suggest that increasing healthy foods on the menus increased reported satisfaction of meals.

DEDICATION

First, I thank the Lord for guiding me through this project. I would like to dedicate my thesis to my mother, Becky, and my fiancé, David, for always believing in me. Thank you for your support throughout my graduate school experience and for always encouraging me to pursue my dreams. I am so blessed to have both of you in my life! Thank you so much for your love and support!

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A big special thank you to:

My thesis chair: Dr. Sara Long Roth

My committee members: Dr. Nicole Davis and Lynn Gill

My graduate school friends and classmates

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CHAPTER 1

INTRODUCTION

Background Information

Community living is common among college students. Eating environments are widely believed to contribute to the rising epidemics of childhood and adult obesity in the United States and globally (1). For instance, many students choose to live on-campus where residence dining halls may lack variety in food choices. Therefore, even if students wanted to eat healthy foods, they may not have this choice due to limited food choices at the dining halls.

This is also the case for on-campus sorority houses. Housed in Stein Hall, members of the Alpha Gamma Delta sorority have only one option for each meal each day. This limits sorority members to: 1) eating the food provided, 2) going out to eat even though they have paid for the house food, or 3) cooking something quickly in the microwave. No cooking facilities are available for the sorority members to cook, so they must use the available microwaves.

For individuals to meet current dietary recommendations, healthful choices must be made available as opposed to unhealthy food options that may be offered (2). One example is fried mozzarella sticks served as the main dish. Fried foods can be a common dish in sorority housing because they are inexpensive and easy to prepare. Members living in the Alpha Gamma Delta house do have the option of eating from a small salad bar. Numerous requests for healthier food have been made so interest in changing menus to healthy food choices is certainly extant. "Recognizing diet and

eating behaviors are influenced by availability and accessibility of foods, there is increasing interest in developing healthful eating,” (3).

Furthermore, much emphasis has been placed on “toxic environment” or “obesogenic” environment in development of obesity. “It is logical to conclude regulation of environmental factors, such as food availability and opportunities for physical activity, can influence diet and exercise habits, which in turn lead to the decrease or increase of obesity rates in a population,” (4).

Statement of the Problem

College is an ideal time and environment for weight gain due to reasons such as socio-economical and lifestyle factors. According to a study by Chourdakis et al. college students had averagely significantly higher intakes of saturated fat, total fat, sodium, and cholesterol, with lower intakes of polyunsaturated and monounsaturated fats, fiber, vitamin E and folate when compared to American Heart Association guidelines (5). The researcher has noticed dining halls at several campuses do not offer many healthy options. Food offered at Stein Hall is usually high in fat and cholesterol, as well as low in fiber. Improving and increasing availability and accessibility of healthier food options may increase overall health and energy status of members living in this community sorority setting.

Need for the Study

Residents at Stein Hall anecdotally expressed interest and desire for healthier menus. Limited entrée choices at meals pose many problems. For example, if a

member does not like what is being served, her alternative is to eat away from her residence hall. Away-from-home foods contain more fat and saturated fat and less fiber as opposed to foods prepared at home (6). Sorority members living in the house are concerned about their health, and have expressed much interest in healthier food options to this researcher.

In addition to having limited food options available, the food served at Stein Hall tends to not be very healthy. For instance, a typical lunch menu is fried chicken strips and French fries. On weekends, brunch usually contains the following food options: bacon, sausage, fried Tater Tots, biscuits and gravy, and an option of eggs, French toast, or pancakes. No fresh fruits are offered for breakfast or for any other meal.

A small selection of food could have potential to worsen members' health. The researcher has observed that many members choose to eat out, which, as stated before, has been proven to be even less nutritious. The majority of members choose fast-food restaurants such as a local deep-dish pizzeria, a Mexican restaurant, and a restaurant serving hot wings with French fries. Foods offered to members are not nutrient dense, and most choices are calorie-dense. There is a need for intervention to increase consumption of healthy food, and to decrease the amount of away-from-home food consumed.

Purpose of the Study

The purpose of this study was to measure perceptions of healthy food choices and satisfaction of menu choices among members of a sorority house on the Southern Illinois University Carbondale campus. This study also determined if members really

want what they say they want (healthy food choices). In addition, this study determined if the number of times eating out per week decreased if healthier options were offered in community sorority housing at a Midwestern university.

Research Questions

1. Are members of a sorority house satisfied with availability of healthy items served at meals?
2. Do menu changes increase or decrease members' satisfaction of meals served?
3. Do menu changes increase or decrease frequency of eating away from current location?

Definition of Terms

- a) In-House: The sorority members who live in the house and pay for meals each semester.
- b) Members: The 38 in-house members of Alpha Gamma Delta aged 18-23.
- c) Toxic environment: an environment that proves to have a toxic effect on the people associated with it.
- d) Obesogenic: factors tending to make individuals obese.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

College is a time for growth and development, providing college students an opportunity to learn proper eating habits that will last them throughout the rest of their lives. Unfortunately, they live in environments that promote poor nutrition choices; mostly eating at buffets and fast-food restaurants. Most college students agree, perceiving their environment to be opposed to a healthy lifestyle. Living in a dormitory does not give students a proper kitchen or room to store fresh food.

College students are not getting the proper amount of essential vitamins and minerals, but *are* obtaining the wrong nutrients in higher amounts. For example, having too much fat and carbohydrates in their diet is very common. Because of their busy lifestyles, they tend to eat out often. Fast-food restaurants are prevailing in university towns. Moreover, there is a lack of nutrition education in the United States. If students do seek nutritional information, they tend to go to the internet or a friend, both of which are may be unreliable sources,

The Age to Learn for Life

Obesity is one of the biggest health concerns related to the dietary intake and lifestyles of current college students (7). Eating habits have been shown to worsen during college (8) and young adulthood, (9). Young adults attending college are more in danger of weight gain in comparison with the general populace (10). A reason for this

could be the fact they are on their own for the first time. As their first opportunity to make their own food decisions, the transition to college or university is a critical period for young adults (11). Because students face many new dietary challenges and are also establishing lifelong health behaviors, nutrition education and prevention efforts targeted at college students are of great importance (7). “A variety of factors may play an important role in diet and physical activity during this period (e.g. increased independence from family, binge drinking, overeating following alcohol/drug use, sleep deprivation, stress management)...” (12).

Transitions between adolescence and adulthood, a common age for college students, are frequently accompanied by striking and inappropriate weight gain (13). Transition from home to college is the most intense change of environment in their lives for the majority of college freshmen (14), and has strongly been associated with weight gain (15). “College enrollment is a documented time for rapid weight gain, averaging from 2 to 7 pounds in the first 3-4 months of college” (12). Little improvement occurs in weight-related health behaviors throughout the college period, which may, in turn, mark the establishment of long-term weight-related health behavior habits (12).

Obesity in this age group is increasing at a steady rate. For example, college freshmen’s rate of weight gain observed is substantially greater than that observed in the population as a whole (14). In 2004, 26% of US college-aged people were obese (7). “Approximately 36% of U.S. college students [were] estimated to currently be overweight or obese” (16). One goal of the American College Health Association’s *Healthy Campus 2010* was to promote health and reduce chronic disease risk associated with diet and weight of college students (7). “The greatest increase in

overweight and obesity has been observed between 18 and 29 years of age, the age range of more than 10 million full-time college students in the United States” (17). It is extremely vital for this population to become aware of nutrition at this age.

This population comprises a group whose dietary behaviors and nutritional statuses are of great concern to the nutrition professional world (18). “Sedentary lifestyles and excess calorie intake contribute to overweight and obesity, and the period between adolescence and early adulthood is accompanied by lifestyle changes that predispose young adults to become less physically active” (13). Decreasing physical activity is a major factor for gaining weight. In a college environment, Horwath, Hendricks and Herbold, in addition to Marietta and coworkers, report that students at the college level consume large amounts of fast foods and alcohol, recurrently skip meals, avoid certain nutritious foods, and adopt unsound weight loss techniques (19). Additionally, having unhealthful eating behaviors, missing meals, snacking regularly on energy-dense food, and engaging in unhealthful weight-loss methods is common, and very familiar, among college students (17).

Many people have heard of the Freshmen 15, in which a freshman student gains fifteen pounds. Many students want to avoid the Freshmen 15, or perhaps have gained some weight rather quickly and want to lose it during their freshmen year (20). From a study conducted by Racette et al., a potentially significant weight gain, approximately 9 pounds, was found in 70% of students throughout the first 2 years of college, as well as the inactivity and unhealthy dietary behaviors characterized by many students during their early college year (13). Throughout college, many students gain weight. According

to a longitudinal study conducted by Racette et al., weight, height, and BMI increased among both females and males from freshman to senior year.

Evidence from a College Health Risk Behavior Survey indicates nutritional and action patterns of many college students predispose them to future health problems (13). Therefore, it is crucial to learn healthy eating behaviors and patterns during college. A growing concern for the nation is this age group's increase in weight (7). Studies have shown that college influences students' lifestyle habits and can even negatively impact dietary intake, which, in turn, affects both short- and long-term health (7). "Food patterns established during college are likely to be maintained for life and may have long-lasting influences on college students' future health and the health of their future families," (17). As stated previously, learning new health behaviors during college will help them in the future. "Although some of the observed weight gain [in this study, Changes in weight and health behaviors from freshman through senior year of college] probably was attributable to normal growth and maturation, a portion likely represents adipose tissue gains that may increase health risks if these trends continue throughout adulthood," (21). This is especially vital in America. "Because nearly two thirds of the adult population in America is classified as overweight, it is important to understand the role that the college environment may play in this [obesity] epidemic, and to consider institutional strategies that might encourage college students to pursue healthy exercise and eating habits and maintain healthy body weight throughout college" (13).

Although higher education institutions can be conducive to poor eating choices, they also present a valuable context for helping students improve their eating habits.

“Colleges and universities can be an ideal setting for interventions because college students are still forming lifestyle patterns,” (22). “That college students are healthy may be widely accepted but we found that a high percentage of our surveyed students were overweight and engaged in less than healthy dietary habits, such as low fruit and vegetable intake and low fiber intake, and low physical activity, suggesting the need for greater attention to diet and exercise interventions in this population,” (22). Interventions are especially needed to improve current dietary patterns and consumption of a healthful diet during college years and young adulthood (23). To sum up, lack of regular exercise, weight gain, and unhealthy eating patterns appear to be common among students in a sample study by Racette et al. during the first 2 years of college (13).

The “Ideal” Environment for Poor Nutrition Choices

“The college environment, which many young adults will experience, is one that may be conducive to overconsumption due to factors such as readily available energy-dense foods” (24, 25). Availability of foods is an important characteristic of the food environment, and availability of food in the dining hall at college is a new lifestyle for college freshmen adjust to (26). “Strong et al. suggest the college environment is conducive to overconsumption because of the ready availability of energy-dense foods, which may be contributing to the increased prevalence of obesity” (7). Many factors can play a part in college-student’s weight gain including “the availability of foods of low nutrient density, preoccupation with weight, financial restrictions, limited food preparation skills, restricted food storage and cooking facilities, difficulty with time management, and nutritional misconceptions” (19). Access to healthy food is imperative

to the college environment for many reasons. “That is, individuals cannot be expected to make healthy choices if those options are not readily available in the home, at work, at school, and in the community” (27). The availability of healthy food reduces the perception of barriers to healthy eating (11).

Buffet-style cafeterias and excessive portions served in dining halls, due to students having the choice of food portions and food options, have been associated with overeating and poor nutrition (28). “Although the use of ‘all you can eat’ dining halls may be effective as a recruiting technique for colleges, they may also be responsible for much of the weight gain evident in freshmen as evidenced from this study” (14). Food courts, a major issue of concern, can offer students a chance to choose meals from a number of fast-food style establishments (29). Although this type of food service offers a greater number of meal choices, the variety of foods offered is much more limited (29).

There are several environmental factors which contribute to poor dietary habits (30). These include lack of compliance with nutrition education, unproblematic access to energy-dense foods through vending machines, school stores, and à la carte lines as well as fast-food sales on campus and at locations near the university (30). Numerous life changes, with many decisions involving food choice, are brought about upon entering college (31). “With new independence, young adults are faced with the challenges of independent meal planning and food and beverage selection” (15). Poor dietary intake and inactivity are examples of adverse weight-related behaviors which are highly prevalent on university campuses (12).

Most college campuses have community-based dining settings. Community-based settings are important environments for outreaches promoting youthful health, as this is most students' way of life (26). "Postsecondary institutions and businesses employing young adults should be encouraged to support good nutrition by providing scheduled time and access to facilities for meals, along with healthful meal and snack options" (23). Public health researchers are progressively aware that modifications in the food environment are compulsory to allow all individuals the chance to reach healthier diets and healthier lifestyles (27). "In order to improve the school nutrition environment, access to unhealthy foods must be reduced or eliminated" (30). Students choose food in their environment based on several factors. "University students select foods based on the following items: time limitations, convenience, cost, taste, health, physical and social environments, and weight control" (22).

College is an ideal time to make new decisions. "Marietta and co-workers have observed college students make more food selection and food preparation decisions after moving away from home while simultaneously adapting to an unfamiliar environment and lifestyle" (19). This is a huge challenge for most students. Poor dietary practices can be adopted throughout the transition stage high school to college (19). Dietary habits among students, which could contribute to weight problems during the first year of college or university and continue through life, often worsen during this transition (11). During the college years, transformations in students' lifestyles and in their social and physical environments seem to have a disadvantageous impact on their diet quality (7).

It is going to take small things to help change the big picture. Morse suggested that if small changes can cause an increase in weight, then small behavioral and/or environmental changes should be able to prevent, or perhaps even reverse, the weight gain (14). “While limiting access may be successful in the short term, a coordinated multilevel approach including nutrition education, physical education, and parental involvement in addition to policies and changes in food service is key to improving the school nutrition environment” (30).

Student Perceptions

Addressing student attitudes about their college environments is an important part of behavioral change. “Students perceived their college environment as one that makes unhealthful foods more available than healthful foods” (10). There are a wide variety of influences that may change one’s diet. “For example, among both sexes, perceptions of same-sex, close friends’ weight-control practices were the single best discriminators of the low- and high-involvement weight-control groups. Therefore, these findings suggest that close friends may have an influence on weight control behavior” (15). In sorority houses cliques form, and diet practices of one member may influence the practices of their friends.

Different students have different concerns about their overall health. While some students might find increasing physical activity to be a real challenge, others might find diet changes difficult to implement (15). In a study conducted by Nelson et al., when initially enrolling at a university, students spoke of different levels of concern about weight gain (12). Many students had observed others who had gone off to college and

returned with some added weight (12). One student quoted, “when I was in high school, I’d watch people come back after their freshman year and I was like ‘Ohh, I don’t wanna do that.’” (12). Some students did not realize this was happening until it was too late. One student stated, “At first, I mean I didn’t even notice it...until I got on the scale and then I was ‘Ohh, whoa!’ and nobody said anything about it...nobody was like, ‘Whoa man you look like you got bigger’. But when I see pictures of myself from them, I was just, ‘Geez!’” (12). In this same study, some students simply believed that weight gain only occurred in heavy drinkers among college students (12).

When asked about availability of food on campus, students reported buffet-style food service encouraged common overconsumption and poor dietary habits (12). One student reported, “I think everybody overeats it, just because you’re in that cafeteria...buffet-style, so everybody is grabbing a lot, and they’re eating it all, too” (12). Buffet-style environments are cheaper for the university. “Although many universities have long employed buffet-style student dining systems because of their reduced labor requirements for service, such a method of food service may likely contribute to overconsumption, thus the cost savings incurred by buffet-style dining may ultimately be at the expense of the student’s health” (12).

In many dining halls, nutrition facts are not posted. This can cause students to not know or realize what they are consuming. In a study done by Alan Mathios, after mandated labeling was instituted, sales of high-fat salad dressing decreased significantly (32). Other challenges to healthy eating include difficulty in keeping fresh, healthful food in the dorms (12). Access to grocery stores was also limited (12). “One participant also discussed convenience stores located within campus residence halls as

a negative influence on dietary intake” (12). Another influence is price. Healthful food purchased on campus was not as affordable as unhealthy food when students purchased foods outside the dining halls (12). Unhealthy foods are commonly less expensive than healthful foods. “Numerous students frequently ordered out for food, particularly late at night. One participant mentioned ordering pizza extensively because of cheap deals marketed to college students” (12). Thus, when students get tired of dining hall food, eating out is a common choice for college students (12).

Wrong Nutrients, Wrong Amounts

College students do not seem to consume the recommended amount of fruits and vegetables. On a daily basis, students tend to eat fewer than 5 servings of fruits and vegetables and report high intake of high-fat, high-calorie foods (11). Moreover, a large amount of Americans (approximately 77%) fail to consume the recommended 5 servings of fruits and vegetables per day (5-A-Day), with college students having the lowest amount of consumption (only 7%) (33). According to a study conducted by Guenther et al., only 40% of Americans met the former 5-A-Day guidelines, and fewer than 10% appear to meet the newer 2005 Dietary Guidelines general and subgroup recommendations for fruits and vegetables, despite the known health benefits of a diet rich in fruits and vegetables (34). “In a study done by Racette, only 29% of freshman participants consumed at least 5 servings of fruits and vegetables daily, and 50% of students consumed fried foods at least twice and high-fat fast foods at least twice” (21). According to the 2010 Dietary Guidelines, at least 2½ cups of fruits and vegetables should be consumed per day (35). In 2005, this guideline was at least 2 cups, making

the above statistics even worse (35). In addition, dietary intakes of college students appear to be high in fat, saturated fat, cholesterol, and sodium, whereas they are low in fiber, vitamins A, C, and E; folate; iron; and calcium,” (17).

Additionally, college students do not obtain the recommended amounts of nutrients. Merely 4% of the participants in a study done by Strong reported eating 30% or less of energy from fat and 10% or less from sugar per day in another study of 2,489 college students (22). “Additionally, national nutrition data indicate that the majority of young adults consume excessive amounts of sugar-sweetened beverages and high-fat, high-sodium foods, and consume less than the recommended amounts of whole grains, fruits, vegetables, and calcium,” (36, 37). College students often surpass the recommended daily limit for saturated fat intake (28). Experimental and epidemiological research provides abundant information and evidence linking diets high in total and saturated fat, cholesterol, and energy and low in fiber to certain kinds of cancers, diabetes, and cardiovascular diseases (19).

Eating Out as an Alternative

Eating at fast-food restaurants and habitually consuming fast foods seems to be part of the typical lifestyles of college students (38, 39). This is something done quite frequently at this age. Racette found more than half the students sample reported eating high-fat fried or fast foods at least three times per week (3). Another study found college students reported eating meals at fast-food restaurants 6 to 8 times per week (38). These statistics show foods eaten at fast-food restaurants actually do substantially contribute to the caloric intakes of college students in general (41).

There are several reasons college students choose to eat at fast food restaurants. According to a study conducted by Morse, the top 4 reasons given by students were 'limited time', 'enjoy the taste', 'eat with friends/family', and 'inexpensive and economical' (41). With busy college lives, students opt for eating fast food as a quick way to obtain a meal in between activities. Due to lack of time during their busy schedules, these young adults may frequently choose to eat convenience foods away from home and at fast-food restaurants (23). Eating out is not the healthiest alternative to eating a home-cooked meal, though. "Eating on the run was associated with higher intakes of soft drinks, fast food and fat, and with lower intake of several healthful foods among females" [in particular] (23).

Lack of Education

Lack of nutrition knowledge could have negative effects on college students, thus potentially putting this group at nutritional risk. Additionally, students may not know the difference between a reliable source if and when they are researching nutrition. Reliance on sources that provide inadequate information about nutrition has been attributed to lack of in-depth nutrition knowledge (11). According to a study conducted by McArthur, Grady, Rosenberg, and Howard, a low level of awareness about three nutrition topics related to the 2000 Dietary Guidelines for Americans and Food Guide Pyramid, healthful eating, and the relationship between diet and health is associated with college students (19). In another study conducted by Krukowski et al, 316 college students were sampled and 52% responded that they did not generally use food labels to make food choices (7).

Nutrition is not a common subject among elementary and secondary schools. It is offered at many universities as a general education course, but is not mandatory. College students could truly benefit from an enhanced awareness of and greater acquiescence to recommendations presented in the Food Guide Pyramid and Dietary Guidelines for Americans (19). A university environment is full of opportunities to learn and become more aware of nutrition. "College students already find themselves in an environment that affords ample opportunities for initiating various kinds of learning experiences about these topics" (19).

Additionally, Knaust and Foster established that college students have difficulty in accurately selecting appropriate serving sizes (7). "Teaching appropriate portion sizes in conjunction with current dietary guidelines has the potential of addressing some of the major nutrition issues of college students, including overweight and obesity" (7).

Dorm Life/Community Housing

Many researchers have reported that college students display unhealthful eating patterns and are engaged in unsound dieting practices (17). There are numerous reasons for this, dorm life being one. In the dorm or community housing setting, there is no stove or oven to prepare meals. Students' resources are rather limited. For instance, in a study conducted by Strong, many students had a refrigerator and microwave in their dorm rooms, but fresh fruits and vegetables were not kept there because of fear of spoilage (10). Their small refrigerators may not be able to store a decent amount of fresh fruits and vegetables.

College students find it very simple to obtain 'junk food'. "Outside the dining hall, the easy accessibility of 'junk foods' in dormitories and classrooms may also contribute to the excessive weight gain because humans do not appear to 'calorically compensate' for food that is consumed between meals," (42). Many shopping facilities on campus provide high-energy and low nutrient-dense foods for students to store in their dormitories.

Summary

College is a very important age to learn nutritional and health habits. Positive behaviors are necessary to acquire during this age period. Obesity in this age group is especially high. The college environment is ideal for weight gain and making unhealthy choices. There is a large availability of unhealthy foods including buffet-style eateries, vending machines, fast food restaurants, and storage of high caloric snacks.

Some students have shown concern during their college years regarding the low availability of healthy foods offered in dining halls throughout the United States. Fruit and vegetable intake is extremely low, while fat and carbohydrate intake is high. Many students enjoy eating out as an alternative despite its negative effects. Furthermore, many students are not aware of the negative side effects associated with poor nutrition. There is a lack of nutrition education in high school and college curriculum. In addition, many university students are not familiar with adequate portion sizes. Lastly, dorm life makes it difficult for students to prepare food due to lack of kitchen appliances. Students also do not have adequate storage space. College is an ideal environment for poor nutrition.

CHAPTER 3

METHODS AND PROCEDURES

Purpose of the Study

The purpose of this study was to measure perceptions of healthy food choices and satisfaction of menu choices among members of a sorority house on the Southern Illinois University Carbondale campus. This study also determined if members truly wanted what they say they wanted (healthy food choices). In addition, this study determined if the number of times eating out per week decreased if healthier options were offered in community sorority housing at a Midwestern university.

Research Questions

1. Are members of a sorority house satisfied with availability of healthy items served at meals?
2. Do menu changes increase or decrease members' satisfaction of meals served?
3. Do menu changes increase or decrease frequency of eating away from current location?

Definition of Study Population and Sampling Procedures

The study population consisted of 38 undergraduate female students aged 18-23 years who attended Southern Illinois University Carbondale in Carbondale, Illinois and lived in University sorority housing on campus. This study was approved by the Human Subjects Committee at Southern Illinois University Carbondale. All 38 girls living in this house agreed to participate with signed consent. The study applied two pre-test surveys

and a post-test survey, all of which were identical (Appendix A). Residents' names were checked off a list after consent forms were signed of residents' names were checked off once surveys were received. After each survey was conducted the list was then shredded.

Methods

Three surveys were used in this experiment: two pre-tests and one post-test. All three surveys measured perceptions of healthy eating, amount of times participants ate in-house versus going out to eat, and overall satisfaction of food being served at the sorority house. The survey was developed using questions from a previous study (44) with permission from the author (Appendix B). Before revisions to incorporate more nutrient dense foods were made, a meeting with the head cook took place. Discussion topics are summarized in Table 1.

Table 1. Discussion with the head cook prior to making changes in menus at Stein Hall

Question	Response
1. What is the cycle for the menu [how many weeks]?	"There is no cycle, just random selections because there are always different requests."
2. From where is the food purchased?	"US Foods. A salesman comes every Tuesday and I make the order for the next week". Kroger's is the next place the head cook shops in case they run out of items.
3. Who purchases the food?	"The head cook purchases the food."

- | | |
|--|--|
| 4. What is the budget? | “There is no budget.” |
| 5. What restrictions are placed on food purchases? | “There are no restrictions on food purchases.” |
| 6. Are there any current nutritional guidelines? | “No, there are no current nutritional guidelines.” |
-

Procedures

During spring semester 2011 at SIUC, both pre-tests and the post-test were distributed before residents' weekly chapter meetings. They were collected 30 minutes after the meeting and all 38 residents completed all three surveys for a 100% response rate.

The three surveys were color-coded to aid in data collection & analysis: the first pre-test was red, second pre-test was buff, and the post-test was green. First survey (red pre-test) was distributed to each resident before the sorority's weekly meeting and was then collected 30 minutes after the end of the meeting. Residents were informed menu changes would take place no sooner than one month. Menu items were changed to healthier choices for the next two weeks with only minor changes of menu items names (Appendix C), as opposed to later when menus were revised to sound completely

The second survey (buff) was distributed as previously described along with a PowerPoint presentation. The PowerPoint presentation (Appendix E) included the following topics: lack of knowledge of nutrition, lack of knowledge of portion sizes, eating out, and how the environment in which one lives plays a large role on what one may consume. “In a study of a random sample of 475 elderly Americans, Elbon et al.

found that high nutrition knowledge was strongly associated with reading of nutrition information panels on food products,” (43).

After this brief nutrition education session, menu item names were changed and enhanced to reflect the nutritional improvements. Two weeks later, the last survey (green post-test) was distributed and collected in the same manner as the two prior surveys.

Intervention

Food and menu items were changed to incorporate healthier food items and healthier recipes along with addition of more fresh fruits, vegetables, and whole grains after the first pre-test. After the second pre-test, names of the new menu items were changed to reflect the healthy changes made. After two weeks, the post-test was administered.

Study Sample

The sample was drawn from a community-housing facility located on campus (38 females).

Validity of the Instrument

The two pre-tests and post-test was adapted from a previous study, *A pilot study exploring the perceptions and selections of healthful food choices by college students in a self-service dining hall setting*, (with permission) (44). The survey was validated for content validity and internal consistency by a panel of two registered dietitians and one

hospitality & tourism faculty member familiar with the college population. The survey was piloted in a group of 26 undergraduate female nutrition students (44). The cronbach- α level was .398 for the survey questions, “How satisfied are you with the availability of healthy foods at Stein Hall?” and “How do you perceive your current health status?”. The cronbach- α level was .819 for the survey questions, “Do you think that Stein Hall offers a variety of healthy food choices for lunch and/or dinner?” and “Is it possible for you to select healthy food choices at Stein Hall for lunch and/or dinner?”.

Data Analysis

Statistical Analyses

Data were analyzed using the Statistical Package for Social Sciences (SPSS version 19.0 for Windows, Graduate Student Version (2011, SPSS Inc. Chicago, IL)). Descriptive data were collected from all participants (n=38) in each time the survey was administered. Since the population was the same only demographic data on the first survey's data were analyzed. One-way ANOVA tests were used to test for significance. Post-hoc tests were used to compare the three surveys. Level of significance for all statistical tests was $\alpha=.05$ to decrease probability of type 1 error.

Descriptive statistics were used to describe demographic information. Frequency tables were also designed to describe cumulative percentages. Standard deviations were reported with all means. Mean, mode, and median were calculated for each frequency table.

One-way ANOVA tests are analyses of variance and are a common and powerful statistical procedure. These tests are used to compare means of two or more samples. Since three samples were being used, it was most fitting to use the 1-way ANOVA test.

Post-hoc testing was also done which is necessary after an ANOVA has been completed in order to determine which groups differ from each other. Tukey's version was selected for this particular study because it is the most commonly used post-hoc analysis tool.

Limitations

Surveys have many benefits for data collection, however there are some limitations. "For instance, a survey only gathers information about the questions asked. In contrast, during an interview, the interviewer can explore important subjects in-depth, as they are uncovered" (45). Only when those being surveyed have at least a moderate degree of literacy are surveys effective (45). Additionally, honest answers are also a limitation of surveys. Another limitation of survey research is that survey research can seldom deal with "context"; as opposed to direct observation.

Delimitations

This study did not utilize a large population. In addition, the researcher limited this study to only lunch and dinner menu changes only and did not include the following: breakfast, desserts, or weekend crock pot menus for lunch and dinner. Additionally, a convenience sample was used. Thus, results obtained cannot be generalized to the population of college students as whole. Results are based on standard portion sizes

not on what was served and/or consumed. Recommended intakes were measured instead of what was actually consumed. A control group may have added to the strength of the study.

CHAPTER 4

RESULTS

Disclaimer

Results are based on standard portion sizes, not on what was served and/or consumed. Due to buffet style meals, standard portion sizes were not enforced at Stein Hall. All statistics were calculated using appropriate standard portion sizes rather than what was eaten.

Nutrition Composition

Before this study was conducted, food options available at this facility were calorically dense. Table 2 shows an example of the macronutrient composition of a two-week menu cycle at Stein Hall compared to revised lunch & dinner menus. This does not include beverages or desserts served with meals, nor does it include weekend meals. Macronutrient content & therefore calorie content decreased across the board from the “old” menus to the “revised” menus, with the largest reduction being in fat content. More whole grains, fruits, and vegetables were incorporated into the new menus to assist with calorie decrease. In addition, the numbers in the tables are based on proper portion sizes (47). As reviewed in Chapter 2, people are very likely to take more than the standard portion size when serving themselves. This table is based on 5 days of lunch and dinner menus.

Table 2. Average Nutrition Composition of Old & Revised Lunch & Dinner Menus at Stein Hall

	Old Menu				Revised Menu			
	Week 1		Week 2		Week 1		Week 2	
	Lunch	Dinner	Lunch	Dinner	Lunch	Dinner	Lunch	Dinner
Calories	2797	2969	2332	3058	2157	2197	1757	1994
Carbohydrates (g)	337	245	221	205	287	321	215.7	179
Protein (g)	115	174	102	153	137	122	88.3	155
Fat (g)	111	143	118	183	54	55	56	75

Note: Data are based on standard portion sizes rather than what was actually consumed.

Return Rates

Surveys were distributed to each participant before a weekly chapter meeting. If a participant was absent, her roommate received an extra survey to distribute to the absent roommate. The researcher waited throughout the duration of the chapter meeting in addition to 30 minutes after the meeting to collect surveys from participants. A checklist was used by the researcher to ensure every participant returned surveys. Meetings were held on Sundays, and if a participant was absent, the researcher returned to the residence hall that following Wednesday to pick up any late surveys. This resulted in a 100% return rate.

Demographics of Participants

Participants were female ranging in ages of 18 to 23 with a mean age of 20.5 years. They ranged in class rank from freshmen to senior (Table 3) with almost 40% reporting their class rank as juniors.

Table 3. Demographic Data of Participants: Ages and Class Ranks

Characteristic:	Frequency	Percent
	(n = 38)	
Age		
18	1	1.3
19	5	6.6
20	12	15.8
21	15	19.7
22	4	5.3
23	1	1.3
Class Rank		
Freshman	2	5.3
Sophomore	9	23.7
Junior	15	39.5
Senior	12	31.6

Ethnic background was comprised primarily of Caucasian/White (89.5%, N=34), with few Asian American/Asian and Hispanic Americans (2.6% each, N=1) and 5.3% (N=2) being classified as 'Other' (Table 4). Within sorority populations, this is a common balance of ethnicities.

Table 4. Demographic Data of Participants: Ethnicities

Ethnicity	Frequency	Percent
African American/Black	0	0
Asian American/Asian	1	2.6
Native American	0	0
Hispanic American	1	2.6
Caucasian/White	34	89.5
Pacific Islander/Native Hawaiian	0	0
Other	2	5.3

Most residents moved into Stein Hall in Fall 2010. Over 17% of the participants reported moving into Stein Hall in during August, 2009; making this their fourth semester living at Stein Hall. Only two participants reported recently moving in, becoming a resident in January of 2011. Those categorized as 'Other' accounted for 5.3% of the total population.

Answers to Research Questions

Research Question 1: Are members of a sorority house satisfied with availability of healthy items served at meals?

To answer this research question, the question: 'How satisfied are you with the availability of healthy foods at Stein Hall?' was asked. Almost 90% of participants reported being dissatisfied to some extent, with menu items served at meals when given the first survey. None of the participants reported they were 'Extremely satisfied', and

only two reported being ‘Somewhat satisfied’. An additional 2 reported feeling neutral about this topic.

A one-way ANOVA test was used to explore relationships between variables and is a general type of statistic measuring differences (46). The dependent variable was level of satisfaction. “A dependent variable is assumed to measure or assess the effect of the independent variable” (46). Table 5 shows ANOVA statistics to answer the first research question: How satisfied are you with the availability of healthy foods at Stein Hall? These results were significant at the $p < .05$ level.

Table 5. One-Way ANOVA Results for Satisfaction of Availability of Healthy Foods at Stein Hall Comparing All Three Surveys

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.965	2	8.982	8.007	.001*
Within Groups	124.526	111	1.122		
Total	142.491	113			

* Indicates that the correlation was significant at the .05 level.

Research Question 2: Do menu changes increase or decrease members’ satisfaction of meals served?

The same question in the survey used for Research Question 1 was used to answer this research question. Using a post-hoc statistical analysis (Table 6), some participants’ answers on surveys were significantly different from survey 1 and others were not ($p < .05$). For instance, between the first and third survey, significance was .002.

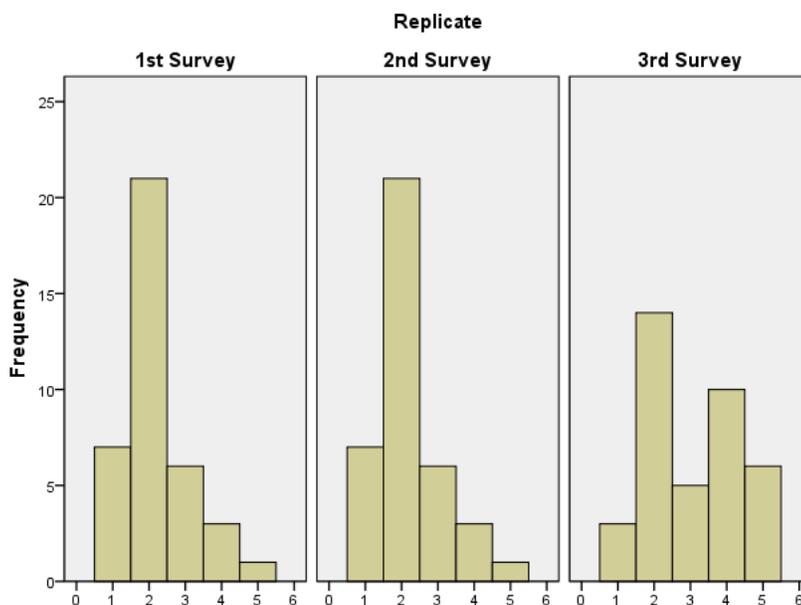
This is not surprising, because meals were supposed to improve. Between the first and second surveys, there was not a significant change ($p=1.000$). At this point, participants were not aware of changes being made. This demonstrates knowledge of change aided in their perception of improvement. In sum, residents' reported satisfaction of menu changes increased significantly throughout the duration of the study.

Table 6. Changes in Members' Satisfaction of Meals Served. Post-Hoc Tukey Test

Surveys	Significance
1 st & 2 nd	$p=1.000$
2 nd & 3 rd	$p=.002^*$
1 st & 3 rd	$p=.002^*$

* Indicates that the correlation was significant at the .05 level.

Figure 1 demonstrates residents' reported satisfaction increasing throughout duration of the study. The table was labeled as following: 1= Extremely dissatisfied, 2= Dissatisfied, 3=Neutral, 4=Satisfied, 5=Extremely Satisfied. Satisfaction averages increased by 72.5% based on participants' reportings. Table 7 shows satisfaction frequency.

Figure 1. Residents' Satisfaction of Meals Served Over the Course of the Study**Table 7.** Satisfaction of Meals Served Frequency

Replicate	Mean	N	Std. Deviation
1 st Survey	2.21	38	.935
2 nd Survey	2.21	38	.935
3 rd Survey	3.05	38	1.272
Total	2.49	114	1.123

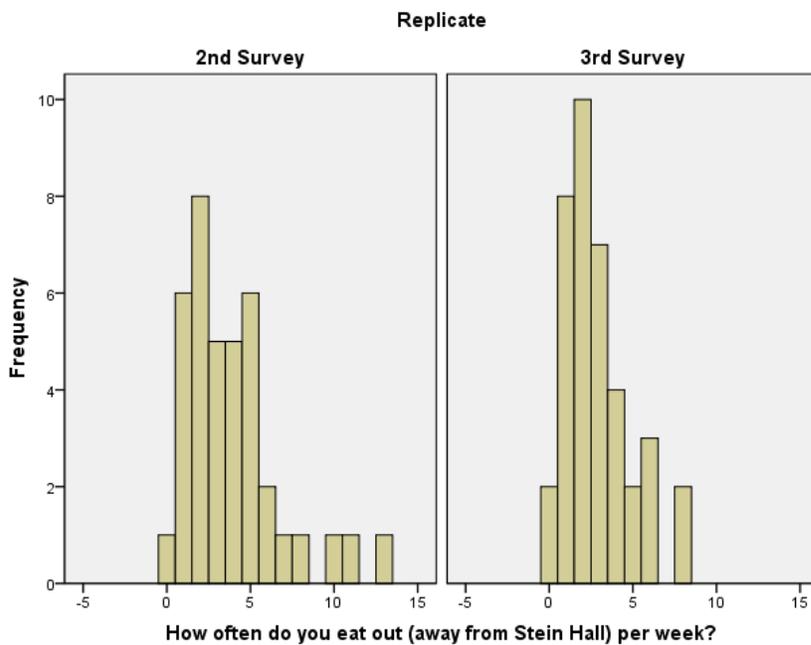
Research Question 3: Do menu changes increase or decrease frequency of eating away from current location?

This question was answered from a total of three questions asked on the survey:

- How often do you eat out (away from Stein Hall) per week?
- How many days per week do you typically eat **LUNCH** at Stein Hall?
- How many days per week do you typically eat **DINNER** at Stein Hall?

A one-way ANOVA test was performed to determine any difference in the frequency of eating out/away from Stein Hall. Frequency of eating away from subjects' residence decreased by the end of the study, but results were not significantly different. A one-way ANOVA test was performed to determine: How many days per week do you typically eat LUNCH at Stein Hall?, and How many days per week do you typically eat DINNER at Stein Hall?. These results were also not significant.

Figure 2. Frequency of Eating Away from Stein Hall Over Time



A Post-Hoc Tukey analysis was used to determine if any further information was to be gained. For instance, the Post-Hoc test shows which groups are being compared, and has more specific results than an ANOVA test. Results were not significant.

Menu changes had little impact on residents' reported frequency of eating away from Stein Hall. Although residents reported to be more satisfied throughout the duration of the study, neither amount of time going out to eat nor the amount of days eating lunch and dinner at Stein Hall per week significantly changed.

CHAPTER 5

CONCLUSIONS

Summary

The general purpose of this study was to measure reported perceptions of healthy food choices and satisfaction of menu choices among members of a sorority house on the Southern Illinois University Carbondale campus. The study also determined if members really wanted what they said they wanted (healthy food choices). Additionally, the study determined if the number of times eating out per week decreased if healthier options were offered.

The research questions were as follows:

1. Are members of a sorority house satisfied with availability of healthy items served at meals?
2. Do menu changes increase or decrease members' satisfaction of meals served?
3. Do menu changes increase or decrease frequency of eating away from current location?

The study population included 38 females aged 18-23 who resided in a sorority house on campus. Three surveys were distributed to participants. They were distributed after weekly meetings to include all residents participated.

Results of this study suggest that increasing healthy foods on the menus increased reported satisfaction of meals. Members reported dissatisfaction with menu offerings at the commencement of the study, but more and more participants reported they were satisfied with the menus after the study. However, menu changes did not

significantly change the reported frequency of eating away from the current location. This could be for a number of reasons. For instance, the seasons were changing from winter to spring, so a lot of people go out to eat more once the weather warms up. In addition, residents are extremely busy at this time of year, making fast food an appealing option for time-restrained students. Residents reported satisfaction with the availability of healthy foods served at Stein Hall, and this changed significantly throughout the duration of the study.

Conclusions

This particular community housing residence hall was willing to make changes to their current menu. Experiences of the researcher while an undergraduate student reinforced the notion that menus should be changed. Residents had requested an intervention and a change of current menus.

From the researcher's experiences and explorations, she had noticed campus sorority houses did not offer many healthy options. Food offered was usually higher in fat and cholesterol, as well as low in fiber. Students living in dormitories do not have access to a complete kitchen. Lifestyles of college students make it a prime environment for weight gain. Residents in this particular dormitory requested major changes be made in the menus.

However, when it came time to make menu changes, advisors of the sorority along with several residents in the house did not want to participate. Multiple meetings and conversations were held to persuade them to allow the research to be conducted. The advisors had perceived high food costs of fresh fruits and vegetables, and some

residents stated they actually **did** like the food being served. Residents did not want to give up fried chicken strips, French fries, and other staples being served which answered an important question: residents truly did not want what they said they wanted. When it came to the point of actually having **only** healthy foods offered, residents did not want their “comfort foods” eliminated.

Results of this study seem to indicate residents of a community housing residence hall did not really want what they said they wanted. However, it could have been overwhelming to residents and advisors to have a complete change from unhealthy foods to healthy foods. A more balanced menu plan including healthy food items as well as keeping some fried foods may have been more easily adjusted to than a complete switch. Furthermore, small changes could have led to larger changes, and would have been easier and more economical to implement.

Additionally, results of my study showed that even though satisfaction of meals increased throughout the study, the number of times eating out did not decrease, nor did the number of times eating at Stein Hall increase. Therefore, frequencies of eating out or eating at Stein Hall do not appear to be relative indicators of satisfaction with meal selections.

Further research is needed on a larger sample size. Sample size for this study was only 38 females, which makes it difficult to generalize to the population.

Recommendations

To increase the ability to generalize, a larger sample size is necessary. Additionally, a control group could have been used to compare two groups. Having a

control group would have helped to support these findings, and whether changes were made based on outside factors or the researcher's changes alone. Further research on cognition should be conducted to understand the effect it may have or may not have had on participants. For instance, when participants did not know about the changes [even though they were in effect], their answers to the second survey were similar to answers on the first survey.

Research could be conducted for longer periods of time. My research was only three sets of two-week cycles. This study was done during the end of the spring semester. There were several holidays that could have skewed the data: Easter, Spring Break, and Cinco de Mayo. Conducting the research for a longer period of time and over different times of the years could have allowed better results.

Food and nutrition professionals should consider obtaining a common list of desired food to help increase the amount of times their participants eat in as opposed to eating out. Having a list of what foods are commonly desired could have increased the amount of times residents ate at Stein Hall instead of eating a [most likely] more unhealthy meal outside of Stein Hall.

Discussion

Some unexpected events occurred during the data collection period. As data collection began, residents voted to move out of the house for the following school year. This meant all of the food they currently had on hand was used to prevent waste. Furthermore, they were not able to purchase all menu items necessary to fully follow

new menus created by the researcher. This could have drastically skewed data and changed outcomes.

There are several factors which could have negatively affected the results of the third research question regarding decreasing amount of times eating out. For instance, several holidays occurred during the time of the study, as well as spring break. This could have provoked residents to eat away from Stein Hall more than usual.

There was some positive discussion concerning the changes made. Anecdotal comments indicated residents took notice of more fruits, vegetables, and whole grains on the revised menus. While these unplanned occurrences may have affected the research, reported satisfaction rates increased by 72.5%.

Interventions *can* and have had positive effects on students. In a study done by Vecchiarelli et al., 55.5% of students reported a policy change impacted beverages consumed at school (30). However, there have been other studies that did not have significant results. For instance, in a study done by Racette et al., 70% of participants gained weight after a year of nutrition interventions (13). To this researcher's knowledge, no similar research studies have been conducted making comparisons difficult.

Need for interventions was especially prevalent within this study. From the first survey to the second survey, results did not differ significantly despite changes being made. After the intervention, however, satisfaction results increased significantly. The education component was exceedingly vital to the study as it resulted in increased satisfaction. Further research could be done covering the psychology of not knowing change versus knowing change.

Information alone does not equal behavior change (48). Even though residents were educated about eating out, their frequency of eating away from Stein Hall did not significantly change. Sometimes it takes more than simply an intervention to see a behavior change in a target audience.

Implications

Since the college-aged population has the greatest increase in weight and with obesity on the rise, serving healthier meals is of extreme importance. There are many implications of this study for the field of dietetics. For instance, dietetic professionals could use results of this study to increase satisfaction among a specific population in a self-serve dining facility. Although the amount of times eating out did not decrease, nor did the amount of times eating at Stein Hall increase, overall satisfaction of participants increased over the duration of the study.

In addition, dietetics professionals can use menus created by the researcher to generate ideas for their own menus to offer healthy items. For example, if a dietitian wanted to use these menus to create a healthy menu for their own place of employment, they could. Interventions similar to this research can be used to help increase menu satisfaction for a variety of populations in a self-serve dining facility which is the most common type of dining facility among universities and colleges throughout the nation.

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APPENDICES

APPENDIX A
SURVEY

1. How long have you lived in Stein Hall at SIU? (please select the best answer)
 - I just moved in this semester (January, 2011)
 - I moved in last fall (this is my second semester)
 - I moved in last January (this is my third semester)
 - I moved in during August of 2009 (this is my fourth semester)
 - Other: _____

2. Where did you live ***before*** moving into Stein Hall at SIU? (please select the best answer)
 - At home with a parent/grandparent/legal guardian
 - In another college residence hall
 - In an apartment or house on my own or with a roommate
 - Other: _____

3. Have your eating habits changed since you came to SIU? (mark one)
 - No**, my eating habits have not changed (skip #4 and #5)
 - Yes. (Please continue with #4 and #5)**

4. **HOW** have your eating habits changed?

<input type="checkbox"/> I'm eating MORE fast food	<input type="checkbox"/> I'm eating LESS fast food
<input type="checkbox"/> I'm eating MORE 'junk' foods	<input type="checkbox"/> I'm eating LESS 'junk' foods
<input type="checkbox"/> I'm eating MORE fruits & veggies	<input type="checkbox"/> I'm eating LESS fruits & veggies
<input type="checkbox"/> I'm skipping MORE meals	<input type="checkbox"/> I'm skipping LESS meals
<input type="checkbox"/> I'm eating MORE fried foods	<input type="checkbox"/> I'm eating LESS fried foods
<input type="checkbox"/> I'm eating LARGER portion sizes	<input type="checkbox"/> I'm eating SMALLER portion sizes
<input type="checkbox"/> I'm eating 1 LARGE meal per day	<input type="checkbox"/> I'm eating 3 regular meals per day
<input type="checkbox"/> Other: _____	

5. **WHY** have your eating habits changed? (check all that apply):

<input type="checkbox"/> Lack of time	<input type="checkbox"/> Increased stress
<input type="checkbox"/> Laziness	<input type="checkbox"/> Studying late hours
<input type="checkbox"/> No parent or guardian to prepare meals for me	
<input type="checkbox"/> Friends are influencing my eating habits	
<input type="checkbox"/> Lack of knowledge about nutrition and healthy foods	
<input type="checkbox"/> I can't find anything healthy at Stein Hall	
<input type="checkbox"/> I do not have access to kitchen appliances	
<input type="checkbox"/> When I serve myself, I take too much food	
<input type="checkbox"/> Other: _____	

6. How often do you eat out (away from Stein Hall) per week?

0 1 2 3 4 5 6 7 8 9 10 11

I eat away from Stein Hall more than 11 times per week

I eat away from Stein Hall for all of my meals each week

7. Why do you eat out this often?

8. Please place an "X" by the **THREE MOST IMPORTANT** factors that influence your choice of eating at Stein Hall versus eating at another location.

Appearance

Convenience

Calorie content

Taste

Nutrient content/health

Food cravings

Safety

Hunger level

Other: _____

9. Do you think that Stein Hall offers a variety of healthy food choices for lunch and/or dinner?

Yes

No

Sometimes

10. Is it possible for you to select healthy food choices at Stein Hall for lunch and/or dinner?

Yes

No

Sometimes

11. What are your barriers, if any, to selecting healthy choices at Stein Hall?

12. How many days per week do you typically eat **LUNCH** at Stein Hall?

0 1 2 3 4 5 6 7

13. How many days per week do you typically eat **DINNER** at Stein Hall?

0 1 2 3 4 5 6 7

14. How satisfied are you with the availability of healthy foods at Stein Hall?

- Extremely satisfied
- Somewhat satisfied
- Neutral
- Somewhat dissatisfied
- Extremely dissatisfied

15. How do you perceive your current health status?

- I feel extremely healthy
- I feel somewhat healthy
- I feel somewhat unhealthy
- I feel extremely unhealthy

How old are you? _____

What is your class rank? _____

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

- | | |
|---|---|
| <input type="checkbox"/> African American/Black | <input type="checkbox"/> Hispanic American |
| <input type="checkbox"/> Asian American/Asian | <input type="checkbox"/> Caucasian/White |
| <input type="checkbox"/> Native American | <input type="checkbox"/> Pacific Islander/Native Hawaiian |
| <input type="checkbox"/> Other: _____ | |

APPENDIX B
PERMISSIONS



Kristin Timken <ktbt15@siu.edu>

Thesis

4 messages

Kristin Timken <ktbt15@siu.edu>

Wed, Nov 10, 2010 at 10:28 AM

To: dpoovey@semo.edu, Sharon Peterson <sharonlpeterson@hotmail.com>

Ms. Poovey & Dr. Peterson:

Hello! I am currently a first-year graduate student at SIUC. I am doing my thesis on perceptions of healthy eating at a community-housing facility on Greek Row, as well as increasing the availability of healthy food options. I came upon Ms. Poovey's thesis and really liked it! It is similar to mine, and I was wondering if I could have permission to use parts of your survey? I am not sure yet which parts I'm going to use exactly, and I'm not sure how formal permission requests are....so I hope this email will do!

Thank you so much,
Kristin Timken

P.S. Dr. Peterson: we all miss you very much! I hope everything is going well for you :)

Poovey, Diana K <dpoovey@semo.edu>

Wed, Nov 10, 2010 at 12:27 PM

To: Kristin Timken <ktbt15@siu.edu>, Sharon Peterson <sharonlpeterson@hotmail.com>

Hi Kristin- That sounds like a super cool thesis. I wish you the best of luck! I have no problem with you using our survey. Let me know what you decide.

Diana Duncan, MS, RD, LD
Nutrition Instructor
Southeast Missouri State University

APPENDIX C
CURRENT MENU NAMES

	Week 1	Week 2
Monday	Lunch: Grilled chicken, Veggie Delight Dinner: Chicken, fettuccine, broccoli	Lunch: Pasta, potatoes Dinner: Turkey-pot-veggies
Tuesday	Lunch: Enchiladas, fruit Dinner: Chicken-pot-veg	Lunch: Hamburgers, chips Dinner: Taco Tuesday
Wednesday	Lunch: Chicken bits, soup Dinner: Pork-pot-veg	Lunch: Grilled cheese, soup, fruit Dinner: Ham, veggies, dinner rolls
Thursday	Lunch: BLT, fruit Dinner: Spaghetti, veggies	Lunch: Mini pizzas, fruit Dinner: Chicken-pot-veggies
Friday	Lunch: Wraps, fruit Dinner: Stir-Fry, chicken, veggies	Lunch: Chicken sandwich, chips Dinner: Big salad

APPENDIX D
REVISED MENU NAMES

	Week 1	Week 2
Monday	<p>Lunch: Sautéed chicken, quinoa & black beans</p> <p>Dinner: Flight fettuccine, steamed broccoli, grilled chicken</p>	<p>Lunch: Summer penne pasta, mixed vegetables</p> <p>Dinner: Cranberry turkey, baked sweet potatoes, mixed veggies: bell peppers, zucchini, snap peas, carrots</p>
Tuesday	<p>Lunch: Whole grain tortillas, low-fat cheese, low-sodium salsa & sour cream, mixed fruit: grapes, pineapple, melon</p> <p>Dinner: Honey-mustard baked chicken, harvest brown rice, mallorca styled vegetable bake</p>	<p>Lunch: Wheat bun hamburgers, low-fat cheese, baked potato chips, carrots & celery sticks</p> <p>Dinner: Taco Tuesday: Whole-wheat tortilla shells, low-sodium salsa/sour cream, low-fat cheese, berries</p>
Wednesday	<p>Lunch: Strawberry pineapple chicken, miso soup</p> <p>Dinner: Apple-glazed pork, parsley buttered new potatoes, veggies</p>	<p>Lunch: Garden fresh tomato soup, whole-grain grilled cheese sandwiches with low fat cheese, fresh fruit: blackberries, blueberries, raspberries, strawberries</p> <p>Dinner: Apricot baked ham, peas, brown rice bread</p>
Thursday	<p>Lunch: BLT sandwiches with wheat buns, watermelon</p> <p>Dinner: Tomato basil spaghetti, vegetables</p>	<p>Lunch: Wheat crust mini pizzas, low-sodium sauce, low-fat cheese, veggies, fresh fruits: bananas, Fuji apples, oranges</p> <p>Dinner: Plum-peach chicken, bulgar wheat with cranberries, corn</p>
Friday	<p>Lunch: Tangy Tumeric chicken wraps, peaches & pears</p> <p>Dinner: Watermelon rind stir-fry, grilled chicken, asparagus</p>	<p>Lunch: Pineapple chicken sandwich on wheat bun, baked chips</p> <p>Dinner: Spinach & berries salad with non-fat curry dressing, grilled chicken</p>

APPENDIX E
POWERPOINT PRESENTATION



By: Kristin Timken

INCREASING AVAILABILITY OF HEALTHY FOODS IN COMMUNITY SETTING

- ⊙ "The greatest increase in overweight and obesity has been observed between 18 and 29 years of age, the age range of more than 10 million full-time college students in the United States," (1).

Where are the Gaps?

- ⊗ Lack of knowledge of Nutrition
 - * Education
- ⊗ Lack of knowledge of portion sizes
 - * Buffet-style
- ⊗ Availability of healthy foods
- ⊗ Eating out as an alternative
- ⊗ Environment
 - * No kitchen use for residents



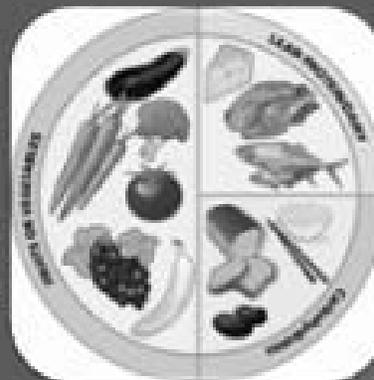
Lack of Knowledge of Nutrition

- ⊗ Nutrition classes
- ⊗ Internet sources
- ⊗ Not a part of most people's daily lives
- ⊗ No nutritional guidelines currently
- ⊗ 2010 Dietary guidelines
 - * www.dietaryguidelines.gov



Lack of Knowledge of Portion Sizes

- Buffet-style leads to overeating
- Your choice
- $\frac{1}{2}$ your plate should be fruits & vegetables, $\frac{1}{4}$ your plate should be lean meats/protein, $\frac{1}{4}$ your plate should be whole grains.
- Portion plate



Lack of Knowledge of Portion Sizes (Continued)



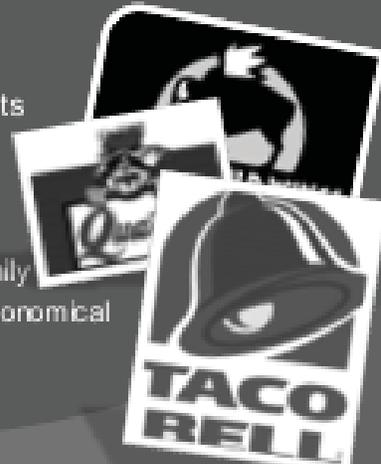
- Bad environment in general
 - Vending machines
 - Fast food surrounding campus
 - Fast food within campus grounds

Availability

- ⦿ "In order to improve the school nutrition environment, access to unhealthy foods must be reduced or eliminated" (4).
- ⦿ As found in a study by Morse, if small changes can cause an increase in weight, then small behavioral and/or environmental changes should be able to prevent, or perhaps even reverse, the weight gain (5).

Eating Out as an Alternative

- ⦿ Fast food
- ⦿ Sit-down restaurants
- ⦿ Reasons
 - Limited time
 - Enjoy the taste
 - Eat with friends/family
 - Inexpensive and economical



Environment

- ⊙ No kitchenette available
- ⊙ Microwavable meals
- ⊙ Eating out if a meal is missed
- ⊙ Outside the dining hall, the easy accessibility of 'junkfoods' in dormitories and classrooms may also contribute to the excessive weight gain because humans do not appear to 'calorically compensate' for food that is consumed between meals," (7).

What am I going to do?

- ⊙ Increase the availability of healthy foods
 - Increasing fruit consumption
- ⊙ Increase variety of healthy foods
- ⊙ Hopefully decrease the amount of times food is eaten out per week

©"Food patterns established during college are likely to be maintained for life and may have long-lasting influences on college students' future health and the health of their future families," (1).

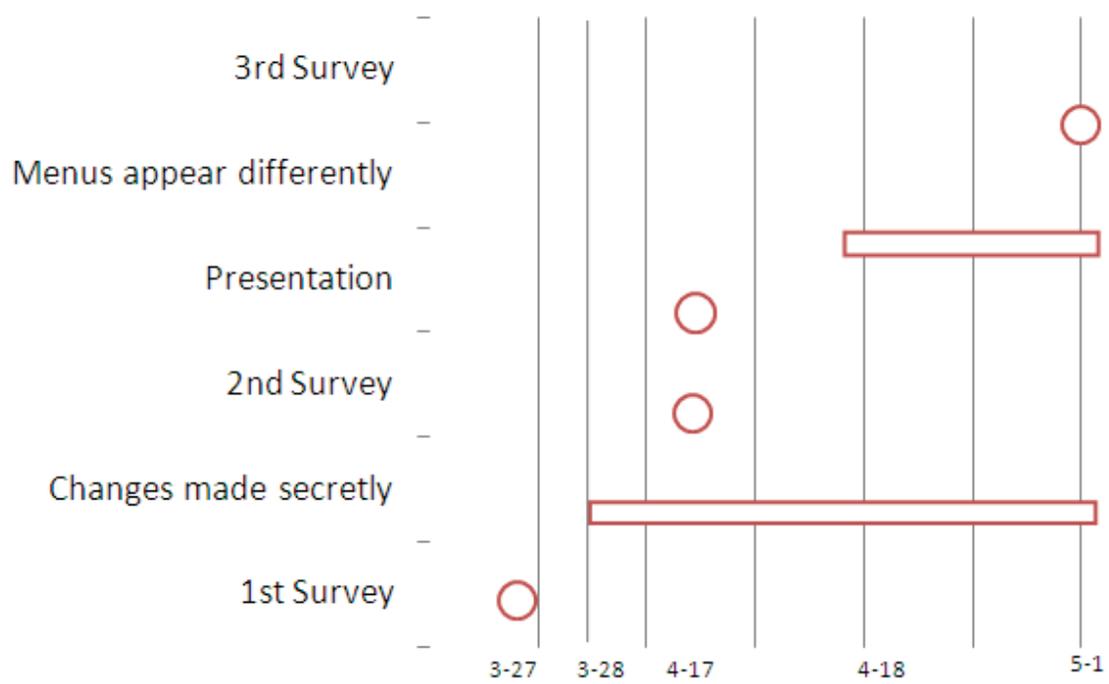


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APPENDIX F
TIMELINE

Timeline



VITA
Graduate School
Southern Illinois University

Kristin Timken

Southern Illinois University

Bachelor of Science, Human Nutrition & Dietetics, May 2010

Thesis Title:

PERCEPTIONS & SATISFACTION OF HEALTHY FOOD CHOICES AMONG
COLLEGE-AGED FEMALES IN A SELF-SERVE DINING FACILITY SETTING

Major Professor: Dr. Sara Long