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Abstract

Objective: The aims of the current descriptive study were to determine if greater levels of perceived stress in college students relates to the frequency in which this population participates in eating out or ordering food for delivery and how this potential association influences weight status.

Methods: Secondary analysis was conducted using an existing data set obtained from the Young Adults Eating and Active for Health study. Demographic questions, The Cohen 14-item Perceived Stress Scale, anthropometrics, the NCI Fruit and Vegetable Screener, and the Food Delivery Questionnaire were used to measure the main variables under examination. Non-parametric statistics, Chi-square T-tests, and ANOVA were used to analyze data. Data was analyzed using SPSS software and tested for a P value < 0.05 as statistically significant.

Participants: The participants consisted of 973 students from 13 college campuses across the U.S. who had participated in the 15-month YEAH study. Of the sample population, 287 participants were male and 685 were female.

Results: Female college students were shown to exhibit greater levels of perceived stress than males (23.96 ± 7.75 versus 21.74 ± 7.54 ; $t(932) = -4.02, p = 0.00$). Male participants demonstrated more frequent ordering of food delivery behavior than females ($U = 76213.0, p = 0.005$) but no association was found between levels of stress compared to eating out frequency, the rate of food delivered to a participant's residence, or to BMI status. Females showed an association for using websites such as campusfood.com more frequently when very high levels of stress were experienced ($\chi^2(12) = 22.2, p = 0.035$).

Conclusion: The study did not present conclusive results but trends suggest at high levels of stress certain health related consumption behaviors may be influenced in a negative manner. The study provides a foundation for future research on stress and its potential influence on unhealthy eating out behaviors within the collegiate population.

**The Effect of Stress on Undergraduate College Students in Relation to Eating
Out Behaviors and Weight Status**

By

Shannon Nicholas

B.S., SUNY the College at Brockport, 2014

Master's Thesis

Submitted in partial fulfillment of the requirements for the degree of

Master of Science in Nutrition Science

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PART I: LITERATURE REVIEW

1. Introduction

The number of high school graduates enrolled in four year college programs has increased steadily over the past two decades. As of October 2014, 68.4% of high school graduates enrolled in a college or university.¹ Concurrently, the prevalence of obesity and an overweight status within the college student populace has become a rapidly increasing occurrence. The population with the most dramatic rise in rates of overweight and obesity appear to be within the 18 to 29 age range, with those participating in a college education representing the most prominent increase.² For young adults, the transition to the college setting has been reported to increase levels of stress associated with relocation, separation from family, financial strains, creating new social contacts, and becoming responsible for one's own daily needs.³ In order to adapt to the new stressors presented, maladaptive coping mechanisms and behaviors have been observed in this population. Lack of time and time management skills have been found to promote unhealthful and convenient food options among college students. Students experiencing heightened stress levels show a preference for energy and nutrient-dense foods especially ones high in sugar and fat that are readily supplied by fast food eating out establishment and food delivery options.⁴ A large portion of this demographic engages in eating out behaviors and food delivery more than three times a week.⁵

Problem Statement

Young adults enrolled in a four year university or college are subjected to high levels of stress from a number of factors that can lead to maladaptive coping mechanisms such as convenience eating in the form of eating out at fast food establishments and ordering food for delivery. This

form of convenience eating offers calorie dense, high in saturated fat, and processed options that promote an increase in weight status along with other deleterious health outcomes.

Purpose Statement

As the number of young adults entering the college setting increases, more research is needed to detect trends that may be proliferating the overweight and obesity epidemic in this country.

Studies have been conducted concerning the topics of stress and weight gain within college students but more concrete evidence of a connection between stress, eating out behaviors and weight requires investigation.

Research Objectives

Aim 1: Determine if greater levels of perceived stress in college students is related to the frequency in which this population engages in eating out or food delivery behavior and how this potential association relates to their weight status.

Hypothesis 1: College students who experience a greater amount of stress will order food outside of the home more frequently, participating in more unhealthy eating behaviors, which will be associated with a higher weight status.

Aim 2: Examine which sex (male or female) experiences greater levels of stress and eating out behaviors.

Hypothesis 2: Due to less successful coping mechanisms for stress alleviation, females will experience greater levels of stress, eating out behaviors and higher weight status.

Research Question

Does a greater level of perceived stress experienced in a college student influence the frequency with which they order food for delivery; potentially promoting weight gain?

2. Literature Review

Health implications of overweight/obese weight status

Obesity is directly linked to numerous health conditions, such as type II diabetes, insulin resistance, hypertriglyceridemia, high density lipoprotein cholesterol, certain musculo-skeletal disorders, heart disease, and hypertension.⁶ Within extreme cases of obesity, chronic hypoxia, hypercapnia, sleep apnea, gout, and degenerative joint disease are commonly experienced.⁷ According to research conducted concerning life insurance, it was indicated that obesity is a major risk factor for mortality, especially mortality from cardiovascular disease.⁷

The prevalence of obesity occurs at a similar rate in males and females (36%) but disproportionately more women (8%) are diagnosed with morbid obesity than their male counterparts (4%).⁷ This inconsistency relates to a sex difference in body fat distribution that is influenced by gonadal steroids on body composition and appetite.⁸ Obesity also takes on different manifestations in men and women. Obese women are at a greater risk for mortality from endometrial cancer while men with colorectal cancer are at a heightened risk of mortality if obese.⁹ An inverse relationship between high socioeconomic level and obesity among women exists while this same relationship is not exhibited in men.¹⁰

Economic Cost of Overweight/Obesity

Obesity has not only had deleterious effects on the overall health of the American population, but has also amassed a large sum of monetary expenses for the country. According to the 1988 and 1994 National Health Interview Survey, in 1995 the total cost of obesity in the U.S. totaled 99.2 billion dollars.¹¹ The direct costs of overweight/obesity represents 5.7% of National Health Expenditure in the country.¹¹ As of 2008, the medical care cost of obesity

(indirect and direct cost) has now risen to \$147 billion in the U.S.¹¹ Lost productivity due to obesity related absenteeism ranges from \$3.38 billion (\$79 per obese individual) and \$6.38 billion (\$132 per obese individual).¹²

Obesity has also affected the recruitment of men and women into the military. Between 2007 and 2008, 5.7 million men and 16.5 million women could not join the armed forces due to scoring above the Army's enlistment criteria for total weight and body fat percentages.¹²

The National Health and Nutrition Examination Survey of 2008 reported 64.5% of American adults (18-29 years) are overweight. This is the highest occurrence of weight gain within this population ever reported.¹³ Enrollment in four year college programs has increased steadily over the past two decades. As of October 2014, 68.4% of high school graduates were enrolled in a college or university.¹ As the highly at risk population for developing obesity (18-29 years) shifts towards secondary education a heightened need for examination of this demographic and the key factors causing increased weight status within this population is necessary.² The proclivity of increased weight status of students must be determined.

Weight status statistics of college students

Young adults within the college setting have been determined as one of the most vulnerable groups to weight gain.¹⁴ The population with the most dramatic rise in rates of overweight and obesity appear to be within the 18 to 29 age range, with those participating in a college education representing the most prominent increase.² Approximately 32% of North American college students are overweight or obese with the average BMI of this demographic landing in the upper range of normal and into the overweight category.¹³ The "freshman fifteen" has become a widely used and accepted term to describe the increased weight status of young adults entering secondary education.⁶ A meta-analysis of 24 studies linking a case population of

3,401 freshmen students, found a mean weight gain of four pounds within the first year of college alone.⁶ A longitudinal study observing dietary and weight changes from freshman to senior year reported females gained 3.75-9.92 lbs. and males on average gained 9.26-14.11 lbs. over the course of four years.¹⁰ The majority of student participants also failed to meet dietary guidelines.¹⁰ The emerging occurrence of an increased weight status within college students leads to an examination of determinants that did not exist or existed in lesser quantities before students' transition to college. A review of literature reveals numerous factors influencing weight gain in the collegiate demographic but an emphasis on the impact of unhealthy eating practices due to a heightened level of stress was highlighted.^{12,13,14} Within the literature, stress induced eating is seen as the biggest factor facilitating unhealthy growth in college students.¹⁵

Stress Implications

A comprehensive definition of stress posed by Hans Selye states that it is “a nonspecific response of the body to any demand made upon it.”¹⁶ The stress response is mediated by the appraisal an individual gives to a certain event whether it be positive or negative.¹⁶ Stress is a highly individualized occurrence that is experienced differently by any given individual.¹⁷ Nelson and colleagues reported that more than 60% of college students experience very high levels of stress.¹⁸ Ross, Neibling, and Heckert reported the top five stressors of college students consisted of change in sleeping habits, change in eating habits, new responsibilities, increased class workload, and a change in social activities.¹⁹ Transitioning into the collegiate setting has also been reported to increase levels of stress associated with relocation, separation from family, financial strains, creating new social contacts within a foreign peer group, and becoming responsible for one's own daily needs.³ The pressure to perform well in academic course work has been found to be a large producer of stress in college students as well.²⁰

The unfamiliar stressors encountered by college students has been observed as resulting in habitual behaviors used as coping mechanisms to alleviate anxiety. College students were reported to use different forms of coping methods for stress. More emotion-focused coping strategies were used by women while men showed a trend towards problem-solving strategies.²¹ Lack of time and time management skills has been found to promote unhealthful and convenient food options among college students as a time saving strategy.²² Additionally, heightened stress levels in college students has been shown to lead to night eating behaviors due to maladaptive coping mechanisms.²³

High levels of stress experienced at the collegiate level are predictive of weight gain.¹⁵ It has been demonstrated that elevated chronic stress levels are connected to a greater preference for energy and nutrient-dense foods especially ones high in sugar and fat.⁴ In a study conducted by Hudd, Dumlao and Erdmann-Sager, stressed Ivy League college students were found to be less likely to practice healthy consumption behaviors and more inclined to practice bad eating habits such as consuming a higher level of junk food.¹⁷ The students who were well-adjusted in terms of coping with stress were found to be involved in athletics and exhibited higher levels of self-esteem. The less stressed college students also showed an overall preference for more healthful foods.¹⁷ For psychologically secure freshmen or sophomores, Greene and colleagues found a lower level of weight gain and less emotional eating than stressed students.²⁴

Gender differences have been observed in relation to stress and weight gain from unhealthy eating behaviors. More data is present on female students but the literature does reveal high levels of stress being predictive of major weight gain in males in the college population.²⁵ Kandiah and colleagues found that only 33% of college females ate healthy food items while experiencing stress. Variety of food decreased concurrently as stress eating behaviors

increased.²⁶ Female students entering college reported a decreased confidence to control what they consumed and showed a significant increase in weight gain.²⁷ The decreased confidence levels experienced in female students increased the likelihood to partake in diet and health behaviors that contradict Dietary Guidelines for Americans.²⁸

High levels of stress within the college population has been shown to lead to unhealthy convenience options especially in regards to dining habits in order to satisfy time constraints and satiate hunger with highly palatable options.

Fast food/eating out behavior demonstrated by college students

In 2005, it was reported that the most important food motivation for college students living in residence halls was convenience.²⁹ A major theme repeatedly demonstrated within this population is the desire for highly accessible options. A study comparing U.S. college students and college students from Spain found U.S. students reported convenience of fast food to be 69% more important.³⁰ Fast-food consumption and neighborhood availability (within close proximity to home) of fast-food exposure are linked to poorer dietary habits.³¹

Regular fast food intake (≥ 3 times/week) was reported by 20% to 33% of young individuals during the transition period to young adulthood.⁵ The proportion of adults eating both meals out and take-away meals at home weekly peaked within the young adult age range of 19-29 years.³² It has been demonstrated that overweight and obese individuals eat larger meals away from the home within the restaurant setting than normal weight individuals. Dingman and colleagues determined that the number of meals acquired from fast food restaurants was positively correlated with financial access and negatively related with health consciousness for college students with a meal plan.³³ Participating in health conscious food choices is a behavior neglected by many college students. Meals are prioritized on the basis of convenience,

palatability, and affordability. Fast food meal consumption on college campuses has been seen to take place as frequently as 1 to 3 times per week.³⁰ A significantly higher percentage of college men (84%) than women (58%) report typically eating fast foods for lunch at least once weekly.³⁰ As the frequency of fast food consumption increased, an inverse relationship was found with the rate at which fruits and vegetables were consumed.³⁴ A diet consisting of primarily calorie dense items and lacking in fruits and vegetables puts this population at severe risk for weight gain and poor health outcomes.³⁴

Study Purpose

Collegiate stress has had a significant impact on the young adult population as it relates to eating behaviors and weight gain. The body of literature offered, demonstrates an existing association between increased stress levels and weight gain. The study at present focused on the gap that exists between elevated stress levels, weight status and eating out/food delivery behaviors. This project poses, as levels of stress elevate within the collegiate population, unhealthy eating behaviors (eating out/food delivery) will increase and be associated with a higher weight status. An examination of gender differences was also conducted. Little research exists probing into this hypothesized link to weight gain at present.

PART II: THESIS MANUSCRIPT

Introduction

Young adults enrolled in a four year university or college are subjected to high levels of stress that can lead to maladaptive coping mechanisms such as engaging in convenience eating regularly in the form of eating out at fast food establishments and ordering food for delivery. The intentions of the current study were to determine if greater levels of perceived stress within college students relates to the frequency in which this population participates in eating out or ordering food for delivery and if this relationship influences overall weight status.

3. Proposed Methodology

Research Design:

The study at present is descriptive and utilizes secondary data analysis of the Project YEAH data collected at 13 U.S. institutions.³⁵

Data Sources:

This study draws upon data obtained from the third data set of the YEAH study sample population (N=973). The participants were enrolled as full time students in one of the 13 participating universities. Recruitment strategies consisted of in-class and residential life housing meetings, emails, letters, and flyers.³⁵

Eligibility criteria consisted of participants being 18–24 years old, a full time college student who was a freshman, sophomore, or junior, and a student with full access to a computer with internet.³⁵ Exclusion criteria consisted of students who had a declared major in nutrition,

exercise science, and health promotion, held a BMI < 18.5, and/or a serious illness/condition or activity-related health restriction³⁵

Measurements:

Data from the YEAH study was obtained using a variety of measurement tools. The present study only examined the tools that measured variables of interest to the study's purpose. The variables required include weight, height, BMI, levels of stress, frequency of eating out/take-out action behavior, fruit and vegetable intake, meal intentions and behaviors, and demographics. The participants completed physical anthropometric assessment appointments and online surveys.

Anthropometrics

The anthropometric measurements conducted included weight and height. Trained study workers at each university directly assessed the anthropometrics. Weight was measured to the nearest 0.1 kg by means of a digital or balance beam scale that had been properly calibrated.³⁵ Height was measured to the nearest 0.1 cm using a wall-mounted stadiometer. Body mass index was calculated using the standard formula: $\text{weight (kg)} / [\text{height (m)}]^2$.³⁵

Perceived Stress

Perceived stress was the independent variable of the study. The Cohen 14-item Perceived Stress Scale was used to numerically determine perceived stress levels within participants.³⁶ This scale measures the degree individuals consider their situations to be stressful (coefficient alphas for reliability of .84–.86 in college students).³⁶ The items enquired how unpredictable, uncontrollable, and overloaded participants found their lives.³⁶ A 5-point Likert scale (never to very often) was used and scores added for a total in which a higher score would indicate greater

perceived stress in that individual.³⁵ The scale was separated into quartile ranges for simple categorization. A score of 0-18 represented low stress levels, 19-23 moderate stress levels, 24-28 high levels of stress, and 29-50 represented very high levels of stress. These categorizations were based upon ranges that previous studies have found appropriate when identifying Cohens 14-item Perceived Stress Scale score results.

Food Delivery Questionnaire

The food delivery questionnaire assessed the dependent variable of the study. The questions were created to assess the eating out and food delivery frequency engaged in by participants on each campus. The questionnaire consisted of four questions in total. It was formatted so that answers were selected by means of a Likert-point frequency scale. If a participant did not desire to reveal information asked, a ‘choose not to answer’ option was provided.³⁵ The first question asked how often food was provided as part of their living situation. Participants could respond seven days/week, 5-6 days/week, 3-4 days/week, 1-2 days/week, zero days/week. The second question asked participants what they do on the days food is not provided within their given rental contract. Answers consisted of: This does not apply to me; food is provided seven days/week, I cook for myself, I eat out or get take-out food, I order delivery, I go to my relatives' homes for meals, I get meals where I work, or I look for opportunities to find free food.³⁵ Third question of this survey asked “Over the last month, how often have you had food delivered to your residence?”. The range of answer options consisted of never, 1-3 times last month, 1-2 times per week, 3-4 times per week, 5-6 times per week, one time per day, two times per day, or three or more times per day.³⁵ The final question asked students about the food ordering websites used; “When you order food delivery, how often do you use a collective website like

campusfood.com?'. The participants could answer never, almost never, sometimes, fairly often, or very often.³⁵

Fruit and Vegetable Intake

Total fruit and vegetable intake was measured using the NCI Fruit and Vegetable Screener.³⁷

This questionnaire consisted of twenty one questions investigating participants' consumption patterns of raw or cooked whole fruits and vegetables over the last month's duration. Each question prompted a participant to answer how many times per month, week, or day they ate each fruit or vegetable, and if they did ingest that item, how much they consumed of it. Specifics on portion sizes were included. The survey prompts participants to answer if they ingested raw or cooked fruits/vegetables, if either food group was eaten as a snack or at meals, eaten at home or away from the home, and if the food item was eaten alone or mixed with other food groups.³⁷

The questionnaire was formatted in a Likert scale structure asking how many times in the last month an item was eaten (never, 1-3 times last month, 1-2 times per week, 3-4 times per week, 5-6 times per week, one time per day, two times per day, three times per day, four times per day, five or more times per day) and then a follow up question on portion size with options ranging from never to more than three cups consumed in one sitting.

Meal Intentions and Meal Behaviors

An additional variable examined consisted of meal intentions and self-reported healthy meal behaviors of participants. Meal intentions and behaviors of participants were scored using the Health Belief subscale Healthier Food Outcomes total questionnaire score.³⁸ This survey contained questions addressing the importance to participants of packing meals, implementing fruits and vegetables into each meal, planning out healthy snacks, and eating in moderation. The

questionnaire contained eleven questions that could be answered with never, occasionally, seldom, often, or always.³⁸

Demographic Questions

The demographic questionnaire within the administered survey provided valuable information on age, gender, Hispanic or Latino, race, year in school, on or off-campus living, university attending, weight concern categories (very underweight, slightly underweight, about right, slightly overweight, very overweight) and the weight control behaviors of the student sample (not trying to do anything about current weight, trying to maintain weight, trying to lose weight, attempting to gain weight). These variables were used to stratify data for potential trends. The questions were administered in various formats such as Likert scale questions, yes or no answers, and open-ended questions.

Data Analysis:

Non-parametric, descriptive statistics, ANOVA, and a stratified secondary analysis were conducted on the potential link of sex (male, female), stress, and rate of eating out as it applies to weight status. Non-parametric tests were used to more appropriately assess ordinal and ranked data. For analytical statistics Chi-square cross tabulations were used to assess perceived stress levels, eating out behaviors, and BMI categories. Additional statistics were run in the form of T-tests, and non-parametric statistics (Mann-Whitney U test and Kruskal Wallis tests) to further analyze stress levels and demographic variables as they relate to BMI and eating out behavior. Data was entered using SPSS software and tested for a P value < 0.05 as statistically significant.

5. Results

The 13 different institutions involved in the YEAH study served as the sample of college and university students for stress, eating out behaviors, and weight status. The third data set of the study included nine hundred seventy three participant responses (59.4% of the initial first data set population) which were analyzed with SPSS software. A t-test was first run to determine whether the mean of the intervention ($n = 454$) and control ($n = 480$) populations within the YEAH sample differed significantly from each other in regards to perceived stress levels. There was not a significant difference in the scores for the control group 23.60 ± 7.99 and the intervention population 23.03 ± 7.51 conditions ($t(932) = 1.13, p = 0.258$). Therefore it was appropriate to run this secondary analysis on the combined third data set.

Study Population Demographics

Of the nine hundred seventy three participant results, the majority of subjects were female (70.5%, $n=685, P = 0.027$) (Table 1). Fifty six percent ($n= 524$) of the participants were between the ages of 18-20 and 43% ($n=404$) were between the ages of 21-23 (Table 1). The majority of participants (74.6%, $n=695$) identified as white followed by 11.6% ($n=108$) African American or black, 9.3% ($n=87$) Asian, and 4.5% as other ($X^2(5) = 2.89, P > 0.05$). A minority, 5.5% ($n=55$) participants identified as Hispanic. The participants were equally split between sophomores and juniors (36.9% versus 36.2%), with a lesser amount declared as seniors (25.8%) (Table 1). Among participants, 47.4% ($n=446$) participated in off-campus housing, 32.1 ($n=446$) lived on campus in residence halls, 10.1% ($n=95$) used other university housing, 5.6% ($n=53$) used sorority or fraternity housing, 3.3% ($n=31$) lived at home with parents or a guardian, and 1.4% ($n=13$) replied they used other housing methods than the options supplied (Table 1). Of the thirteen universities and colleges that were used to gather the sample population, Michigan represented the university with the largest percentage of participants making up 12% of the

sample (n=113), followed closely by New Hampshire (11%), Wisconsin (10.6%), and New Jersey (10.2%). Kansas, New York and Indiana provided an average of 86 students to the sample. The smallest percentage of participants were recruited from North Carolina at 2.7% (n=25) (Table 1).

Almost seventy percent (69.5%, n=675) of participants fell within the normal BMI categorization while 21.9% (n=213) were overweight, and 8.5% (n=83) were obese (Table 1). When divided by gender, males were found to have a significantly higher BMI than females ($X^2(2) = 11.12, P < 0.004$) (Table 1.5). The mean BMI of participants within the study was 24.18 ± 4.45 . The minimum BMI reported was 16.61 and the maximum 66.96. By university, BMI was not significantly different ($p > 0.05$). The mean pyramid servings of fruit for participants was 1.16 ± 1.24 servings (minimum – 0, maximum - 13.13), and vegetables 1.37 ± 1.35 (minimum – 0.5, maximum - 11.67). Although there was no difference based on sex for vegetables, women consumed significantly less fruit than men (1.06 ± 1.04 versus $1.41 \pm 1.61, P = 0.01$) (Table 1.5). The mean total for intention for healthy meal choices was a score of 3.5 ± 0.7 , with women (3.60 ± 0.67) scoring significantly higher than men (3.26 ± 0.83) ($P = 0.00$) (Table 1.5). The overall meal behavior score was 3.51 ± 0.71 with women also scoring significantly higher than men (3.62 ± 0.66 versus $3.40 \pm 0.08; P = 0.00$) (table 1.5). As for weight control categories, a significant difference existed between males and females ($X^2(3) = 130.66, P < 0.000$), as did for weight concern categories ($X^2(4) = 65.78, P < 0.000$). Significantly more females reported “trying to lose weight” while males predominantly responded with “stay the same weight” concerning weight control categories. Weight concern categories showed significantly more women responding “slightly overweight” than males, and the majority of males responding with “about the right weight”.

Of the nine hundred thirty four participants that completed the Cohen's survey, the average score was 23.30 ± 7.75 , a moderate level of stress. (Table 2). When perceived stress was divided by gender, there was a significant difference between male (21.74 ± 7.54) and female (23.96 ± 7.75) stress level scores; $t(932) = -4.02, p = 0.00$. Conversely, when stress levels were compared across the sample universities there was no significant difference found ($F(3, 915) = 1.63, p = 0.18$).

Eating Out Behaviors

The majority of students do not have food provided for them on a daily basis (57.7%) or have food provided through a meal plan seven days a week (30.3%) (Table 3). These percentages do not differ significantly between male and female participants. When food was not provided on a daily basis, participants responded in greatest frequency to cooking for themselves (53.1%) and then by engaging in take out or dining out options (15.2%) (Table 4). The least amount of participants responded by purchasing food through delivery (1.5%) (Table 4). Half of the sample population (50.3%) replied they never engaged in the purchasing of food by delivery to their residence and specifically more females (53.3%) than males (42.9%) replied never (Table 5). The majority of participants who did participate in food delivery to their residence reported using this service on average one to three times within the last month (40.3%) (Table 5). Only two participants (one female and one male) responded to partaking in food delivery to their university homes three or more times daily (0.2%) (Table 5). The Mann Whitney U test found statistical significance between gender and the frequency in which males and females had food delivered to their residence ($U = 76213.0, p = 0.005$). Males were found to have food delivered to their residence more frequently than females (1.77 ± 0.89 versus 1.56 ± 0.69). Over half of the study sample, (62.2%) reported never using food delivery sites such as campusfood.com (Table 6). Of

the participants that did reply as users of campusfood.com sites, the majority said they “sometimes” use sites such as that (13.9%) (Table 6).

Stress Levels and Eating Out Frequency

Stress levels and frequency of eating out behavior were analyzed using a cross tabulation of the Cohen Perceived Stress Scale results and the Eating out Questionnaire results of participants. No significant relation was found between stress category and how often food was provided ($\chi^2 (12) = 17.9, p < 0.118$). Although gender stratification showed no statistical significance between stress category and how often food was provided, there was a slight trend ($p = 0.052$) between men, stress, and how often food was provided (Table 7). When food is not provided for students daily, there were no significant differences between stress levels and reliance on eating out or cooking for self for the total sample population nor by gender stratified comparison ($p > 0.05$) (Table 8 and 8.5). No significant difference between stress categories and how often over the last month a student had food delivered to their residence was found ($\chi^2 (9) = 10.32, p = 0.325$) together or gender stratified under chi-square conditions (Table 9 and 9.5). When stress categories were compared to food delivery rates by university no statistical significance was found as well ($\chi^2 (18) = 23.69, p = 0.166$). Finally, although there was no significant difference between stress categories and the mean use of a collective food ordering website (using Mann Whitney U), there was a significant difference between stress categories and how often a student uses a collective website like campusfood.com using a Chi-square model ($\chi^2 (12) = 23.9, p = 0.021$). Stratifying by gender, there were no significant difference within men, whereas, women had a significant interaction with stress categories and using campusfood.com websites ($\chi^2 (12) = 22.2, p = 0.035$) (Table 10 and 10.5). University stratification of these variables revealed

Michigan State University showed statistical significance between higher campusfood.com use and increased stress levels ($\chi^2(12) = 26.55, p = 0.009$).

Stress and Dietary Variables

There was a significant effect of stress on total pyramid servings of fruit, intention for healthy meal behaviors, and self-reported behavior for meal behaviors (Table 11 and 11.5). An ANOVA stratified by gender was run and found stress was significantly related to intention for healthy meal behaviors [$F(3,267) = 2.79, p = 0.041$] and self-reported meal behaviors [$F(3,269) = 5.43, p = 0.001$] in men (Table 11). Male students with very high stress levels were significantly different from those with moderate levels of stress for meal intentions (2.98 ± 0.78 versus 3.38 ± 0.79 respectively) (Table 11). Students with very high stress levels had significantly lower healthy meal behaviors (3.00 ± 0.86) than the other three stress categories in men (Table 11). Stress was significantly related to total pyramid servings of fruit [$F(3,644) = 3.78, p = 0.010$] and self-reported meal behaviors [$F(3,642) = 21.01, p = 0.000$] for females (Table 11.5). Women with very high levels of stress differed significantly from those with moderate levels of stress concerning total pyramid servings of fruit (0.85 ± 0.93 versus 1.20 ± 1.14) (Table 11.5). Additionally, there were significant differences for self-reported meal behaviors for women between the groupings of very high and high levels of stress (3.40 ± 0.69 and 3.50 ± 0.57) versus moderate and low levels of stress (3.75 ± 0.66 and 3.89 ± 0.60) (Tables 11.5).

Stress, BMI categories, and Weight Concerns

There were no significant differences found between stress and categorical body mass index scores ($\chi^2(6) = 5.03, p = 0.539$), nor between BMI and eating out frequency ($p = 0.672$) (Tables 12-12.5). Even when stratified by gender there were no statistical significant differences. The Kruskal–Wallis test was used to assess the frequency of food delivered by weight concern

categories (very underweight, slightly underweight, about right, slightly overweight, very overweight). No statistical significance was found ($\chi^2(20) = 46.48, p = 0.13$) but when a Chi-square model was used with gender stratification, males ($\chi^2(15) = 7.19, p = 0.001$) and females ($\chi^2(15) = 44.55, p = 0.000$) were shown to have statistical significance. By observance of adjusted residual scores for males, the significance was drawn from 50% of very underweight males ordering food for delivery 5-6 times a week and 2.4% of slightly underweight males ordering food for delivery at a rate of three or more times a day. The food delivery rates as compared with weight categories for females that showed statistically significant trends were slightly underweight who ordered food 1-3 times in the last month (12.5%), slightly underweight ordering food 1-2 times a week (18.8%), slightly overweight who ordered 3-4 times a week (2.2%), very overweight ordering food 1-3 times in the last month (53.2%), very overweight ordering food 5-6 times a week (2.1), and very overweight females ordering food once a day (2.1%).

Discussion

At an increasing rate, the onset of obesity and an overweight status have become more prevalent within society. The population with the most dramatic rise in rates of overweight and obesity is appearing within the young adults, with those partaking in a college education demonstrating the most prominent increase.² With the introduction of a more self-directed lifestyle and more responsibilities, college students experience an elevation in stress levels.^{14,15,16} Studies have revealed that as a result of increased stress levels college students demonstrate more eating out and food delivery behaviors. The present study hypothesized college students who experience a greater amount of stress will order food outside of the home more frequently, participating in more unhealthy eating behaviors, which will be associated with a higher weight

status. The general hypothesis was not reinforced by solid results from the main study variables but trends did exist to support the study's chief premises. No significant associations were found between levels of stress and how often food was provided or actions taken when food was not provided. When stress was compared to the rate of delivery participants partook in, there was no significance, but males ordered delivery more often than women. Yet, as women's stress levels increased, so did their use of campus food ordering sites. Although previously refuted with males frequenting food delivery more than females, this finding helped support the second hypothesis of the study that women may engage in more eating out or food delivery behaviors due to less successful healthy stress coping mechanisms as posed by Brougham et al.¹⁹

Demographics and Weight

Due to the varied locations of the 13 universities and colleges across the U.S. that were involved in the YEAH study, the sample population was diverse in regards to the settings the participants were drawn from. It was not an unexpected finding that 70.5% of participants were female and 74.6% Caucasian. According to the National Center for Education Statistics, the female to male ratio of the sample fell in line with the national reporting of a female majority participating in four year post-secondary education (56.9%).³⁹ Women are also typically more prone to participate in college studies as participants than their male counterparts which this study demonstrates. The U.S. Department of Education's statistics of 2012 (the year the third data set was collected) revealed 58% of 18 to 24 year olds enrolled in a U.S. college or university were Caucasian.³⁹ The mean BMIs of the sample fell within the normal range for men (24.67 ± 3.85) and women (23.97 ± 4.67). In a similar study assessing U.S. college students' weight and dietary practices, (N=630) 64% of the students were assigned normal BMIs based upon height and weight measurements.⁴⁰ Another study observing food habits and nutritional knowledge was

conducted at a Chinese university with a somewhat smaller sample size (N=255). Of the entire sample 80.5% of participants fell within the normal BMI range.⁴¹ The BMI results of the present study remain in line with these two studies. Males within the study were shown to have a greater BMI than females which is a normal occurrence and an expected outcome. Normally men are genetically predisposed to be larger in the aspects of height, weight, and muscle mass.

Two of the supplemental variables used to assess weight with stress and delivery frequency were weight description categories and weight control categories. A difference was expected to be seen between male and female participants concerning these variables. When observing weight control, there was a trend for women to answer “stay the same” or “lose weight” whereas males more frequently responded with wanting to “maintain weight” or “gain weight”. Research presented in a study conducted by Silberstein demonstrated how women exhibit body dissatisfaction to a higher degree and more often are in a state of dieting or trying to lose weight to improve their physical appearance than men.⁴² As for the weight description categories, men show a tendency towards wrongly appraising their weight status whereas women are overcritical of their weight. Men responded more so with being “just about the right weight” while women chose more critical responses such as “slightly overweight” or “very overweight”.

Our results found women had significantly higher levels of stress than men when stress categories were compared by gender. A study previously addressed also sheds light on this facet of the study as well. Braugham found within a sample of 166 college students, women were reported to have higher levels of stress than male participants of the study.¹⁹ Another study drew parallels to this finding by concluding female college students experienced significantly higher levels of depression and anxiety than college males.⁴³

Eating Out Behaviors

Many young adults enrolled in a four year university or college are for the first time independent to make their own dietary decisions. The literature has demonstrated this population directing its consumption patterns towards convenience eating frequently in the form of eating out at fast food establishments and ordering food for delivery.^{28,30,32} The present study did not demonstrate a majority of students partaking in eating out or food delivery practices on a regular basis (16.7%). The most common response among respondents was to cook for themselves when food was not provided (53.1%). Studies indicate that with increased cooking skills and culinary technique, average weekly vegetable consumption increases, while convenience food consumption is shown to decrease.^{44,45} The fact that over half of the participants in the study reported cooking their own meals when food was not provided could have impacted the low frequency of eating out and food delivery that was exhibited within the study population. The more cooking competence a college student acquires, the less likely they will engage in convenience eating and dedicate more of their budget and time towards preparing healthful meals according to Ternier.⁴⁶

The present study's findings on the overall rate at which participants order food for delivery and use delivery sites such as campusfood.com was much lower than expected. Over half of the sample (50.3%) reported never partaking in food delivery during the last month. The second highest response rate was recorded for students who ordered food for delivery one to three times in the last month (40.3%). Concurrently, 62.2% of participants answered never to using campusfood.com websites. These lower than anticipated results could be attributed to the geographic locations of some of the sample schools. When food delivery frequency and use of campusfood.com were stratified by campus, there was a trend for a greater rate of participation in this activity within the Northeastern campuses as opposed to Southern and Western campuses.

This phenomena could be related to the fact that sites such as campusfood.com are more popular within the Northeastern region and not as commonly found among the Western and Sothern campuses that participated within the study.

Stress Levels and Eating Out Frequency

College students are prone to experiencing heightened levels of stress during the duration of their post-secondary careers. The literature revealed that elevated levels of stress have the ability to create a preference for energy dense food within the college demographic which manifests as frequent eating out and ordering food for delivery.^{12,22} The present study did not produce results that were indicative of this occurrence. No statistical significance was found when stress was compared to frequency of food provided, consumption patterns when food is not provided, and frequency of delivery. As mentioned earlier, a large percentage of participants identified with cooking as their method for obtaining meals. If a majority of the sample was competent in their cooking abilities, the necessity to order out may be reduced even with increased levels of stress if food is readily available to be prepared within the home.

The study did reveal an association between stress levels and the frequency of use of campusfood.com websites for females. The supplemental hypothesis: females exhibit greater food delivery behavior due to less successful stress coping mechanisms posed by the literature is maintained through these results.^{19,25} At very high stress levels women demonstrated a greater percentage of campufood.com use than at any other level of stress.

Stress and Dietary Variables

Although study results did not reveal an association for increased stress to serve as an indicator of eating out and food delivery behavior, stress did show an effect on the overall

consumption of fruit, intentions for healthy meal behaviors, and self-reported meal behaviors. The mean fruit intake in women showed an inverse relationship when compared to the level of stress they were experiencing at that time. The greater the level of stress that was reported, the less fruit was reported as being consumed. Continuity of this relation is demonstrated within the work of Nelson, who reported young adults consuming less than one serving of fruit on a daily basis.¹⁸

Male participants showed a relation between stress and their intention for healthy meal behaviors and their self-reported meal behaviors while women showed a relation for self-reported behaviors alone. As stress increased within both groups, means decreased for healthy meal intentions and self-reported eating behaviors. The literature surrounding healthy meal intention behavior and the stressors of college life reimburses the results produced from this study. With increased stress levels there is an urgency for time saving measures and convenience options to restore balance. When this occurs, healthy meal intention and healthy eating behaviors are seen to decrease.^{24,27,47}

Stress, BMI categories, and Weight Concerns

The literature surrounding stress and weight gain is not conclusive but studies have found a trend with stress serving as an influence for weight gain.²² Stress that is initiated habitually is shown to induce a preference for foods that are high in fat and sugar.⁴ If students are constantly in a state of stress then their BMI may be greater than less stressed students due to the consumption of more energy dense food. When stress was run with BMI categorically, no significance was found for male or female participants. The lack of significant findings for this association could be attributed to the fact that the overall sample population showed little variance in BMI to begin with. Nearly 70% of all participants were classified as having a normal

or underweight BMI status. A normal bell curve distribution was demonstrated by the sample in regards to BMI.

Strength and Limitations

The use of a pre-existing data set provided benefits to the study. Secondary analysis allowed for efficiency of data analysis and served as a powerful time conservation measure. Secondary analysis also provided an opportunity for the present study to be conducted without budget concerns. The use of 13 separate college campuses supplied a varied sample of participants geographically, which improved generalizability. The data set included a large sample size which helped serve as a more encapsulating representation of the population under examination. A robust sample size also facilitated controlling the influence of outliers and extreme occurrences within the data that could have potentially thrown off results. For BMI measurements, participants' actual height and weight were measured by a trained study personnel instead of relying on potentially inaccurate self-reports for these measurements. Another strength of the study was the use of validated tools to measure certain key variables within the study such as the NCI Fruit and Vegetable Screener, Cohens Perceived Stress Scale, and Health Belief subscale Healthier Food Outcomes Questionnaire. These tools helped ensure reliability, validity, and sensitivity within the participant results of the YEAH data. The study is also novel in the way that it lays a path for further investigation into a topic that has not been examined fully.

Study limitations existed as well. The data set was not entirely clean. Certain measurements were misreported and never corrected for. This data could not be included and was thrown out. Misreported data that could be manually corrected slowed down the running of analyses and results had to be re-run to ensure accuracy. The main variable of concern, eating out

and food delivery behavior, was measured using the Food Delivery Questionnaire which is not a validated survey tool. It was uncertain if the four questions it included were sensitive enough to gather an accurate representation of participants actual eating out and food delivery frequency behavior. The format of the questions were somewhat restrictive and did not allow for alternative median answer options that could have potentially affected the results of this study. This questionnaire was also the last administered after a long string of previous questionnaires (13 surveys/questionnaires). Response integrity could have dropped by the end of the overall survey, potentially effecting the correctness of responses given for the last four questions. Discrepancies could have also been produced from the time of the semester that participants were assessed. The dataset used (third) only observed one time during the entire college duration in which the food delivery survey was administered. If this was not a particularly stressful period of the semester results may not be revealing of the average stress levels of students as it relates to eating out behavior. It also must be noted that the majority of participants were Caucasian females which decreases the generalizability of any results ascertained.

Future Research

The premise of the study holds potential and with modification of tools and implementation methods, more powerful results may be produced. The topic remains a focal point and relevant within society. The Food Frequency Questionnaire was a later addition to the YEAH study and not a focal point measurement, therefore not as much precaution was taken to ensure its validity when measuring eating out tendencies of participants. With future research, the tool needs to be lengthened to include more sensitive questions on eating out and food delivery rates of students. The YEAH study concentrated on behavior focused activities of students. In order to gather a more encompassing image of what links students to eating out and

food delivery behavior an environmental focus should be used as well. Environment is a powerful indicator of food directed behavior and may prove to be beneficial to include. The survey should be administered multiple times during a set duration in order to capture a more characteristic image of the variables interacting with one another and to control for potentially outlier circumstances from being represented in the results. Only a survey with questionnaires of concern to the present study would be administered. The shortened length may help produce more accurate answers.

6. Conclusion

The present study examined a novel format for observing potential links between stress, eating out and food delivery behaviors, and BMI status. Although many of the main results were not found to be significant, trends were present dictating needs for future research in this area. High levels of stress are a potentially mediating factor in the overall decrease of fruit consumption, healthy meal intentions, and healthy meal behavior within college students. Furthermore, a trend was found associating very high levels of stress to more frequent use of online food ordering websites in women. The current study contained many limitations that could have interfered with the overall findings; that is why it is important research is sustained in this topic domain so future studies can expound upon the trends presented in order to unearth more conclusive findings. Once more definitive results are produced, potential interventions can be tailored based upon findings for the collegiate population.

7. Tables

Table 1		
Demographics	N	%
Race (N=932)		
White	695	74.6
Black or African American	108	11.6
Asian	87	9.3
Other	42	4.5
Hispanic (N=934)		
Yes	55	5.9
No	875	93.7
Not sure	4	0.4
Gender (N=972)		
Male	287	29.5
Female	685	70.5
Year in School (N=973)		
Sophomore	346	36.9
Junior	340	36.2
Senior	242	25.8
Graduate	10	1.1
Age (N=939)		
18	1	0.1
19	185	19.7
20	338	36
21	269	28.6
22	125	13.3
23	10	1.1
24	8	0.9

>24	3	0.3
Residence (N=940)		
Campus residence hall	302	32.1
Off campus housing	446	47.4
Other university housing	95	10.1
Sorority/Fraternity	53	5.6
Parent or guardian's home	31	3.3
Other	13	1.4
University (N=938)		
Alabama	61	6.5
Florida	29	3.1
Kansas	87	9.3
Indiana	85	9.1
Michigan	113	12
New Hampshire	103	11
New Jersey	96	10.2
New York	85	9.1
North Carolina	25	2.7
Rhode Island	42	4.5
South Dakota	67	7.1
Wisconsin	99	10.6
West Virginia	29	3.1
Categorical BMI (N=971)		
Underweight/Normal	675	69.5
Overweight	213	21.9
Obese	83	8.5

Table 1.5 –Differences by gender on demographic variables

Categories (N)	Mean \pm SD		P*
	Male (n=287)	Female (n=685)	
BMI ^a (n=971)	24.67 \pm 3.85	23.97 \pm 4.67	0.03*
Total Pyramid Servings of Fruit ^b (n=933)	1.41 \pm 1.61	1.06 \pm 1.04	0.01*
Total Pyramid Servings of Vegetables ^b (n=925)	1.51 \pm 1.63	1.31 \pm 1.21	NS
Meal Intentions Behavior ^c (n=932)	3.26 \pm 0.83	3.60 \pm 0.67	0.00*
Self-reported Meal Behavior (n=933)	3.40 \pm 0.08	3.62 \pm 0.66	0.00*

NS indicates not significant

*Significant at $P < 0.05$; ^aT-test of BMI between sex found men to have significantly higher BMIs than women ^bTotal pyramid servings of fruit and vegetables were based upon the National Cancer Institute Fruit and Vegetable Screener; ^cMeal intentions and self-reported meal behavior used the scoring of the Health Belief subscale Healthier Food Outcomes.

Table 2 – Population Stress Distribution

Stress Categories	Frequency (N= 933)			Percent Total/Category (%)
	Total	Male	Female	
Low (0-18)	262	101	161	28.1
Moderate (19-23)	245	72	173	26.3
High (24-28)	204	55	149	21.9
Very High (29-50)	222	47	175	23.8

Note: Stress was defined using the Cohens 14-item Perceived Stress Scale and then separated into quartiles based upon a score of 1-50; (a score of: 0-18 = low stress, 19-23 = moderate stress, 24-28 = high stress, 29-50 = very high stress). Stress quartile ranges were based upon previous representations of Cohens score totals. * $P < 0.05$; stress level scores; $t(932) = -4.02, p=0.00$

Table 3 – Weekly Food Provision

Days Food is Provided	Frequency (N=903)					
	Total (N=903)		Male (n=262)		Female (n=641)	
7 Days/Week	274	30.3%	75	28.6%	199	31%
5-6 Days/Week	72	8.0%	18	6.9%	54	8.4%
3-4 Days/Week	22	2.4%	6	2.3%	16	2.5%
1-2 Days/Week	14	1.6%	7	2.7%	7	1.1%
0 Days/Week	521	57.7%	156	54.4%	365	56.9%

Note: Table demonstrates how many days each week the students' meals are provided for (if any) within their rental contract/living situation. The frequency is divided by gender.

Table 4 – How Students Obtain Food

When Food is Not Provided	Frequency (N=919)					
	Total (N=919)		Male (n=267)		Female (n=652)	
Does Not Apply to Me – Food is Always Provided	223	24.3%	60	22.5%	163	25%
Cook for Myself	488	53.1%	146	54.7%	342	52.5%
Eat Out/Take Out	140	15.2%	42	15.7%	98	15%
Order Delivery	14	1.5%	7	2.6%	7	1.1%
Eat at Parents' Home	17	1.8%	3	1.1%	14	2.1%
Meals Obtained at Work	16	1.7%	4	1.5%	12	1.8%
Look for Free Food Opportunities	21	2.3%	5	1.9%	16	2.5%

Note: A simple frequency test was run to demonstrate where students' acquire meals from if they are not provided for within their living arrangement contract. The frequencies were stratified by gender and percentages were given.

Table 5 – Food Delivery to Residence

Food Delivered to Residence	Frequency (N=924)					
	Total (N=924)		Male (n=266)		Female (n=658)	
Never	465	50.3%	114	42.9%	351	53.3%
1-3 Times a Month	372	40.3%	114	42.9%	258	39.2%
1-2 times/Week	71	7.7%	31	11.7%	40	6.1%
3-4 Times/Week	9	1.0%	2	0.8%	7	1.1%
5-6 Times/Week	5	0.5%	4	1.5%	1	0.2%
3 or More/Day	2	0.2%	1	0.4%	1	0.2%

Note: A simple frequency test was run to demonstrate the regularity of food delivery use by students on a monthly to daily basis. The test was stratified by gender.

Table 6- Use of Campusfood.com

Campusfood.com	Frequency (N=915)					
	Total (N=915)		Male (n=263)		Female (n=652)	
Never	569	62.2%	155	58.9%	414	63.5%
Almost Never	80	8.7%	31	11.8%	49	7.5%
Sometimes	127	13.9%	39	14.8%	88	13.5%
Fairly Often	58	6.3%	14	5.3%	44	6.7%
Very Often	81	8.9%	24	9.1%	57	8.7%

Note: Campusfood.com is a generic term for campus websites used for ordering food for delivery within a close proximity to a residence; includes lists of all local restaurants, their hours, delivery fees, estimated wait time, and a menu. This table demonstrates the frequency with which students use campusfood.com stratified by gender.

Table 7 – Weekly Food Provision by Levels of Stress for Men

Stress Categories	Frequency of Food Provided (N=259)									
	7 Days/Week (% within stress category)		5-6 Days/Week (% within stress category)		3-4 Days/Week (% within stress category)		1-2 Days/Week (% within stress category)		0 Days/Week (% within stress category)	
	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)
Low	24.7	24	9.3	9	1.0	1	0	0	64.9	63
Moderate	31.8	21	7.6	5	0	0	4.5	3	56.1	37
High	30.8	16	3.8	2	3.8	2	7.7	4	53.8	28
Very High	31.8	14	2.3	1	6.8	3	0	0	59.1	26

Weekly Provision of Food	Gender	value	df	Significance (2-sided)
		Male	20.90	12

Note: Chi-square model used to compare percentages of stress and frequency of food provision with gender stratification. *P < 0.05; no categories were shown to be statistically significant. NS indicates not significant

Table 7.5 – Weekly Food Provision by Levels of Stress for Women

Stress Categories	Frequency of Food Provided (N=626)									
	7 Days/Week (% within stress category)		5-6 Days/Week (% within stress category)		3-4 Days/Week (% within stress category)		1-2 Days/Week (% within stress category)		0 Days/Week (% within stress category)	
	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)
Low	27.4	43	8.9	14	1.3	2	0.6	1	61.8	97
Moderate	32.0	54	7.1	12	3.0	5	3.0	5	55.0	93
High	30.9	43	10.8	15	2.9	4	0	0	55.4	77
Very High	34.0	54	6.8	11	2.5	4	0.6	1	56.2	91

Weekly Provision of Food	Gender	value	df	Significance (2-sided)
		Female	12.40	12

Note: Chi-square model used to compare percentages of stress and frequency of food provision with gender stratification. *P < 0.05; no categories were shown to be statistically significant. NS indicates not significant

Table 8 –Methods for Acquiring Food if not provided and Levels of Stress for Men

Stress Categories	When Food is Not Provided (n=185)			
	Cook for myself (% within stress category)		Eat take out/Take out (% within stress category)	
	(%)	(n)	(%)	(n)
Low	30.3	56	7.6	14
Moderate	18.9	35	4.9	9
High	16.2	30	5.4	10
Very High	11.9	22	4.9	9

When Food Not Provided	Gender	value	df	Significance (2-sided)
	Male	9.99	18	0.932-NS

Note: Chi-square model used to compare percentages of stress and the percentage of students who cook or eat take out when food is not provided with gender stratification. Other categories (does not apply to me, order delivery, eat at parent's home, meals obtained at work, look for free opportunities) were comprised of low response rate and not included for this analysis *P < 0.05; no categories were shown to be statistically significant.

NS indicates not significant

Table 8.5 –Methods for Acquiring Food if not provided and Levels of Stress for Women

Stress Categories	When Food is Not Provided (n=427)			
	Cook for myself (% within stress category)		Eat take out/Take out (% within stress category)	
	(%)	(n)	(%)	(n)
Low	20.6	88	3.5	15
Moderate	22.0	94	5.6	25
High	17.3	74	6.1	26
Very High	18.3	78	6.3	27

When Food Not Provided	Gender	value	df	Significance (2-sided)
		Female	22.40	18

Note: Chi-square model used to compare percentages of stress and the percentage of students who cook or eat take out when food is not provided with gender stratification. Other categories (does not apply to me, order delivery, eat at parent's home, meals obtained at work, look for free opportunities) were comprised of low response rate and not included for this analysis *P < 0.05; no categories were shown to be statistically significant.

NS indicates not significant

Table 9 – Incidence of Food Delivery and Levels of Stress for Men

Stress Categories	Food Delivered to Residence (N=263)							
	Never (% within stress category)		1-3 Times Last Month (% within stress category)		1-2 Times/Week (% within stress category)		3 or more Times/Week (% within stress category)	
	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)
Low	43.8	42	41.7	40	12.5	12	2.1	2
Moderate	45.6	31	45.6	31	7.4	5	1.5	1
High	41.8	23	40.0	22	14.5	8	3.6	2
Very High	36.4	16	45.5	20	13.6	6	4.5	2

Food Delivered to Residence	Gender	value	df	Significance (2-sided)
	Male	17.20	15	0.307 NS

Note: Chi-square model used to compare percentages of stress and frequency of food delivered to students' residence with gender stratification. *P < 0.05; no categories were shown to be statistically significant.

NS indicates not significant

Table 9.5 Incidence of Food Delivery and level of stress for Women

Stress Categories	Food Delivered to Residence (N=642)							
	Never		1-3 Times Last Month		1-2 Times/Week		3 or more Times/Week	
	(% within stress category)	(n)	(% within stress category)	(n)	(% within stress category)	(n)	(% within stress category)	(n)
Low	56.3	90	38.8	62	5.0	8	0	0
Moderate	50.6	86	40.0	68	8.2	14	1.2	2
High	53.1	77	42.1	61	4.8	7	0	0
Very High	51.2	86	38.1	64	6.5	10	4.2	9

Food Delivered to Residence	Gender	value	df	Significance (2-sided)
	Female	17.42	15	0.295 NS

Note: Chi-square model used to compare percentages of stress and frequency of food delivered to students' residence with gender stratification. *P < 0.05; no categories were shown to be statistically significant.

NS indicates not significant

Table 10 – Campusfood.com Use and Levels of Stress for Men

Stress Categories	Use campusfood.com (N=260)									
	Never (% within stress category)		Almost Never (% within stress category)		Sometimes (% within stress category)		Fairly Often (% within stress category)		Very Often (% within stress category)	
	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)
Low	57.9	55	17.9	17	12.6	12	4.2	4	7.4	7
Moderate	62.7	42	3.0	2	16.4	11	10.4	7	7.5	5
High	57.4	31	13.0	7	14.8	8	1.9	1	13.0	7
Very High	59.1	26	11.4	5	13.6	6	4.5	2	11.4	5

Campusfood.com	Gender	value	df	Significance (2-sided)
	Male	14.36	12	0.278 NS

Note: Chi-square model used to compare percentages of stress and frequency of campusfood.com website use with gender stratification. *P < 0.05; no categories were shown to be statistically significant.

NS indicates not significant

Table 10.5 Campusfood.com and Levels of Stress for Women

Stress Categories	Use campusfood.com (N=636)									
	Never (% within stress category)		Almost Never (% within stress category)		Sometimes (% within stress category)		Fairly Often (% within stress category)		Very Often (% within stress category)	
	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)
Low	63.5	101	6.9	11	14.5	23	6.3	10	8.8	14
Moderate	61.3	103	6.0	10	17.9	30	7.7	13	7.1	12
High	62.5	90	7.6	11	16.7	24	8.3	12	4.9	7
Very High	64.5	107	9.6	16	6.0	10	5.4	8	14.5	24

Campusfood.com	Gender	Value	df	Significance (2-sided)
	Female	22.77	12	0.035*

Note: Chi-square model used to compare percentages of stress and frequency of food delivered to students' residence with gender stratification. *P < 0.05; stress categories run by frequency of campusfood.com was shown to be statistically significant ($p = 0.035$)

Table 11 - Demographics Separated by Stress Category Means for Men

Category	Stress Category				Significance
	Low	Moderate	High	Very high	
BMIC (M ± SD)	24.74 ± 4.25	24.94 ± 4.07	24.70 ± 3.47	23.88 ± 3.30	NS
Total Pyramid Fruit (M ± SD)	1.61 ± 1.92	1.58 ± 1.57	1.23 ± 1.35	0.97 ± 1.15	NS
Total Pyramid Vegetables (M ± SD)	1.65 ± 1.63	1.49 ± 1.52	1.55 ± 1.85	1.22 ± 1.57	NS
Meal Intentions Behavior (M ± SD)	3.33 ± 0.89 ^a	3.38 ± 0.79 ^b	3.18 ± 0.75 ^{ab}	2.98 ± 0.78 ^a	0.041*
Self-Reported Meal Behavior (M ± SD)	3.53 ± 0.83 ^a	3.54 ± 0.71 ^a	3.36 ± 0.70 ^a	3.01 ± 0.86 ^b	0.001*

Note: One-way analysis of variance (ANOVA) used to find statistical significance; *P < 0.05. Post Hoc test: Tukey-b (varying letters (a, b, or, c) indicate statistically significant mean differences within stress categories of low, moderate, high, or very high for each variable. *P < 0.05; denotes statistical significance

Table 11.5 - Demographics Separated by Stress Category Means for Women

Category	Stress Category				Significance
	Low	Moderate	High	Very high	
BMIC (M ± SD)	23.88 ± 4.48	23.59 ± 3.69	24.46 ± 4.76	24.27 ± 5.74	NS
Total Pyramid Fruit (M ± SD)	1.13 ± 0.94 ^a	1.20 ± 1.14 ^a	1.07 ± 1.13 ^b	0.84 ± 0.93 ^c	0.01*
Total Pyramid Vegetables (M ± SD)	1.37 ± 1.23	1.40 ± 1.23	1.11 ± 0.84	1.31 ± 1.36	NS
Meal Intentions Behavior (M ± SD)	3.79 ± 0.66	3.76 ± 0.64	3.46 ± 0.63	3.38 ± 0.67	NS
Self-Reported Meal Behavior (M ± SD)	3.89 ± 0.60 ^a	3.75 ± 0.66 ^a	3.48 ± 0.57 ^b	3.40 ± 0.69 ^b	0.000*

Note: One-way analysis of variance (ANOVA) used to find statistical significance; *P < 0.05. Post Hoc test: Tukey-b (varying letters (a, b, or, c) indicate statistically significant mean differences within stress categories of low, moderate, high, or very high for each variable. *P < 0.05; denotes statistical significance

Table 12 – Stress Categories by BMI Categories for Men

Stress Categories	Categorical BMI (N=275)					
	Underweight/Normal		Overweight		Obese	
	(%)	(n)	(%)	(n)	(%)	(n)
Low	23.27	64	9.45	26	4.0	11
Moderate	16.00	44	6.90	19	3.27	9
High	13.45	37	5.45	15	1.09	3
Very High	11.27	31	4.73	13	1.09	3

BMI Categories	Gender	Value	df	Significance (2-sided)
	Male	2.61	6	0.857 NS

Note: Chi-square model used to compare percentages of stress by BMI categories (BMI split into the categories of Underweight and Normal, Overweight, and Obese) with gender stratification. *P < 0.05; no categories were shown to be statistically significant.

NS indicates not significant

Table 12.5 – Stress Categories by BMI Categories for Women

Stress Categories	Categorical BMI (N=657)					
	Underweight/Normal		Overweight		Obese	
	(%)	(n)	(%)	(n)	(%)	(n)
Low	18.42	121	3.96	26	1.98	13
Moderate	19.48	128	5.02	33	1.67	11
High	16.29	107	3.50	23	2.89	19
Very High	17.80	117	6.85	45	2.13	14

BMI Categories	Gender	Value	df	Significance (2-sided)
	Female	10.7	6	0.097 NS

Note: Chi-square model used to compare percentages of stress by BMI categories (BMI split into the categories of Underweight and Normal, Overweight, and Obese) with gender stratification. *P < 0.05; no categories were shown to be statistically significant.

NS indicates not significant

8. Appendices

Appendix A. – Survey Tool 1

Cohen Perceived Stress Scale:

In the last month, how often have you...

1)...been upset because of something that happened unexpectedly?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

2)...felt that you were unable to control the important things in your life?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

3)...felt nervous and stressed?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

4)...dealt successfully with irritating life hassles?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

5)...felt that you were effectively coping with important changes that were occurring in your life?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

6)...felt confident about your ability to handle your personal problems?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

7)...felt that things were going your way?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

8)...found that you could not cope with all the things that you had to do?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

9)...been able to control irritations in your life?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

10)...felt that you were on top of things?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

11)...been angered because of things that happen that were outside of your control?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often

(6) Choose not to answer

12)...found yourself thinking about things that you have to accomplish?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

13)...been able to control the way you spend your time?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

14)...felt difficulties were piling up so high that you could not overcome them?

- (1) Never
- (2) Almost never
- (3) Sometimes
- (4) Fairly often
- (5) Very often
- (6) Choose not to answer

Appendix B. – Survey Tool 2

Health Belief Subscale Healthier Food Outcomes (Social Cognitive Theory outcome expectations):

Indicate below how often in the past 3 months you have done the following:

1) Remind myself that planning quick and simple meals is important.

- (1) Never
- (2) Seldom
- (3) Occasionally
- (4) Often
- (5) Always
- (6) Choose not to answer

2) Tell myself that healthy meals do not require a lot of work.

- (1) Never
- (2) Seldom
- (3) Occasionally
- (4) Often
- (5) Always
- (6) Choose not to answer

3) Remind myself to eat in moderation.

- (1) Never
- (2) Seldom
- (3) Occasionally
- (4) Often
- (5) Always
- (6) Choose not to answer

4) Tell myself to allow room for an occasional treat food or dessert for just plain enjoyment.

- (1) Never
- (2) Seldom
- (3) Occasionally
- (4) Often
- (5) Always
- (6) Choose not to answer

5) Remind myself to think about my beverage choices.

- (1) Never
- (2) Seldom
- (3) Occasionally
- (4) Often
- (5) Always
- (6) Choose not to answer

6) Tell myself that fruits and vegetables should be included in every meal.

- (1) Never
- (2) Seldom
- (3) Occasionally
- (4) Often
- (5) Always
- (6) Choose not to answer

Indicate how often during the past 3 months you did the following:

7) Planned quick, easy, and healthy snacks.

- (1) Never
- (2) Seldom
- (3) Occasionally
- (4) Often
- (5) Always
- (6) Choose not to answer

8) Select beverages with my health in mind.

- (1) Never
- (2) Seldom

- (3) Occasionally
- (4) Often
- (5) Always
- (6) Choose not to answer

9) Purposely added vegetables to my meals and snacks.

- (1) Never
- (2) Seldom
- (3) Occasionally
- (4) Often
- (5) Always
- (6) Choose not to answer

10) Was flexible and sensible with my food choices.

- (1) Never
- (2) Seldom
- (3) Occasionally
- (4) Often
- (5) Always
- (6) Choose not to answer

11) Would you say that your diet is...

- 1) Somewhat or Very Unhealthy
- 2) Somewhat Healthy
- 3) Very Healthy
- (6) Choose not to answer

Appendix C. – Survey Tool 3

NCI Fruit and Vegetable Screener:

1) Over the last month, how many times per month, week, or day did you drink **100% juice** such as orange, apple, grape, or grapefruit juice? **Do not count** fruit drinks like Kool-Aid, lemonade, Hi-C, cranberry juice drink, Tang, and Twister. Include juice you drank at all mealtimes and between meals.

- (1) never (go to question 3)
- (2) 1-3 times last **month**
- (3) 1-2 times per **week**
- (4) 3-4 times per **week**
- (5) 5-6 times per **week**
- (6) 1 time per **day**
- (7) 2 times per **day**
- (8) 3 times per **day**
- (9) 4 times per **day**
- (10) 5 or more times per **day**
- (11) Choose not to answer

2) Each time you drank **100% juice**, how much did you usually drink?

- (1) Did not drink 100% juice
- (2) Less than $\frac{3}{4}$ cup (less than 6 ounces)
- (3) $\frac{3}{4}$ to $1\frac{1}{4}$ cup (6 to 10 ounces)
- (4) $1\frac{1}{4}$ to 2 cups (10 to 16 ounces)
- (5) More than 2 cups (more than 16 ounces)
- (6) Choose not to answer

3) Over the last month, how many times per month, week, or day did you eat **fruit**? Count any kind of fruit—fresh, canned, and frozen. **Do not count** juices. Include fruit you ate at all mealtimes and for snacks.

- (1) never (go to question 5)
- (2) 1-3 times last **month**
- (3) 1-2 times per **week**
- (4) 3-4 times per **week**
- (5) 5-6 times per **week**
- (6) 1 time per **day**
- (7) 2 times per **day**
- (8) 3 times per **day**
- (9) 4 times per **day**
- (10) 5 or more times per **day**
- (11) Choose not to answer

4) Each time you ate **fruit**, how much did you usually eat?

- (1) Did not eat fruit
- (2) Less than 1 medium fruit (less than $\frac{1}{2}$ cup)
- (3) 1 medium fruit (about $\frac{1}{2}$ cup)
- (4) 2 medium fruits (about 1 cup)
- (5) More than 2 medium fruits (more than 1 cup)
- (6) Choose not to answer

5) Over the last month, how often did you eat **lettuce salad (with or without other vegetables)**?

- (1) never (go to question 7)
- (2) 1-3 times last **month**
- (3) 1-2 times per **week**
- (4) 3-4 times per **week**
- (5) 5-6 times per **week**
- (6) 1 time per **day**
- (7) 2 times per **day**
- (8) 3 times per **day**
- (9) 4 times per **day**
- (10) 5 or more times per **day**
- (11) Choose not to answer

6) Each time you ate **lettuce salad**, how much did you usually eat?

- (1) Did not eat lettuce salad
- (2) About ½ cup
- (3) About 1 cup
- (4) About 2 cups
- (5) More than 2 cups
- (6) Choose not to answer

7) Over the last month, how often did you eat **French fries** or **fried potatoes**?

- (1) never (go to question 9)
- (2) 1-3 times last **month**
- (3) 1-2 times per **week**
- (4) 3-4 times per **week**
- (5) 5-6 times per **week**
- (6) 1 time per **day**
- (7) 2 times per **day**
- (8) 3 times per **day**
- (9) 4 times per **day**
- (10) 5 or more times per **day**
- (11) Choose not to answer

8) Each time you ate **French fries** or **fried potatoes**, how much did you usually eat?

- (1) Did not eat French fries or fried potatoes
- (2) Small order or less (About 1 cup or less)
- (3) Medium order (About 1½ cups)
- (4) Large order (About 2 cups)
- (5) Super-Size order or more (About 3 cups or more)
- (6) Choose not to answer

9) Over the last month, how often did you eat **other white potatoes**? Count **baked, boiled, and mashed potatoes, potato salad, and white potatoes that were not fried.**

- (1) never (go to question 11)
- (2) 1-3 times last **month**
- (3) 1-2 times per **week**
- (4) 3-4 times per **week**
- (5) 5-6 times per **week**
- (6) 1 time per **day**
- (7) 2 times per **day**
- (8) 3 times per **day**
- (9) 4 times per **day**
- (10) 5 or more times per **day**
- (11) Choose not to answer

10) Each time you ate **these potatoes**, how much did you usually eat?

- (1) Did not eat these types of potatoes
- (2) 1 small potato or less (1/2 cup or less)
- (3) 1 medium potato (1/2 to 1 cup)

- (4) 1 large potato (1 to 1½ cups)
- (5) 2 medium potatoes or more (1½ cups or more)
- (6) Choose not to answer

11) Over the last month, how often did you eat **cooked dried beans**? Count **baked beans, bean soup, refried beans, pork and beans** and **other bean dishes**.

- (1) never (go to question 13)
- (2) 1-3 times last **month**
- (3) 1-2 times per **week**
- (4) 3-4 times per **week**
- (5) 5-6 times per **week**
- (6) 1 time per **day**
- (7) 2 times per **day**
- (8) 3 times per **day**
- (9) 4 times per **day**
- (10) 5 or more times per **day**
- (11) Choose not to answer

12) Each time you ate **these beans**, how much did you usually eat?

- (1) Did not eat cooked dried beans
- (2) Less than ½ cup
- (3) ½ to 1 cup
- (4) 1 to 1½ cups
- (5) More than 1½ cups
- (6) Choose not to answer

13) Over the last month, how often did you eat **other vegetables**?

DO NOT COUNT:

- Lettuce salads
- White potatoes
- Cooked dried beans
- Vegetables in mixtures, such as in sandwiches, omelets, casseroles, Mexican dishes, stews, stir-fry, soups, etc.
- Rice

COUNT: All other vegetables—raw, cooked, canned, and frozen

- (1) never (go to question 15)
- (2) 1-3 times last **month**
- (3) 1-2 times per **week**
- (4) 3-4 times per **week**
- (5) 5-6 times per **week**
- (6) 1 time per **day**
- (7) 2 times per **day**
- (8) 3 times per **day**

- (9) 4 times per **day**
- (10) 5 or more times per **day**
- (11) Choose not to answer

14) Each of these times that you ate **other vegetables**, how much did you usually eat?

- (1) Did not eat these vegetables
- (2) Less than $\frac{1}{2}$ cup
- (3) $\frac{1}{2}$ to 1 cup
- (4) 1 to 2 cups
- (5) More than 2 cups
- (6) Choose not to answer

15) Over the last month, how often did you eat **tomato sauce**? Include tomato sauce on pasta or macaroni, rice, pizza and other dishes.

- (1) never (go to question 17)
- (2) 1-3 times last **month**
- (3) 1-2 times per **week**
- (4) 3-4 times per **week**
- (5) 5-6 times per **week**
- (6) 1 time per **day**
- (7) 2 times per **day**
- (8) 3 times per **day**
- (9) 4 times per **day**
- (10) 5 or more times per **day**
- (11) Choose not to answer

16) Each time you ate **tomato sauce**, how much did you usually eat?

- (1) Did not eat tomato sauce
- (2) About $\frac{1}{4}$ cup
- (3) About $\frac{1}{2}$ cup
- (4) About 1 cup
- (5) More than 1 cup
- (6) Choose not to answer

17) Over the last month, how often did you eat **vegetable soups**? Include tomato soup, gazpacho, beef with vegetable soup, minestrone soup, and other soups made with vegetables.

- (1) never (go to question 19)
- (2) 1-3 times last **month**
- (3) 1-2 times per **week**
- (4) 3-4 times per **week**
- (5) 5-6 times per **week**
- (6) 1 time per **day**
- (7) 2 times per **day**
- (8) 3 times per **day**
- (9) 4 times per **day**

- (10) 5 or more times per **day**
- (11) Choose not to answer

18) Each time you ate **vegetable soup**, how much did you usually eat?

- (1) Did not eat vegetable soup
- (2) Less than 1 cup
- (3) 1 to 2 cups
- (4) 2 to 3 cups
- (5) More than 3 cups
- (6) Choose not to answer

19) Over the last month, how often did you eat **mixtures that included vegetables**? Count such foods as sandwiches, casseroles, stews, stir-fry, omelets, and tacos.

- (1) never
- (2) 1-3 times last **month**
- (3) 1-2 times per **week**
- (4) 3-4 times per **week**
- (5) 5-6 times per **week**
- (6) 1 time per **day**
- (7) 2 times per **day**
- (8) 3 times per **day**
- (9) 4 times per **day**
- (10) 5 or more times per **day**
- (11) Choose not to answer

20) Including snacks, how many cups of fruit and 100% fruit juice do you usually eat each day?

- (1) Less than ½ cup
- (2) ½ cup
- (3) 1 cup
- (4) 1 ½ cups
- (5) 2 cups
- (6) 2 ½ cups
- (7) 3 cups
- (8) 3 ½ cups
- (9) 4 cups
- (10) 4 ½ cups
- (11) 5 cups
- (12) 5 ½ cups
- (13) 6 cups or more
- (14) Choose not to answer

21) Including snacks, how many cups of vegetables do you usually eat each day?

- (1) Less than ½ cup
- (2) ½ cup
- (3) 1 cup

- (4) 1 ½ cups
- (5) 2 cups
- (6) 2 ½ cups
- (7) 3 cups
- (8) 3 ½ cups
- (9) 4 cups
- (10) 4 ½ cups
- (11) 5 cups
- (12) 5 ½ cups
- (13) 6 cups or more
- (14) Choose not to answer

Appendix D. – Survey Tool 4

Demographic Questionnaire:

1) How old are you?

- (1) Less than 18 years old
- (2) 18
- (3) 19
- (4) 20
- (5) 21
- (6) 22
- (7) 23
- (8) 24
- (9) More than 24 years old
- (10) Choose not to answer

2) What is your gender?

- (1) Male
- (2) Female
- (3) Choose not to answer

3) Are you Hispanic or Latino?

- (1) Yes
- (2) No
- (3) Don't know / Not sure
- (4) Choose not to answer

4) Which one or more of the following would you say is your race?

- (1) White
- (2) Black or African American
- (3) Asian
- (4) Native Hawaiian or Other Pacific Islander
- (5) American Indian or Alaska Native
- (6) Other [specify]_____

5) What is your year in school?

- (1) Freshman
- (2) Sophomore
- (3) Junior
- (4) Senior
- (5) Graduate
- (6) Choose not to answer

6) Where do you live?

- (1) Campus residence hall
- (2) Sorority or fraternity
- (3) Other university/college housing
- (4) Off campus housing
- (5) Parent or guardian's home
- (6) Other, specify _____

7) Where is the university you attend?

- (1) Alabama
- (2) Florida
- (3) Maine
- (4) Kansas
- (5) Indiana
- (6) Michigan
- (7) New Hampshire
- (8) New Jersey
- (9) New York
- (10) North Carolina
- (11) Rhode Island
- (12) South Dakota
- (13) Wisconsin
- (14) West Virginia
- (15) Choose not to answer

8) How would you define your current relationship status?

- (1) Single
- (2) In a committed relationship
- (3) Choose not to answer

9) How would you describe your weight?

- (1) Very Underweight
- (2) Slightly Underweight
- (3) About The Right Weight
- (4) Slightly Overweight
- (5) Very Overweight
- (6) Choose not to answer

10) Are you trying to do any of the following about your weight?

- (1) I am not trying to do anything
- (2) Stay the same weight
- (3) Lose weight
- (4) Gain weight
- (5) Choose not to answer

11) Do you participate in...? (Check all that apply)

- (1) Intercollegiate sports team (varsity)
- (2) Club sports team
- (3) Intramurals
- (4) None

12) How many hours a week do you work for pay during the school year?

- (1) I do not work
- (2) 1 to 9 hours
- (3) 10 to 19 hours
- (4) 20 to 29 hours
- (5) 30 to 39 hours
- (6) 40 hours
- (7) More than 40 hours
- (8) Choose not to answer

13) Are you an international student?

- (1) Yes
- (2) No
- (3) Choose not to answer

Appendix E. – Survey Tool 5

Food Delivery Questionnaire:

17. Where you live during this school semester, how often is food provided as part of your rental contract?

- 7 days/week 1
- 5-6 days/week 2
- 3-4 days/week 3
- 1-2 days/week 4
- 0 days/week 5
- Choose not to answer

18. What do you usually do on the days food is not provided where you live?

- This does not apply to me; food is provided 7 days/week as part of my housing. 1
- I cook for myself. 2
- I eat out or get take-out food. 3
- I order delivery. 4
- I go to my parents', other relatives', or friends' homes for meals. 5
- I get meals where I work. 6
- I look for opportunities to find free food, like food that is offered at meetings or other events. 7
- Choose not to answer 8

19. Over the last month, how often have you had food delivered to your residence?

- Never 1
- 1-3 times last MONTH 2
- 1-2 times per WEEK 3
- 3-4 times per WEEK 4
- 5-6 times per WEEK 5
- 1 time per DAY 6
- 2 times per DAY 7
- 3 or more times per DAY 8
- Choose not to answer

20. When you order food delivery, how often do you use a collective website like campusfood.com?

- Never 1
- Almost Never 2
- Sometimes 3
- Fairly Often 4
- Very Often 5
- Choose not to answer

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Vita

Education**Syracuse University***Masters of Science in Nutrition Science*

Current Cumulative GPA: 3.95/4.0

Syracuse, NY

May 2016

The College at Brockport SUNY*Bachelor of Science in Psychology and Health Science*

May 2014

Brockport, NY

Cumulative GPA: 3.79/4.0 – Graduated Cum Laude

Dean's List with Honors: 2010-2014, Alpha Chi Honor Society: 2012-2014, Psi Chi Honor Society: 2011-2014

Work Experience**Research Assistant**, August 2014- Present

Syracuse, NY

- Perform literature reviews and execute health evaluative campus audits
- Physical Assessment Syracuse Campus Coordinator for USDA funded FRUVED Study
- Lead and train an undergraduate campus team of 20 to help facilitate FRUVED study efforts

Wine Shop Attendant, May 2013 – November 2015

Belhurst Castle, Geneva, NY

- Manage cash register/POS software, assist customers, stock floor, pour wine

Nutrition and Adolescence Tutor, September 2013-May 2014

Learning Center, Brockport, NY

- Tutor students with test preparation and study skills

Intern for Children with Autism Respite, September 2011-2012

F.A.C.T.S., Brockport, NY

- Aid for an autistic child ensuring safety and care during the program
- Facilitate play and activities with the child/monitor the child at all times

Experiential Activities**Ashton Place Senior Living Food Service Experience**, July-August 2015

Clifton Springs, NY

- Shadowed food service personnel/engaged in food preparation/food assembly line tasks
- Collaborated with foodservice manager on facility/menu enhancement strategies

Diabetes Education, July 2015

Geneva, NY

- Shadowed/collaborated with R.D. Amanda Tourtellotte (diabetes educator)
- Observed diabetes education seminars
- Actively engaged in diabetes education counseling under supervision

ORANGE WRAP, January 2015- May 2015

Syracuse, NY

- Create/present nutrition education events, disseminate nutrition information to community

Geneva General Hospital, January 2014

Geneva, NY

- Shadowed Acute Care Dietitian Sarah Eighmey
- Observed clerical documentation, kitchen responsibilities, and patient rounds

Autism Speaks U Member, September 2011- May 2014

Brockport, NY

- Participate in activities and fundraisers to raise awareness and funds for autism

Psychology Club, October 2010- May 2014

Brockport, NY

- Create fundraisers to promote and further the knowledge of psychology

Methodist Church: Food Pantry, September 2009 - May 2010

Geneva, NY

- Acquired food line preparation and service skills
- Served meals to large underserved populations

Computer Skills: Microsoft Office (Word, PowerPoint, Excel), IBM SPSS, Diet Analysis Software**Honors/Certifications:** Syracuse University Honor Society, ServSafe Certification, Dr. Tanya Horacek Syracuse University Nutrition Counseling Certification, CITI- Human Subject Research