

INTERACTIONS AMONG WEIGHT STATUS,
WEIGHT PERCEPTIONS, STRESS AND DIETING BEHAVIORS
IN FEMALE COLLEGE STUDENTS

A THESIS

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JENNIFER L. HOLLMAN

ADVISOR – JO CAROL CHEZEM, PHD, RD
BALL STATE UNIVERSITY
MUNCIE, INDIANA

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ABSTRACT

THESIS: Interactions Among Weight Status, Weight Perceptions, Stress and Dieting Behaviors in Female College Students

STUDENT: Jennifer L. Hollman

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The purpose of this thesis was to determine relationships among dieting behaviors, stress, weight status, and weight perceptions in college undergraduate females. Individuals who were overweight/obese reported significantly higher eating in response to emotions and stress as well as reduced ability to change a situation, manage one's emotional reaction, or cope effectively than their underweight/normal weight peers. Also, those who were overweight/obese used significantly more total methods for weight loss. Individuals who were more likely to use food to cope also used a higher number of restraint methods of dieting as well as non-diet methods than those who were less likely to use food to cope. Perceived healthy and perceived attractive weight, as percents of current weight, were significantly lower for overweight/obese individuals than for those who were underweight/normal weight. Results from this study illustrate that weight status is associated with dieting behaviors, emotional eating, and weight perceptions.

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CHAPTER 1

INTRODUCTION

Introduction/Background

Obesity is a problem of significant concern in the United States. It has been projected that by the year 2030, approximately 90% of all American adults will become overweight or obese and specifically, 51.1% of all Americans will be classified as obese (Wang, Beydoun, Liang, Caballero, & Kumanyika, 2008). In relation to this, college students are often in danger of weight gain. Studies have shown that in the first year alone, students may gain on average anywhere from 3.5 to 5.3 pounds (Holm-Denoma, Joiner, Vohs, & Heatherton, 2008; Economos, Hildebrandt, & Hyatt, 2008). Many factors have been linked to weight gain. Changes in dietary habits, such as an increased amount of sugary snacks and high-fat foods consumed, can lead to weight gain (Pliner & Saunders, 2007; Levitsky, Halbmaier, & Mrdjenovic, 2004). Stress can have a large impact on weight gain, as well (Ozier et al., 2008). It is important to recognize that diet and stress have the potential to result in weight gain.

Purpose Statement

The purpose of this observational research was to determine relationships among dieting behaviors, stress, weight status, and weight perceptions in college undergraduate females.

Rationale

It is apparent that overweight and obesity in the United States is a critical problem. Another troubling fact is the amount of weight gain often observed throughout college. Conducting this research facilitated further understanding of factors related to weight gain in college undergraduate females. One study has shown that certain unhealthy eating behaviors are more likely to lead to an increase in weight (Pliner et al., 2007). Furthermore, Ozier et al. (2008), explain how those who are overweight or obese are more likely to eat in response to stress. Analysis of data from the current study supplied an understanding of how underweight/normal weight and overweight/obese individuals use food to cope with stress. Furthermore, the current study showed how likely underweight/normal weight and overweight/obese individuals were to attempt weight loss and how many methods would be used.

Research Hypotheses

1. Weight status is associated with stress and emotion-related eating.
 - i. Those who are overweight/obese are more likely to use food as a coping mechanism when stressed than those who are underweight/normal weight.
2. Weight status is associated with ability to cope with stress.
 - i. Those who are overweight/obese are less likely to possess the ability and resources to cope with stress than those who are underweight/normal weight.

3. Weight status is associated with weight-loss and weight-control practices.
 - i. Those who are overweight/obese are more likely to use weight-loss or weight-control practices than those who are underweight/normal weight.
4. Weight status will be associated with weight perceptions.
 - i. Those that are overweight/obese have greater differences in perceived weight than those who are underweight/normal weight.
5. Weight-loss and weight-control practices are associated with emotion- and stress-related eating.
 - i. Those who use food to cope with stress and emotions are less likely to use restraint with timing and amount of food.
 - ii. Those who use food to cope with stress and emotions are more likely to use non-diet related methods.

Limitations

There were some limitations throughout the research that may have had an impact on the results. First, self-reported heights and weights were used. Some participants may not have provided accurate information, and this may have resulted in incorrect classification of weight status (BMI). Second, this study considered solely females, so the findings should not be used in conjunction with males.

Assumptions

There were also some assumptions made with this research. First, the researchers assumed that the participant sample was a representation of the diverse undergraduate population. Also, it was assumed that all participants were truthful in their responses.

Definition of Terms

1. BMI (Body Mass Index): A number calculated from a person's height and weight that provides an indicator of body fatness for most people; it is used to screen for weight categories ("Body Mass Index", 2009).
2. Dietary Supplements: Vitamins, minerals, herbs and other substances meant to improve the diet ("Dietary Supplements", 2010).
3. Obesity: A range of weight that is greater than what is generally considered to be healthy for a given height; specifically, a BMI ≥ 30 ("Defining Overweight and Obesity", 2010).
4. Stress: A physical, chemical, or emotional factor that causes bodily or mental tension ("Stress", 2010).
5. Anxiety: An abnormal and overwhelming sense of apprehension and fear often marked by physiological signs, such as sweating and an increased pulse ("Anxiety", 2010).
6. Body Image: A subjective picture of one's own physical appearance established by self-observation and by noting the reactions of others ("Body Image", 2010).
7. The Eating and Appraisal Due to Emotions and Stress (EADES) Questionnaire: A validated questionnaire, created by Ozier et al. (2007), which assesses how one uses food to cope with stress and emotions.

Summary

The purpose of this observational research was to determine relationships among dieting behaviors, stress, weight status, and weight perceptions in college undergraduate

females. Conducting this research was important not only because of the high prevalence of overweight and obesity in the United States, but also because of the amount of students in college that fall into the weight gain trap. Chapter two provides a comprehensive literature review covering obesity in the United States, weight gain and dietary habits in college students, weight-loss strategies, weight perceptions, stress, and methods of coping with stress. Chapter three details the methodology that was utilized in this study. Chapter four explains the results from the study while chapter five includes a discussion of the results. Lastly, chapter six is a final conclusion of the study.

CHAPTER 2

REVIEW OF LITERATURE

Obesity in the United States

Obesity is a worldwide problem, and the prevalence of obesity observed in the United States is increasing at an alarming rate. Wang and Beydoun (2007) stated that in 2003-2004, approximately two-thirds (66.3%) of men and women aged 20 years and older were overweight or obese. Additionally, 32.4% of men and women 20 years and older were obese and 4.8% were extremely obese. Furthermore, the prevalence of obesity and overweight has more than doubled since the 1970's in adolescents and adults, and the rate is continuing to rise. Wang, Beydoun, Liang, Caballero & Kumanyika (2008) explained that projection models suggest by the year 2030, approximately 90% of all American adults would become overweight or obese, and that 51.1% of all Americans would be classified specifically as obese. As a result, mean BMI would increase from 27.9 in 1999-2004 to 31.2 in 2030 (Wang et al., 2008). These current statistics and trends demonstrate the severity of the problem not only currently, but in the future as well.

Overweight and obesity are a common problem among American adults, and there are often differences observed between males and females as well as among ethnicities. For example, data from 2004 explained that 67% of men, compared with 62%

of women, were overweight or obese (Ogden et al., 2006). Looking at specific ethnic groups, Black females had the highest prevalence (78%) of overweight and obesity overall. The next highest group for females was Mexican American at 71.8%, followed by non-Hispanic White with 57.5%. Looking at males, it was observed that at a rate of 74.4%, Mexican Americans had the highest overweight and obesity rates. The next highest group for males was non-Hispanic White at 67.5% followed by non-Hispanic Black at 60.1%. Regardless of the cause, it is apparent that the outlook for the future is concerning, as Ogden et al. (2006) explained there is little indication that the prevalence is decreasing in any subgroup of the population.

The prevalence of obesity in young adults is also of great concern. More than one-third (35%) of older US children and adolescents aged 6-19 years are at risk for overweight or obesity (Wang et al., 2007). Studies noted that around 17 % of children and adolescents were overweight in 2003-2004, which was a significant increase from 13.8% reported in 1999 (Ogden et al., 2006; Wang et al., 2007). Projections suggest the trend will not improve in the future. Specifically, overweight and obesity observed in children and adolescents could increase 1.6-fold (to approximately 30%) by the year 2030 (Wang et al., 2007). Additionally, about one-half of obese school-age children become obese adults, and those who are overweight or obese have a high chance of becoming overweight or obese adults. These trends and projections demonstrate not only the high amount of overweight and obese adolescents, but also the alarming rate at which the percentages are increasing.

Prevalence of Weight Gain in College

Not all students will gain weight while attending college; however, it is a problem that many will encounter. Studies have reported that during the transition to college life, students see an increase in body weight. Wengreen and Moncur (2009) showed that from August to December of the first year of college, the average weight change was 1.51 kg, and that 23% of those who gained weight gained at least 5% of their body weight. A Hajhosseini et al. (2006) examined changes in body weight in the first semester of college and observed a weight gain of 3 pounds over the 16-week period. Comparable results were observed in a study by Lloyd-Richardson, Bailey, Fava and Wing (2009) to determine the prevalence of weight gain in males and females throughout freshman and sophomore years of college; participants gained an average of 3.5 kg during the freshman year. In a similar study that examined weight gain in college male and female freshmen, Economos, Hildebrandt, and Hyatt (2008) found that an average of 5.3 pounds was gained during the freshman year. Holm-Denoma, Joiner, Vohs, and Heatherton (2008) reported that during the first year of college, men gained an average of 3.5 pounds and women gained an average of 4 pounds. In contrast, Mihalopoulos, Auinger, and Klein (2008) observed men's average weight gain to be 3.7 pounds while women only gained an average of 1.7 pounds. These results suggest that weight gain in college is a potential problem for many students.

Reasons for Weight Gain in College

There are many factors to consider while looking at reasons for weight gain, including differences between males and females. Economos et al. (2008) examined the effects of stress and health-related behaviors on weight change by gender, and discovered

that for females, an increased workload during the academic year was associated with an average weight gain of 2.9 pounds. Also, for females, it was reported that those who had uncritical parents, were satisfied with their relationships with their parents, and felt that their parents allowed them to be independent were more likely to gain weight in the transition from high school to college (Holm-Denoma et al., 2008). Conversely, males that reported having critical parents, being unsatisfied with their relationships with their parents, and feeling that their parents did not let them be independent were more likely to gain weight in the transition from high school to college. Furthermore, males that reported a lack of academic confidence at the beginning of the year were likely to experience a weight gain (Economos et al., 2008). Additionally, a positive relationship between alcohol consumption and weight gain was observed for both males and females. These studies demonstrate that many factors can contribute to weight change in college, and that gender can play an important role in these changes.

Dietary Habits in College

Weight gains can also be attributed to a change in dietary habits. Pliner and Saunders (2008) reported that students whose diets demonstrated the greatest change in an “unhealthy” direction, such as consuming high-fat sweet snacks, high-fat desserts, and non-diet soft drinks, gained the most weight during their freshman year. When looking at the amount of weight gain as well as reasons for weight gain in college freshmen, Levitsky, Halbmaier and Mrdjenovic (2004) noted that the two variables that best predicted weight gain were an increase in the amount of evening snacks consumed and consumption of high-fat foods. Additional variables associated with weight gain included eating breakfast and lunch in an all-you-can-eat dining hall and consuming ‘junk’ foods.

Furthermore, the consumption of alcohol can also contribute to weight gain. Nelson, Lust, Story, and Ehlinger (2009) reported that students who “usually” or “always” eat before and/or during drinking alcohol experienced a nearly 25% increase in overweight status compared to those who reported “sometimes”, “rarely” or “never”. Changes in dietary habits are common as students transition to college, and, as research has shown, these habits may contribute to weight gain.

Weight-Loss Strategies

Because weight gain is a common problem in college, weight-loss attempts are frequently implemented. While exploring associations between weight-loss strategies and body weight perception, Wharton, Adams, and Hampl (2008) observed that while there were low rates of self-reported overweight and obesity, the majority of participants (73.2%) were attempting to either lose or maintain weight, with almost half (49.8%) attempting to lose weight. Conversely, Davy, Benes, and Driskell (2006) examined eating habits, dieting trends, and nutrition beliefs of undergraduate students, and it was noted that only 13% of participants were trying to lose weight at the time of the study. Differences have also been found when looking at past attempts to lose weight. Malinauskas, Raedeke, Aeby, Smith, and Dallas (2006) explored dieting practices, weight perceptions, and body composition of college females, and 83% of participants reported previous attempts to lose or control their weight. In contrast, Lowe et al. (2006) observed that multiple types of dieting may predict weight gain in college freshmen, and that only 41% of freshmen females surveyed reported being on a diet in the past to lose weight. These studies indicate that attempts to lose weight are common among college

students, and while some students may not have been attempting to lose weight at the time, a high percentage of them have tried in the past.

Gender Differences

Studies have demonstrated a clear difference in weight-loss attempts between males and females. Researchers have found that women are more likely than men to attempt to lose or control their weight (Wharton et al., 2008; Clemens, Thombs, Olds and Gordon, 2008). More specifically, in a recent survey of college students approximately 30% of men and more than 50% of women were attempting weight loss (Economos et al., 2008). While women are more likely to try to control or lose weight, men were more often overweight or obese than their female counterparts (Wharton et al., 2008). Similarly, Cluskey and Grobe (2009), in a study exploring gender differences in behavior changes and weight gain during college, reported that females were more likely to maintain or lose weight than males (40% versus 36%), and that males gained more weight than women (8% of males gained at least 4.5 kg compared to 6% of females). It is more common for women to be concerned with weight than men. In a recent study by Davy et al. (2006), 57.4% of women, but only 28.6% of men, agreed/strongly agreed that they needed to lose weight. These discrepancies between males and females regarding weight-loss attitudes and patterns indicate that while men are more likely to be overweight or obese, women are more likely to be concerned with their weight and attempt weight loss.

Weight-Loss Strategies for Students

There are many methods of dieting and behavior changes for weight loss among college students, and these methods are often different for males and females. In a study

of female college students, five of the most common weight-control behaviors reported by participants were exercising (80%), eating or drinking low-fat/fat-free versions of foods/drinks (59%), eating less than what was wanted (51%), eating or drinking sugar-free versions of foods/drinks (43%), and counting calories (40%) (Malinauskas et al., 2006). Clemens et al. (2008) reported that women were more likely to restrict calories, eat less fat, skip meals, use nonprescription diet pills, use laxatives, use diuretics, and engage in self-induced vomiting to lose weight. In contrast, men were more likely to exercise, use dietary supplements, use anabolic steroids, and fast or starve for weight control. The authors also identified the top two unhealthy practices used - skipping a meal, which was observed in 65.3% of women and 49.1% of men, and using dietary supplements, described by 29.1% of men and 14.0% of women. In addition, it was commonly observed that more women attempted to follow a diet than men. According to Davy et al. (2006), 79.1% of men reported never having tried a diet, as opposed to 65.6% of women. The authors also noted that, in regard to specific diets, more women than men had tried Weight Watchers (6.6% vs. 1.0%), low-fat diets (19.3% vs. 7.6%), low-carbohydrate diets (15.5% vs. 6.7%), and vegetarian diets (4.4% vs. 0%). Interestingly, of participants that had tried a diet, only 17% were pleased with the diets. A wide variety of weight loss strategies are potentially used by college students who seek weight loss, including strategies that are diet-related as well as those that are not diet-related. The studies mentioned demonstrate that both males and females may engage in dieting practices with the goal of losing weight, and that there are often differences between genders in the methods used.

Weight Perception

A person's perception of his or her weight can often be very distorted. In a study examining the associations between body weight perception and weight-loss strategies, 33.2% of respondents viewed themselves as being overweight or obese; however only 28.3% were actually overweight or obese based on BMI (Wharton et al., 2008). They also found that participants who suffered from distorted body images were more likely to participate in inappropriate weight-loss strategies compared to those with accurate body image perceptions. It is also common for individuals with higher BMIs to have more negative perceptions. In a study conducted by Wengreen et al. (2009) to observe changes in diet, health-related behaviors, and weight among first-year college students, subjects with higher BMIs (≥ 25) were more likely to be unhappy with their weight than those with lower BMIs (< 25). One's opinion of his or her weight, whether positive or negative, can have an impact on physical perception. Malinauskas et al. (2006) found that mean perceived attractive weight was 6% lower for normal weight individuals, 15% lower for overweight individuals, and 26% lower for obese individuals. Similarly, mean perceived healthy weight was 5% lower than current weight for normal weight individuals, 13% lower for overweight individuals, and 23% lower for obese individuals. Additionally, most respondents felt that their weight would be higher if they did not consciously try to control it. Specifically, subjects reported that if there was no attempt to control weight, their weight would be 2% to 6% higher than current weight (Malinauskas et al., 2006). As these studies demonstrate, most individuals perceive a lower weight to be healthier and more attractive than their current weight, regardless of weight classification.

Sources of Stress

It is important to consider types and levels of stress that go along with the transition to college life. Economos et al. (2008) discovered that after the transition to college, students experienced less stress from their parents, but increased stress from roommates, as well as an increase in stress regarding academic performance. They also noted that a higher percentage of females, 22%, had five or more causes of stress at the beginning of the study while only 11.6% of men had five or more causes. In comparison, Brougham, Zail, Mendoza, and Miller (2009) discovered that female college students reported higher overall levels of stress, greater stress for familial and social relationships, and greater stress from daily hassles in comparison to males. As the academic year progresses, stress levels tend to increase. Economos et al. (2008) also noted that stress related to academic- and living-related issues increased over the year for both males and females, with males reporting increases in workload, lower grades, and academic performance stress as the year progressed. Additionally, Smith and Renk (2007) explained that academic-related stress was significantly related to anxiety for both males and females in college. These studies suggest the multiple sources of stress affect males and females in different ways.

Stress Eating

With all the stress that occurs during the transition to college students must find ways to cope. These coping mechanisms may not always be healthy behaviors, and eating when under stress is a common response. In the transition to a more independent lifestyle, college students struggle with nutrition (LaFountaine, Neisen, and Parsons, 2006). Ozier et al. (2008) examined how overweight and obesity are associated with emotion- and

stress-related eating and found that participants who ate in response to emotions and stress were more likely to be overweight or obese. Furthermore, in a study that observed the effects of daily hassles on eating behavior, it was determined that daily hassles were associated with increased consumption of both high-fat and high-sugar between-meal snacks and decreased consumption of main meals and vegetables (O'Connor, Jones, Conner, McMillan, and Ferguson, 2008). In addition, it was discovered that females and those who are obese have a significantly higher likelihood of snacking in response to daily hassles. Related to this, Nguyen-Michael, Unger, and Spruijt-Metz (2007) explored emotional eating in adolescents and reported that participants who were classified as emotional eaters had significantly more frequent intakes of salty and sweet high energy-dense foods as opposed to those not classified as emotional eaters. In fact, the mean frequency intake of energy-dense foods was approximately three to four times more than intake of fruits and vegetables. Similarly, Mikolajczyk, Ansari, and Maxwell (2009) looked at food consumption and stress among European students. They discovered an increased consumption of sweets and fast food was associated with increased levels of perceived stress, while higher consumption of fruits and vegetables was correlated with lower levels of depressive symptoms. O'Connor et al. (2008) explained that some stressors, including those that were ego-threatening, interpersonal and work-related, were associated with an increase in between-meal snacks. In contrast, physical stressors, such as feeling anxious or frightened, were associated with significantly decreased consumption of snacks. Kandiah, Yake, and Willett (2008), in a study exploring how stress influences food preferences in adults, reported that 91% of participants reported

trying to make healthy eating choices; however, when under stress, only 51% made healthy eating choices.

Weight may also play a role in emotional eating. Ozier et al. (2008) explained that participants with a higher tendency to eat in response to stress were 13.38 times more likely to be overweight or obese than those with a lower tendency. Similarly, Braet and Strien (1997) observed that obese children had significantly higher scores for emotional eating behaviors than normal weight children. In another study investigating anxiety, depression and emotional eating, Goossens et al. (2006) reported overweight adolescents used eating as a coping mechanism to handle negative emotions. Conversel, Nguyen-Rodriguez, Chou, Unger, and Spruijt-Metz (2008), looking at the association between BMI and stress and emotional eating, discovered that 26% of normal weight participants were categorized as emotional eaters as opposed to 18% of overweight participants. These studies support the idea that individuals who are overweight/obese often have a more difficult time controlling eating behaviors while under stress.

Summary

Overall, it is evident that obesity is a problem of great concern in the United States. Adolescents and young adults are becoming overweight and obese at an alarming rate, and this trend is expected to continue. These studies demonstrate that the transition from living at home to attending college can result in changes in habits that may eventually lead to weight gain. This transition may also bring many other sources of stress that can have adverse effects on weight. As a result, there are often many weight-loss strategies utilized to try to maintain or control weight. The purpose of this study was

to determine relationships among dieting behaviors, stress, weight status, and weight perceptions in college undergraduate females.

CHAPTER 3

METHODOLOGY

Introduction

Obesity is a worldwide problem, and the number of people that are overweight or obese is increasing at an alarming rate; in fact, projection models have shown that by the year 2030, approximately 90% of all American adults will be overweight or obese (Wang et al., 2008). Many studies have reported that weight gain is a common problem among students during college (Cluskey et al., 2009; Economos et al., 2008; Hajhosseini et al., 2006; Kasperek et al., 2008). Also, college can prove to be a very stressful time in one's life, and it is important to understand the impact of these stresses on dietary habits. The purpose of this observational research was to determine the relationships among dieting behaviors, weight status, stress and weight perceptions in undergraduate college females.

Participants

The participants of this study were female undergraduate students aged 18-24 at a mid-sized Midwestern university who were not currently pregnant. The student participants were recruited from Family and Consumer Sciences classes, and participation was voluntary.

Instruments

A variety of instruments were examined for use in this survey. After careful consideration of the purpose of this study and the desired data to be collected, two surveys were chosen for use: the Eating and Appraisal Due to Emotions and Stress (EADES) questionnaire and a modified behavior and weight-perception survey (Ozier et al., 2007; Malinauskas et al., 2006; Calderon, Yu, Jambazian, 2004).

The EADES questionnaire is a validated questionnaire, created by Ozier et al. (2007) that assesses how one uses food to cope with stress and emotions. The survey consists of 49 statements, and subjects are asked to rate their level of agreement with each statement by answering Strongly Disagree to Strongly Agree on a five-point Likert scale. The survey encompasses three factors that assess emotion- and stress-related eating, appraisal of ability and resources to cope, and appraisal of outside influences. Factor 1, Emotion- and Stress-Related eating, was measured by questions that identify eating as a response to emotions or stress. An example of a Factor 1 statement is “I use food to cope with my emotions.” Factor 2, Appraisal of Ability and Resources to Cope with stress and emotions, was measured by questions that examine one’s ability to change a situation, manage one’s emotional reaction, or cope effectively. An example of a Factor 2 statement is “I try to think positive when times are tough.” Lastly, Factor 3, Appraisal of Outside Stressors and Influences, was measured by questions that examine conditions that trigger stress. An example of a Factor 3 statement is “I worry about what other people think of me.” Reliability of this survey was estimated by Ozier et al. (2007) using Cronbach’s α . Specifically, the measures of reliability from Cronbach’s α were: .949 for Factor 1, .869 for Factor 2, and .652 for Factor 3.

The modified behavior and weight-perception survey was adapted from a survey originally created by Calderon et al. (2004) and used in a study examining dieting practices of high school students. It was modified by Malinauskas et al. (2006) for use in a study that observed dieting practices, weight perceptions, and body composition of college females. For the purpose of this research, further modifications were made. First, portions of the survey were updated to ensure the information was current, such as updating diets and supplements used. In addition, content changes were made to reflect the specific goals of the current research by adding demographic and topic-related questions and by giving participants the option to explain answers. Following modification, the survey was reviewed by a panel of five professors in the nutrition field for validity and a panel of five undergraduate students in a general nutrition class for clarity and readability. The final survey consisted of multiple choice and short answer questions regarding current weight and weight perceptions, dieting history, current dieting behaviors, and basic demographics.

Procedures

The researcher contacted faculty members in the Department of Family and Consumer Sciences to identify those willing to assist with subject recruitment. The researcher visited all participating classes and used a script to recruit participants. The study was available online using InQsit, and participants were asked to complete the two study surveys. Participants were given one week to complete the surveys and, after completion, they received extra credit points as deemed appropriate by each professor.

All surveys were completed anonymously. Using the 'BSU Blind Study' authentication allowed participants' responses to remain anonymous, while still

identifying those who completed the surveys. Specifically, the GradeBook page showed a list of students that completed the surveys, while the results page showed only the anonymous responses. All data was stored on a desktop computer with a back-up copy on a flash drive with no identification of subjects by name.

Statistical Analysis

SPSS 17.0 (SPSS Institute, Chicago, IL) was used to input and analyze all data. Descriptive statistics from the modified behavior and weight-perception survey were analyzed, including means with standard deviations for continuous data and counts with percentages for categorical data. Cronbach's α was then calculated for the Eating and Appraisal Due to Emotions and Stress survey. One-way ANOVA was used to compare Factor 1 scores, total number of dieting methods used, perceived highest weights, healthiest weights, attractive weights, and uncontrolled weights among BMI categories. Correlational analysis was then used to compare the use of methods involving restraint with Factor 1 scores and the use of non-diet methods with Factor 1 scores.

Institutional Review Board (IRB) approval

The researcher received exempt approval from the IRB. The research was conducted in an established educational setting. Data was collected solely through the use of the surveys which were completed online. With the use of the BSU Blind method on InQsit, there was no way to connect participants with responses; therefore, all participants remained anonymous.

Summary

Obesity is a widespread problem, and factors such as dieting behaviors and stress-related eating often contribute to weight gain. The researcher used a previously validated

survey, the Eating and Appraisal Due to Emotions and Stress questionnaire, and a modified behavior and weight-perception survey to assess dieting behaviors, weight perceptions and emotion- and stress-related eating in college females. This research will provide healthcare professionals with a better understanding of the connections among weight status, dieting behaviors, stress and weight perceptions.

CHAPTER 4

RESULTS

Demographics

Demographic characteristics of the sample are described in Table 1. All participants were undergraduate students in a Midwestern university. The majority of participants were White (89%), almost one-half were seniors, and 50% lived in off-campus student housing. This study originally began with 187 participants. A total of 41 participants were excluded due to gender (27 were male and 1 did not answer), height (2 had heights that were implausible), age (4 were outside of the age and 1 did not answer), pregnancy (3 were pregnant and 2 did not answer), and weight (1 did not answer).

EADES

In order to determine if the results of the EADES survey were consistent and reliable, Cronbach's α test was conducted for Factor 1, Factor 2, and Factor 3. Cronbach's α for Factor 1 = .945 while Factor 2 = .877 and Factor 3 = .761. Due to the low scores for Factor 3, no further analysis of this data was conducted. Individuals who were overweight/obese reported significantly higher eating in response to emotions and stress, as evidenced by reduced Factor 1 scores ($M=79.5$, $SD=16.3$), than those who were underweight/normal weight ($M=87.8$, $SD=15.3$), $p=.003$. Similarly, individuals who were

Table 1

Demographic Characteristics of Participants

	n	%
BMI Classification		
Underweight	4	2.7
Normal Weight	95	65.1
Overweight	30	20.5
Obese	17	11.6
Residence		
On-Campus Residence Halls	62	42.5
Off-Campus Student Housing	73	50.0
Home	11	7.5
School Classification		
Freshman	40	27.4
Sophomore	23	15.8
Junior	12	8.2
Senior	71	48.6
Race/Ethnicity		
White	131	89.7
Black	9	6.2
Asian or Pacific Islander	2	1.4
Other	4	2.7

overweight/obese reported being less able to change a situation, manage one's emotional reaction, or cope effectively, as evidenced by reduced Factor 2 scores ($M=73.9$, $SD=9.3$), opposed to those who were underweight/normal weight ($M=77.5$, $SD=9.4$), $p=.029$.

Weight-Loss and Weight-Control Practices

Subjects were asked a variety of questions regarding weight management strategies; results are described in Table 2 and Table 3. At the time of the study, 42% of participants were trying to lose weight, 35% were trying to control their weight, and 23% were neither trying to lose nor control their weight. Overall, those who were overweight/obese used significantly more total methods for weight loss ($M=7.2$, $SD=3.6$) than those who were underweight/normal weight ($M=5.4$, $SD=3.6$), $p=.005$. A variety of diet-related strategies were reported ; the most common diet-related strategy involving restraint with food was to eat less than wanted (62%), while the most common strategies that did not involve restraint were eating or drinking low-fat or fat-free versions of food (60%), and eating or drinking sugar-free versions of foods and drinks (47%). Not all strategies involved diet, and the most common non-diet related strategy was the use of exercise (90%). Lastly, the most common weight management product used was dieter's tea, green tea, or green tea pills, with 13% of participants reporting use.

Weight-Loss and Weight-Control Practices and Emotion- and Stress-Related Eating

Regarding stress and emotions, results showed that individuals who were more likely to use food to cope also used a higher number of restraint methods of dieting; this was evidenced by the significant negative correlation between Factor 1 scores and the

Table 2

Weight Management Strategies

	N	%
Diet- Restraint		
Count calories	81	55.5
Count grams of fat	32	21.9
Count grams of carbohydrates	25	17.1
Eat less than wanted	90	61.6
Skip snacks	61	41.8
Skip breakfast	35	24.0
Skip lunch	30	20.5
Skip evening meal	21	14.4
Diet – Non-Restraint		
Eat foods with a low glycemic index	8	5.5
Eat or drink low-fat or fat-free versions of food	88	60.3
Eat or drink sugar-free versions of food/drinks	68	46.6
Use artificial sweeteners	43	29.5
Non-Diet		
Exercise	131	89.7
Smoke cigarettes	9	6.2
Use laxatives	9	6.2
Vomit after eating	15	10.3
Weigh on a scale frequently	51	34.9

Note. Participants were allowed to choose multiple methods, or no methods, so the counts are not equal to the final number of participants.

Table 3

Weight Management Products

	n	%
Meal replacement drinks	9	6.2
Meal replacement bars	10	6.8
Over-the-counter weight-loss supplements	7	4.8
Dieter's tea, green tea, or green tea pills	19	13.0
Physician-prescribed weight-loss medications	2	1.4

use of dieting methods involving restraint in timing and amount of food, $r(140) = -.208$, $p=.001$. Similarly, individuals that use food to cope also use a greater number of non-diet methods, evidenced by a significant inverse correlation between Factor 1 scores and the use of non-diet methods for weight loss or control, $r(140) = -.130$, $p = .046$.

Weight Status and Weight Perceptions

Participants were asked questions regarding weight and weight-perceptions (see Table 4 for a full description of results). Both perceived healthy and perceived attractive weights, as percents of current weight, were significantly lower for overweight/obese individuals ($M=84.6$, $SD=9.2$ and $M=81.7$, $SD=10$, respectively) compared to underweight/normal weight ($M=95.4$, $SD=4.8$ and $M=94.2$, $SD=5.3$, respectively), $p<.001$ and $p<.001$, respectively. Although they did not reach statistical significance, there was a trend that perceived highest and perceived uncontrolled weight, as percents of current weight, were higher for overweight/obese individuals ($M=108$, $SD=11.2$, and $M=109$, $SD=6.6$, respectively) compared to underweight/normal weight ($M=105.5$, $SD=5.8$, and $M=106.4$, $SD=6.6$, respectively), $p=.059$ and $p=.073$, respectively.

Table 4

Weight Perceptions as Percents of Current Weight

	Underweight/Normal Weight	Overweight/Obese
Reported healthiest weight		
<i>M</i>	95.4*	84.6*
<i>SD</i>	4.8	9.3
Reported attractive weight		
<i>M</i>	94.3*	81.7*
<i>SD</i>	5.3	10.1
Reported highest weight		
<i>M</i>	105.5	108.2
<i>SD</i>	5.8	11.3
Reported uncontrolled weight		
<i>M</i>	106.4	109.4
<i>SD</i>	6.6	13.0

* $p < .001$

CHAPTER 5

DISCUSSION

Limitations of the Study

The current study examined interactions among dieting behaviors, weight perceptions, and emotion- and stress-related eating in female undergraduate college students, and there were some limitations that should be noted. One limitation of the study was that participants self-reported their heights and weights. According to Nawaz et al. (2001), the higher a women's weight, the more likely she is to under-report weight while over-reporting height. In light of this finding, self-reported heights and weights in the current study may have led to a misrepresentation of weight classification. Second, this study used solely females. Since previous research has documented differences in weight perceptions, factors influencing weight gain, weight loss attempts, methods used for weight loss, and sources of stress between males and females, the findings should not be used in conjunction with males (Paeratakul et al., 2002; Holm-Denoma et al., 2008; Economos et al., 2008; Wharton et al., 2008; Clemens, Thombs, Olds and Gordon, 2008; Davy et al., 2006; Brougham et al., 2009). Lastly, only general Family and Consumer Sciences classes from a single Midwestern university were used to recruit participants. As a result, the study sample may not be a true representation of the general female college population.

Overweight/Obese Status and Emotion- and Stress-Related Eating

In regards to overweight/obesity and its relationship to emotion- and stress-related eating, the current study found that individuals who were overweight/obese reported significantly higher eating in response to emotions and stress than underweight/normal weight individuals. This was evidenced by low Factor 1 scores from the EADES questionnaire, which represented a greater tendency to eat in response to stress and emotion. This finding is supported by Ozier et al. (2008), who reported that participants in the lowest scoring group for Factor 1 were 13.38 times more likely to be overweight or obese than those in the highest scoring group. Likewise, in a study investigating the role of anxiety, depression and emotional eating on loss of control over eating in adolescents, Goossens et al. (2008) reported that overweight adolescents used eating as a coping mechanism to handle negative emotions. In an earlier study investigating loss of control over eating in obese children seeking treatment, Goossens et al. (2006) determined that obese children ate more when experiencing strong, negative emotions. Furthermore, in a study looking at whether changes in eating behaviors were associated with weight in children, it was shown that there was an increased tendency to overeat for those who were overweight/obese as opposed to those categorized as underweight/healthy weight (Webber et al, 2008). Lastly, Braet and Strien (1997) utilized the Dutch Eating Behavior Questionnaire to observe differences between obese and non-obese children, and they also found that obese children had significantly higher scores for emotional eating behaviors than their normal weight peers. Results from the current study, as well as from previous studies, makes it evident that emotions have the potential to have a negative

impact on eating behaviors and that this is more commonly observed in individuals who are overweight/obese than those who are normal weight.

Diet Strategies

Following a diet is a commonly-used practice when one is trying to lose or control weight. Results from the current study are similar to those reported by Malinauskas et al. (2006), who reported that the most common dieting behaviors used by college females were eating or drinking low-fat or fat-free versions of foods/drinks, consciously eating less than wanted, eating or drinking sugar-free versions of foods/drinks, and counting calories. In comparison, Calderon et al. (2004), in a study which examined dieting practices of high school students, found that a large number of the participants consciously ate less than they wanted in order to control their weight. Furthermore, limiting portion sizes and counting calories or grams of fat were commonly used dieting practices. In a study by Wing and Phelan (2005), information was gathered from the National Weight Control Registry, which investigates characteristics of individuals that have succeeded in maintaining long-term weight loss. The authors found that the most common dieting strategies for weight loss were to restrict certain foods (88%), limit food quantities (44%), and count calories (43%). According to Clemens et al. (2008), reporting on a study that assessed weight-control behaviors in college students, another commonly-used practice was to skip meals, with 65% of female participants reporting they had skipped meals for weight control. These studies, in addition to the current study, demonstrate the popularity of weight loss and weight control methods involving changes in diet.

Non-Diet Strategies

Weight control methods are not limited to changes in diet. Exercise is a very popular method that has many benefits, including increased metabolism, which in turn leads the body to burn more calories at rest (“Common-sense strategies to long-term weight loss,” 2009). Malinauskas et al. (2006) reported that the most common behavior used by undergraduate college females was exercise (80%). Similarly, Wharton et al. (2008) researched weight-loss practices in college students and reported that 72% of participants used exercise to lose weight. Furthermore, the website for the National Weight Control Registry reported that 90% of members exercise an average of 1 hour per day (“NWCR Facts,” 2010). These findings support the current study in which 89.7% of participants reported using exercise as a weight-control or weight-loss technique, suggesting exercise is a popular non-diet method and is preferred by males and females of many ages.

An additional non-diet method frequently reported by subjects in the current study was the practice of weighing oneself. According to information on the National Weight Control Registry website, 75% of members weigh themselves at least once a week (“NWCR Facts,” 2010). In the current study, 35% of participants reported that they weighed themselves frequently to lose or control their weight. Gokee-LaRose et al. (2009) described that at the baseline of their study, 5% of participants reported weighing more than once a day, 10% weighed daily, 25% weighed at least once a week, 20% weighed less than once a month, and 20% never weighed themselves. Monitoring one’s weight has the potential to be very beneficial to health, as suggested in a study by Butryn et al. (2007). In this study, the authors investigated the relationship between self-

weighing and weight-loss maintenance among members of the National Weight Control Registry. Members who had the highest frequency of self-weighing had decreased percentage of caloric intake from fat, decreased disinhibition, increased cognitive restraint, and lower BMI at their highest lifetime weight compared to those with the lowest frequency of self-weighing. In addition, maintaining or increasing the amount of self-weighing from baseline to the follow-up at 1-year was associated with less weight regain. As described by Butryn et al. (2007), the act of weighing oneself daily may help with weight control because it allows individuals to catch and be able to reverse small weight gains. These studies illustrate that individuals who choose to weigh themselves more frequently are often more successful with losing weight and/or maintaining current weight compared to those that do not.

Use of Food as a Coping Mechanism and Use of Dieting Methods that Involve Restraint

The current study explains that individuals who use a greater number of dieting methods involving restraint in quantity or timing of food intake are also more likely to use food as a coping mechanism in response to stress. While this may appear contradictory, other studies have shown similar findings. Solomon (2001) completed a study of women that overate to test a model that stress results in eating as coping, and then eating becomes a stressor. The study findings suggested that eating is stressful to those who frequently use strategies to control overeating and overweight and that the frequent use of these strategies worsened their moods. Similarly, a study conducted by Polivy, Coleman, and Herman (2005) examined relationships between being deprived of foods, and the resulting intake and craving for the foods in college undergraduate

females. The authors concluded that after being asked to not eat for three hours, restrained eaters, defined by a restraint scale, reported feeling hungrier than those classified as unrestrained eaters. In addition, not only did restrained eaters report higher cravings for the food, they also ate more than unrestrained eaters after the three-hour restriction. In response to the increased intake, restrained eaters blamed negative affect following the food deprivation. Likewise, Roemmich, Wright, and Epstein (2002) conducted a study to determine whether or not dietary restraint has an impact on stress-induced eating in youth. They found that children with high dietary restraint ate more snacks when in a stress condition than those with low dietary restraint. The current study, in support of findings from previous studies, interestingly shows that individuals prone to using restraint with eating also tend to use food to cope with stress, as well as use more dieting methods, in comparison with those that do not use restraint.

Weight Management Products

An additional method that is sometimes utilized to lose or control weight is the use of weight management products, including over-the-counter weight-loss supplements, meal replacement bars and drinks, and green tea supplements. A study conducted by Pillitteri et al. (2008), in which 3,500 U.S. adults were randomly contacted via telephone, reported that one-third of respondents that had made a serious weight-loss attempt reported having ever used a dietary supplement for weight loss. In contrast, Wilson et al. (2004), in a survey of U.S. adolescents, reported that 11% of participants had used weight-loss supplements in their lifetime. In the current study, the most popular weight management products used by participants were dieter's tea, green tea, or green tea pills, with 13% of participants reporting they had used them. This is similar to results in a

study in which 21.5% of participants had used herbal or green tea in their lifetime (Wilson et al., 2004). In contrast, a study conducted by Johnson and Blanchard (2006), investigating alternative medicine and herbal supplement use in college students, found that the most common herbal supplement used was also green tea, with 41% of participants reporting use. In an additional study conducted by Stasio et al. (2008) that examined herbal and dietary supplement use in college, 31% of students reported using an herbal supplement and 14% reported using a weight-loss supplement in the week prior to the study. It is possible that fewer participants in the current study used weight management products because they were already using other methods. The above studies show that while not as popular as other diet and non-diet methods, the use of weight management products is an option some individuals choose while try to lose or control their weight.

CHAPTER 6

CONCLUSION

The purpose of this study was to determine relationships among dieting behaviors, stress, weight status, and weight perceptions in college undergraduate females. The current study found that individuals who were overweight/obese reported significantly higher eating in response to stress than underweight/normal weight individuals. Overweight/obese individuals also reported being less able to change a situation, manage one's emotional reaction, or cope effectively. In regards to weight loss methods, overweight/obese individuals reported using significantly more total methods for weight loss than those who were underweight/normal weight. Concerning stress, those that were more likely to use food to cope with stress also used a higher number of restraint methods of dieting as well as non-diet methods. These findings suggest that those who are overweight/obese have a more difficult time managing their eating habits when under stress opposed to those that are underweight/normal weight; this may explain why overweight/obese individuals use multiple strategies to lose/control weight. Furthermore, individuals that turn to food when stressed also tend to restrict foods when trying to lose or control weight. However, their use of these restrictive dieting strategies, paradoxically, may act as a stimulus for stress-related eating, with the resulting cycle promoting

overweight/obesity. It is important to recognize these tendencies before a change can be made.

In order to gain a better understanding of these findings, further research is recommended. The results from this study imply that college students may benefit from information about successful methods for avoiding weight gain in college as opposed to attempting multiple methods that may not be healthy or provide desired results. Similarly, students should be further educated about stress, its potential effects on eating, and healthy strategies for coping with stress. Further research that implements dieting methods involving restraint versus non-restraint may be beneficial to see how they compare with weight loss, both short-term and long-term, and how well they can be incorporated into the college lifestyle. Moreover, research in which emotional eaters are advised to try different coping methods when stressed may result in a better understanding of what drives emotional eaters to eat when stressed as well as methods that may be used instead. This further research would provide college students with more information on the importance of healthy diet and lifestyle decisions as well as suggest alternatives to limit emotional eating.

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APPENDIX A

Eating and Appraisal Due to Emotions and Stress Questionnaire

Instructions: Please determine your level of agreement with the following statements. There are no right or wrong answers. Treat each question separately and answer as honestly as possible. It is important that you answer all questions. Choose only one answer per statement. Please respond to items 1-49 as follows:

1. If you **strongly disagree** with the statement
2. If you **disagree** with the statement.
3. If you are **neutral** to the statement.
4. If you **agree** with the statement.
5. If you **strongly agree** with the statement.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	My family supports me when I have problems.	1	2	3	4	5
2.	I am confident I can control my eating when I feel happy.	1	2	3	4	5
3.	I overeat when I am stressed.	1	2	3	4	5
4.	I can usually work out a solution to my problems.	1	2	3	4	5
5.	I am capable of handling my own problems.	1	2	3	4	5
6.	I do NOT feel secure in my life.	1	2	3	4	5
7.	I try to find alternative solutions to my problems.	1	2	3	4	5
8.	I overeat when I socialize.	1	2	3	4	5
9.	I weigh the pros and cons of situations before I make decisions about what to do.	1	2	3	4	5
10.	I worry about what people think of me.	1	2	3	4	5
11.	I comfort myself with food.	1	2	3	4	5
12.	I eat when I am upset with myself.	1	2	3	4	5

13.	I feel the need to make others happy.	1	2	3	4	5
14.	I am confident I can control my eating when I am tired.	1	2	3	4	5
15.	My friends support me when I have problems.	1	2	3	4	5
16.	I feel sad often.	1	2	3	4	5
17.	I am confident I can control my eating when I am angry.	1	2	3	4	5
18.	I am able to meet my emotional needs.	1	2	3	4	5
19.	It is hard for me to stop eating when I am full.	1	2	3	4	5
20.	I am able to say no when I need to.	1	2	3	4	5
21.	I try to think positive when times are tough.	1	2	3	4	5
22.	I am confident I can control my eating when I am sad.	1	2	3	4	5

23.	I have control over my emotions.	1	2	3	4	5
24.	I eat to avoid dealing with problems.	1	2	3	4	5
25.	I talk about my feelings.	1	2	3	4	5
26.	I am confident I can control my eating when I am upset with myself.	1	2	3	4	5
27.	Other people influence how I handle problems.	1	2	3	4	5
28.	I deal with problems sooner rather than later	1	2	3	4	5
29.	I try to resolve a problem when I know there is something wrong in my life.	1	2	3	4	5
30.	I am confident I can control my eating when I feel upset.	1	2	3	4	5
31.	I feel out of control when I eat.	1	2	3	4	5

32.	I eat when I am frustrated.	1	2	3	4	5
33.	I am capable of dealing with stressful situations.	1	2	3	4	5
34.	I am confident I can control my eating when I am frustrated.	1	2	3	4	5
35.	I use food to cope with my emotions.	1	2	3	4	5
36.	I am able to meet my spiritual needs.	1	2	3	4	5
37.	I eat when I am tired.	1	2	3	4	5
38.	I do NOT allow people to change my mind.	1	2	3	4	5
39.	I eat when I am angry.	1	2	3	4	5
40.	I eat when I am sad.	1	2	3	4	5
41.	When a problem arises, it is hard for me to make a plan of action and follow it.	1	2	3	4	5
42.	I am confident I can control my eating when I am anxious.	1	2	3	4	5
43.	I do NOT see challenges as stressful.	1	2	3	4	5
44.	I am confident I can control my eating when I am relieved.	1	2	3	4	5
45.	I eat when I am anxious.	1	2	3	4	5
46.	I have control over my life.	1	2	3	4	5
47.	I eat when I am relieved.	1	2	3	4	5
48.	I try to analyze a problem in order to better understand it.	1	2	3	4	5
49.	I do NOT have control over how much I eat.	1	2	3	4	5

APPENDIX B

Modified Dieting Behaviors and Self-Perceptions Survey

Demographic Information

1. School classification:

- Freshmen Sophomore Junior Senior

2. Gender: Male Female

3. Age: _____ years

4. Current Residence:

- On-Campus Dormitory
 Off-Campus Student Housing
 Home

5. Race/Ethnicity:

- White Asian/Pacific Islander American Indian/Alaskan native
 Black Hispanic Other- Please list: _____

Weight Information

1. Current weight: _____ pounds

2. Current height : _____ inches

3. Highest weight: _____ pounds

4. At what weight do you feel you would be most healthy? _____ pounds

5. At what weight do you feel you would be most attractive? _____ pounds

6. Do you feel pressure to be at a certain weight?

- Yes No (If so, skip to question 8)

7. Rank the top three (1=highest, 2=2nd highest, 3=3rd highest) sources of pressure you feel to be a certain weight:

- Self
 Significant other
 Family members
 Friends
 Colleagues at work
 Media influence (TV, magazines)
 Other (please specify): _____
-

8. Do you have (or have you ever had) a weight problem?

- Yes
 No (If so, skip to Diet Information)

9. At what age did your weight problem begin: _____ years old**Diet Information****1. Which of the following best describes you?**

- Trying to lose weight
 Trying to control weight
 Neither trying to lose nor control weight (Skip to Nutrition Information)

2. At what age did you first try to lose or control your weight? _____ years old**3. Which of these methods have you used to lose or control your weight (mark all that apply)?:**

- Count calories
 Count grams of fat
 Count grams of carbohydrates
 Eat foods with a low glycemic index
 Eat less than you want
 Eat or drink low-fat or fat-free versions of foods (e.g. low fat crackers or popcorn, baked potato chips, skim milk, low-fat cheese or ice cream)
 Eat or drink sugar-free versions of foods/drinks (e.g. diet soda)
 Exercise
 Skip snacks
 Skip breakfast
 Skip lunch
 Skip supper
 Smoke cigarettes
 Use artificial sweeteners (e.g. Equal, Sweet n' Low)
 Use laxatives
 Vomit after you eat
 Weigh yourself on a scale frequently
 Other (please specify): _____

4. Which of these products do you currently use to lose or control your weight (mark all that apply)?

- I do not currently use any products to lose or control my weight
 Over-the-counter meal replacement drinks
 If yes, please describe: _____
 Over-the-counter meal replacement bars
 If yes, please describe: _____
 Over-the-counter weight-loss supplements
 If yes, please describe: _____

- Dieter's tea, green tea, green tea pills
If yes, please describe: _____
- Physician-prescribed weight loss medications
If yes, please describe: _____
- Other: The following are other products I currently use to lose or control my weight:

5. Do you follow any specific diets? If yes, please describe.

- I do not use any diets to lose or control my weight
- Yes (Please describe):

6. What do you think your weight would be if you did not take steps to lose or control your weight? _____ pounds

Nutrition Information

1. Rank the top three (1=highest, 2=2nd highest, 3=3rd highest) resources you use when looking for nutrition information.

- | | | |
|------------------------------------|---|--|
| <input type="checkbox"/> Internet | <input type="checkbox"/> Radio | <input type="checkbox"/> Television |
| <input type="checkbox"/> Magazine | <input type="checkbox"/> School course text books | <input type="checkbox"/> Other: Please list: _____ |
| <input type="checkbox"/> Newspaper | <input type="checkbox"/> Scientific journals | _____ |

2. Rank the top three (1=highest, 2=2nd highest, 3=3rd highest) individuals you ask when you want nutrition information or have nutrition questions.

- | | |
|--|--|
| <input type="checkbox"/> Acupuncturist | <input type="checkbox"/> Personal trainer |
| <input type="checkbox"/> Athletic trainer | <input type="checkbox"/> Professor
List course professor teaches: _____ |
| <input type="checkbox"/> Chiropractor | <input type="checkbox"/> Relative
List profession: _____ |
| <input type="checkbox"/> Coach | <input type="checkbox"/> Strength coach |
| <input type="checkbox"/> Dietitian | <input type="checkbox"/> Weight-loss center personnel |
| <input type="checkbox"/> Friend | <input type="checkbox"/> Other:
Please specify: _____ |
| <input type="checkbox"/> Health club personnel | |
| <input type="checkbox"/> Medical doctor | |
| <input type="checkbox"/> Nurse | |

APPENDIX C

IRB Letter



Institutional Review Board

DATE: April 7, 2010

TO: Jennifer Hollman

FROM: Ball State University IRB

RE: IRB protocol # 162351-2

TITLE: Interactions Among Weight Status, Stress, and Dieting Behaviors in Female College Students

SUBMISSION TYPE: Amendment/Modification

ACTION: DETERMINATION OF EXEMPT STATUS

DECISION DATE: April 7, 2010

The Institutional Review Board reviewed your protocol on April 7, 2010 and has determined the procedures you have proposed are appropriate for exemption under the federal regulations. As such, there will be no further review of your protocol, and you are cleared to proceed with the procedures outlined in your protocol. As an exempt study, there is no requirement for continuing review. Your protocol will remain on file with the IRB as a matter of record.

While your project does not require continuing review, it is the responsibility of the P.I. (and, if applicable, faculty supervisor) to inform the IRB if the procedures presented in this protocol are to be modified or if problems related to human research participants arise in connection with this project. **Any procedural modifications must be evaluated by the IRB before being implemented, as some modifications may change the review status of this project.** Please contact Amy Boos at (765) 285-5034 or akboos@bsu.edu if you are unsure whether your proposed modification requires review or have any questions. Proposed modifications should be addressed in writing and submitted electronically to the IRB (<http://www.bsu.edu/irb>) for review. Please reference the above IRB protocol number in any communication to the IRB regarding this project.

Reminder: Even though your study is exempt from the relevant federal regulations of the Common Rule (45 CFR 46, subpart A), you and your research team are not exempt from ethical research practices and should therefore employ all protections for your participants and their data which are appropriate to your project.