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Associated factors of intuitive eating in undergraduate students at a midwestern university

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ABSTRACT

ASSOCIATED FACTORS OF INTUITIVE EATING IN UNDERGRADUATE STUDENTS AT A MIDWESTERN UNIVERSITY

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Data is limited on the associated factors that most influence the ability to engage in Intuitive Eating. Intuitive Eating is an approach that teaches one how to create a healthy relationship with food, mind, and body.

The research design is a non-experimental, cross sectional and correlational survey study. College students were recruited from Northern Illinois University to participate in a web-based survey study. Mean age was 24 years old. The mean BMI was 25kg/m(2) ± 6.135 SD. 75% respondents were females from Northern Illinois University. The average Intuitive Eating score for college students was 77.85 ± 77.85 SD. In sequential order of hypothesis, results indicated the following: Body Mass Index and Intuitive Eating indicated a weak negative linear association (-0.29, p=0.01). Dietary Intent Scale and Intuitive Eating has a negative linear association (-0.41, p=0.01). Past diagnosis of an eating disorder and Intuitive Eating has no correlation (-0.132, p=0.01). Eating and Appraisals Due to Stress were most associated with Intuitive Eating (0.775, p=0.05).

Emotional eating and stress were the factors that most influenced the level of Intuitive Eating. The understanding of the most common risk factor for inhibition of Intuitive Eating in the college population was identified. This valid information can help to lead to the development of interventions that support for the development of healthy lifestyle habit.

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CHAPTER 1

INTRODUCTION

Background and Rationale

Obesity is a current ongoing issue that impacts the health of the United States. Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health (73). An individual's weight and health status can be further determined by their body mass index (BMI). A normal categorical BMI range for an adult is 18.5-24.9kg/m ^{2}. A person with a BMI equal to or more than 25.0kg/m ^{2} is considered overweight. A person with a BMI of 30.0kg/m ^{2} or more is generally considered obese (73). The prevalence of obesity is highest among the American population. According to the World Health Organization (73), in 2008, research indicated that 62% of Americans were overweight in both genders, and 26% for obesity (73). More specifically, more than 33% of adults and 17% of youth in the United States were obese (40). It is extremely crucial to fully comprehend the health status of the nation and seek non-traditional venues of improving health.

National trend data suggests that emerging adults who are ages 18 to 25 years old are the individuals who are most at risk for the development of obesity, unhealthy diets and inactivity (36). The college-aged population (18-29 years old) has the greatest increase in obesity rates

over any other American population (increasing from 7.1% to 12.1% (36). Among the college population, 36.7% are overweight or obese (3). The college population may already be at risk for maladaptive eating behaviors simply due to their emerging adulthood and transitioning stage.

The college population experiences changes in many aspects. According to the Social Ecological Model (SEM), there are four factors (societal, community, relational and individual) which may influence an individual's choices. Societal influential factors can include religion, culture, race, social policies, etc. Community influential factors can include on/off campus housing, transportation, businesses (restaurants, markets), community, etc. Relationship influential factors can include peers, family, classmates, roommates, supervisors, resident advisors, rituals, customs, traditions, economic forces, diversity, athletics, recreation, intramural sports, clubs, etc. Individual influential factors can include gender, religious identity, racial/ethnic identity, sexual orientation, economic status, financial resources, values, goals, expectations, age, genetics, resiliency, coping skills, time management skills, health literacy, etc (31). This multiplicity of factors can potentially lead to maladaptive eating behaviors which can lead to further implications of emotional eating, eating disorders, and overall compromise of health.

Inadequate health behaviors can lead to Obesity. Obesity is a concerning issue because it can affect overall health and can create further health risks if untreated. Obesity has slowly risen over the years; if the trends of obesity continue to increase, then the nation will experience widespread health risks such as: type 2 diabetes mellitus, heart disease, hypertension, high cholesterol, stroke, sleep apnea, osteoarthritis, gallbladder disease, liver disease, depression and anxiety disorders (47). Chronic diseases are the major cause of death and disability worldwide.

More specifically, in the United States, cardiovascular disease was the highest contributing mortality factor (38%) (65).

There is a need to shift the focus from weight management to health promotion. Intuitive Eating offers an alternative for the traditional paradigms of weight management and weight loss. Intuitive Eating is an approach that teaches one how to create a healthy relationship with food, mind, and body - where one ultimately becomes the expert of their own body. According to Tribole, a primary researcher and founder of Intuitive Eating, "You learn how to distinguish between physical and emotional feelings, and gain a sense of body wisdom" (58). From birth, newborns are able to determine on their own when they are hungry and when they are full which honors the internal satiety cascade (3). Intuitive Eating is a skill that humans have the capacity and ability to relearn if practiced mindfully. Intuitive Eating includes practices of which advocate the regulation of attention through nonjudgmental focus on thoughts, feelings, and/or sensations. An intuitive eater is able to understand his/her stimulus and responses (3).

Many factors can contribute to weight gain and obesity and inhibit Intuitive Eating, such as emotional eating, restrictive dieting, and eating disorders. Thus, by gaining knowledge on the aforementioned factors, the current research can be used as a tool to help individuals achieve overall health.

Research Purpose

Intuitive Eating holds potential as an effective intervention for those struggling with maladaptive eating behaviors and psychopathology that accompanies eating (15). Through previous research, Intuitive Eating appears to be a promising intervention to assist adults in

regaining a connection with hunger cues, thus improving overall health. However, it is not well known how often and to what extent college students use this technique.

Therefore, it is important to understand the factors that are most associated with the inability to be an intuitive eater. Justifying a main cause most associated with the causes of obesity can help to reduce the prevalence of obesity in the college population. Identifying factors that most contribute to weight gain in students can help for the development of interventions. Thus, interventions will ultimately support the development of healthy lifestyle habits. This research will help to identify if undergraduate students are intuitive eaters and the factors that influence their ability to be mindful while eating. Data was obtained through the distribution of an electronic survey to undergraduate college students in order to determine risks associated with the absence of Intuitive Eating, determine awareness and knowledge of Intuitive Eating.

Thus, the purpose of this study is to identify to what extent college students use intuitive eating, if at all. In addition, the research will help to better understand the most common risk factors associated with the inhibition of Intuitive Eating in the college population. The research study will help to identify risks associated with the absence of Intuitive Eating by observing factors such as emotions and stress, dieting behaviors, and a medical diagnosis of an eating disorder.

Research Questions

Research questions to be answered by this study include the following:

1. Is there an association between body mass index (BMI) classification and Intuitive Eating (as measured by the Intuitive Eating Scale 2 Scores (IES2))?

2. To what extent do past dieting efforts (as measured by the Dietary Intent Scale (DIS)) influence Intuitive Eating?
3. Does a past diagnosis of an eating disorder (measured by a response of yes or no) affect Intuitive Eating (as measured by the Intuitive Eating Scale 2 Scores (IES2))?
4. Is Emotion and Stress-related Eating (as measured by the Eating and Appraisal Due to Emotions and Stress (EADES) questionnaire) associated with Intuitive Eating?
5. What is the average Intuitive Eating scores (as measured by IES2) for the undergraduate college students?

Hypotheses

The research hypotheses include the following:

1. Intuitive Eating Scale (IES2) scores will be inversely correlated with BMI status;
2. Previous engagements in restrictive dieting (as measured by the Dietary Intent Scale (DIS) will be significantly associated with Intuitive Eating Scale (IES2) scores;
3. A past diagnosis of eating disorders by a medical professional (as measured by a response of yes or no) will be significantly associated with Intuitive Eating Scale (IES2) scores;
4. Eating and Appraisal Due to Emotions and Stress (EADES) factor levels will be inversely correlated with IES2 scores;
5. There will be a significantly higher average of individuals who do not practice Intuitive Eating compared to individuals who do practice Intuitive Eating (as measured by the Intuitive Eating Scale (IES2) scores).

CHAPTER 2

REVIEW OF LITERATURE

Introduction

Intuitive Eating has been researched in recent times for its effectiveness in weight loss, weight maintenance, and increased self-efficacy to make mindful choices. However, many of the studies do not have a primary focus on the college population and the philosophy of Intuitive Eating. Nor does previous research examine the most influential internal and/or external factors that contribute to, or inhibit the practice of intuitive Eating among college students. Therefore, the purpose of the literature review is to focus on five major themes: obesity and weight status among the college population, Intuitive Eating, emotional eating and stress related to weight status, dieting behaviors related to weight status, and diagnosis of binge eating disorder related to weight status. These focuses are important to better comprehend their influences on the college population, specifically, to determine how Intuitive Eating relates to overweight and obesity, emotional eating and stress, dieting behaviors and the risk of developing an eating disorder.

Overweight/Obesity Among American Population and Demographics

Up to 33% of USA adults are overweight, and 17% of children and adolescents are overweight (39). However, the United States adults saw a faster increase in obesity rates than in the increase in overweight rates in children and adolescents (68). According to National Health and Nutrition Examination Survey (NHANES) conducted in 2011-2012, used to determine weight and height or recumbent length of the US population, there were no significant changes in obesity prevalence in youth or adults between 2003-2004 and 2011-2012. Regardless, the prevalence of obesity among the American population continues to be high (40).

Demographically, Caucasian men and women had the highest weight increase rate in the combined prevalence, compared with African Americans and Mexican Americans within both genders (68). Moreover, according to NHANES (1970's through 2004) and NHANES projections, by year 2030, African American women (prevalence 96.9%) and Mexican American men (prevalence 91.1%) will be the groups most affected by the weight increasing weight trends (68). In trends continue to increase then NHANES projections indicate that all of the American population will be overweight or obese by 2048 (68). Concerning gender, women had a faster increase in weight gain than men (68). Furthermore, obesity is significantly higher among women. More specifically, in America, more than 50% of women were overweight (65).

In addition, the highest rates of obesity are found among women with lower education. Women with college degrees are less likely to have obesity compared with less educated women. Among women, the overall prevalence of obesity among those who had completed college was 13-16% lower than in other groups. Among men, the prevalence of obesity was lowest (25%) among college graduates but highest (35%) among those who had only completed some college. There was little difference in obesity prevalence between those who had not finished high school

and those who had completed some college (30). The current study aims to determine the weight status of college students and compare the level of education with their ability to use Intuitive Eating as a weight control mechanism.

Weight Status Among College Students

Nearly 32% of North American college students are overweight or obese, with the average body mass index (BMI) in the upper classification categories (3). The rate of obesity is increasing most rapidly among adults in the 18-29-year-old age group 32. Weight gain among college students has been linked to a number of factors such as newly found independence and food choices, lack of facility to choose and prepare healthier options. Also, stress has been cited as a contributing factor to weight gain in college freshman (46). In recent years a number of studies have focused on weight gain among college students. Some research has reported that on an average, college freshmen tend to gain fifteen pounds following their first academic year in college. The 'freshman 15' phenomenon among university students was observed in a longitudinal study at a large public university in the Northeastern United States of 290 participants. Results indicated that nearly 12% of students gained 15 pounds or more, college students gained on average 3.2 pounds from their first through third semesters. Moreover, in regards to weight and academics, students with lower Scholastic Assessment Tests (SAT) scores were more likely to gain 15 or more pounds (17).

Additional research conducted seems to show similar trends in regards to weight gain. Serlachius surveyed 268-freshman students to determine if stress affected weight change in college students. Students reported a significant weight increase in their first year (1.53 kg±2.70, $p= 0.001$). Fifty-five percent of the participants reported weight gain, 12% weight loss, and 33%

remained stable. Sixty-one percent of women reported weight gain while only 44% of men reported weight gain. Participants who snacked more had a greater reported weight gain (46). Furthermore, another study of 24,613 students found significantly higher rates of overweight and obesity among students in their later years of college (33). The height and weight were self-reported in this study so the rates of overweight and obesity must be interpreted with caution.

Intuitive Eating and Obesity

According to Evelyn Tribole, MS, RD, "Intuitive Eating is an approach that teaches you to create a healthy relation with your food, mind, and body—where you ultimately become the expert of your own body" (58). There are ten principles of Intuitive Eating which include the following: reject the diet mentality, honor your hunger, make peace with food, challenge the food police, respect your fullness, discover the satisfaction factor, honor your feelings without using food, respect your body, exercise—feel the difference, and honor your health—gentle nutrition (58). Intuitive Eating is a non-diet approach to a healthy lifestyle where the individual uses their biological hunger signals to make choices about hunger and satiety (58).

In 2006, Tylka survey 1260 female undergraduate students to observe intuitive eating and weight status. Tylka found that female college students who scored positively on the Intuitive Eating Scale (IES) surveys were less likely to be overweight or obese. No other studies reviewed addressed Intuitive Eating as a factor associated with weight gain, but the research supports an association. Tylka's research, however, only addressed female college students (55). The current study will include both males and females.

Kidd further lends support to Intuitive Eating and weight change using a mixed methods study of a convenience sample of 12 obese women. Data was collected at baseline and 8 weeks followed by a focus group. Participants said they started to feel control over how and what they ate. As they increased awareness of thoughts and feelings related to food and eating, they began to watch themselves throughout the day. The application of mindful principles can impact the following: weight loss, decreased food cravings, decreased BMI, reduced binge eating episodes, improved emotion regulation, and increased self-efficacy of eating behaviors. However, the study was limited by the small sample size, low retention rate, questionnaire not previously validated beyond initial psychometric testing, bias, and possible focus group dishonesty (21).

Overall, Children are born knowing how to regulate their food intake (28). A multitude of stimuli can trigger an individual to consume and over consume food, and cause a person to engage in unhealthy eating styles. Stimulus can be associated with the following factors: obesity, emotional eating, binge eating disorder, and dieting. It is important to identify these factors most associated with the absence of Intuitive Eating so that individuals can once again know how to regulate their food intake.

Health At Every Size (HAES)

Intuitive Eating is a component of Health at Every Size (HAES). Health at Every Size is a paradigm that focuses on body acceptance, social support and replacing food restrictions with internal regulation of eating behaviors (5). Terms associated with Intuitive Eating and the HAES paradigm include some of the following: internal cues, flexibility, satisfaction, pleasure, trust, empowerment, nourishment, compassion, acceptance, freedom, and ownership (28). Intuitive

Eating is an underlying component of HAES and therefore is a non-diet approach that ultimately focuses on the health promotion of individuals. Health at Every Size is a non-diet approach that focused on overall wellbeing and health rather than weight status. Health at Every Size can be beneficial because it involves the promotion of a healthy lifestyle by creating long term healthy habits with body acceptance. Health at Every Size relates to Intuitive Eating because both practices involve similar components. Both HAES and Intuitive Eating adapt the promotion for a healthy lifestyle by trusting and empowering one's self with body acceptance and ability to make healthful, mindful choices.

Studies have been conducted in order to evaluate the use of HAES for patients with obesity. A six month randomized clinical trial of 78 obese male and female chronic dieters was conducted. The intervention included six months of weekly HAES sessions. HAES sessions included those of which practiced the main concepts previously discussed within the HAES paradigm. The results indicated that there was an improvement in anthropometry, metabolic fitness, energy expenditure, eating behaviors and psychology. The program was able to help the group members maintain their weight after a 2-year evaluation. Overall, the HAES approach enabled participants to maintain long-term behavior change whereas the diet approach did not (5).

Moreover, in 2009, a randomized control trial of a sample of 144 premenopausal overweight/obese women was conducted. The subjects received a four-month intervention, a six-month follow up and a one-year post-intervention. Forty-eight women were randomly assigned to either a HAES group, social support group or control group. The research study examined

their eating behaviors, appetite ratings, anthropometric data and level of physical activity. The study revealed that the HAES intervention does have long-term beneficial effects on eating behaviors. Situational susceptibility to disinhibition and susceptibility to hunger significantly decreased over time in both HAES groups (-0.9+/-0.2 and -1.3+/-0.5, respectively) (44).

Intuitive Eating and Emotional Stress

Ignoring or suppressing emotional signals may lead to automatic thoughts and behaviors in overeating (21). Emotional eating is defined as "eating in response to emotions, which may lead to the consumption of excessive calories, which typically leads to weight gain" (53). Individuals may be more likely to engage in emotional eating as a substitute for fulfilling their needs in order to maintain homeostasis (53). More specifically, emotional eaters will typically indulge in foods by ignoring senses of internal hunger cues and eat past their satiety levels. Emotional eaters may have very little to no regulation on their food habits. Emotions that may trigger a person to eat certain food items and eat those foods in excess may include the following: stress, depression, and anger. By ignoring or suppressing emotional signals, an individual creates automatic thoughts and behaviors leading to an overconsumption of food. Emotional eaters may not be able to differentiate automatic, emotion-driven eating and physical hunger (53).

In regards to stress, the Serlachius study also found that the stress frequency and severity was significantly higher among those that gained weight or lost weight compared to those with a stable weight. Stress is likely a casual factor for weight change in undergraduate students (46). In 2007, a research study surveyed 2038 college students at a Midwestern University to determine what factors contributed to BMI. The weight gains and weight loss group had significantly higher stress frequency and severity scores compared to the stable weight group. Stress was positively correlated with weight change. Stress severity was associated with a greater risk of weight gain and weight loss (1). The study concluded no significant predictors for men. However, women who gained weight were more likely to have maladaptive coping behaviors. The study was not prospective so the researchers could not determine if it was a causal relationship between stress and weight change.

In 2013, a study was conducted using 233 female college students to understand the relationship between self-compassion and Intuitive Eating. Results showed that self-compassion was positively associated with Intuitive Eating. Women who had a higher acceptance for body image had higher levels for Intuitive Eating. The relationship between self-acceptance and Intuitive Eating was examined by image acceptance and action as well as distress tolerance. Results showed that body image acceptance and action was higher while distress tolerance was lower. Moreover, high self-esteem and self-compassion were associated with a lower BMI. Overall, research concluded that there was a higher self-compassion and ability for Intuitive Eating (49).

Transactional Model of Stress and Coping

In 1984, Lazarus and Folkman developed the transactional model of stress and coping. This model is a cognitive approach rather than just a general adaptations syndrome (short and long-term reactions to stress, i.e. fight or flight). The model is also a dynamic model because it has two appraisals, both primary and secondary. These appraisals allow for the individual to choose a response (coping mechanisms) to a certain stressor. The transactional model can vary from person to person because of differences in individuals. In addition, this model is beneficial because it demonstrates the ability for the individual to make choices and develop alternative methods for stressors (25).

Individuals are most vulnerable to stress because of interactions socially and environmentally. Stress can rise when there is a high physical or emotional demand placed on an individual. Emotional based-coping can happen when the individual feels that they do not have control of the situation. The individual will interpret a stressor and create a coping mechanism. First, the individual will encounter a stressful event where they then instinctually make a primary appraisal by observing all concerns to their well-being. The stressor can either be viewed as beneficial, harmful or having no effect. The individual will develop a coping mechanism to that stressor if he/she feels that the stressor is harmful. If the stressor is perceived as a threat then the individual will develop anxiety and/or fears. If there is a harmful effect, then individuals will make a secondary appraisal to create a more desirable outcome. If the stressor is not seen as a threat then it can be viewed as positive and/or a challenge.

In turn, the individual evaluates coping options to change the undesirable conditions. The person will try to create a positive environment by looking at internal and external options. For example, a person may use food as a coping mechanism to stressors. Problem based coping is the

attempt of the individual to change any negative emotions and stress by learning new skills such as: defining the problem, creating new solutions, creating new skills to manage the stressor and/or finding a new standard for the behavior.

When the individual encounters emotional distress then they will try to either avoid or accept the situation. Furthermore, the individual can seek out emotional support, attention or engage in inappropriate behaviors (25). Overall, the transactional model of stress and coping can be used as an approach to stress and coping mechanisms for stressors by learning how to view the stressors positively and as unthreatening.

Binge Eating Disorder

Binge eating disorder (BED) is related to the lack of Intuitive Eating for several reasons. To begin, the individual is overriding their hunger cues by engaging in a meal or snack before they are physically hungry. Also, the individual will continue to eat even though their satiety levels may have already been reached. Binge eating disorder overrides hunger and satiety cues associated with Intuitive Eating because BED individuals listen to cues other than biological cues.

Binge eating disorder occurs in 1 in every 35 adults in the US, which is 3-5% of women (about 5 million) and 2% of men (3 million) (35). More specifically, BED is the consumption of a large amount of food in a short period of time where an individual feels a lack of control (55). Binge eating disorder is a common eating disorder, which is characterized by the following: rapid ingestion of food, secretive eating, eating until uncomfortably satiated, and feelings of depression, disgust and/or guilt following the binge-eating episode (55). It is also identified as

the inability to manage emotional distress, dysregulation of interceptive awareness, appetite and satiety mechanisms (23).

Binge eating can be triggered by a multitude of events but is typically experienced when a person feels a sense of stress. Research has shown that individuals tend to binge more on days where their mood was altered and low (70). One-fifth of people had moderate levels of depression and anxiety severity and almost half engaged in at least one obsessive-compulsive disorder type behavior (45). The antecedent most associated with BED includes: boredom, dissatisfaction with body weight and shape, anxiety, bad moods and anger. More specifically, irritability and depression were the moods that were most frequent when observing BED (55). Generally, individuals with BED have low self-esteem, display an overemphasis on weight and shape, use strict dieting, dietary restraint, and maintain their binge eating due to outcomes of individual episodes.

Binge eating disorder relates to this research study because the eating disorder may impact college students' ability to practice Intuitive Eating. As seen in these studies, eating disorders is related to low self-efficacy. It is expected in the current study that students with an eating disorder, past or present may benefit from Intuitive Eating.

Binge Eating Disorder and College Students

College can be a difficult time for some students. Transitioning to a new environment can become overwhelming, school and work may be difficult and making new friends can be a challenge. Disordered eating is one of the most serious health issues on college campuses. College students are a high-risk group for the onset of an eating disorder because of sudden life

changes and new life experiences. Millions of college students have eating disorders, yet most of them receive little or no medical attention or psychological intervention (50). Research indicated by a survey through the National Eating Disorders Association (NEDA) found that nearly 20% of the more than 1,000 college students surveyed (both male and female) said they have or previously had an eating disorder (50). A 2010 survey of college counselors and other professionals by the Eating Disorders Recovery Center found that 48% of students did not realize they had an eating disorder (50). Eating disorders have been estimated to affect 10% of women aged 15-30 years old (12).

In 2011, a web based survey of 211 college students at a private university was conducted to examine binge drinking and disordered eating behaviors. Binge eating disorder was reported by 48% of students and was correlated with healthy and unhealthy weight loss behaviors. Binge eating disorder was found common in both genders, where 50% are female students and 43.6% are male students. Data was also collected on the occurrence of unhealthy weight loss behaviors such as skipping meals, fasting, diet pills, laxatives, and self-induced vomiting. Research concluded that females were more likely to engage in the unhealthy weight loss behaviors as mentioned above (69).

Intuitive Eating and Binge Eating Disorder

Over a long period of time, individuals who ignore their intuitive cues to eat, may develop disordered eating that can have a destructive impact on a person's life and has been linked to a reduced ability to cope with stressful situations (35). In addition, evidence from the eating disorder literature indicates that an emphasis on weight control can promote eating

disordered behaviors (5). Most cases of eating disorders are reported in traditional college-aged adults (10). More specifically, prospective studies show that body dissatisfaction is associated with binge eating and other eating disordered behaviors (37). Binge eating disorder (BED) is associated with increased psychopathology including depression and personality disorders (75). According to the Academy of Nutrition and Dietetics (AND), "BED is associated with an increased risk for a heart attack, high blood pressure, high cholesterol, kidney disease, arthritis, bone loss and stroke" (23). Individuals diagnosed with BED showed an oversensitivity to "external" or "nonnutritive" factors. Social, emotional, or conditioned craving for certain foods can influence an individual's food preferences and/or intake (23). These external signals become adopted as the individual loses ability to recognize and listen to their internal cues (23).

Patients with eating disorders are virtually the polar opposite of intuitive eaters (58). In general, binge eaters who are intuitive eaters help to normalize their relationship with food. Intuitive Eating has contributed to decreased BMI (56), decreased binge eating (48), and increased self-efficacy and bulimic symptoms (48). Mindful eating group interventions report reduced binge eating episodes (7). Increased attention to food consumption contributes to greater awareness and acceptance of self, less sensitivity to thoughts and emotions, and ability to make healthier choices. The application of mindfulness principles can impact weight loss and decrease food cravings. Mindful-based interventions have successfully treated disorders of self-regulation, depression, pain, and self-injury. Mindful based interventions placed an emphasis on the following: observation, acceptance, tolerance, and regulation of unpleasant emotions, allowing inhibition of impulsive eating behavior and more rapid restoration of equilibrium (21). Lastly,

Intuitive Eating has a more diverse diet, lower BMI, and take more pleasure in their eating than non-intuitive eaters.

In 2011, 33 Individuals attending treatment at an outpatient treatment facility participated in the 10-week intervention which was designed to further improve the quality of awareness in regards to hunger and satiety cues. Significant reductions were found on all sub-scales of the Eating and Attitudes Test (EAT-26) with large effect sizes. EAT-26 is a standardized self-report measurement for signs and symptoms of eating disorders. Overall, no significant differences were found between eating disorder diagnoses. Results indicate prospective benefits for a mindfulness group intervention when treating a variety of eating disorders. However, the limitations include the following: lack of a control group, observation of all eating disorder types (and not just binge eating disorder), and select few individuals were prescribed weight loss medications (19).

In 2013, an observational, cross-sectional analysis study examined a sample of 2287 young adults (mean age 25.3) and their eating activity. The eating activity in teenagers and young adults was examined by using an online survey and a frequency questionnaire. Results showed that there was a significantly lower chance for young adults to develop an eating disorder if they trust their body. Moreover, men and women who reported that they stop eating when they are full had lower odds of reporting chronic dieting and binge eating than those who reported that they do not stop eating when full. Overall, more males reported trusting their bodies to tell them how much to eat than did females. Intuitive Eating was inversely associated with BMI in both genders. Further research is needed on factors, such as fatigue and stress determining a person's ability to listen to their physical cues (11).

Mindfulness-based eating awareness training for treating BED has been shown to be effective. A brief overview of current research discuses empirical support for mindful based eating awareness training (MB-EAT). A non-randomized, extended baseline/follow up design used a sample size of 18 obese women with BED (age=46.5; mean weight=238lb, mean BMI: 40). The study was conducted over six weeks and involved seven group sessions. The sessions involved five key components that include the following: cultivate mindfulness, mindful eating, emotional balance and self-acceptance. Results showed that binges per week dropped from over 4 to 1.5; a self-report indicated that the amount of food consumed decreased significantly. Furthermore, binge eating scale scores range from "severe" to just higher than "having little or no problem" with BED. Lastly, depression decreased from clinical to sub clinical levels (23).

Restrictive Diet

Today, diet is a term that is most often associated with food/calorie restrictions. Typical words associated with the diet mentality include the following: external rules, rigid, deprived, guilt, fear, preoccupied, weight loss, shame, judgment, oppressed, and in control (28). Diets are often unrealistic, short term and extremely restrictive.

Conventional weight management is often ineffective in the long-term. The traditional paradigm of weight management varies. Regardless, there are many forms of weight management options available today. For example, weight management can include weight loss programs, weight loss support groups, fad diets, and restrictive diets. However, despite the type of weight management, restrictive dieting is not an effective long term behavior change. Thus, weight lost will often result in complete weight re-gain, weight cycling or weight fluctuations. A panel of experts convened by the National Institutes of Health indicated that "one third to two

thirds of the weight is regained within one year [after weight loss], and almost all is regained within five years" (5). Furthermore, by engaging in low calorie dieting, the individual increases their cortisol hormone due to increased chronic psychological stress. Chronic Increased cortisol production can also increase disease risk (62).

In relation to dieting and calorie restriction diets, when the body is starved of food it responds by reducing the rate at which it burns energy (the metabolic rate), which can result in overeating and binge eating behaviors; this can lead to weight gain and obesity (35). Weight gain and obesity is related to restrictive dieting. According to the United States Department of Agriculture, a healthy diet plan is defined as managing a healthy weight by including a variety of foods and balancing out all foods (67).

Research indicates that 91% of women on a college campus had previously attempted to control their weight through dieting, and 22% responded as having dieted often or always (28). Diets often fail because people engage in restrictive dieting. Individuals are directed not to consume a certain food item, which ultimately leaves the individual craving that particular item which can lead to a binge eating episode. Many binge eaters interested in weight loss will engage in a type of traditional diet (23). Diets often will have structure and indicate when and what a person will eat. Many traditional diet programs are viewed as ineffective, counterproductive, and even harmful to the health of dieters (43). Despite peoples' efforts to maintain/lose weight, restrictive diets to lose weight are more often unsuccessful. This phenomenon is known as the dieting paradox (23). The person will engage in disordered eating and an unnatural obsession with food. The dieting paradox occurs when individuals engage in a traditional restrictive type diet but end up regaining the weight lost (23).

"Sixty percent of college women in a study admitted to chronic dieting or binge eating, and 69% of this group reported using diet pills, diuretics, fasting, or purging to control their weight" (61). While many short-term weight loss intervention studies do indicate improvements in health measures, because the weight loss is always accompanied by a change in behavior, it is not known whether, or to what extent the improvements can be attributed to the weight loss itself (4). Dieting can also disconnect an individual from Intuitive Eating because their craving for food increases and their style of eating changes drastically. When dieting, an individual necessitates tuning into external cues with regard to food intake and disconnecting from internal cues of hunger and satiety (28). Individuals who attempt to restrict food alter their Intuitive Eating. They are not letting their bodies perceive their needs. Chronic dieters often lose their ability to recognize their internal hunger and satiety cues. Internal cues for hunger and satiety are necessary components needed for normal eating practices (28). Furthermore, diets may also lead to a further disconnect from internal signals because the individual is so reliant on all external signals. External signals for hunger may include emotions, social settings, agendas, media, food commercials, etc. External cues are things that stimulate one to consume food even when they may not be physically hungry. Dieting is often dependent on external cues and disregard of internal cues of hunger and satiety (28).

Dieting becomes extremely common by adolescence, during which time 46% of U.S. high school students report dieting behaviors (10). Furthermore, research indicates that dieting behaviors observed in adolescence have a general tendency to continue into adulthood, suggesting that early behaviors set the stage for later behaviors (10).

Many dieters eventually end up weight cycling or regaining their initial weight loss (39). Weight cycling is a term used for weight that fluctuates over any given period of time. Weight cycling is most evident in the dieting population. Overriding hunger is associated with lifetime overweight and weight cycling. Ignoring internal cues of hunger and satiety may lead an individual to weight cycling. Overriding hunger cues by delaying meals to extreme hunger will increase the chances of weight cycling by 2.4 times (39). This is due to that fact that delaying meals can cause extreme hunger, thus leading to an overconsumption of foods cravings high in calories and fat. Disturbances can occur when practicing the following through dieting: restricting calories, delaying a meal, ending a meal too soon, beginning a meal too soon or extending a meal past the point of satiety (39). The dieting population may not be aware of the disparities of dieting due to lack of knowledge. College students may not be aware of dietary weight cycling. The current student will provide baseline data that can be used to plan interventions of this group.

Weight Management Through Dietary Therapy / Long Term

Diets may seem to be effective in the short term, but they do not have the potential to continue long term. However, some individuals who lose weight in traditional diet programs might maintain the weight loss long term. Less than 5% of people are able to maintain significant weight loss over five years (13). According to the Practical Guide for Weight Management, created by the National Heart and Lung Blood Institute, a dietary therapy can be utilized for weight loss. A typical dietary therapy includes information on long term nutritional adjustments, diet instructions and diet modifications.

For instance, a caloric intake should only be reduced by 500 to 1,000 calories per day (kcal/day) from the individual's daily-recommended levels. It is important to maintain a moderate decrease in calories with a one to two-pound weight loss maximum. The diet should be low in calories, but it should not be too low (less than 800 kcal/day). Diets lower than 800 kcal/day have been found to be no more effective than low-calorie diets in producing weight loss (63).

Long-term changes in food choices are more likely to be successful when the individual's preferences are taken into account and when the individual is educated about food composition, labeling, preparation, and portion control (moderation) (63). Ultimately, lifestyle changes are the most appropriate for long-term weight loss success. Eventually, the diet mentality should become automatic rather than a conscious process. This can be a challenging process, but it is obtainable if done correctly. Long-term maintenance can be achieved if lifestyle modifications are followed. To determine if weight loss is successful long term, an adult must lose at least 10% of their initial weight and not regain more than six or seven pounds in two years.

In regards to long term weight loss, a very low calorie diet (VLCD) can be too restrictive and is not maintainable long term. The long term weight outcomes are negatively correlated with restrictive diets. One-third to two-thirds of dieters regain more weight than they lost on their diets (26). Furthermore, a sample of 500 adults showed that 228 individuals were overweight or obese. Of these 228 participants, 47 (20.6%) met the criteria for successful weight loss maintenance. Research indicated that about 20% of overweight individuals are successful at long-term weight loss. If individuals can succeed at maintaining their weight loss for 2 years, they can reduce their risk of subsequent regain by nearly 50% (72). Moreover, the research

indicated that failure for long-term weight loss was associated with a higher level of dietary disinhibition (loss of control of eating). The factor most associated with failure for weight loss/maintenance was depression. It is important for individuals to learn how to maintain weight loss for the appropriate time frame because it can lead to better weight maintenance throughout their lives.

Lastly, when individuals acknowledge external cues over internal cues and are restrictive dieters, Intuitive Eating are more likely to have an absence of weight control over time (4). Ultimately, Intuitive Eating can be a better option than dieting because it allows for improved internal regulation, body acceptance and overall weight maintenance long term. In addition, HAES demonstrates alternatives for individuals to learn about good food choices short and long term. With HAES, people pay more attention to food and mood, concentration, energy levels, fullness, ease of bowel movements, comfort eating, appetite, satiety, hunger and pleasure as guiding principles (4). Intuitive Eating skills can be accomplished over time and adapted into everyday life. Intuitive Eating research has shown for overall improvement in nutrient intake, reduced eating disorder symptomatology, reduction in weight gain long term, and lower BMI (4).

In 2009, research was conducted using a two-year intervention randomized controlled trail. The purpose of the study was to analyze the adherence to the diet over a two-year span. The participants included 322 individuals (age average 52 years and BMI average 31kg/m (2). individuals were examined using a low-carbohydrate diet, Mediterranean diet, low-fat diet. Results showed that the individuals showed weight loss within the first six months, however, adherence began to decline slowly after. A few factors influenced the individuals to not maintain

their diet such as the following: holidays, smoking, and physically activity (19). Weight loss was not proven long term. More research should be conducted on college population.

Intuitive Eating & Biological Response to Dieting

The body can easily become imbalanced when one practices unfavorable dieting behaviors. When an individual restricts calories, they are ultimately disrupting their bodies homeostatic system. The body will experience an increase in chemical and hormonal changes. More specifically, the hunger hormone, grehlin, is secreted at a higher level. This is done in order to signal to the body that it is lacking energy and cues the individual to consume more foods for energy sustainability. Simply, the body tries to overcompensate in calorie consumption in order to avoid any further starvation. The increase in grehlin will also increase the secretion of fat producing enzymes. Once the body consumes a sufficient amount of calories, then the body will release satiety hormones, leptin & peptide YY (39). With dieting the body has a delayed response of peptide YY because it fears starvation. The body actually prepares itself by storing any excess calories more efficiently in fear that the body will soon again experience a lack of energy from calorie consumption. Overall, overriding homeostatic cues of hunger or satiety are both linked to weight cycling and negative weight outcomes.

In turn, when an individual overeats they disrupt their internal physiologic processes. Therefore, they are unable to self-regulate, which decreases their ability to recognize hunger/satiety cues. The self-regulation theory describes how an individual understands their external cues and is able to respond appropriately. The self-regulation theory is a regulatory process where a person is fully able to observe themselves in many situations, both socially and emotionally. Therefore, they do not engage in overeating because they are able to exude

willpower and control for the situation. Biofeedback is also a large component of the self-regulation theory. When a person is self-aware then they understand relevant internal cues and can engage regulatory systems more effectively (23). Hunger is an internal physiologic process, but overeating may cause failure to self-regulate (53).

Summary

Intuitive Eating can help as a way to regulate one's internal hunger and satiety cues, thus overall helping an individual to maintain a healthy weight. Through previous research, Intuitive Eating has shown many beneficial aspects concerning overall health and a healthy lifestyle. Intuitive Eating can normalize a person's relationship with eating, improve emotional eating and coping mechanisms, and improve their BMI.

Many internal and external influences can inhibit an individual's ability for Intuitive Eating. Emotion and stress can cause an individual to lose their ability to eat mindfully. In turn, emotional eating can lead to weight gain and eating disorders. Furthermore, weight gain can also cause a person to partake in dieting behaviors and/or eating disorders. All factors have an influence on one another but it is not known to what extent one factor impacts the other. An abundance of research has been provided on the aforementioned topics, however all considerations have not been observed cohesively.

The above mentioned factors have the potential to affect one's ability to practice Intuitive Eating. The current research will examine the extent the college population utilizes Intuitive Eating and which factors have the greatest impact on their ability to become intuitive eaters.

CHAPTER 3

METHODS AND DESIGN

Research Design

This study was approved by the Northern Illinois University Institutional Review Board (IRB) prior to the conduction of the survey research (Appendix A). The research design was a non-experimental, cross sectional, correlational survey study. Questions from a web-based survey consisted of undergraduate students on students' demographics, anthropometrics, body mass index (BMI), stress levels, Intuitive Eating, past eating disorders and past dieting. All questions were self-administered questionnaires where the respondents were asked to complete the entire questionnaire by themselves.

Data Collection: Recruitment and Sampling

The research design included non-probability sampling. The population studied included undergraduate students at Northern Illinois University (NIU). Thus, the research study is representative of the undergraduate college population. Sample characteristics provided were representative of the subset of college NIU population undergraduate students. Furthermore, a convenience sample was used for the non-probability sampling. Each member of the undergraduate college population received an equal chance to be chosen for the research study in

order for this to be a representative sample. Eligibility requirements included the following: the student must be classified as an undergraduate student (freshman, sophomore, junior, senior) and the student must be enrolled at Northern Illinois University.

Northern Illinois University (NIU) Division of Marketing and Communications provided permission for mass email distribution to all undergraduate students on campus. The request form can be viewed in Appendix B. Following confirmation, a mass email on campus was sent out to all students through the NIU Division of Marketing and Communications. No student was required to take the survey as the survey was entirely optional and voluntary. Each participant received an email which included a brief description of the thesis, the purpose of the study, and a link to access the survey (Appendix G). No student will be allowed to take the survey twice. This will be ensured by stating clear instruction through the email that each student is only allowed to take the survey once.

Students were informed that their participation is voluntary and that their data will be kept confidential. Consent forms were not required for the adult participants (18 years or older). No personal information was required for a student to participate in the survey. Therefore, all undergraduate students who completed the survey remained anonymous. Any publication from the study will only use group data and no subject will be identified.

To allow for a higher amount of responses, the survey remained open for two weeks. In addition to the mass email distribution, the undergraduate students were also informed of the survey by various NIU faculty. The Northern Illinois University website and faculty division webpage provided faculty emails of which were used as channel of communication to distribute the survey. Professors were emailed asking permission to allow for their students to participate in

the survey for extra credit points. Professors were asked to distribute the survey by forwarding the participation email (Appendix C) to their students via email. If students completed the survey then they were rewarded extra credit upon their course of which they are enrolled. The professor determined the amount of extra credit that the students were awarded with. In addition, it will be asked that the professors reiterate to their students that if the survey has been taken that it should not be taken again.

Pilot Testing of Instrument

The online version of the survey was pilot tested before formal distribution. Pilot testing was performed in order to better understand the total length of time to complete the survey. Moreover, pilot testing allowed for necessary improvements to allow for a better involvement and completion rate. The survey was tested by ten individuals. Those ten individuals consisted of undergraduate NIU students. Those individuals completed the survey in an average of twelve minutes. Verbal feedback was supplied by those who completed the survey. Survey respondent comments included the following, "the survey was a good length, the survey did not take me long at all, the survey really made me think about my eating habits, the survey was really easy to complete, and the survey was extremely easy to understand." Following pilot testing, the survey (Appendix F) was later distributed formally by email (Appendix B) to undergraduate students at Northern Illinois University.

Instrument Development

The online survey did not include a time limit for completion. However, if the survey was taken in one sitting then it was expected to take less than fifteen minutes total. The web-based

survey utilized Survey Monkey, which is an online research tool to create surveys which can be distributed to a large quantity of individuals. Survey Monkey allows for the following: text analysis, SPSS integration, and custom reporting. A total of sixty-four questions were included within the survey. Four questions were related to demographics, two questions were related to anthropometric data, two questions were related to past diagnosis of an eating disorder, twenty-four questions were related to emotional eating (by using Eating and Appraisal Due to Emotions and Stress (EADES), twenty-three questions were related to Intuitive Eating (by using Intuitive Eating Scale-2 (IES2)), and nine questions were related to diet (by using a Dietary Intent Scale (DIS)). All survey scales are discussed below in detail.

To begin, demographic and anthropometric data was obtained in order to gain an understanding for the individual on a personal level (Appendix G). Furthermore, the criterion for health can be determined by a multitude of factors but one of the most common indicators used is body weight. Body weight is a commonly used measurement tool that can indicate a person's health. An individual's weight can be further determined by their body mass index (BMI). A BMI is a measurement of relative size based on the mass and height of an individual which is calculated as body weight kg/height m^2. Body Mass Index categorizes a person as one of the following: underweight (BMI <18.5), normal (BMI 18.5 to 24.9), overweight BMI of 25.0 to29.9), or obese (BMI of >30.0). Body Mass Index status was calculated using SPSS. The BMI classifications of individuals were compared to scores for the various factors (dieting, eating disorders, emotional stress). Table 1 describes the weight classifications by BMI score.

Table 1: Body Mass Index (BMI) - Associated Weight Classifications

BMI	Weight Classification
<18.25kg/m ^{2}	Underweight
18.5-24.9kg/m ^{2}	Normal Weight
25-29.9kg/m ^{2}	Overweight
>30.0kg/m ^{2}	Obese

In addition, an established validated research tool, Eating and Appraisal Due to Emotions and Stress (EADES) was used to assess the level at which individuals cope with and appraise stress in relation to food and eating. The EADES Questionnaire is a validated instrument used to assess emotional eating and appraisal of situations. Permission was obtained to use this tool from the respective author. The EADES Questionnaire can be viewed in Appendix D. The EADES has a total of three different factors with a total of 58 questions, however, for the purpose of this study, only factor; Factor 1 (questions 2, 3, 8, 11, 12, 14, 17, 19, 22, 24, 26, 30, 31, 32, 34, 35, 37, 39, 40, 42, 44, 45, 47, and 49) will be utilized. Factor 1 includes information regarding emotion and stress related eating (Cronbach's alpha=0.949). The questions are scored by one to five (1 strongly disagree to 5 strongly agree). Reverse scoring (i.e. 1=5, 2=4, 3=3, 4=2, 5=1) will be used for the following questions: 3, 8, 11,12, 19, 24, 31, 32, 35, 37, 39, 40, 45, 47, and 49. The possible scoring range is between 24-120. A lower score indicates greater emotion and stress related eating. Therefore, a 24-56 indicates a greater ability for emotion and stress related eating,

a score of 57-88 indicates an average score for emotion and stress related eating and a score of 89-120 indicated a lower score for emotion and stress related eating.

The Intuitive Eating Scale-2 (IES2) was used to assess practices of Intuitive Eating. Intuitive Eating Scale-2 is a validated survey tool created by Tracy L. Tylka Ph.D. Dr. Tylka approved IES2 to be used within this study. Intuitive Eating Scale-2 can be viewed in Appendix E. Intuitive Eating Scale-2 has a total of 23 questions. The questions are scored by one to five (1 strongly disagree to 5 strongly agree). Reverse scoring (i.e. 1=5, 2=4, 3=3, 4=2, 5=1) used reserve scoring for questions: 1, 2, 3, 7, 8, 9, and 10. A total IES-2 score is calculated by adding together all items and dividing by the total number of questions, 23. A higher IES2 score indicates a higher level for Intuitive Eating whereas a lower score indicates a lower level for Intuitive Eating. For this study, scores less than 50 will be ranked as low intuitive eaters, scores 50-88 will be ranked as average intuitive eaters, and scores greater than 88 will be ranked as high intuitive eaters. All other scoring within the IES2 will not be utilized for this study. Please disregard scoring procedures 3 through 6 found in Appendix E.

The Dietary Intent Scale (DIS) was used to observe behaviors concerning dieting and weight loss. Dietary Intent Scale is a validated research tool created by Eric Stice, Ph.D. The scale is a valid tool which is internally consistent and temporally reliable. The DIS is a nine-item survey (Appendix F), where self-report measures the following: dietary restraint, intentional efforts to restrict food intake and intentional effort to control body weight. The questions are scored by one to five (1 never to 5 always). Higher scores indicate an individual’s ability for a greater dietary restraint.

Lastly, information on past diagnosis of an eating disorder was obtained through the survey by inquiring through the following question, "Have you ever been diagnosed with an eating disorder by a medical professional?" The respondent's choices were either yes, no or unsure. In addition, a follow up question inquired the following, "Do you believe you have an eating disorder or have disordered eating behaviors? The respondent's choices were either yes, no or unsure.

Data Collection and Procedures

Proper procedure and forms were completed prior to survey distribution. To begin, IRB approval (Appendix A) was requested. Once permission was received from the NIU office of research compliance and integrity, then further research processions continued. Next, NIU Division of Marketing and Communications approval was requested for mass email distribution on NIU campus (Appendix B) in order to gain access to students' emails at Northern Illinois University. Undergraduate students were informed of the survey through various Northern Illinois University faculty. Professors were asked to distribute the survey to their students via email. If students completed the survey, then they were rewarded with extra credit for their course for which they are enrolled. The professor determined the amount of extra credit for which the student was awarded.

Moreover, an incentive was included in order to increase overall participation from the undergraduate students. For each student who participated in the survey, they were eligible to enter into a drawing for a $25 visa gift card. There were a total of three prize winners randomly selected. Each winner received a $25 visa gift card. The three award winners were announced at

the completion of the study.

Statistical Analysis

Statistical Package for Social Sciences (SPSS) was used to determine results of this study. SPSS is a data analysis software that was used to analyze the correlations between the aforementioned factors that may inhibit or influence Intuitive Eating. More specifically, Pearson's Correlation Coefficient R (Simple Linear Regression) was used to calculate the correlation between body mass index (BMI) and Intuitive Eating Scale (IES2) scores, Dietary Intent Scale (DIS) and IES2 scores, and EADES score and IES2 scores. Spearman Rank Coefficient was used to determine if past diagnosed eating disorders influence IES2 scores. Furthermore, statistical central tendency helped to analyze students level of IES2 and demographic data. The research hypotheses include the following: Intuitive Eating Scale (IES2) scores will be inversely correlated with BMI status; previous engagements in restrictive dieting (as measured by the Dietary Intent Scale (DIS) will be significantly associated with Intuitive Eating Scale (IES2) scores; a past diagnosis of eating disorders by a medical professional (as measured by a response of yes, no or unsure) will be significantly associated with the Intuitive Eating Scale (IES2) scores; eating and Appraisal Due to Emotions and Stress (EADES) factor levels will be inversely correlated with IES2 scores; and there will be a significantly higher average of individuals who do not practice Intuitive Eating compared to individuals who do practice Intuitive Eating (as measured by the Intuitive Eating Scale (IES2) scores). The following information can be viewed in Table 2: Summary Review of Statistical Analysis.

Table 2: Summary Review of Statistical Analysis

#	Research Question	Hypothesis	Type of Variables	Statistical Analysis
1	Is there an association between body mass index classification and Intuitive Eating?	Intuitive Eating Scale (IES2) scores will be inversely correlated with BMI status.	Intuitive Eating Scale (IES2) scores BMI classification	Pearson's Correlation Coefficient
2	To what extent do past dieting efforts influence Intuitive Eating?	Previous engagements in restrictive dieting (as measured by the Dietary Intent Scale (DIS) will be significantly associated with Intuitive Eating Scale (IES2) scores.	Restrictive dieting (as measured by the Dietary Intent Scale (DIS)) Intuitive Eating Scale (IES2) scores	Pearson's Correlation Coefficient
3	Does a past diagnosis by a medical professional of an eating disorder affect Intuitive Eating?	A past diagnosis of eating disorders by a medical professional (as measured by a response of yes or no) will be significantly associated with Intuitive Eating Scale (IES2) scores	A past diagnosis of eating disorders by a medical professional (as measured by a response of yes or no) Intuitive Eating Scale (IES2) scores categorized as by a value.	Spearman Rank Correlation
4	Is emotion and stress related eating associated with Intuitive Eating?	Eating and Appraisal Due to Emotions and Stress (EADES) factor levels will be inversely correlated with IES2 scores;	Eating and Appraisal Due to Emotions and Stress (EADES) factor levels Intuitive Eating Scale (IES2) scores	Pearson's Correlation Coefficient

Table 2 (continued)

5	What is the average Intuitive Eating scores for the undergraduate college students?	The overall average amount of individuals who do not practice Intuitive Eating will be significantly higher than the average amount of individuals who do practice Intuitive Eating (as measured by the Intuitive Eating Scale (IES2) scores).	Intuitive Eating Scale (IES2) scores	Statistical central tendency, mean, median, and mode.

Considerations and Data Monitoring: IRB Approval

Prior to study implementation, approval from the Institutional Review Board (IRB) at Northern Illinois University (NIU) was obtained to adhere with the University's policy for conducting ethical research with human subjects. No personal information was required for students to participate in the survey. Therefore, all undergraduate students who completed the survey remained anonymous. Institutional Review Board confirmation (Appendix A) was received on March 14th 2016 from the Office of Research Compliance and Integrity. The application submitted for IRB involving human subjects was reviewed by IRB #1. It was determined that the thesis research meets the criteria for exemption, as defined by the U.S. Department of Health & Human Services Regulation for the Protection of Human Subjects, 45 CFR 46.101(b), 2. Regardless, all responsibilities for ethical conduct for the purpose of the research were complied with entirely. All data collected remained confidential and stored in secured locations at NIU for three years. In addition, all electronic files were password protected. The records kept included the following: research protocol, all questionnaires, survey instruments, interview questions and/or data collection instruments associated with the

participants, all correspondence for or from the IRB and all other pertinent documents. The IRB correspondence protocol number is HS16-0095.

CHAPTER 4

RESULTS

Sample Demographic Characteristics

There were 211 participants who returned the survey, however three were ineligible due to missing data. The mean age in years of the final sample was 24 years old. Additionally, concerning gender, 158 of participants were female (74.9%) and 50 of participants were male (23.7%). A total of 70% of the sample reported being white Non-Hispanic, whereas the remaining 30% were of other races/ethnicities. More specifically, the sample self-identified with the following ethnicities: 147 Hispanic or Latino (12.3%), 26 Black of African American - Non Hispanic (10.5%), 11 Asian (5.24%), 3 American Indian of Alaska Native (1.4%) and 1 Native Hawaiian or other Pacific Islands (0.5%). Concerning student classification, the mean student classification of the final sample was 76 seniors (36.0%). The remaining responses are as follows: 18 freshman (8.5%), 25 sophomores (11.8%), 39 juniors (18.5%), 27 graduate (12.8%), and 23 other (10.9%). Demographic characteristics of the study sample are presented in Table 3.

Table 3: Descriptive Statistics for Demographics

Demographic Characteristics	Number(%)	Mean
Age	211(100)	23.98
Gender	208	
Female	158(74.9)	
Male	50(23.7)	
Race		
White - Non - Hispanic	147(69.7)	
Hispanic or Latino	26(12.3)	
Black or African American - Non Hispanic	22(10)	
Asian	11(5.2)	
American Indian of Alaska Native	3(1.4)	
Native Hawaiian or Other Pacific Islands	1(0.5)	
Class	208	
Freshman	18(8.5)	
Sophomore	25(11.8)	
Junior	39(18.5)	
Senior	76(36.0)	
Graduate	27(12.8)	
Other	23(10.9)	

The average mean for body mass index was 25.46 kg/m ² (SD± 6.1350). A total of 48.34% of study participants were considered a healthy weight (BMI = 18.5-24.9 kg/m ²), 5.21% were considered underweight (BMI <18.5 kg/m ²), 27.49% were considered overweight (BMI = 25 - 29.9 kg/m ²), and 18.01% were considered obese (BMI > 30 kg/m ²). One hundred ninety-three (91.5%) participants said no, they have never been diagnosed with an eating disorder by a medical professional. Fifteen (7.1%) reported that yes, they have been diagnosed with an eating disorder by a medical professional. Moreover, participant's belief as to whether they may have an eating disorder or have disordered eating behaviors are as follows: 27 said yes (12.8%), 167 said no (79.1%), and 15 said they were unsure (7.1%). Descriptive statistics can be viewed in Table 4.

Table 4: Descriptive Statistics for Variables

Characteristics and Variables	Number(%)	Mean ± SD
Body Mass Index (BMI)	211	25.46 ± 6.135
Underweight	11(5.21)	
Healthy Weight	102(48.34)	
Overweight	58(27.49)	
Obese	38(18.01)	
Eating Disorder Diagnosis	209	1.08 ± 0.29
No	193(91.5)	
Yes	15(7.1)	
Unsure	1(0.5)	

Table 4 (continued)

Believe To Have An Eating Disorder or Disordered Eating	209	
No	167(79.1)	
Yes	27(12.8)	
Unsure	15(7.1)	
Intuitive Eating Scale (IES2)	-	77.01 ± 12.73
Eating Appraisals Due to Emotional Stress (EADES)	-	85.40 ± 16.46
Dietary Intent Scale (DIS)	-	23.34 ± 7.23

Correlations of Intuitive Eating Scale 2 (IES2) and Body Mass Index (BMI) Classification

Pearson's r correlation coefficient was used to observe for the relationship between variables IES2 and BMI classification. These are continuous scale variables. The Pearson correlation coefficient between IES2 and BMI is -0.30, which indicates a weak negative linear association. The correlation is statistically significant at the 0.01 level.

Correlations of IES2 and DIS

Pearson's correlation coefficient was used to observe for the relationship between variables DIS and IES2. These are continuous scale variables. The Pearson correlation coefficient between IES2 and DIS is -0.40, which indicates a moderately negative linear association. The correlation is statistically significant at a 0.01 level.

Correlations of IES2 and Past Diagnosis of Eating Disorder

Spearman's rho was used to observe for the correlation between IES2 score (continuous scale variable) with diagnosis of eating disorder (categorical variable). The correlation coefficient is -0.13. This observed significance level is 0.085.

Correlations of EADES and IES2

Pearsons correlation coefficient was used to observe for the relationship between variables EADES and IES2. These are continuous scale variables. The Pearson correlation coefficient between IES2 and EADES is 0.78, which indicates a positive degree of correlation. The correlation is statically significant at the 0.01 level.

Summary Statistical Analysis for IES2

A higher IES2 score indicates a higher level for Intuitive Eating whereas a lower score indicates a lower level for Intuitive Eating. For this study, scores less than 50 will be ranked as low intuitive eaters, scores 50-88 will be ranked as average intuitive eaters, and scores greater than 88 will be ranked as high intuitive eaters. The original scores for Tribole's survey are scored low to high. The original survey indicated high, normal or low ability for Intuitive Eating. For the purpose of the survey, the scores were numbered specifically to represent a group of intuitive eaters. Results indicated that the mean for intuitive eaters was 77.01 ± 12.73. Thus an average of individuals were ranked as average intuitive eaters.

Statistical Analysis Among All Factors

Pearson's correlation coefficient was used to further investigate is correlations exist among any of the variables. The Pearson correlation coefficient between IES2 and BMI is -0.30,

which indicates a weak negative linear association. The correlation is statistically significant at the 0.01 level. The Pearson correlation coefficient between IES2 and Diagnosis of an Eating Disorder is -0.13, which indicates a weak negative linear association. The Pearson correlation coefficient between IES2 and EADES is 0.78, which indicates a strong positive linear association. The correlation is statistically significant at the 0.01 level. The Pearson correlation coefficient between IES2 and DIS is -0.40, which indicates a weak negative linear association. The correlation is statistically significant at the 0.01 level. The Pearson correlation coefficient between BMI and Diagnosis of an Eating Disorder is -0.14, which indicates a weak negative linear association. The correlation is statistically significant at the 0.045 level. The Pearson correlation coefficient between BMI and EADES is -0.31, which indicates a weak negative. The correlation is statistically significant at the 0.01 level. The Pearson correlation coefficient between BMI and DIS is 0.12, which indicates a relatively weak positive linear association. The Pearson correlation coefficient between Diagnosis of an Eating Disorder and EADES is -0.016, which indicates a weak negative linear association. The Pearson correlation coefficient between Diagnosis of an Eating Disorder and DIS is 0.16, which indicates a positive linear association. The correlation is statistically significant at the 0.028 level. The Pearson correlation coefficient between EADES and DIS is -0.32, which indicates a weak negative linear association. The correlation is statistically significant at the 0.01 level. There is not enough evidence to show that the correlation is significant or exists in the population. However, there were three positive degrees of correlation which include the following: IES2 compared to EADES, BMI compared to DIS, and Diagnosis of an Eating Disorder compared to DIS. Thus indicating that these factors were most closely associated. The statistical analysis summary can be found in Table 5.

Table 5: Statistical Analysis - Pearson's Correlation Coefficient

Variable Correlations Observed	Mean ± SD	Correlations (r)	p values
IES2, BMI	77.01 ±12.727 25.46 ±6.135	-0.30	0.01**
IES2, Dx of Eating Disorder	77.01 ±12.727	-0.13	0.085
IES2, EADES	77.01 ±12.727 85.397±16.462	0.78	0.01**
IES2, DIS	77.01 ±12.727 23.343±7.227	-0.40	0.01**
BMI, Dx of Eating Disorder		-0.14	0.045*
BMI, EADES	25.46 ±6.135 85.397±16.462	-0.31	0.01**
BMI, DIS	25.46 ±6.135 23.343±7.227	0.12	0.116
Dx of Eating Disorder, EADES	85.397±16.462	-0.04	0.588
Dx of Eating Disorder, DIS	23.343±7.227	0.16	0.028*
EADES, DIS	85.397±16.462 23.343±7.227	-0.32	0.01**

*P<0.05 ** p,0.01 *** p< 0.001

Note: Correlations with Dx of Eating Disorders were calculated using Spearman Correlation for Categorical data

CHAPTER 5

DISCUSSION

Conclusion

Intuitive Eating has become more a challenge for individuals due to an abundance of influential internal and external factors. Understanding the most common risk factors associated with the inhibition of Intuitive Eating in the college population can become extremely beneficial. Identifying risks correlated with Intuitive Eating can provide positive feedback to build programs, organizations, and overall campus dining structure. Observing factors such as emotions and stress, dieting behaviors, and a medical diagnosis of an eating disorder reveals insight about college campus students and their Intuitive Eating abilities.

Correlational analysis revealed information regarding the variables involved within original hypothesis. The first hypothesis was, "IES2 scores will be inversely correlated with BMI status." However, the observation on BMI and IES2 indicated a weak correlation, which showed that there was lower probability of a relationship between the variables. A total of 48.34% of study participants were considered a healthy weight and 83.76% ranked as average for intuitive eaters. Results differed from the literature review. Previous studies showed that the more an

individual had ability for intuitive eating that they individual was more likely to have a BMI within normal limits. More specifically, the female college students who scored positively on the Intuitive Eating Scale surveys were less likely to be overweight or obese (55).

Similar relationships were found when using Pearson's correlation. The second hypothesis was, "previous engagements in restrictive dieting (as measured by the Dietary Intent Scale (DIS) will be significantly associated with Intuitive Eating Scale (IES2) scores." However, results indicate that there was also a lower probability for the relationship between dietary intent and Intuitive Eating.

The third hypothesis indicated the following, a past diagnosis of eating disorders by a medical professional (as measured by a response of yes or no) will be significantly associated with Intuitive Eating Scale (IES2) scores. However, results showed the correlations between IES2 and past diagnosis of an eating had no correlation and was not found to be significant. The results did not confirm the research conducted through the literature review. Previous research indicated that Individuals diagnosed with binge eating disorder lacked the ability to be Intuitive Eaters. In addition, the research suggested that the individuals with a diagnosis of binge eating disorder lacked the skills for Intuitive Eating because they are oversensitive to external cues. More specifically, nearly 20% of the more than 1,000 college students surveyed (both male and female) said they have or previously had an eating disorder (50). The research did not show similar findings and overall lacks data to prove any correlation between the variables.

In regards to eating disorders, 91.5% of individuals reported that they did not have an eating disorder as diagnosed by a medical professional. However, 12.8% said they do believe that they may have an eating disorder and 7.1% said that they were unsure. According to

previous research through literature review, millions of college students have eating disorders, yet most of them receive little or no medical attention or psychological intervention (50). Research also indicated that 48% of students did not realize they had an eating disorder (50). The current research conducted did not show a correlation between eating disorders and intuitive eating. This may be due to the high percentage (91.5) who reported not having an eating disorder. However, the information collected was similar to the aforementioned literature review research. An individual should have a better understanding of self and be able to identify with a confident yes or no. However, many individuals may not understand if they actually have an eating disorder. Moreover, the individual may be in denial or may not want to confess to the public that they have an eating disorder. Many factors could influence the individual to reveal a true diagnosis statement.

In regards to the fourth hypothesis, "Eating and Appraisal Due to Emotions and Stress (EADES) factor levels will be inversely correlated with IES2 scores," showed to be proven true. Results indicated a positive significant probability that the variables are closely related. Therefore, results showed that the higher an individual's ability to cope with emotional eating, the higher the probability that the individual has an increased ability for Intuitive Eating. Overall, the findings did indicate a strong linear trend for different levels of Intuitive Eating in relation to emotional eating and awareness. The results supported the literature review. More specifically, previous research conducted showed trends in regards to weight gain and stress.
Ignoring or suppressing emotional signals may lead to automatic thoughts and behaviors in overeating (21). In addition, stress severity was associated with a greater risk of weight gain/loss (1) and emotional eating may lead to the consumption of excessive calories (53).

Results also indicated that of the 211 survey, only 208 students answered all of the IES2 questions. In turn, data showed that a majority of students do have the ability for Intuitive Eating. The overall average was ranked at the score of 77. A majority of students that responded indicated that they do have the ability as intuitive eaters. Thus, the final hypothesis, "there will be a significantly higher average of individuals who do not practice Intuitive Eating compared to individuals who do practice Intuitive Eating (as measured by the Intuitive Eating Scale (IES2) scores)," was proven false.

Fourteen of those who completed the survey did not complete the IES2 portion of the survey. Due to incomplete survey responses, fourteen responses were removed from correlation statistical analysis portion. Regardless, trends viewed did show potential as influential factors on Intuitive Eating. EADES & IES2 are the factors most correlated in linear trends. The factor, EADES did show as the highest potential for influencing Intuitive Eating. In addition, the literature review does support that those who are able to abide by internal satiety and hunger cues can maintain within normal limits for BMI and improved health statuses.

Strengths and Limitations

The intent of the current research was to observe correlations and/or associations between influencing variables on Intuitive Eating. The research accomplished the aims of the study by identifying significant associated factors for Intuitive Eating. The study involved a sample size of 211 college students from Northern Illinois University. Many individual's participated in the survey because the survey was pilot tested, distributed through multiple channels of communications, and be granting an incentive. All measures allowed for an increased participation rate and more individuals were engaged to participate. Moreover, the survey

utilized likert scales, thus when the survey was relatively easy to comprehend. The surveys used within the research survey were also reliable and validated tools by previous researchers. Reliable was enhanced by utilizing previously validated tools.

Limitations existed within the present study. All responses were self-reported. Therefore the information provided may not be entirely accurate. Potential error may have been included in multiple parts of the survey responses. Foremost, the anthropometric data for self-reports on height and weight may be biased. Which in turn could affect the accuracy of BMI classification and status. In regard to demographics, a majority of the respondents were female, non-Hispanic, senior, 23 years old, with a healthy BMI status. Thus, the lack of diversity on data collected may have been affected and in turn decreasing the reliability of the responses and generalizability. A more diverse sample response may have provided different results. In addition, the survey included multiple internal surveys and additional questions regarding demographics and anthropometric data. In sum, the survey was sixty-four questions. The length of the survey may have caused the participants to not answer the survey with entire honesty or attention. In turn, the time restraints and attention spans could have potentially created a possibility for incomplete and inaccurate survey responses.

Moreover, persuasion biased may have occurred when offering an incentive for a chance to earn gift certificates. In addition, surveys were distributed with instruction that all students are only allowed to complete the survey one time. However, no further measures were taken in order to ensure that the survey was not repeated twice by the same individual. Lastly, the original intent of the survey was to only allow for undergraduate students to participate in the survey. However, the survey was sent to all students on campus including those of graduate level status.

According to the data collection, there was a self-report of 27 graduates (12.8%), and 23 other (10.9%). Therefore, 50 of total respondents were beyond undergraduate level. Also, it was unknown the area of study for the students. There may have been potential for skewed data if the individual had a higher level of understanding for health and nutrition.

Recommendations

Future research could be done by allowing for a more diverse group of participants, thus allowing for a more heterogeneous sample. Moreover, further research could potentially be conducted to observe students and their type of academic studies. It was not known whether a majority of students were educated in nutrition or not. Future data should include a survey question regarding academic routes such as business, science, arts, and fine arts to examine extent of previous knowledge on Intuitive Eating and associated factors. Moreover, in order to allow for a larger diverse group..

Conclusion

Preliminary research has shown that an increase in Intuitive Eating can positively impact individual's health status and eating behaviors. Individuals who practice Intuitive Eating have the potential to eliminate the possibility for disordered eating, improper dieting efforts, and emotional eating behaviors. The findings of the current study indicated a significant correlation between Intuitive Eating and Eating and Appraisals Due to Emotion and Stress.

Research can be further conducted to better understand why and how these individuals deal with emotions and stress. Regardless, the individuals can benefit from education on alternative routes rather than turning to food to comfort. Intuitive Eating is an approach that can

once again teach individuals on how to have a healthy relation with food. When individuals trust their mind and body then they can be empowered to make positive healthful mindful choices. College is a stressful time for many. If individuals understand that emotions and stress can lead to lack of Intuitive Eating, then they may choose healthier coping options. Individuals have the potential to have healthy lifestyle habits while on campus.

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APPENDICES

APPENDIX A

IRB LETTER

NORTHERN ILLINOIS UNIVERSITY
Office of Research Compliance and Integrity
Lowden Hall 301 · DeKalb, IL 60115-2584
815-753-8588 · Fax 815-753-1631 · www.niu.edu/orci

Exempt Determination

14-Mar-2016
Christie Marie Nagel
Family, Consumer and Nutrition Sciences

RE: Protocol # **HS16-0095 "Associated factors of intuitive eating in undergraduate students at a Midwestern university**"

Dear Christie Marie Nagel,

Your application for institutional review of research involving human subjects was reviewed by Institutional Review Board #1 on and it was determined that it meets the criteria for exemption, as defined by the U. S. Department of Health and Human Services Regulations for the Protection of Human Subjects, 45 CFR 46.101(b), 2.

Although this research is exempt, you have responsibilities for the ethical conduct of the research and must comply with the following:
Amendments: You are responsible for reporting any amendments or changes to your research protocol that may affect the determination of exemption and/or the specific category. This may result in your research no longer being eligible for the exemption that has been granted.
Record Keeping: You are responsible for maintaining a copy of all research related records in a secure location, in the event future verification is necessary. At a minimum these documents include: the research protocol, all questionnaires, survey instruments, interview questions and/or data collection instruments associated with this research protocol, recruiting or advertising materials, any consent forms or information sheets given to participants, all correspondence to or from the IRB, and any other pertinent documents.

Please include the **protocol number** (**HS16-0095**) on any documents or correspondence sent to the IRB about this study.

If you have questions or need additional information, please contact the Office of Research Compliance and Integrity at 815-753-8588.

APPENDIX B

REQUEST FOR STUDENT DATA

REQUEST FOR STUDENT DATA

(Projects will be completed as time allows.)

Please submit only the Request for Student Data page to the Office of Registration and Records and retain the attached informational sheet as your reference to the FERPA policy.

*Requests with the intention of sending a **'mass email'** require a mass email submission form to be submitted to and approved by the Provost Office prior to the release of information. To read the policy and find the submission form, go to ITS Home on the NIU web site and find Mass E-Mail under the E-Mail link.*

Description and purpose of project (how information will be used): *(FERPA requires R&R to collect this response. Only requests with this information included will be considered.)*

The purpose of this research study will be to identify risks associated with the absence of Intuitive Eating Determine if emotional eating, stress, diagnosis of an eating disorder, and pasting efforts to diet influence weight gain. Also, to identify risks associated with the absence of Intuitive Eating.

Information needed : **UG GRAD** **LAW** *Specify if needed*

I would like to receive e-mail addresses for all full-time students living in a residence hall on campus.

Approximate number of students you expect to receive information about: 1,000

Sequence: __ Alpha by name ____ ZIP Code ____Other _____

If needed: __ Residence Hall Address____ Local Address ____Permanent Address

__E-Mail Address

Send Excel file to this NIU e-mail address:
z1546650@students.niu.edu

Date needed: _____

Our office receives a large volume of requests for data. Please allow ample time to fulfill a request.

Person(s) who will have access to student data (please print):

Name	Title	Department	Phone
Christie Nagel	Graduate Student	FCNS	(847)421–0139
Dr. Amy Ozier	Thesis Director/Faculty Advisor	FCNS	(815)761-8711
Dr Sheila Barrett	Thesis Committee Member	FCNS	(847)421–0139
Dr. Alan Polanksy	Thesis Committee Member	ETR	(815)761-8711

Statement of Confidentiality:

I will ensure that adequate measures will be taken to protect the confidentiality of the student information requested, and that only those people identified above will have access to individual data.

_____

Signature of Person Making Request Date

z1686227@students.niu.edu (847)421-0139 2/3/16

Include your e-mail address and phone number

_____2/3/16_____

____

Signature of Faculty Advisor (required for requests submitted by students) Date

_____

Printed name of Faculty Advisor and phone number

_____

Office of Registration and Records Date Approved: _____

Denied: _____

APPENDIX C

EMAIL TO STUDENTS

Email to NIU Undergraduate Students:

Dear NIU Student,

My name is Christie and I am a master's degree student at at Northern Illinois University (NIU) studying at the College of Health and Human Sciences (School of Family, Consumer & Nutrition Sciences) with a specialization in Nutrition & Dietetics. I received my Bachelor of Science degree in Nutrition and Dietetics from NIU. I am currently working on my thesis "Associated Factors of Intuitive Eating In Undergraduate Students At A Midwestern University."

I am seeking your participation in this study. Timely completion of the survey is greatly appreciated. The survey should take approximately 10 to 15 minutes to complete. A link to the survey is provided below.
https://www.surveymonkey.com/r/intuitive-eating

All information will be kept confidential. Only NIU research personnel associated with this study will see the returned surveys. No names or potential identifying information of individuals will be required. Results of this study will be presented in a M.S. thesis and perhaps in journal articles at professional meetings.

The purpose of the survey is to provide NIU with a better understanding of the lifestyle habits of NIU students and their correlation with health, which will assist NIU graduate students in developing health services and programs that best fit the health needs of the student community. Participation in the survey is completely voluntary and all results will remain anonymous.

For each student who participates in the survey, they will be eligible to enter into a drawing for a $25 visa gift card. There will be a total of three prize winners randomly selected. Each winner will receive a $25 visa gift card. Winners will be notified via email.

In advance, thank you for your willingness to participate in this study. If you have any questions or concerns about the survey please reply to this email and we will get back to you in a timely manner.

Sincerely,
Christie Nagel
Graduate student researcher
NIU Family, Consumer, & Nutrition Sciences Department
Email: z1546650@students.niu.ed

APPENDIX D

EADES SURVEY

Instructions for the EADES (Eating and Appraisal Due to Emotions and Stress) Questionnaire

The EADES Questionnaire is an instrument that has undergone preliminary validation using exploratory factor analysis in a university population and contains questions that measure the constructs of Emotion and Stress Related Eating, Appraisal of Ability and Resources to Cope, and Appraisal of Outside Influences and Stressors.

The EADES Questionnaire takes approximately 10-15 minutes to complete. Questions are written so that individuals respond in first person and determine their level of agreement with the questions by answering Strongly Disagree to Strongly Agree on a scale of 1-5. Each factor uses its own scoring range.

The EADES constructs derived a factor solution having a total Cronbach α reliability coefficient of 0.949. The factors loaded onto the concepts of:

Factor 1: Emotion and Stress Related Eating (Cronbach α =0.949)
Factor 2: Appraisal of Ability and Resources to Cope (Cronbach α =0.869)
Factor 3: Appraisal of Outside Stressors and Influences (Cronbach α =0.652).

Emotion and Stress Related Eating
Twenty-four questions measure Emotion and Stress Related Eating which addresses the extent to which individuals use food to cope with emotions and/or stressors and includes questions related to eating behavior along with self-efficacy in regards to eating behavior. The possible cumulative scoring range for this factor is *24-120* with lower scores representing greater Emotion and Stress Related Eating.
Questions: 2, 3, 8, 11, 12, 14, 17, 19, 22, 24, 26, 30, 31, 32, 34, 35, 37, 39, 40, 42, 44, 45, 47, 49

Appraisal of Ability and Resources to Cope
Twenty questions measure Appraisal of Ability and Resources to Cope, which is one's perception, in relation to his personal well-being, of resources, including skills, to cope with stress and emotions. The possible scoring range for this factor is *20-100* with lower scores representing more compromised appraisal skills and resources to cope.
Questions: 1, 4, 5, 6, 7, 9, 15, 16, 18, 20, 21, 23, 25, 28, 29, 33, 36, 41, 46, 48

Appraisal of Outside Stressors
Five questions measure Appraisal of Outside Stressors and Influences which is one's perception, in relation to his personal well-being, of how one copes with external stressors such as other individuals. The possible scoring range for this factor is *5-25* with lower scores representing a more compromised ability of how one perceives stressors. (Please refer to page 625 in the attached article to identify specific questions representing the EADES constructs.)
Questions: 10, 13, 27, 38, 43

Reverse Scoring
All factors each have their own cumulative score.
Strongly Disagree = 1 point
Disagree = 2 points
Neutral = 3 points
Agree = 4 points
Strongly Agree = 5 points.

However, the following questions are reversed scored.

Questions:
3, 6, 8, 10, 11, 12, 13, 16, 19, 24, 27, 31, 32, 35, 37, 39, 40, 41,45, 47, 49

(Example: If a person answers with a 5, it is added into the score as a 1).

(Please note that the ***original*** EADES questions 1, 9, 17, 19, & 44 did not provide sufficient factor loadings greater than 0.400 on any of the subscales and so have been removed from the EADES).

The EADES (Eating and Appraisal Due to Emotions and Stress) Questionnaire

The following questionnaire was developed to assess how individuals cope with and appraise stress in relation to food and eating. Your participation will assist in research related to why people overeat. This assessment will take about 10-15 minutes to complete. Your answers are confidential. There are a total of 58 questions.

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

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
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

Tell us a little about yourself by answering questions 50-53. Circle the statement that **best** represents you.

50. What is your sex?
    A. Male
    B.Female

51. Which of the following represents your job category?
    A.Faculty
    B.Staff
    C.Other

52. How do you describe yourself?

A. American Indian of Alaska Native
B. Asian
C. Black or African American-Not Hispanic
D. Hispanic or Latino
E. Native Hawaiian or Other Pacific Islander
F. White-Not Hispanic

53. What is your annual household income from all sources?

A. Less than $10,000
B. $10,000-14,999
C. $15,000-19,000
D. $20,000-24,999
E. $25,000-34,999
F. $35,000-49,999
G. $50,000-74,999
H. $75,000 or more

For Questions 54-58, write your answers on the lines provided.

54. How old are you (Example: 45)?
Age in Years: ___ ___

55. How much do you weigh without your shoes on (Example: 185)?
Weight in pounds: ___ ___ ___

56. How tall are you without your shoes on (Example: 5 Feet 07 Inches)?
___ Feet ___ ___ Inches

57. How many individuals live in your immediate household (if 4 individuals live in your immediate household, put 04)?
Individuals in household: ___ ___

58. How many individuals live in your immediate household that are under the age of 18 years (if 4 individuals live in your immediate household that are under 18 years, put 04)?
Individuals under 18: ___ ___

Created by Amy D. Ozier PhD, RD, LDN, CHES

For use: Contact aozier@niu.edu

The Eating and Appraisal Due to Emotions and Stress Questionnaire (EADES)

Instructions: Transfer answers from the EADES Questionnaire into the open space for that item, noting where reverse scoring is indicated. Reverse scored numbers are indicated with an asterisk * (i.e. 1=5, 2=4, 3=3, 4=2, 5=1). Total the responses for each factor below according to the proceeding instructions.

	Factor 1	Factor 2	Factor 3		Factor 1	Factor 2	Factor 3
1				26			
2				27*			
3*				28			
4				29			
5				30			
6*				31*			
7				32*			
8*				33			
9				34			
10*				35*			
11*				36			
12*				37*			
13*				38			
14				39*			
15				40*			
16*				41*			
17				42			
18				43			
19*				44			
20				45*			
21				46			
22				47*			
23				48			
24*				49*			
25							

Total Factor columns. When adding the numbers, be sure the reverse scoring question numbers are added using the reverse scoring (Example: If a person answers with a 5 for a ***reverse scoring question***, it is added into the total as a 1).

	Factor 1	Factor 2	Factor 3		Factor 1	Factor 2	Factor 3
Total				**Total**			

Factor 1 Total:_____

Emotion and Stress Related Eating

Possible Range: 24-120

*Lower score indicates greater emotion and stress related eating

Factor 2 Total:_____

Appraisal of Ability and Resources to Cope

Possible Range: 20-100

*Lower score indicates more compromised appraisal skills and resources to cope

Factor 3 Total:_____

Appraisal of Outside Stressors

Possible Range: 5-25

*Lower score indicates more compromised ability of how one perceives stressors

APPENDIX E

IES-2 SURVEY

Intuitive Eating Scale-2 (23 items)

Permission to use this measure is not required. However, I do request that you notify me via email if you use the Intuitive Eating Scale in your research.

Directions for participants: For each item, please circle the answer that best characterizes your attitudes or behaviors. (note to experimenter: use "check" in lieu of "circle" if survey is online)

1. **I try to avoid certain foods high in fat, carbohydrates, or calories.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

2. **I have forbidden foods that I don't allow myself to eat.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

3. **I get mad at myself for eating something unhealthy.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

4. **If I am craving a certain food, I allow myself to have it.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

5. **I allow myself to eat what food I desire at the moment.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

6. **I do NOT follow eating rules or dieting plans that dictate what, when, and/or how much to eat.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

7. **I find myself eating when I'm feeling emotional (e.g., anxious, depressed, sad), even when**
   I'm not physically hungry.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

8. **I find myself eating when I am lonely, even when I'm not physically hungry.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

9. **I use food to help me soothe my negative emotions.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

10. **I find myself eating when I am stressed out, even when I'm not physically hungry.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

11. **I am able to cope with my negative emotions (e.g., anxiety, sadness) without turning to food for comfort.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

12. **When I am bored, I do NOT eat just for something to do.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

13. **When I am lonely, I do NOT turn to food for comfort.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

14. **I find other ways to cope with stress and anxiety than by eating.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

15. **I trust my body to tell me when to eat.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

16. **I trust my body to tell me what to eat.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

17. **I trust my body to tell me how much to eat.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

18. **I rely on my hunger signals to tell me when to eat.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

19. **I rely on my fullness (satiety) signals to tell me when to stop eating.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

20. **I trust my body to tell me when to stop eating.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

21. **Most of the time, I desire to eat nutritious foods.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

22. **I mostly eat foods that make my body perform efficiently (well).**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

23. **I mostly eat foods that give my body energy and stamina.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Scoring Procedure:

1. Reverse score Items 1, 2, 3, 7, 8, 9, and 10
2. *Total IES-2 Scale Score:* Add together all items and divide by 23 to create an average score.
3. *Unconditional Permission to Eat subscale:* Add together Items 1, 2, 3, 4, 5, and 6; divide by 6 to create an average score.

4. *Eating for Physical Rather than Emotional Reasons subscale:* Add together Items 7, 8, 9, 10, 11, 12, 13, and 14; divide by 8 to create an average score.

5. *Reliance on Hunger and Satiety Cues subscale:* Add together Items 15, 16, 17, 18, 19, and 20; divide by 6 to create an average score.

6. *Body-Food Choice Congruence subscale:* Add together Items 21, 22, and 23; divide by 3 to create an average score.

APPENDIX F

DIS SURVEY

1. I take small helpings in an effort to control my weight

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

2. I hold back at meals in an attempt to prevent weight gain

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

3. I limit the amount of food I eat in an effort to control my weight

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

4. I sometimes avoid eating in an attempt to control my weight

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

5. I skip meals in an effort to control my weight

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

6. I sometimes eat only one or two meals a day to try to limit my weight

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

7. I eat diet foods in an effort to control my weight

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

8. I count calories to try to prevent weight gain

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

9. I eat low-calorie foods in an effort to avoid weight gain

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

APPENDIX G

SURVEY FOR RESEARCH

https://www.surveymonkey.com/r/intuitive-eating

APPENDIX H

CITI PROGRAM CERTIFICATE

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COURSEWORK REQUIREMENTS REPORT*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Christie Nagel (ID: 3880397)
- **Email:** z1546650@students.niu.edu
- **Institution Affiliation:** Northern Illinois University (ID: 1662)
- **Institution Unit:** Nutrition & Dietetics

- **Curriculum Group:** Social and Behavioral Responsible Conduct of Research
- **Course Learner Group:** Same as Curriculum Group
- **Stage:** Stage 1 - Basic Course
- **Description:** This course is for investigators, staff and students with an interest or focus in **Social and Behavioral** research. This course contains text, embedded case studies AND quizzes.

- **Report ID:** 11810215
- **Completion Date:** 11/22/2013
- **Expiration Date:** N/A
- **Minimum Passing:** 80
- **Reported Score*:** 85

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Introduction to the Responsible Conduct of Research Archived 1248 (ID: 1248)	11/22/13	No Quiz
Research Misconduct (RCR-SBE) (ID: 1495)	11/22/13	4/5 (80%)
Data Management (RCR-SBE) (ID: 1523)	11/22/13	5/5 (100%)
Authorship (RCR-SBE) (ID: 1518)	11/22/13	4/5 (80%)
Peer Review (RCR-SBE) (ID: 1521)	11/22/13	4/5 (80%)
Mentoring (RCR-Interdisciplinary) (ID: 1250)	11/22/13	4/5 (80%)
Using Animal Subjects in Research (RCR-Basic) (ID: 13301)	11/22/13	4/5 (80%)
Conflicts of Interest (RCR-SBE) (ID: 1462)	11/22/13	5/6 (83%)
Collaborative Research (RCR-SBE) (ID: 1484)	11/22/13	5/5 (100%)
Research Involving Human Subjects (RCR-Basic) (ID: 13566)	11/22/13	4/5 (80%)
Responsible Conduct of Research (RCR) Course Conclusion (ID: 1043)	11/22/13	No Quiz