An Examination of Factors that Contribute to Binge Eating among Bariatric Patients

Erin Neuman-Boone

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AN EXAMINATION OF FACTORS THAT CONTRIBUTE TO BINGE EATING AMONG BARIATRIC PATIENTS

A Dissertation

Submitted to the School of Education
Executive Doctoral Program in Counselor Education and Supervision

Duquesne University

In partial fulfillment of the requirements for the degree of Doctor of Philosophy

By

Erin E. Neuman-Boone, M.Ed.

August 2015
DUQUESNE UNIVERSITY
SCHOOL OF EDUCATION
Department of Counseling, Psychology and Special Education

Dissertation
Submitted in Partial Fulfillment of the Requirements
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Executive Counselor Education and Supervision Program

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JUNE 3, 2015

AN EXAMINATION OF FACTORS THAT CONTRIBUTE TO BINGE
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ABSTRACT

AN EXAMINATION OF FACTORS THAT CONTRIBUTE TO BINGE EATING AMONG BARIATRIC PATIENTS

By

Erin E. Neuman-Boone

August 2015

Dissertation supervised by Dr. David Delmonico

Binge eating is the most common eating disorder among individuals presenting for bariatric surgery. The majority of patients with pre-surgical binge eating experience a short-term reduction in binge eating symptoms following surgery. However, binge eating symptoms can re-emerge. This quantitative study examined variables related to and predictive of binge eating within the bariatric patient population. Specifically, the purpose of this study was to determine whether daily hassles, uplifts, depression, pre-surgical binge eating, time since surgery, and weight regain were predictors of binge eating within the bariatric patient population. One hundred and twenty-six participants completed either an electronic or paper version of the demographic and health history questionnaire, the Binge Eating Scale (BES), and the Combined Hassles and Uplifts (CHUS). A Pearson correlation and hierarchical multiple regression were used to analyze the data. The results of the two-tailed Pearson correlation revealed a positive relationship between BES scores and the frequency and severity of hassles. A negative
relationship between BES scores and the intensity of uplifts was also identified. The results of the hierarchical multiple regression analysis revealed weight regain, hassles severity, pre-surgical binge eating, and uplifts intensity were significant predictors of binge eating. The results of this study indicate the need for binge eating treatment before and after bariatric surgery. The findings for this study offer implications for the counseling profession and other professionals who work with the bariatric patient population.
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CHAPTER 1
INTRODUCTION

The prevalence of adult obesity has doubled over the past three decades in the United States (C. L. Ogden & Carroll, 2010). The Centers for Disease Control and Prevention (CDC) estimate 35.1% of adults are obese and 6.4% of adults are severely obese in the United States today (Fryar, Carroll, & Ogden, 2014). The obesity statistics demonstrate that this disease affects a significant percentage of Americans.

Obesity and severe obesity are determined by utilizing a standardized, objective measure known as the Body Mass Index (BMI). The BMI is calculated by using one of the following formulas: weight (kg) / [height (m)]^2 or weight (lb) / [height (in)]^2 x 703. The BMI range associated with weight status is as follows: a BMI of less than 18.5 is underweight; 18.5–24.9 is a healthy weight; 25.0–29.9 is overweight; 30.0–34.9 is class I, obesity; 35–39.9 is class II, serious obesity; 40.0 and above is class III, severe obesity (American Society for Metabolic and Bariatric Surgery [ASMBS], 2015). Based on the BMI categories, an adult woman measuring 5 feet 5 inches and weighing between 114–150 pounds would be considered within the healthy weight range, obese at 180 pounds, and severely obese if nearly 100 pounds over the healthy weight recommendations.

Understanding obesity is complex because “the obese population is heterogeneous with respect to etiology, effects of excess weight on medical variables, and response to various treatments” (Friedman & Brownell, 2002, p. 393). Obesity often results from the interaction between several variables, particularly genetics, lifestyle, environment, socioeconomic status, and stress.
Obesity and Genetics

A genetic link to obesity was identified in two landmark studies on twins and adopted families (Stunkard, Foch, & Hrubec, 1986; Stunkard, Sorensen, et al., 1986). In the twin study, Stunkard, Foch, & Hrubec (1986) examined obesity among twins and “the concordance rates for different degrees of overweight were twice as high for monozygotic twins as for dizygotic twins” at age 20 and at the follow-up 25 years later (p. 51). In the adoption study, the findings revealed a “strong relation between the body-mass index of biologic parents and adoptee weight class and no relation between the index of adoptive parents and adoptee weight class” (Stunkard, Sorensen, et al., 1986, p. 193). Furthermore, recent genome-wide association studies have identified gene variants such as the “fat mass and obesity-associated” (FTO) gene, which increases the likelihood of developing obesity (Choquet & Meyre, 2011; Harvard School of Public Health, 2015). “These gene variants are fairly common, and people who carry one have a 20 to 30 percent higher risk of obesity than people who do not” (Harvard School of Public Health, 2015). The FTO gene variant is related to increased fat in-take and decreased satiety (Choquet & Meyre, 2011). Though genetic studies have revealed that some individuals have a predisposition towards developing obesity, genetic risk factors do not indicate one will inevitably develop obesity. The interaction between genetics and lifestyle influence one’s risk of developing obesity (Harvard School of Public Health, 2015).

Obesity and Lifestyle

Lifestyle significantly impacts body weight. Currently, refined grains, added fats, and sugar make up a large part of the Standard American Diet (SAD; Grotto & Zied, 2010). This is because today Americans eat out often, frequently consume processed snack food items, and drink sweetened beverages (Grotto & Zied, 2010; R. K. Johnson et al., 2009; Popkin, 2010). As
a result of consuming more processed and refined foods today, the average caloric intake had increased by 24% between 1970 and 2000 (United States Healthful Food Council [USHFC], 2013). Concurrently, the prevalence of obesity and severe obesity increased by 20% (C. L. Ogden, Carroll, Kit, & Flegal, 2012). The impact of increased caloric intake is further compounded by the concurrent decrease in physical activity. “Physical activity is defined as any bodily movement produced by skeletal muscles that result in energy expenditure” (Caspersen, Powell, & Christenson, 1985, p. 126). Essentially, it is not limited to intentional exercise, but rather cumulative activity that occurs throughout the day. Overall physical activity has lessened because of modern technology. Due to technological advances, occupations are less physically demanding and leisure time is more sedentary, increasing the risk for obesity (Church et al., 2011; Liou, Liou, & Chang, 2010). Fortunately, lifestyle risk factors can be modified to prevent obesity, though this is challenging, particularly for the low socioeconomic status (SES) population (Darmon & Drewnowski, 2008).

**Obesity and Socioeconomic Status**

The low-income population has limited opportunities to eat healthy and stay physically active. Grocery stores are not typically housed in low-income neighborhoods making nutritious food less accessible, particularly if transportation is limited (Food Research and Action Center [FRAC], 2010; Powell, Slater, Mirtcheva, Bao, & Chaloupka, 2007). As a result, they shop at convenience stores and dine at fast food restaurants, which are plagued with inexpensive, calorically dense food, with little nutritional value (Drewnowski & Specter, 2004; FRAC, 2010). Low-income communities also have more crime and fewer parks and recreational facilities, which are barriers to getting adequate physical activity (Floyd, Taylor, & Whitt-Glover, 2009).
Because poverty is a barrier to implementing a healthy lifestyle, it is a risk factor for obesity (FRAC, 2010).

**Obesity and Stress**

Prior research has examined the relationship between obesity and stress (Dallman et al., 2003; Sinha & Jastreboff, 2013). Stress is “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (Lazarus & Folkman, 1984, p. 19). “According to McEwen (1998), the brain is the most important organ for determining what is perceived as stressful. The perceptions of the brain are influenced by individual differences including genes, one’s experiences, early development and learned behaviors” (Logan & Barksdale, 2008, p. 203).

Perceived stress is accompanied by physiological responses intended to help the individual adapt (Djuric et al., 2008; Logan & Barksdale, 2008; McEwen, 2000; Sapolsky, 2004). This process is known as allostasis (Djuric et al., 2008; Logan & Barksdale, 2008; McEwen, 2000; Sinha & Jastreboff, 2013). Allostatic load is “the cumulative biological burden exacted on the body through daily adaptation to physical and emotional stress” (Djuric et al., 2008, p. 3). When individuals are frequently exposed to perceived stressors, physiological responses occur repeatedly overtime which leads to increased allostatic load (Djuric et al., 2008; Logan & Barksdale, 2008; McEwen, 2000; Sinha & Jastreboff, 2013).

Increased allostatic load resulting from stress is a risk factor for obesity for several reasons (Dallman et al., 2003; McEwen, 2000; Sapolsky, 2004; Sinha & Jastreboff, 2013). First, the hypothalamic pituitary adrenal axis (HPA), part of the neuroendocrine system, releases cortisol when stressed (J. Ogden, 2004). Cortisol is a glucocorticoid that stimulates appetite and suppresses serotonin, a hormone known to regulate mood. As a result of the suppressed
serotonin, the individual will crave high sugar, high carbohydrate foods because these foods increase serotonin. Second, when one is exposed to frequent intermittent stressors, known as daily hassles, cortisol levels remain high causing a frequent state of hyperphagia (Sapolsky, 2004; Sinha & Jastreboff, 2013). Third, cortisol not only stimulates appetite but also signals the body to store fat. Specifically, fat is stored around the abdomen when cortisol and insulin levels are high (Dallman et al., 2003; Sapolsky, 2004). The fat around the abdomen is visceral fat, meaning the fat surrounds the organs rather than accumulating under the skin as subcutaneous fat. Visceral fat is a concern because it creates a greater risk for developing obesity-related diseases (Sapolsky, 2004).

**Obesity and Co-Morbidities**

Understanding the risk factors related to obesity is important because obesity is essentially “abnormal or excessive fat accumulation that may impair health” (World Health Organization [WHO], n.d.). Health is compromised because obesity is a risk factor for cardiovascular disease, pulmonary conditions, and diabetes mellitus. The risk and severity of these co-morbidities increase with the level of obesity (WHO). As a result, life expectancy is decreased by 5 to 20 years (Fontaine, Redden, Wang, Westfall & Allison, 2003).

In addition to physical co-morbidities, obesity is related to psychological co-morbidities. Data from the National Comorbidity Survey Replication (NCS-R) demonstrated a significant, positive relationship between depression, anxiety, and obesity (Simon et al., 2006). Results from the Behavioral Risk Factor Surveillance System suggest that the obese and severely obese population experience a decreased quality of life due to physical limitations and psychological distress (Ford, Moriarty, Zack, Mokdad, Chapman, 2001). Weight stigmatization and
discrimination appear to be factors that contribute to the psychological distress experienced by persons with obesity (Koball & Carels, 2011; Wott & Carels, 2010).

**Obesity and Stigma**

The Obesity Society (2010) defines weight stigma as:

Stigma and bias generally refer to negative attitudes that affect our interpersonal interactions and activities in a detrimental way. Stigma may come in several forms including verbal types of bias (such as ridicule, teasing, insults) physical stigma (such as touching, grabbing, or other aggressive behaviors), or other barriers and obstacles due to weight (such as medical equipment that is too small for obese patients, chairs or seats in public venues which do not accommodate obese persons, or stores which do not carry clothing in large sizes). In an extreme form, stigma can result in both subtle and overt forms of discrimination, such as employment discrimination where an obese employee is denied a position or promotion due to his or her appearance, despite being appropriately qualified. (para. 2)

Weight stigma and discrimination exist throughout our society. Earlier research by Richardson, Goodman, Hastorf, and Dornbusch (1961) found that children as young as six rated silhouettes of children with obesity as the least likeable when compared to silhouettes of children with various physical disabilities and disfigurements. This study has since been replicated and weight stigma not only persists, but has increased today (Latner & Stunkard, 2003). Puhl and Brownell (2006) found in their study that 62% of individuals with obesity had recurrently experienced stigmatization from family members and over 50% from physicians and classmates. Weight stigma continues to exist throughout our culture, in part because individuals with obesity are misperceived as personally responsible for their weight.
The current societal message is that both the cause and the solution for obesity reside within the individual. Thus, the pervasiveness of the “personal responsibility” message plays a key role in stigmatization, and serves to justify stigma as an acceptable societal response. (Puhl & Heuer, 2010, p. 1021)

Unfortunately, society’s shaming attitude towards people with obesity has a negative impact. Exposure to weight stigma is related to psychological distress such as low self-esteem, body dissatisfaction, anxiety, and depression (Carels et al., 2009; Puhl, Latner, King, & Luedicke, 2014; Vartanian & Novak, 2011). Research shows that when individuals with obesity internalize weight stigma, they are less apt to engage in healthy weight loss behaviors such as healthier eating and exercise (Puhl & Heuer, 2010; Puhl, Moss-Racusin, & Schwartz, 2007; Vartanian & Novak, 2011). Those who internalize weight stigma are also more likely to engage in binge eating behavior, which perpetuates obesity (Ashmore, Friedman, Reichmann, & Musante, 2008; Puhl & Heuer, 2010; Puhl et al., 2007; Vartanian & Novak, 2011).

**Binge Eating**

Binge eating is characterized by episodes of consuming a large amount of food in a discrete, two-hour period of time (American Psychiatric Association [APA], 2013). During a binge episode, the individual experiences a loss of control over his or her eating, along with emotional distress. Loss of control and emotional distress are two features that distinguish a binge episode from overeating (Cooper & Fairburn, 2003). Binge episodes often exist across the spectrum of eating disorders, including bulimia nervosa (BN) and binge eating disorder (BED; APA, 2013). Individuals with BN use inappropriate compensatory behaviors (self-induced vomiting, laxatives, excessive exercise, fasting, etc.) following a binge episode, and individuals with BED do not. As a result of bingeing without compensating for the influx of calories, people...
with BED are more likely to be obese (National Institute of Mental Health [NIMH], 2014). In fact, binge eating is the most common eating disorder associated with obesity (de Zwaan, 2001).

It is estimated between 5–20% of individuals with obesity have BED (Mitchell, Devlin, de Zwaan, Crow, & Peterson, 2008). The occurrence rate varies across the research because some studies limited the sample population to those with full syndrome BED whereas other studies included those with subthreshold BED. Those with full syndrome BED, which is a new diagnosis, meet all of the criteria outlined in the *Diagnostic and Statistical Manual 5th Edition (DSM-5)*; American Psychiatric Association [APA], 2013). The DSM-5 criteria for BED is:

Recurring episodes of eating significantly more food in a short period of time than most people would eat under similar circumstances, with episodes marked by feelings of lack of control. Someone with binge eating disorder may eat too quickly, even when he or she is not hungry. The person may have feelings of guilt, embarrassment, or disgust and may binge eat alone to hide the behavior. This disorder is associated with distress and occurs, on average, at least once a week over three months. (para. 2, Binge Eating Disorder)

Those who do not meet the full diagnostic criteria are recognized as having subthreshold BED and would be diagnosed with Other Specified Feeding or Eating Disorders (APA, 2013). Research has shown that “women with subthreshold BED appear to be at similar risk for obesity and psychiatric distress as women with full syndrome BED” (Striegel-Moore et al., 2000, p. 275).

Individuals with subthreshold or full syndrome BED are both susceptible to emotional eating (Ricca et al., 2009). Emotional eating refers to eating in response to feelings of anxiety, depression, and anger. For individuals who binge eat, negative emotions are a trigger for a binge
episode. In fact, “the most frequently cited instigator of a binge episode is stress or negative affect” (Polivy & Herman, 1993, p. 179).

Stress is related to the onset and maintenance of binge eating disorder. According to Pike et al. (2006), “in the year preceding onset of disturbed eating, individuals with BED experience an increased number of stressful life events, and these events tend to be interpersonal in nature” (p. 27). Pike et al. found that the most frequently endorsed stressful events preceding the development of binge eating included safety concerns, school or work related stressors, and exposure to critical comments about shape, weight, and eating. These findings inform us that experiencing multiple stressful events is a risk factor for developing BED.

For those with BED, stress also functions to maintain the disorder. Previous studies have shown stress precedes a binge episode for individuals with bulimia nervosa and binge eating (Freeman & Gil 2004; Goldschmidt et al., 2014; Hawkins & Clemente, 1980; Mathes, Brownley, Mo, & Bulik, 2009; Polivy & Herman, 1993; Smyth et al., 2007; Wolff, Crosby, Roberts, & Wittrock, 2000). Because stress is a broad concept, several studies have examined a particular type of stress referred to as daily hassles (Crowther, Sanftner, Bonifazi, & Shepherd, 2001; O’Connor, Jones, Conner, McMillan, & Ferguson, 2008; Smyth et al., 2007). Daily hassles are recurring stressors and annoyances experienced in our day-to-day lives (Lazarus & Folkman, 1984). The counterpart to daily hassles are uplifts. Uplifts are daily experiences that are perceived as positive (Lazarus & Folkman, 1984). Research indicates that individuals without obesity who binge eat report more frequent and/or more severe daily hassles than individuals who do not binge (Crowther et al., 2001; Wolff et al., 2000). Additionally, for those who binge eat, daily hassles were perceived as more severe on days that a binge episode occurred than on days without a binge episode (Wolff et al., 2000). Current research has not examined whether
uplifts decrease binge episodes by buffering the effects of stress. Understanding the role of uplifts could be beneficial for developing interventions. Though the relationship between uplifts and binge eating has not been explored, the aforementioned research findings suggest that daily hassles play a role in maintaining BED.

Binge eating is an attempt to regulate stress. It is a maladaptive coping mechanism in which food is used to escape, avoid, or mask distress (Freeman & Gil, 2004; Koo-Loeb, Costello, Light, & Girdler, 2000). Two theoretical approaches, the escape theory and masking theory, explain how binge eating temporarily relieves stress (Heatherton & Baumeister, 1991; Polivy & Herman, 1993; Stein et al., 2007). Based on the escape theory, bingeing serves to temporarily distract one from self-awareness, so the focus shifts from the stressor and negative emotions to food (Heatherton & Baumeister, 1991; Polivy & Herman, 1993). Additionally, focusing on food along with the trance-like state often experienced during a binge episode serve as an escape from self-awareness. Alternatively, Stein et al. (2007) describes the masking theory as

Rather than blocking out emotions, binge eating serves as an attribution for negative affect that masks other problems, That is, negative emotions can be blamed on binge eating, which may be perceived as more controllable and/or tolerable than other aspects of one’s life that may be the actual cause of distress. (p. 196).

Based on both the escape theory and masking theory, binge eating is an attempt to regulate stress by altering the psyche. However, binge episodes only provide temporary relief and consequently cause feelings of guilt which furthers the binge cycle (Arnow, Kenardy, & Agras, 1992). The binge cycle is particularly distressing for individuals with obesity who binge eat and are striving to lose weight. Because weight loss is difficult for those with obesity in general, binge eating is
an additional challenge to weight loss and weight loss maintenance (Elfhag & Rössner, 2005; Kraschnewski et al., 2010).

**Obesity Treatment and Bariatric Surgery**

Researchers have long been interested in factors that contribute to successful weight loss, weight loss maintenance, and weight regain (Elfhag & Rössner, 2005). Despite the fact that weight loss is a multi-billion dollar industry, only 17.3% of overweight and obese individuals who have lost 10% of their body weight maintained their weight loss for at least one year (Kraschnewski et al., 2010). The research on weight loss maintenance suggests self-monitoring weight and food intake, physical activity, improved coping skills, and social supports were associated with successfully maintaining weight loss (Elfhag & Rössner, 2005). Conversely, the research indicates that limited physical mobility, weight cycling, stressful experiences, avoidant coping mechanisms, and binge eating were associated with weight regain (Elfhag & Rössner, 2005). Popular diets, and over-the-counter and prescription pharmaceuticals do not offer promising results, particularly for those with severe obesity (Rao, 2010). “Given that most obesity treatments have modest effects at best and many times do not result in significant weight change over time, for individuals with severe obesity, bariatric surgery procedures offer a viable and cost-effective alternative” (Mitchell & Courcoulas, 2005, p. 1). Current bariatric surgery procedures include Roux-en-Y gastric bypass (RYGB), laparoscopic adjustable gastric banding (LAGB), and sleeve gastrectomy.

Roux-en-Y gastric bypass (RYGB) surgery contributes to weight loss because the surgery has restrictive and malabsorptive properties (ASMBS, 2015). The surgery restricts the amount of food that can be tolerated by decreasing the size of the stomach. The stomach size is decreased by separating the upper and lower portion of the stomach with surgical staples. The
upper portion of the stomach, referred to as a pouch, has an outlet called the gastrojejunal (GJ) stoma. The stoma is where the pouch and a limb of the small intestine, known as the Roux limb, are connected. The Roux limb bypasses the lower part of the stomach and the upper part of the small intestine so less nutrients are absorbed, resulting in weight loss (ASMBS, 2015).

Laparoscopic adjustable gastric banding (LAGB) is a restrictive procedure in which an inflatable band is placed around a section of the stomach. The band creates a small pouch which allows one to feel full after eating a modest amount of food. The band also creates a narrow opening between the pouch and the remainder of the stomach intended to prevent food from moving too quickly from the pouch to the lower portion of the stomach. After the band is surgically inserted, saline can be injected into the band through a port to adjust the size of the opening (ASMBS, 2015).

Sleeve gastrectomy is a non-reversible, restrictive procedure. The sleeve involves surgically removing nearly 80% of the stomach. This procedure leads to weight loss because the reduced stomach size limits the amount of food one can eat. The sleeve also reduces hunger by altering the hormones in the gut (ASMBS, 2015).

Bariatric patients can expect to lose between 40-80% of excess body weight within 24-36 months of surgery (De Zwaan, 2005; Obesity Action Coalition [OAC], 2015). The amount of weight loss varies depending upon the surgical procedure. RYGB and sleeve gastrectomy yield greater weight loss than LAGB (ASMBS, 2015; OAC, 2015). In the long-term, the majority of RYGB and sleeve gastrectomy patients maintained at least 50% of excess weight loss (Christou, Look, & MacLean, 2006; Suter, Donadini, Romy, Demartines, & Giusti, 2011). However, 10–30% had failed weight loss results or regain weight (Bessler et al., 2010; Bohdjalian et al., 2010; Chin, Ali, Francis, & LePort, 2009; Khoursheed et al., 2011; Mehran & Koleilat, 2010; Parikh,
Pomp, & Gagner, 2007). Weight loss failure and weight regain occurred for 14%–68% of LAGB patients (Aarts et al., 2014; Suter, Calmes, Paroz, & Giusti, 2006). Failure of weight loss is considered a loss of less than 50% of excess body weight (Magro et al., 2008). Weight regain is when a patient has a 15% weight regain 2–10 years after the procedure (Rosenthal, Szomstein, & Lo Menzo, 2012).

Weight loss failure and weight regain for bariatric patients is multifaceted. Suboptimal results for RYGB are often related to structural issues, such as staple line dehiscence, pouch dilation, and stoma dilation. Pouch dilation allows the individual to eat more before feeling full, whereas stoma dilation allows more nutrients to pass into the small intestine resulting in more calories absorbed. Weight loss failure for sleeve gastrectomy can be related to stomach dilation which is similar to the aforementioned pouch dilation experienced by RYGB patients (Mehran & Koleilat, 2010). Poor weight loss outcomes for LAGB patients often result from pouch dilation or failure of the patient to follow-up with their doctor to have their band adjusted (Moser et al., 2006). Surgical error, intestinal adaptation over time, and binge eating may cause stomach/pouch and stoma dilation (Ames, Patel, Ames, & Lynch, 2009; Mehran & Koleilat, 2010; Moser et al., 2006; Poole et al., 2004). However, even when the anatomical structure was intact, overeating and binge eating were related to weight regain (Behrns, Smith, Kelly, & Sarr, 1993; Topart, Becouarn, & Ritz, 2011).

Nearly 30% of bariatric surgery candidates have BED (Dymek-Valentine, Rienecke-Hoste, & Engelberg, 2005; Kalarchian et al., 2007; Niego, Kofman, Weiss, & Geliebter, 2007). Interestingly, binge eating is typically not a contraindication to bariatric surgery, in part, because research yields mixed results Hsu et al., 1998; Kalarchian et al., 2002; Kalarchian & Marcus, 2005; Livhits et al., 2010). Burgmer et al. (2005) found no significant difference in
postoperative weight loss between those who had binge eating behavior before surgery and those who did not. Yet, Hsu et al. (1998) concluded that weight regain 2 years post-surgery was correlated with pre-surgical binge eating.

Other studies have focused on post-surgical binge eating. Kalarchian et al. (2002) found that post-surgical binge eaters regained almost twice as much weight as those who did not binge eat after surgery. This study also revealed postoperative binge eaters had significantly more eating, shape, and weight concerns than non-binge eaters, suggesting that those with post-surgical binge eating experienced eating disorder psychopathology (Kalarchian et al., 2002; Niego et al., 2007). Depression also seems to be related to binge eating after bariatric surgery. A study by Colles, Dixon, and O’Brien (2008) found that after surgery, depression was greater for those who experienced symptoms of binge eating such as loss of control.

Research indicates that individuals with post-surgical binge eating typically had pre-surgical binge eating (Kalarchian & Marcus, 2005). According to Kalarchian and Marcus, “diagnoses of eating disorders after bariatric surgery appear to be most common among patients who had eating disturbances before surgery” (p. 66). In order to address binge eating disorder within the bariatric population, we must understand the psychological underpinnings of the disorder. Therefore, this research examines factors that contribute to binge eating among bariatric patients.

Statement of the Problem

In response to the obesity epidemic, the number of bariatric surgeries performed each year in the United States has increased from 16,200 to 179,000 between 1992 and 2013 (ASMBS, 2015; Elliott, 2012; Niego et al., 2007). Among those who are presenting for weight loss surgery, about 30% have binge eating disorder (Dymek-Valentine et al., 2005; Kalarchian et
al., 2007; Niego et al., 2007). The majority of patients who had pre-surgical binge eating will experience a short-term reduction in binge eating symptoms following surgery (Kalarchian, 2000; Kalarchian et al., 2002). Though, several studies indicate that between 4% and 50% of bariatric patients with pre-surgical binge eating will have symptoms re-emerge following surgery (Lang, Hauser, Buddeberg, & Klaghofer, 2002; White, Kalarchian, Masheb, Marcus, & Grilo, 2010).

Research suggests that individuals who report post-surgical binge eating lose significantly less excess weight, regain significantly more weight, experience greater rates of depression, and have poorer quality of life after surgery compared to those who do not experience post-surgical binge eating (Colles et al., 2008; Kofman, Lent, & Swencionis, 2010; Mitchell, de Zwaan, & Steffen, 2009; Niego et al., 2007). In order to prevent and/or treat binge eating within the bariatric population, understanding the factors related to binge eating is needed.

Studies have found that daily hassles are related to binge episodes for individuals with bulimia nervosa and healthy weight individuals with BED (Crowther et al., 2001; O’Connor et al., 2008; Smyth et al., 2007; Wolff et al., 2000). It is unclear whether there is a relationship between daily hassles and binge eating for individuals who have had bariatric surgery. It would be beneficial to better understand this relationship within the post-bariatric population because it could provide information for treatment and prevention interventions.

**Purpose of the Study**

The purpose of this study was to examine variables related to and predictive of binge eating within the bariatric patient population. Specifically, the purpose of this study was to determine whether daily hassles, uplifts, depression, pre-surgical binge eating, time since surgery, and weight regain were predictors of binge eating within the bariatric patient population.
Additionally, this study examined the relationship between binge eating and daily hassles and uplifts.

**Significance of the Study**

This study is intended to provide mental health counselors with knowledge about binge eating disorder within the bariatric population. This study will provide information about predictors of binge eating for post-surgical bariatric patients. The findings will add to the existing literature regarding the mental health needs of the bariatric population that can be used to guide counseling interventions. Counselors can draw on information from this study to help patients identify binge eating triggers, stressors, and the positive experiences that may be used to counter stress. The results of this study will also provide information that can be used to help guide counseling recommendations following the pre-surgical psychological evaluation for individuals who identify as binge eating prior to surgery.

**Research Questions**

The following research questions directed this study:

1. Is there a relationship between binge eating and stressful daily experiences and positive daily experiences?
2. What factors may be predictive of binge eating?

**Hypotheses**

The following hypotheses were tested:

*Hypothesis 1.* There is a positive relationship between the reported frequency and severity of hassles and the scores of the Binge Eating Scale among bariatric patients.

*Hypothesis 2.* There is a negative relationship between the reported frequency and intensity of uplifts and the scores of the Binge Eating Scale among bariatric patients.
Hypothesis 3. Weight regain accounts for a significant amount of variance in scores of the Binge Eating Scale over and above that accounted for by current depression, pre-surgical binge eating, and months post-surgery. Hassles and Uplifts accounts for a significant amount of variance in the BES scores over and above that accounted for by current depression, pre-surgical binge eating, months post-surgery, and weight regain.

Methodology

The purpose of this study was to examine variables related to and predictive of binge eating within the bariatric population. This study used the Combined Hassles and Uplifts Scale (CHUS) to assess the frequency and severity of hassles and the frequency and intensity of Uplifts (Lazarus & Folkman, 1989). Depression and pre-surgical binge eating were identified through dichotomous self-report questions. Binge eating severity was assessed using the Binge Eating Scale (BES; Gormally et al., 1982). The BES is not used to diagnose but rather assess the feelings, cognitions, and behaviors associated with binge eating on a continuum (Gormally et al., 1982). Although the BES is not used to formally diagnose, it was developed specifically to screen for binge eating within a population of individuals with obesity. According to Grupski et al. (2013),

The BES was not designed to assess for the presence of BED and therefore should not be used in isolation to diagnose BED. However, the results of this study suggest that it is a valid and useful binge eating screening tool for patients seeking bariatric surgery that will inform a thorough clinical evaluation of eating pathology. The vast majority of patients with BED and most patients without BED will be correctly identified by the BES. The BES may identify a significant number of patients with moderate/severe binge eating who do not meet criteria for BED; this is acceptable for a screening instrument, where
false positives are more desirable than false negatives. Finally, clinicians can be very confident that a patient with a negative BES screen most likely does not have BED. (pp. 5-6)

**Definitions**

**Adjustable Gastric Banding:** The Medline Plus Medical Encyclopedia (2012) states, in this procedure, a hollow band made of special material is placed around the stomach near its upper end, creating the small pouch and a narrow passage into the larger remaining portion of the stomach. This small passage delays the emptying of food from the pouch and causes a feeling of fullness. The band can be tightened or loosened over time to change the size of the passage. Initially, the pouch holds about 1 ounce of food and later expands to 2-3 ounces.

**Bariatric Surgery:** “Another name for weight loss surgery designed to treat the morbidly obese” (National Association for Weight Loss Surgery [NAWLS], 2012).

**Binge Eating Disorder:** Defined by the American Psychiatric Association (2013) as recurring episodes of eating significantly more food in a short period of time than most people would eat under similar circumstances, with episodes marked by feelings of lack of control. Someone with binge eating disorder may eat too quickly, even when he or she is not hungry. The person may have feelings of guilt, embarrassment, or disgust and may binge eat alone to hide the behavior. This disorder is associated with marked distress and occurs, on average, at least once a week over three months.

**Body Mass Index (BMI):** Defined by the Centers for Disease Control and Prevention (CDC) as “a number calculated from a person’s weight and height. BMI provides a reliable indicator of body fatness for most people and is used to screen for weight
categories that may lead to health problems” (2011). The formula used to determine BMI is: weight (lb) / [height (in)]² x 703 (CDC, 2011).

**Daily Hassles:** “Irritants that can range from minor annoyances to fairly major pressures, problems or difficulties. They can occur few or many times in any given time period” (Lazarus & Folkman, 1989, p. 38).

**Obesity:** The World Health Organization (WHO) defines obesity as “abnormal or excessive fat accumulation that presents a risk to health. A person with a BMI of 30 or more is generally considered obese.”

**Roux-en-Y Gastric Bypass Surgery:** The Medline Plus Medical Encyclopedia (2012) defines Roux-en-Y gastric bypass as: creating a stomach pouch out of a small portion of the stomach and attaching it directly to the small intestine, bypassing a large part of the stomach and duodenum. Not only is the stomach pouch too small to hold large amounts of food, but by skipping the duodenum, fat absorption is substantially reduced (para. 1).

**Severe Obesity:** Severe obesity is also referred to as morbid or extreme obesity. The American Society for Metabolic and Bariatric Surgery (ASMBS) define severe obesity as a “BMI ≥ 40 kg/m² or a BMI ≥ 35 kg/m² in the presence of high-risk co-morbid conditions” (Buchwald, 2005, p. 372).

**Sleeve Gastrectomy:** The Medline Plus Medical Encyclopedia (2012) states: vertical sleeve gastrectomy is surgery to help with weight loss. The surgeon removes a large portion of your stomach. The new, smaller stomach is about the size of a banana. It limits the amount of food you can eat by making you feel full after eating small amounts of food.
**Uplifts:** “Events that make you feel good. They can be sources of peace, satisfaction, or joy. Some occur often, others are relatively rare” (Lazarus & Folkman, 1989, p. 43).

**Summary**

This chapter began with a brief introduction of the concepts obesity, binge eating disorder, stress, and bariatric surgery. This chapter then presented the statement of the problem, purpose of the study, and the significance of the study. Additionally, this chapter introduced the research question, hypotheses, and operational definitions. This study examined variables predictive of binge eating within the bariatric population. The following chapter presents a review of the existing literature.
CHAPTER II
LITERATURE REVIEW

The purpose of this study is to examine variables related to and predictive of binge eating. This chapter presents an overview of the literature pertinent to the study. Emphasis is on literature related bariatric surgery, binge eating, and its connection to stress. The literature review is divided into 4 sections: (a) bariatric surgery, (b) binge eating, (c) stress, and (d) a summary of the review.

Bariatric Surgery

Bariatric surgery emerged from a surgical procedure used to treat a damaged part of the small bowel resulting from insufficient blood flow known as intestinal ischemia (A.D.A.M. Medical Encyclopedia, 2012; Martin, 2004). Intestinal ischemia is treated by surgically removing sections of the small intestine (A.D.A.M. Medical Encyclopedia, 2012). Because the small intestine is responsible for the absorption of nutrients, patients often developed short bowel syndrome (Martin, 2004). “Short bowel syndrome is a group of problems related to poor absorption of nutrients that typically occurs in people who have had half or more of their small intestine removed” (National Digestive Diseases Information Clearinghouse [NDDIC], 2009, p. 1). Due to the poor absorption, weight loss is a common side effect of short bowel syndrome. As surgeons observed the weight loss that resulted from short bowel syndrome, surgeons began experimenting with surgical procedures that induced short bowel syndrome, and in essence weight loss, for patients with morbid obesity in the 1950s (Martin, 2004).

Jejunoileal Bypass

In 1953, the first surgery to treat morbid obesity was performed at the University of Minnesota by Dr. Richard L. Varco (Martin, 2004; Saber, Elgamal, & McLeod, 2008). The
procedure was known as a jejunoileal bypass (JIB), in which 90% of the small intestine was bypassed (Martin, 2004; Saber et al., 2008; Singh, Laya, Clarkston, & Allen, 2009). During this same timeframe, Dr. Victor Henriksson from Sweden completed a similar surgery, but rather than bypassing the majority of the small intestine, Dr. Henriksson resected the majority of the small intestine (Martin, 2004). A small bowel bypass allowed for the surgery to be reversed, whereas the small bowel resection did not. Variations of the small bowel bypass were performed during the next two decades, including the 14-4 JIB, which became the standard small bowel bypass procedure of this time (Martin, 2004; Saber et al., 2008). However, the first generation of malabsorptive procedures was eventually eliminated in the early 1980s due to the high risk of complications and mortality (MacDonald, 2003; Martin, 2004; Mitchell & Courcoulas, 2005; Saber et al., 2008).

**Biliopancreatic Diversion**

The second generation of malabsorptive procedures were introduced in Italy during the 1970s by Dr. Nicola Scopinaro (Martin, 2004; MacDonald, 2003; Saber et al., 2008). The procedure was called the biliopancreatic diversion (BPD). “The new generation shared the principle of not depriving any part of the gut from intestinal flow” (Saber et al., 2008, p. 122) eliminating the risk of developing excessive bacteria in the small intestine which was the problem with first generation procedures (Martin, 2004; MacDonald, 2003; Saber et al., 2008). Additionally, the biliopancreatic diversion evolved to include a restrictive component by surgically removing part of the stomach, known as a partial gastrectomy. Variations of this procedure exist such as the biliopancreatic diversion with duodenal switch (BPD-DS). Essentially a different section of the stomach is removed in the BPD-DS than was removed in the BPD. The BPD and the BPD-DS are both still performed today and most patients will
experience a long-term loss of 70%–80% of excess weight. However, the BPD and BPD-DS are often reserved for those with super obesity, a BMI of 50 or greater, because of the higher risk for complications compared to other bariatric procedures available today (McGowan & McGowan Chopra, 2004; Mitchell & Courcoulas, 2005).

**Gastric Bypass**

Gastric bypass, a malabsorptive and restrictive procedure, was introduced at the University of Iowa by Dr. Edward Mason and Dr. Chikashi Ito in the late 1960s (Martin, 2004; MacDonald, 2003; Saber et al., 2008). This was the first weight loss surgery to restrict the size of the stomach by creating a small pouch and bypassing the remainder of the stomach and upper portion of the small intestine. The first procedure was known as the loop gastric bypass, which has been modified over the years and replaced by the Roux-en-Y gastric bypass (RYGB). The RYGB is the most common bariatric surgery performed today and is recognized as the gold standard procedure by the American Society for Metabolic and Bariatric Surgery (ASMBS) because of the low risk of complications and successful weight loss outcomes (American Society for Metabolic & Bariatric Surgery [ASMBS], 2013; Livingston, 2002). Patients who have RYGB typically lose 60%–85% of excess weight 18–24 months post-surgery (De Zwaan, 2005). Patients typically reach their lowest weight, referred to as nadir, during this time period, as well. After two years, weight loss stabilizes, and in fact, modest weight regain (8%) is expected (Magro et al., 2008). Patients are likely to maintain 50%–60% of the excess weight loss 10 years post-surgery (Allegheny Health Network, n.d.). In addition to weight loss, those with type II diabetes experience improvement and often remission of the disease. Blood sugar levels typically improve immediately after surgery, before the patient loses weight, due to hormonal changes in the gut (Allegheny Health Network, n.d.; Allen et al., 2013; Keidar, 2011).
**Restrictive Procedures**

Restrictive procedures are intended to induce weight loss by decreasing the stomach size and gastric outlet while leaving the remainder of the digestive system intact. The first purely restrictive procedure was the horizontal gastroplasty developed in 1971 by Dr. Edward Mason, who also developed gastric bypass surgery, and Dr. Kenneth Printen (Martin, 2004; Saber et al., 2008). Due to insufficient weight loss, the horizontal gastroplasty along with several variations of this procedure, including vertical banded gastroplasty, are no longer recommended (Brolin, Robertson, Kenler, & Cody, 1994; Martin, 2004; Saber et al., 2008). The current restrictive procedures that are recommended include the adjustable gastric band and the sleeve gastrectomy.

**Adjustable gastric band.** Adjustable gastric band is the least invasive weight loss procedure in which the stomach size is reduced by placing a silicone band around the upper portion of the stomach (Allegheny Health Network, n.d.; Saber et al., 2008).

The common explanation of how this device works is that with the smaller stomach pouch, eating just a small amount of food will satisfy hunger and promote the feeling of fullness. The feeling of fullness depends upon the size of the opening between the pouch and the remainder of the stomach created by the gastric band. The size of the stomach opening can be adjusted by filling the band with sterile saline, which is injected through a port placed under the skin. Reducing the size of the opening is done gradually over time with repeated adjustments or “fills.” (ASMBS, 2013).

Patients typically lose 40% of excess weight one year after the adjustable gastric band procedure and 50% of excess weight three years after surgery. Additionally, the majority of diabetic patients will experience resolution, or at least improvement, of type II diabetes within one to three years (Ponce et al., 2004).
**Sleeve gastrectomy.** Sleeve gastrectomy is a more recent procedure in which 75% of the stomach is surgically removed and the remainder of the stomach is a narrow sleeve (Allegheny Health Network, n.d.; Brethauer & Schauer, n.d.; Saber et al., 2008). “Sleeve gastrectomy can be employed as a first stage preceding either duodenal switch or gastric bypass; it can also be used as a definitive procedure in some patients” (Saber et al., 2008, p. 125). Sleeve gastrectomy leads to weight loss because the stomach is smaller so less food can be consumed. Additionally, appetite is diminished because ghrelin, a hunger stimulating hormone produced by the stomach, decreases after the surgery (Brethauer & Schauer, n.d.). A systematic review of the literature found the mean excess weight loss was 56% and 61% at 12 and 24 months, respectively, after the procedure (Fischer et al., 2012).

**Complications and Risks**

Bariatric surgery is a viable weight loss option when accompanied by a healthy lifestyle for individuals with morbid obesity. Though, as with any surgical procedure, there are risks and complications associated with bariatric surgery. The risk of mortality, which is low, is the most serious. According to Allegheny Health Network, Bariatric and Metabolic Institute:

The risk of death at experienced bariatric surgery centers is less than 0.3% (1 per 300 patients). Death is usually due to a patient’s health problems such as heart or lung disease. Surgical causes of death can be related to pulmonary embolism (blood clots to the lungs) or a gastrointestinal tract leak. Patients with a very high BMI, male patients, and patients with severe medical conditions are at the highest risk, but death can occur in any patient.
There is also a low risk (<1%) of developing pulmonary embolism, pneumonia, and infections at the incision site, as with any major surgery (Allegheny Health Network, n.d.; McGowan & McGowan Chopra, 2004).

In addition to the general risks that are associated with major surgical procedures, there are risks that are more unique to bariatric surgery. The most common difficulty after bariatric surgery is vitamin and mineral deficiencies (Mechanick et al., 2013; Schweiger, Weiss, Berry, & Keidar, 2009; Xanthakos, 2009). Vitamin and mineral deficiencies often exist for individuals with obesity prior to surgery because their diet lacks nutrient-rich food and their excess body fat interferes with the body’s ability to efficiently utilize nutrients (Schweiger et al., 2009; Xanthakos, 2009). After bariatric surgery, vitamin and mineral deficiencies may persist or increase (Schweiger et al., 2009; Xanthakos, 2009). Individuals who have RYGB, BPD, or BPD-DS are at risk of deficiencies because these are malabsorptive procedures which bypass sections of the small intestine. Individuals who have a restrictive procedure are also at risk of vitamin and mineral deficiencies because food intake is limited (Allegheny Health Network, n.d.; Preidt, 2014; Xanthakos, 2009). Iron and vitamin B12 deficiencies are most common after surgery. Additionally, bariatric patients often experience calcium and vitamin D deficiencies. Fortunately, vitamin and mineral deficiencies can be addressed by carefully monitoring the patient and prescribing appropriate vitamin supplementation (Allegheny Health Network, n.d.; McGowan & McGowan Chopra, 2004; Xanthakos, 2009). Additionally, due to the rapid weight loss, bariatric patients have an increased risk of developing gallstones. Patients are prescribed bile salts as a preventative measure. Despite preventative efforts, gallstones may still develop and 7% eventually have their gallbladder surgically removed (Allegheny Health Network, n.d.).
There are also risks associated with specific procedures. Gastric bypass and sleeve gastrectomy patients have a low risk (1%) of a gastrointestinal tract leak within two weeks following surgery (Allegheny Health Network, n.d.). Gastrointestinal fluid leaks through the staples or sutures causing an infection, which is then treated by draining the infection. Adjustable gastric banding patients are at risk of band slippage. Band slippage is when a portion of the stomach below the band slips above the band. Band slippage will cause gastrointestinal problems such as acid reflux and dysphagia. It occurs in 2–3% of patients and is treated by either deflating the band or surgically correcting the band’s placement (Stegemann, n.d.). Adjustable gastric banding patients are also at risk of the band eroding into the center of the stomach (Fobi et al., 2001; Martin, 2004). Band erosion typically results in weight gain because the band is no longer restricting the stomach. Band erosion can also cause a small bowel obstruction. Band erosion is treated by surgically removing the band (Fobi et al., 2001; Martin, 2004).

Pre-Surgical Process

Bariatric surgery is a major, life-changing process. Because of the many benefits and risks, the American Society for Metabolic and Bariatric Surgery (ASMBS), insurance providers, and bariatric surgical centers have established requirements and guidelines. The requirements and guidelines are based on current research and are intended to promote successful surgical outcomes (Mechanick et al., 2013). The pre-operative process typically takes 6 months because some insurance providers require a physician-supervised diet during this period before approval. Patients are advised to lose weight prior to surgery in order to decrease perioperative risks (Allegheny Health Network, n.d.; Benotti & Martin, 2004; Mechanick et al., 2013). Additionally, patients should keep a food journal and have it assessed by the surgeon and
dietician. Food journals serve as documentation for insurance providers who require a physician-supervised diet and they inform the bariatric team about the patients eating behaviors (Allegheny Health Network, n.d.).

**Medical exam.** Bariatric candidates are required to have a thorough medical exam and provide a comprehensive medical history prior to surgery (Allegheny Health Network, n.d.; Benotti & Martin, 2004; Mechanick et al., 2013). The medical exam includes standard blood work, nutrient screening, and an electrocardiogram. Additional medical testing may be recommended by the bariatric surgeon and primary care physician including sleep apnea screening, gastrointestinal evaluation, and endocrine testing (Allegheny Health Network, n.d.; Benotti & Martin, 2004; Mechanick et al., 2013). Bariatric candidates must provide documentation of prior weight loss attempts and medical necessity for the surgery (Mechanick et al., 2013). Patients who smoke are also required to quit and are offered smoking cessation supports (Allegheny Health Network, n.d.; Mechanick et al., 2013)

**Informed consent.** In addition to the medical evaluation, informed consent is necessary (Benotti & Martin, 2004; Mechanick et al., 2013; Nieves-Khouw, Welton, & Muchow, 2009). The purpose of informed consent is twofold. First, the surgeon and bariatric team must provide information about the procedure so the patient is able to make an educated decision. Second, the surgeon and bariatric team must obtain the patient’s consent to have surgery (Nieves-Khouw et al., 2009). The patient should have a clear understanding of the surgical process, available and alternative options, risks, post-surgical requirements, and expected weight loss. Bariatric centers should provide patients with educational materials and opportunities to attend information sessions. Patients will also work with a multidisciplinary team of surgeons, nurses, dieticians, and psychologist/mental health professional to learn about the pre-operative, perioperative, and

**Psychosocial evaluation.** Bariatric candidates should have a psychosocial evaluation before surgery (Allegheny Health Network, n.d.; Mechanick et al., 2013). Currently, bariatric centers do not have a standard protocol for the psychosocial assessment (Bauchowitz et al., 2005; Dymek-Valentine et al., 2005; Heinberg, 2013; LeMont, Moorehead, Parish, Reto, & Ritz, 2004; Mechanick et al., 2013). Therefore, psychosocial assessments vary across bariatric centers.

Nearly 99% of bariatric centers use a clinical interview to complete the psychosocial assessment (Heinberg, 2013; Walfish, Vance, & Fabricatore, 2007). Additionally, the majority of bariatric centers utilize psychometric tests during the preoperative psychosocial evaluation (Heinberg, 2013; Walfish et al., 2007). The ASMBS has found bariatric centers generally assess the following domains: behavioral (i.e., weight history, binge eating, and substance abuse), cognitive (i.e., cognitive functioning and knowledge of surgery), emotional (i.e., coping style and psychopathology), developmental (i.e., trauma and abuse), current life situation (i.e., stressors and support system), motivation, and expectations (LeMont et al., 2004). The multidimensional assessment provides insight into bariatric candidates past and current psychosocial functioning.

According to the ASMBS, the evaluation is intended to “identify psychosocial risk factors and make recommendations to both the client and surgical group that are aimed at facilitating the best possible outcome for the patient” (LeMont et al., 2004, p. 1). The evaluation process allows mental health professionals to further educate bariatric candidates about the process, to identify and plan for potential obstacles, and to clarify post-operative outcomes (Dymek-Valentine et al., 2005; LeMont et al., 2004; Marcus, Kalarchian, & Courcoulas, 2009). Mental health professionals may also identify contraindications to surgery, though it is not
common practice (Marcus et al., 2009; Walfish et al., 2007). Based on current research, mental health professionals have only recommended the delay or denial of surgery for 14.3±12.9% (Walfish et al., 2007). The most frequently identified reasons for delay or denial of surgery were significant psychopathology (i.e., psychosis, bipolar disorder), untreated/undertreated depression, lack of understanding about the risks and follow-up, active substance abuse, and eating disorders (Walfish et al., 2007). Psychiatric disorders do not preclude individuals from having bariatric surgery. In fact, nearly half of bariatric candidates have a psychiatric diagnosis (Bagdade & Grothe, 2012; Sarwer et al., 2004). According to Marcus et al. (2009), “Although a comprehensive pre-surgical evaluation provides an opportunity to identify the small number of patients for who surgery is contraindicated, for most individuals careful presurgical evaluation should serve a planning and education function rather than a gatekeeping function” (p. 287).

**Post-Surgical Outcomes**

Surgical outcomes are defined in terms of excess weight loss (EWL), improvement in obesity-related medical conditions, and quality of life (Huberman, 2013; Oria & Moorehead, 1998). The Sleeve Gastrectomy and RYGB are comparable in terms of expected EWL. Individuals can expect to have an EWL of 60%–85% one year after RYBG surgery (Allegheny Health Network, n.d.; Puzziferri et al., 2008). The lowest weight is typically reached 18 months following RYGB (Magro et al., 2008). The expected EWL one year after the Adjustable Gastric Band (AGB) averages between 40% and 66%. EWL increases to an average of 46%–82% five to six years after AGB surgery. Long-term outcomes suggest after bariatric patients reach their nadir, it is common to regain about 8–10% of EWL (Bariatric Surgery Source, 2015; Magro et al., 2008). Despite regaining some weight, most patients are still regarded as having successful weight loss. “‘Successful' weight-loss is arbitrarily defined as weight-loss equal to or greater
than 50 percent of excess body weight” (ASMBS, 2014, Bariatric surgery misconceptions). Suter et al. (2011) found that seven years after surgery nearly 65% of patients had an EWL of 50% or more. This study found the majority of bariatric patients have long-term weight loss success; however, 25%–35% of patients do not (Suter et al., 2011).

Multiple variables are related to weight loss success, including adherence to dietary recommendations (Kalarchian et al., 2002; Kofman et al., 2010; Livhits et al., 2010; Mechanick et al., 2013; Mitchell, Lancaster, Burgard, & Krahn, 2001; Odom et al., 2010), postoperative exercise (Freire, Borges, Alvarez-Leite, & Correia, 2012; Livhits et al., 2010), and attending postoperative support groups (Livhits et al., 2010; Livhits et al., 2011; Orth, Madan, Taddeucci, Coday, & Tichansky; 2008). Numerous variables are also associated with failure of weight loss and weight regain after bariatric surgery, including a preoperative BMI of 50 or more (Magro et al., 2008), recurrence of binge eating (Kalarchian et al., 2002; Kofman et al., 2010; Livhits et al., 2010; Magro et al., 2008; Mechanick et al., 2013; Mitchell et al., 2001; Odom et al., 2010), postoperative grazing (Kofman et al., 2010; Mechanick et al., 2013; Odom et al., 2010), and intestinal adaptation (Ames et al., 2009; Freire et al., 2012; Poole et al., 2004). Adherence to follow-up recommendations was also related to weight loss outcomes. Magro et al. (2008) found “among patients in whom surgery failed, 60% never underwent nutritional follow-up, and 80% never underwent psychological follow-up. The intensity or frequency of care or follow-up visits probably contributes to the failure or success of surgery” (p. 251).

Remission or improvement of obesity-related co-morbidities is another surgical outcome due to weight loss and gastrointestinal hormone changes (Rubino, R’bibo, del Genio, Mazumdar, & McGraw, 2010). Type II diabetes, which is common among bariatric patients, significantly improves after weight loss surgery. Between 62% and 90% of RYGB patients experience
remission of type II diabetes one to three years after surgery (Ardestani, Rhoads & Tavakkoli, 2015; Chikunguwo et al., 2010; Cummings, 2009; Rubino, Schauer, Kaplan, & Cummings, 2010). Diabetes remission was maintained by 62% of RYGB patients six years after surgery (Adams et al., 2012). Thirty-four percent of LAGB patients and 66.2% of sleeve gastrectomy patients also experienced remission of type II diabetes one year after surgery (Ardestani et al., 2015; Gill, Birch, Shi, Sharma & Karmali, 2010).

Other co-morbidities such as hypertension, high cholesterol, and sleep apnea improve after weight loss surgery. About 75% of patients experienced resolution of hypertension and over 90% experienced resolution of high cholesterol after RYGB (Buchwald, Avidor, & Braunwald, 2005; Peluso & Vanek, 2007; Society of American Gastrointestinal and Endoscopic Surgeons [SAGES], 2008). The sleeve gastrectomy procedure results in the resolution of hypertension for almost 60% of patients and an estimated 54% experience resolution of high cholesterol (Al Khalifa, Al Ansari, Alsayed, & Violato, 2013; Sarkhosh, Birch, Shi, Gill, & Karmali, 2012). LAGB surgery, though less effective than RYGB, also improves hypertension and high cholesterol for 38% and 71% of patients respectively (Buchwald et al., 2005; SAGES, 2008). All three procedures lead to improvement or resolution of obstructive sleep apnea for 80% or more of patients (Peluso & Vanek, 2007; Shi, Karmali, Sharma, & Birch, 2010; SAGES, 2008). The durability of improvement and remission varies among bariatric patients. Recurrence of co-morbid conditions is related to weight loss, weight regain, and the severity and duration of the condition prior to surgery (Brethauer et al., 2013; Peluso & Vanek, 2007)

Improved quality of life in another expected outcome following bariatric surgery (Kolotkin, Davidson, Crosby, Hunt, & Adams, 2011; Sarwer et al., 2010; Suter et al., 2011).
According to the United States Department of Health and Human Services (HHS), Healthy People 2020 (2014),

Health-related quality of life (HRQoL) is a multi-dimensional concept that includes domains related to physical, mental, emotional and social functioning. It goes beyond direct measures of population health, life expectancy and causes of death, and focuses on the impact health status has on quality of life. (health-related quality of life and well-being, p. 1)

Initial outcome studies for bariatric surgery focused on weight loss and the improvement of physical co-morbidities with minimal research on quality of life (Herpertz et al., 2003). More recently, psychosocial functioning and HRQoL measures have been included in assessing post-surgical outcomes in response to recommendations from the 1991 National Institute of Health (NIH) Consensus Conference on Gastrointestinal Surgery for Severe Obesity (NIH, 1991; Oria & Moorehead, 1998).

Sarwer et al. (2010) found that HRQoL, including physical functioning, bodily pain, vitality, social functioning, and general health significantly improved as early as 20 weeks after surgery and the improvements were maintained 92 weeks after surgery. Kolotkin et al. (2011) also found that HRQoL improved two years after gastric bypass and was maintained six years post-operatively. Multiple variables are related to improved HRQoL after bariatric surgery, including increased physical activity (Bond et al., 2009), excess weight loss (Modarressi, Balague, Huber, Chilcott, & Pittet-Cuénod, 2013), undergoing body contouring surgery (Modarressi et al., 2013), economic opportunities through new or better employment (Buchwald et al., 2005), and more social opportunities (Buchwald et al., 2005).
Although bariatric surgery is related to improved HRQoL for some, the outcomes vary. A subgroup of bariatric patients does not maintain the initial improvement in HRQoL over time (Adams et al., 2012; Gerbrand et al., 2006; Sarwer et al., 2010). For example, Sarwer et al. (2010) found that women reported improved mental health 20 weeks after surgery but the improvement reverted to baseline by week 92. The deterioration experienced by women but not men in this study could be related to the greater degree of impairment that women report experiencing before surgery compared to men (Kolotkin et al., 2008). The decline in HRQoL that occurs following the short-term improvement may also be related to post-operative binge eating (Kofman et al., 2010), post-operative grazing (Kofman et al., 2010), and weight regain (Karlsson, Taft, Rydén, Sjöström, & Sullivan, 2007; Legenbauer, Herpertz, & de Zwaan, 2012).

Another study by Adams et al. (2012) assessed HRQoL using the 36-Item Short Form Health Survey (SF-36). This study revealed that the physical health component improved for bariatric patients but the mental health component did not. Adams et al. stated this may be due to the belief that “numerous life changes occur after bariatric surgery that may generate tension and pose special social, psychological, and lifestyle challenges” (p. 1130). It is important that patients are aware that the surgery affects many aspects of one’s life. Patients should also have realistic expectations and know the limits of the surgery. Bariatric surgery is a tool that can aid in transforming one’s physical and psychological well-being, but some issues will persist after surgery. As Huberman (2013) emphasized

It is becoming clear that bariatric surgery is not a cure-all and that patients face a myriad of behavioral, emotional, and interpersonal issues both before and after surgery and it is essential that these issues be addressed to maximize patient outcomes. (para.7)
**Binge Eating**

This section provides an overview of binge eating and further examines the relationship between binge eating, obesity, and bariatric patients. Binge eating is characterized by feeling a loss of control and distress over eating (Colles et al., 2008; Fairburn & Wilson, 1993; Johnson, Boutelle, Torgrud, Davig, & Turner, 2000; Mitchell et al., 2008). Loss of control over eating is defined as

The subjective perception of being compelled to eat or unable to resist or stop eating, resulting in initiating eating when not intended, and/or eating more than originally intended, and/or difficulty stopping eating. The loss of control over eating often involves subjective distress and/or eating past the point of fullness. It can occur irrespective of the weight or size of the person eating, and irrespective of the amount or type of food eaten. (Latner, Mond, Kelly, Haynes, & Hay, 2014, p. 651)

An objective binge episode is when the loss of control and distress are accompanied by eating a large amount of food in a discrete period of time. *The Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM–5*; APA, 2013) defined a large amount of food as “definitely larger than what most people would eat in a similar period of time under similar circumstances” (2013, Diagnostic Criteria 307.51 [F50.8]). A subjective binge episode is when the individual does not consume a large amount of food, yet still feels a loss of control and distress. Violating a personal food rule or perceiving the type or amount of food consumed as unacceptable contributes to the feelings of distress during a subjective binge episode (Pratt, Niego, & Agras, 1998). Though the quantity of food consumed differs between an objective and subjective binge episode, research indicates that the levels of distress, anxiety, and psychopathology associated with an objective binge episode are similar to the levels associated
with a subjective binge episode (Colles et al., 2008; Garner, Shafer, & Rosen 1992; Latner, Hildebrandt, Rosewall, Chisholm, & Hayashi, 2007; Niego, Pratt, & Agras, 1997; Pratt et al., 1998). Both objective and subjective binge eating episodes occur across the spectrum of eating disorders, including bulimia nervosa (BN), binge eating disorder (BED), and a subtype of anorexia nervosa (AN; APA, 2013).

The behavioral characteristics of a binge episode and accounts of insatiable hunger have been documented by physicians for centuries (Vandereycken, 2002). During the 18th century, binge episodes followed by vomiting were recognized as a stomach disorder rather than a psychological disorder. This eating behavior was not recognized as a symptom of psychiatric disorders until the 1940s and was not recognized as a distinct disorder, now known as bulimia nervosa (BN), until the 1970s (Vandereycken, 2002).

In addition to the binge-purge cycle of bulimia nervosa, Stunkard (1959) recognized that a subgroup of obese clients experienced shame, distress, and loss of control while consuming a large quantity of food; however, the compensatory behaviors were not present (Mitchell et al., 2008; Stunkard, 1959). Today, the phenomenon described by Stunkard is known as binge eating disorder (BED). BED was in the appendix of the Diagnostic and Statistical Manual fourth edition (DSM-IV), and today it is included as a distinct diagnosis in The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM–5; APA, 2013). The DSM-5 criteria for BED includes the characteristics described by Stunkard (1959), which include experiencing a loss of control while consuming a large amount of food, associated with feelings of distress. Though Stunkard recognized this phenomenon among a subgroup of clients with obesity, BED can affect healthy weight and overweight individuals, as well (APA, 2013).
Prevalence of Binge Eating Disorder

Binge eating disorder (BED) is the most widespread eating disorder in the United States. According to the National Comorbidity Survey Replication (NCS-R), which is a national mental health survey (Harvard Medical School, 2005), BED affects 3.5% of women, which is nearly 3.5 time more than anorexia nervosa and more than double bulimia nervosa (Binge Eating Disorder Association [BEDA], 2013; Hudson, Hiripi, Pope, & Kessler, 2007). An estimated 2% of men experience BED; whereas, 0.3% and 0.5% of men experience AN and BN respectively (BEDA, 2013; Hudson et al., 2007). The NCS-R was based on the DSM-IV criteria for BED, which states binge episodes occur at least twice a week; whereas the DSM-5 criteria is at least once per week. Therefore, BED could be more prevalent than the NCS-R suggests. Unlike other eating disorders, African American, Caucasian, and Hispanic women are equally affected by BED (National Association of Anorexia Nervosa and Associated Disorders [ANAD], 2014). The average onset for BED is 25 years old, which is about 5–6 years older than the average onset of AN and BN (Hudson et al., 2007; Taylor, Caldwell, Baser, Faison, & Jackson, 2007). Over half of individuals with BED are within a healthy weight range or overweight. However, nearly 28% have obesity, and 15% have severe obesity (Hudson et al., 2007). Additionally, it is estimated that binge eating occurs for over one third of individuals involved in weight loss programs (BEDA, 2013)

Binge Eating and Obesity

Binge Eating Disorder is the most common eating disorder within the population of individuals with obesity and severe obesity (Hudson et al., 2007). The onset of binge eating can precede or follow the onset of overweight and obesity. Because individuals who binge eat consume large quantities of food without compensating for excessive calories, it is plausible that
Binge eating would function to cause, maintain, or increase obesity (APA, 2013). Hasler et al. (2004) conducted a longitudinal study and “found strong evidence for atypical depression and binge eating being associated with overweight and with increased average weight gain between ages 20 and 40” (p. 1053). Another longitudinal study with a sample size of almost 7,000 participants conducted by Field et al. (2012) found “girls with BED were almost twice as likely as their nondisordered peers to become overweight or obese” (p. e289). The research findings of Hasler et al. and Field et al. support the notion that binge eating precedes the progression of overweight and obesity.

Other research has found that overweight and obesity precede the onset of binge eating. Decaluwé and Braet (2003) conducted a study on children with obesity and found that the research participants were overweight and obese before binge eating developed. Reas and Grilo (2007) found that 63% of participants in their study were overweight prior to experiencing binge eating. Reas and Grilo (2007) referred to this group of participants as the “Overweight First group” in their study and found “the sequential pattern for the Overweight First group was characterized by subsequent dieting, followed by the emergence of binge eating behavior” (p. 168). Reas and Grilo’s research suggests that dieting could be a risk factor for binge eating within population of individuals who are overweight. Despite the mixed results in the literature regarding the sequence of binge eating and obesity, the research does indicate that a relationship between binge eating and obesity does exist.

**Binge Eating and Bariatric Surgery**

Between 2% and 64% of bariatric patients have pre-surgical binge eating (Niego et al., 2007; Sarwer et al., 2005). There is a broad variation in the reported prevalence of pre-surgical binge eating for several reasons. First, bariatric centers do not have a standardized method for
assessing pre-surgical binge eating. This allows for the use of a variety of assessments, some of which may fail to accurately capture one’s behaviors, cognitions, and feelings towards food (Sarwer et al., 2005). Second, the parameters used to define binge eating differ throughout the research. For example, some studies only include individuals who meet the full diagnostic criteria of binge eating disorder (BED) and other studies include individuals with subclinical binge eating. Individuals with subclinical binge eating are sometimes part of the sample population because they experience similar levels of distress as individuals who meet the full diagnostic criteria (Ricca et al., 2009; Striegel-Moore et al., 2000). Third, the diagnostic criteria have changed with the transition from the DSM-IV to the DSM 5. The DSM-IV criteria included a binge frequency of twice a week for a period of six months. The DSM 5 criteria includes a binge frequency of once a week for a period of three months (Marek, Ben-Porath, Ashton, & Heinberg, 2014). Because of the changes in the DSM, individuals who meet the current diagnostic criteria may have been excluded from the research that utilized the DSM-IV criteria.

Though the exact prevalence rates of pre-surgical BED and binge eating are unknown, research demonstrates that pre-surgical binge eating is predictive of post-surgical binge eating (de Zwaan, 2005; Kalarchian et al., 2002; Niego et al., 2007). Several studies found that for the majority of individuals who binge eat after surgery, binge eating is not a new issue, but rather the reemergence of previous eating disturbances (de Zwaan, 2005; Kalarchian et al., 2002; Lang et al., 2002; Mitchell et al., 2001; Niego et al., 2007). Binge eating most often reemerges 12 to 24 months after surgery (de Zwaan, 2005). Post-surgical binge eating occurs for 4% to 50% of bariatric patients (Lang et al., 2002; Welch et al., 2011; White et al., 2010). There is a broad range in the reported prevalence of post-surgical binge eating due to follow-up and assessment issues. Not all patients follow up with the bariatric center, especially in the long-term (Harper,
Madan, Ternovits, & Tichansky, 2007). Some patients may not reach out to their bariatric treatment team at the most critical times, such as when pre-surgical eating patterns reemerge, because of embarrassment and shame. The lack of follow-up makes it difficult to have an accurate snapshot of post-surgical binge eating.

There are also difficulties with assessing post-surgical binge eating. Just as with pre-surgical binge eating, there is not a standardized method for assessing post-surgical binge eating. Assessments based on the *DSM-IV* and *DSM-5* diagnostic features include the criteria of eating a large amount of food in a discrete period of time compared to most others. However, bariatric surgery anatomically changes the digestive tract so the amount of food consumed during a post-surgical binge may be much less than the amount of food consumed during a pre-surgical binge episode. Because of this, assessments may fail to identify post-surgical binge eating (Niego et al., 2007).

In response to this concern, some have altered the post-surgical assessments. For example, Kofman et al. (2010) altered the criteria to “what most people would regard as a large amount of food for someone who has had weight loss surgery” (p. 1941). Kofman et al. also assessed loss of control over eating after bariatric surgery. Others, including White et al. (2007), have also assessed loss of control after surgery rather than focusing on the quantity of food. Both Kofman et al. (2010) and White et al. (2007) found that individuals who experienced a loss of control over eating following bariatric surgery lost less weight than those who did not.

Post-surgical binge eating is related to less weight loss, more weight regain, and poorer quality of life. Mitchell et al. (2001) found that 13–15 years after surgery, individuals who had a recurrence of binge eating symptoms regained significantly more weight than those who did not experience post-surgical binge eating. Larsen et al. (2004) also examined the relationship
between binge eating, weight loss, and quality of life after laparoscopic adjustable gastric banding. Larsen et al.’s study revealed that individuals with post-surgical binge eating had lost less weight and had poorer mental health in the short-term (8–24 months) and long-term (over 2 years).

**Binge Eating Theories**

Multiple theories have developed over the years as researchers attempt to understand binge eating. The restraint model suggests that binge eating is in response to consciously restricting food consumption (J. Ogden, 2008). “The process of denial and self-control makes food more attractive and creates a situation in which the individual becomes increasingly preoccupied with food” (p. 21). The individual’s fixation on food accompanied by physiological hunger can contribute to binge eating according to the restraint model (Peñas-Lledó, 2005). The abstinence violation model suggests

The inevitable violation of extreme dietary restraint activates all-or-nothing thinking (e.g., perfect restraint versus complete failure). These extreme thoughts heighten negative mood, disinhibit attempts to control what one eats, and lead to binge eating. Once binge eating occurs, attempts at rigid restraint are theorized to begin again, and the cycle continues. (Stein et al., 2007, p. 195)

The restraint model and abstinence violation model describe binge eating within the context of cycling between restrictive dieting, bingeing, and for some, purging (de Zwaan, 2001; Mitchell et al., 2008; Stein et al., 2007). The diet-binge cycle exists for a subgroup of individuals who binge eat, but de Zwaan (2001) concluded that “about half of the patients with BED start binge eating first in the absence of dieting” (p. S52). Hagan et al. (2002) conducted research that assessed the dieting behaviors of individuals with BED. Dieting was assessed using the Dutch
Eating Behavioral Questionnaire Restraint Scale (DEBQ-R). Hagan et al. (p. 101) found that “dieting status (based on the DEBQ-R score) contributed little to the frequency of chaotic behaviors in the BED group.” The mixed findings in the literature illuminate the fact that individuals with obesity and binge eating are a heterogeneous group. Binge eating is a complex disorder, and like other behavioral manifestations of psychological disorders, binge eating serves multiple functions.

Another model of binge eating is the escape model, which suggests that binge eating is an attempt to regulate negative emotions (Heatherton & Baumeister, 1991; Mitchell et al., 2008; Polivy & Herman, 1993; Stein et al., 2007). The escape model suggests some individuals with binge eating disorder are overly self-critical when they do not meet self-imposed or others’ expectations. Their critical self-evaluation leads to negative affect. The combination of aversive self-awareness and negative affect become intolerable so the individual seeks a state of cognitive deconstruction. Cognitive deconstruction, a cognitive defense mechanism, “is a subjective shift to less meaningful, less integrative forms of thought and awareness” (Baumeister, 1990, p. 92). A deconstructed state reduces awareness to physical sensations and environmental stimuli, which leads to disinhibited eating. The narrowing of focus to food and eating interferes with one’s ability to experience meaningful or thoughtful awareness. The individual becomes consumed with the binge experience, which serves as an escape from self-criticism and negative emotions. In this state, individuals are temporarily numb and emotionless.

The desire to escape through binge eating is reinforced by negative affect, such as depression. Multiple studies have revealed a relationship between binge eating and depression. Grucza, Przybeck, and Cloninger (2007) conducted a study, which included a community sample. The results indicate that those with binge eating are at a much greater risk of having
depression than those without binge eating. Pagoto et al. (2007) examined the relationship between depression and binge eating within a weight loss setting. The study revealed that those with major depression were more likely to have binge eating than those without major depression. Jones-Corneille et al. (2012) examined binge eating and mood and panic disorders among individuals seeking bariatric surgery. The study found that depression was the most frequently observed mood disorder among bariatric candidates with binge eating. The relationship between depression and binge eating illustrate the role emotions have in maintaining a maladaptive relationship with food.

**Stress**

**Definition of Stress**

Stress is “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (Lazarus & Folkman, 1984, p. 19). In accordance with Lazarus and Folkman’s definition, stress is an umbrella term. The concept ‘stress’ is used to describe interactions between variables such as stimulus, appraisal, coping, and response (Jones & Bright, 2001; Lazarus & Folkman, 1984).

**Stimuli.** Stimuli, also referred to as stressors, are environmental conditions that elicit a stress response. Stressors can be chronic or acute. Chronic stressors persist for a long duration of time, either continuously or intermittently. Poverty is an example of a continuous chronic stressor; whereas, a migraine disorder is an example of a chronic, intermittent stressor. Acute stressors, such as an exam or flat tire, are time-limited, though the frequency varies for each individual (APA, 2013; Lazarus & Folkman, 1984; J. Ogden, 2004).
Stressors are often measured as major life events or daily hassles. The life events approach postulates that change, both positive and negative, are stressors because the individual must readjust. Examples include death of a spouse, marriage, career change, and vacation. As per the examples, the impact of each life event varies. Each event is given a value referred to as the Life Change Unit (LCU) score. By summing the LCU score for the events that have occurred within the past year, an overall LCU score can be determined. An LCU score over 300 is considered to be a major crisis. Major crises are related to changes in one’s health (Jones & Kinman, 2001).

The life events approach is well-researched, but not without criticisms. Lazarus and Folkman have criticized the life events approach because it does not account for individual appraisal of events and it fails to acknowledge the impact of recurrent, minor stressors (Jones & Kinman, 2001; Lazarus & Folkman, 1984). Lazarus and Folkman referred to the common, everyday stressors as daily hassles. Work load, social obligations, and traffic are examples of potential hassles (stressors; Lazarus & Folkman, 1989).

Lazarus and Folkman (1989) developed the Daily Hassles scale to measure the impact of minor stressors while accounting for the individual’s perception. This assessment asks individuals to rank the degree to which daily occurrences are experienced as hassles. This approach acknowledges that individuals have various responses to shared and similar experiences. The different perceptions and responses are influenced by the appraisal process (Lazarus & Folkman, 1984).

**Appraisal.** Individuals use an evaluative process known as cognitive appraisal to assign meaning to their experiences. “Cognitive appraisal can most readily be understood as the process of categorizing an encounter, and its various facets, with respect to its significance for
well-being” (Lazarus & Folkman, 1984, p. 31). Two forms of appraisal exist: primary and secondary appraisal. The primary appraisal process looks at the environmental situation to determine whether a condition is irrelevant, benign-positive, or stressful. Irrelevant conditions are perceived as inconsequential so they do not generate an emotional response. Benign positive appraisals include encounters that generate pleasant emotions. Lazarus and Folkman (1984) referred to the common, everyday positive encounters as uplifts. Uplifts (positive events) may have a buffering effect against the negative effects of hassles (stressors; Jain, Mills, Von- Känel, Hong, &Dimsdale, 2007; Lazarus & Folkman, 1984; Nierop, Wirtz, Bratsikas, Zimmermann, & Ehlert, 2008). Stressful appraisals occur if the encounter is perceived as harmful, threatening, or challenging. It is the stressful encounters that activate the secondary appraisal process (Lazarus & Folkman, 1984).

**Coping.** The secondary appraisal process evaluates coping. It determines whether necessary coping strategies exist and if the coping strategies can be effectively employed (Lazarus & Folkman, 1984). According to Lazarus and Folkman, coping is defined as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). “Coping serves two overriding functions: managing or altering the problem with the environment causing distress (problem-focused coping), and regulating the emotional response to the problem (emotion-focused coping)” (p. 179). Problem-focused and emotion-focused coping strategies often co-occur when managing stressors. Coping strategies can also be ineffective or effective. Ineffective coping results in the maintenance or exacerbation of stress (Peyrot & McMurry, 1992; Zeidner & Saklofske, 1996). “Effective coping can be classified as that which reduces the
stressor and minimizes the negative outcomes” (J. Ogden, 2004, p. 271). Effective coping can buffer the negative effects of stress.

**Stress-response.** If a stimulus is appraised as stressful, it activates a physiological stress-response. This process begins with the amygdala receiving and interpreting the information detected by our senses. The hypothalamus then receives information from the amygdala and releases corticotropin-releasing hormone (CRH). CRH circulates to the anterior pituitary gland which activates the release adrenocorticotropic hormone (ACTH). ACTH circulates to the adrenal gland, which activates the release of glucocorticoids such as cortisol (Sapolsky, 2004).

This physiological response to stress is an adaptive process known as allostasis. “The term allostasis refers to the process whereby an organism maintains physiological stability by changing parameters of its internal milieu by matching them appropriately to environmental demands” (Juster, McEwen, & Lupien, 2010, p. 2). Allostasis helps the body adjust to the demands of stress. When the stress-response is overworked, it is referred to as allostatic load. “Allostatic load (AL) represents the ‘wear and tear’ the body experiences when repeated allostatic responses are activated during stressful situations” (Juster et al., 2010, p. 3). Allostatic load has a negative impact on one’s health and is related to a deterioration in cognitive and physical capabilities (Juster et al., 2010; McEwen, 1998).

**Effects of Stress**

Physiological changes occur in response to stress such as increased heart rate, blood pressure, and cortisol production. Frequent or prolonged exposure to perceived stressors can over-stimulate the stress-response and have serious health implications such as cardiovascular disease, heart attack, kidney disease, and psychiatric disturbances (Bouteyre, Maurel, & Bernaud, 2007; DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; Jain et al., 2007; J. Ogden,
Prolonged physiological responses to stress can also suppress the immune system, which decreases one’s ability to fight disease (J. Ogden, 2004).

The relationship between stress and illness can also be facilitated by the unhealthy behaviors developed in response to stress (Cassidy, 2000; J. Ogden, 2004). For example, there is a positive relationship between stress and the onset of smoking, relapse after smoking cessation, decreased exercise, and changes in eating behaviors (J. Ogden, 2004; Sapolsky, 2004). “The conceptual link between unhealthy behaviors and stress is mood self-management. Simply stated, aversive states, such as stress, may motivate people to engage in unhealthy behaviors that bring them pleasure” (Ng & Jeffery, 2003, p. 638). The relationship between unhealthy, pleasurable behaviors and stress is cyclical. The unhealthy behavior provides momentary pleasure, which could temporarily relieve stress. Though, the long-term effects of unhealthy, pleasurable behaviors could also contribute to stress.

**Stress and Binge Eating**

Stress is associated with the onset of binge eating. Pike et al. (2006) examined the relationship between stressful life events and the development of binge eating. Pike et al.’s study was conducted with a sample which consisted of three matched groups: individuals with BED, individuals with a psychiatric diagnosis, and individuals without a psychiatric diagnosis. The study found that individuals with BED had significantly more stressful life events in the preceding year than both the groups with and without a psychiatric diagnosis. The findings suggest that those who experience multiple stressful life events within a year’s period could have an increased risk of developing binge eating. This finding is supported by another study conducted by Striegel-Moore et al. (2007), who found that the onset of binge eating and bulimia
nervosa followed heightened degrees of perceived stress. Both studies suggest that stress could contribute to the onset of binge eating.

Following the onset of binge eating, the disorder is maintained by various factors including stress. Specifically, intermittent stressors such as hassles are related to the maintenance of binge eating disorder. Wolff et al. (2000) conducted a study examining whether reported daily stressors differed between women recruited on a college campus with and without binge eating. The findings revealed that the frequency and severity of the daily stressors were greater for women with binge eating. The difference in daily stressors between binge days and non-binge days within the binge eating group were also compared. Wolff et al. discovered that daily stressors were perceived as more severe on binge days than on non-binge days. Crowther et al. (2001) reported similar findings. The study included a sample of women at a healthy weight. Crowther et al. found the severity, though not the frequency, of daily hassles (stressors) was more severe for women with binge eating compared to women without binge eating. Additionally, for women with binge eating, the overall daily caloric intake was positively related to reported daily stress levels (Crowther et al., 2001).

The relationship between daily hassles and binge eating is influenced by physiological and psychological components. The physiological response to daily hassles influences appetite and cravings (Mathes et al., 2009; O’Connor et al., 2008; J. Ogden, 2004; Sapolsky, 2004). Recurring stressors, such as daily hassles, cause cortisol levels to remain elevated and serotonin levels to decrease. High cortisol levels stimulate the appetite causing one to feel hungry. Low serotonin levels intensify cravings for foods that restore serotonin levels such as sugar and carbohydrates (Sapolsky, 2004). This physiological response to stress can trigger a binge episode for some individuals with binge eating.
The combination of hunger and cravings in response to stress is a possible binge trigger because sugar and processed carbohydrates are often identified as “forbidden foods” by those with binge eating (Greeno, Wing, & Marcus, 1999). Because daily stressors (hassles) create a physiological state that make individuals more susceptible to eating sugar and carbohydrates, individuals with binge eating are vulnerable to violating their self-imposed food rules. In accordance with the abstinence violation model, even small portions of forbidden foods can be viewed as complete failure, causing feelings of distress. Binge eating may be a form of coping with the distressful feelings that accompany the failure to abstain from eating forbidden foods.

In line with the escape model, feeling overwhelmed by daily hassles can also motivate binge episodes. There may be a desire to avoid dealing with hassles and binge eating is a temporary escape. Binge eating shifts the focus to food rather than the actual stressors (Baumeister, 1990; Heatherton & Baumeister, 1991; Mitchell et al., 2008; Polivy & Herman, 1993; Stein et al., 2007). Individuals may also feel inadequate if they lack the means to effectively cope with stressors (Crowther et al., 2001). This can lead to a negative self-concept, which could trigger a binge episode in an attempt to escape one’s negative self-awareness (Baumeister, 1990; Heatherton & Baumeister, 1991; Mitchell et al., 2008; Polivy & Herman, 1993; Stein et al., 2007).

Summary

Bariatric surgery is effective weight loss tool for individuals who are willing and able to adopt a healthy lifestyle. The bariatric procedures have been refined over the years to minimize complications and maximize successful outcomes. Despite improving the surgical process, some individuals will either have insufficient weight loss or regain a significant percentage of the weight they had lost. Inadequate weight loss or weight regain could result from post-surgical
binge eating for a subgroup of individuals who have bariatric surgery. Binge eating before surgery and depression could contribute to binge eating after surgery. Stress is another variable that could contribute to post-surgical binge eating. Stress is a comprehensive term; however, previous research has found that a particular type of stress, daily hassles, is related to binge eating. The literature reviewed indicates that the relationship between daily hassles and binge eating exists among college aged women and women at a healthy weight. However, this relationship has not been examined among bariatric patients, which demonstrates the need for further research. The results of this study could be used to better understand post-surgical binge eating and the role of daily hassles within this population.
CHAPTER III

RESEARCH METHODS AND PROCEDURES

This study examined variables predictive of binge eating among bariatric patients. This chapter provides an overview of the methodology of this study. This chapter consists of a description of the setting, participants and the participant selection process. Additionally, this chapter includes information about the instruments and data analysis. The methodology used in this study is intended to examine the following research questions:

1. Is there a relationship between binge eating and hassles (stressful daily experiences) and uplifts (positive daily experiences)?

2. What factors may be predictive of binge eating?

Hypotheses

The following hypotheses were tested:

Hypothesis 1. There is a positive relationship between the reported frequency and severity of hassles and the scores of the Binge Eating Scale among bariatric patients.

Hypothesis 2. There is a negative relationship between the reported frequency and intensity of uplifts and the scores of the Binge Eating Scale among bariatric patients.

Hypothesis 3. Weight regain accounts for a significant amount of variance in scores of the Binge Eating Scale over and above that accounted for by current depression, pre-surgical binge eating, and months post-surgery. Hassles and Uplifts accounts for a significant amount of variance in the BES scores over and above that accounted for by current depression, pre-surgical binge eating, months post-surgery, and weight regain.
**Research Design**

This quantitative study was intended to examine predictors of binge eating and the relationship between binge eating and hassles and uplifts. Participants provided demographic information and their weight and health history. Participants also completed the Binge Eating Scale (BES) to assess the severity of binge eating and the Combine Hassles and Uplifts (CHUS) to assess stressors and positive experiences. Pearson correlation was used to determine the relationship between binge eating severity and the frequency and severity of hassles and the frequency and intensity of uplifts. Hierarchical multiple regression was used to determine whether weight regain was a predictor of binge eating after accounting for current depression, pre-surgical binge eating, and the time since having the surgery. The hierarchical regression analysis was also used to determine whether hassles and uplifts were predictors of binge eating after accounting for the aforementioned variables. The variables were entered in three different stages as illustrated in Table 3.1.

**Table 3.1**

*Variables Entered/Removed*\(^a\)

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Current depression Pre-surgical binge eating Months post-surgery</td>
<td></td>
<td>Entered</td>
</tr>
<tr>
<td>2</td>
<td>Weight regain</td>
<td></td>
<td>Entered</td>
</tr>
<tr>
<td>3</td>
<td>Hassles Severity Uplifts Intensity</td>
<td></td>
<td>Entered</td>
</tr>
</tbody>
</table>

\(^a\)Dependent variable: BES score
Participants

The participants for this study included bariatric patients recruited through on-line bariatric discussion and support forums, support groups, and snowball sampling recruitment methods. Participants were given the opportunity to have their name entered in a drawing for a $250.00 VISA gift card as an incentive to participate. The participants for this study met the following criteria:

1. Had one of three bariatric procedures including Roux en Y gastric bypass, laparoscopic adjustable gastric band, or sleeve gastrectomy.
2. 18 years or older.
3. Received information about confidentiality and the use of the data for this study.
4. Voluntarily completed a demographic questionnaire.
5. Voluntarily completed the Binge Eating Scale (Gormally et al., 1982).

Instrumentation

A self-report questionnaire was used to collect data about participants’ demographic information, weight history, pre-surgical and current mental health diagnoses, and pre-surgical and current physical health conditions (see Appendix A). The mental and physical health questions were selected based on co-morbidities that pertain to bariatric patients identified in the literature. The Binge Eating Scale (BES), developed by Gormally et al. (1982), was used to assess the participants’ binge eating cognitions, emotions, and behaviors. The Combined Hassles and Uplifts Scale (CHUS), developed by Lazarus and Folkman (1989), was used to assess the participants’ perception of stressful and positive experiences (hassles and uplifts).
The Binge Eating Scale

The Binge Eating Scale (BES), also referred to as the Eating Habits Checklist, was used to measure binge eating severity (see Appendix B). The BES was developed by Gormally et al. (1982) specifically to assess binge eating severity for individuals with obesity. Permission to use the BES was granted by Gormally (See Appendix C). The BES is a 16-item questionnaire, which includes 8 items about binge eating behaviors and 8 items about the feelings and cognitions related to a binge episode (Gormally et al., 1982). The authors used their clinical experience and the binging criteria for Bulimia Nervosa from the Diagnostic and Statistical Manual (3rd Edition) to design the BES. Each item includes a choice of 4 statements ranging in severity. Each statement is weighted from 0–3, with 0 meaning no binge eating problem, and 3 meaning severe binge eating problems. The BES is scored by summing the point value assigned to each item. A score ranging from 0–17 = no binge eating; 18–26 = moderate binge eating; and 27 and greater = severe binge eating (Gormally et al., 1982).

The reliability and validity of the BES has been assessed in prior research. Internal consistency of the BES was supported in the original study by Gormally et al. (1982). Convergent validity and concurrent validity were also assessed in the study by Gormally et al. Convergent validity was demonstrated by comparing the BES scores to the ratings from a structured interview (Gormally et al., 1982). Additionally, the mean scores for the low, moderate, and severe binge eating groups were significantly different, demonstrating concurrent validity (Gormally et al., 1982). However, inconsistent findings exist across the research.

Celio, Wilfley, Crow, Mitchell, and Walsh (2004) compared the BES to the Eating Disorder Examination (EDE, Fairburn & Cooper, 1993), which is a structured interview used to diagnose eating disorders. The research of Celio et al. (2004) assessed the sensitivity and
specificity values of the BES. The results indicated the BES had a .85 sensitivity value and a .20 specificity value; therefore, reasonably identifying those with binge eating disorder but less accurately identifying those without binge eating disorder. However, Greeno, Marcus, and Wing (1995) found the opposite in their study. Additionally, Brody, Walsh, and Devlin (1994) reported that the BES only demonstrated fair agreement with the semi-structured interview used to diagnose BED in their study.

The BES was developed before the DSM 5 criteria for binge eating disorder so it does not address all of the diagnostic criteria. Therefore, the BES is not intended to formally diagnose (Grupski et al., 2013), which is a limitation of the instrument. It is a limitation because the DSM-5 diagnostic criteria “provides a common language for clinicians to communicate about their patients and establishes consistent and reliable diagnoses that can be used in the research of mental disorders” (APA, 2012, dsm5.org, FAQ).

Despite the mixed findings reported in the literature and limitations of the BES, it is a recognized self-report questionnaire for assessing binge eating severity. The BES was selected for this study for three reasons. First, the BES assesses severity of binge eating, without the constraints of the frequency and duration criteria. The BES does not preclude those who experience the cognitive and affective dimensions of binge eating disorder but engage in binge eating behaviors less often than required for diagnosis. This is an important aspect of the BES given that sub-threshold binge eaters experience similar levels of distress as those who meet the diagnostic criteria (Striegel-Moore et al., 2000).

Second, the BES assesses severity regardless of whether an objectively large amount of food is consumed (Timmerman, 1999). Whereas the diagnostic criteria requires that one consumes “an amount of food that is definitely larger than what most people would eat in a
similar period of time under similar circumstances” (APA, 2013). This criteria is problematic because it is difficult to measure and it does not account for subjective binge episodes. This is particularly relevant for the bariatric population because the smaller stomach restricts the amount of food consumed in one sitting; however, cognitive and emotional aspects of eating pathology could still exist. Third, the BES was selected for this research because it was developed specifically for individuals with obesity (Gormally et al., 1982), which is the population of interest for this study.

The Combined Hassles and Uplifts Scale

The Combined Hassles and Uplifts Scale (CHUS) is one of three independent scales included in the Hassles and Uplifts Scales developed by Lazarus and Folkman (1989; see Appendix D). The CHUS is copyrighted and permission to use the instrument was purchased through the publisher, Mind Garden Inc. (see Appendix E). The Hassle and Uplifts Scales is a research instrument used to assess “how individuals appraise their encounters with the environment” (Lazarus & Folkman, 1989, p. 3). Lazarus and Folkman referred to these encounters with the environment as hassles and uplifts. Hassles are “irritants that can range from minor annoyances to fairly major pressures, problems or difficulties. They can occur few or many times in any given time period” (p. 38). Uplifts are “events that make you feel good. They can be sources of peace, satisfaction, or joy. Some occur often, others are relatively rare” (Lazarus & Folkman, 1989, p. 43).

The three independent scales that make up the Hassles and Uplifts Scales include: the Daily Hassles Scale (117 items), the Uplifts Scale (135 items), and the Combined Hassles and Uplifts Scale (53 items; Lazarus & Folkman, 1989). Of the three independent scales, only the Combined Hassles and Uplifts Scale (CHUS) was used for this study. “The Combined Hassles
and Uplifts Scale was created to serve as a shorter measure of hassles and [uplifts] to enable people to rate the same transaction with the environment as a hassle, an uplift, or both” (Lazarus & Folkman, 1989, p. 6). The CHUS lists everyday encounters that occur across various life domains including: environmental, family and friends, financial, health, home maintenance, household, personal life, and work (DeLongis, Folkman, & Lazarus, 1988). For each of the 53 items, participants are asked to use a Likert scale to answer two questions: “how much of a hassle was this for you?” and “how much of an uplift was this for you?” (Lazarus & Folkman, 1989, p. 49). Participants rate the severity of hassles and intensity of uplifts as “0 = None or not applicable,” “1 = Somewhat,” “2 = quite a bit,” and “3 = a great deal” (Lazarus & Folkman, 1989).

The CHUS allows the researcher to select a time frame for the participants to consider when completing the questionnaire. The possible time frames are: the past month, the past week, yesterday, today, or other (which allows the researcher to offer an alternative time frame; Lazarus & Folkman, 1989). For this study, participants were asked to think about the past month when answering the questions. A month time frame was selected for this study because, according to Lazarus and Folkman (1989), “time frames of a month and a week have been used successfully in much of the research on the Daily Hassles Scale” (p. 8). Additionally, a one month time frame, rather than a week or day, is more representative of the participants’ overall experience.

The Combined Hassles and Uplifts Scale (CHUS) yields 4 scores: the frequency of hassles, the severity of hassles, the frequency of uplifts, and the intensity of uplifts (Lazarus & Folkman, 1989). The frequency of hassles is scored by adding the number of items that were endorsed as a hassle, regardless of the severity. The severity of the hassles is scored by summing
the severity ratings. The frequency of uplifts is scored by adding the number of items that were endorsed as uplifts, regardless of the intensity. The intensity of uplifts is scored by summing the intensity ratings (Lazarus & Folkman, 1989).

Normative data exists for the CHUS. The normative data is from elderly persons between 65 and 74 years old and married couples between 35 and 44 with children (DeLongis, Folkman, & Lazarus, 1988; Lazarus & Folkman, 1989). However, the existing normative data is not representative of the sample in this study (Lazarus & Folkman, 1989). For the purpose of this research, the scores for the CHUS were correlated with the scores from the Binge Eating Scale.

Limited research exists on the reliability and validity of the Combined Hassles and Uplifts Scale, whereas more research has been done on the Daily Hassles Scale. DeLongis (1986) found that the CHUS demonstrated internal consistency reliability and test-re-test reliability. The validity of the CHUS is addressed by Lazarus and Folkman in the Hassles and Uplifts Scales manual (1989). Lazarus and Folkman stated:

Preliminary data comparing the Daily Hassles Scale and the hassles portion of the Combined Hassles and Uplifts Scale show modest but significant correlations between the two scales. In an unpublished study with 64 college students, correlation between the two scales was .43 frequency and .54 for severity. Young (1987) reports a correlation of .60 between the two scales with a large sample of 448 subjects and also reports fairly similar relationships with psychological symptoms and somatic health for the two scales. (p. 23)

The CHUS was selected for this research for three reasons. First, the CHUS “presumes that any experience can be appraised as either a hassle or an uplift, or both, depending on which
facet of the encounter is being attended to, as well as on the environmental or temporal context” (Lazarus & Folkman, 1989, p. 7). Essentially, because CHUS allows for an experience to be rated as both a hassle and/or uplift, it captures a more balanced view of the individual’s perception of the experience. Second, the CHUS was selected because it includes 53 items, which would likely yield a better response rate than the Daily Hassles Scale with 117 items plus the Uplifts scale with 135 items. Third, the CHUS was selected because currently there is no existing research to determine whether the absence of uplifts is related to binge eating rather than just the presence of daily hassles and this could not be assessed by using only the Daily Hassles Scale.

Procedure

The research proposal for this study was approved by my dissertation committee at Duquesne University. All recruitment documents, instruments, and Institutional Review Board (IRB) documents were submitted and approved by Duquesne University’s IRB (see Appendix F). Following approval, bariatric patients were made aware of this study through recruitment flyers (Appendix G), electronic announcements (see Appendix H), and snowball sampling methods. Interested participants were given the opportunity to complete either an electronic or paper version of the demographic and health history form, the Binge Eating Scale (BES), and the Combined Hassles and Uplifts Scale (CHUS).

Electronic Version

The electronic version was created on Survey Monkey and the web link was posted to online bariatric forums and shared with the investigators’ contacts electronically. In order to complete the questionnaires, participants had to read and agree to the electronic consent form (see Appendix I). The consent form included the purpose of the study, the potential risks and
benefits of the study, and the expected time to complete the survey. The consent form stated that participation in this study was voluntary and potential subjects had the right to terminate their involvement in the study at any time before submitting the completed survey. The consent form also informed potential participants that after the completed survey was submitted, participants would not be able to withdraw due to the anonymous nature of this study. Each participant who agreed to participate in this study selected “yes” to acknowledge he or she was 18 years or older and read and agreed to consent to the terms of this study. If a potential participant selected “no” to the consent form then an automated message appeared which thanked the potential participant for his or her consideration and stated that the potential participant was unable to proceed to the next section of the survey.

After consent was obtained, participants were directed to complete demographic questions. The demographic section included questions about the participant’s gender, birth date, ethnicity, relationship status, level of education, current occupation, and annual household income. This section also included questions about the participant’s pre-surgical weight, lowest weight, current weight bariatric procedure and date, smoking status, and co-morbidities before surgery and currently. The BES and finally the CHUS followed the demographic section. Participants were then given the option to participate in the drawing for the $250.00 VISA gift card. In order to participate in the drawing, the participant had to provide a phone number or email address so the winner could be contacted. After the survey was complete, participants selected “done” and the survey was submitted through Survey Monkey. Confidentiality was maintained through the use of a password protected account with Survey Monkey.
Paper Version

The paper version was disseminated and collected in person or via regular postal mail depending upon the geographic location and preferred distribution method of the research subject. Potential participants were given a packet that included instructions (see Appendix J), a consent form (see Appendix K), the demographic survey, the BES, and the CHUS, and a stamped and addressed envelope. The packet included a contact information form for the optional VISA gift card drawing and a separate envelope labeled “gift card drawing” so the participant’s entry would be separate from the completed questionnaires to protect confidentiality (See Appendix L). Participants were instructed to read and sign the consent form, complete the surveys, and return all materials in the provided envelope. The questionnaires and return envelope were labeled with a numerical code in order to maintain confidentiality, link the corresponding documents for data analysis, and ensure that informed consent was received. All study materials were then stored in a locked file cabinet while in the care of the investigator. Electronic data files created from the forms were password protected to further guard confidentiality of the patient. After the results of this study are published, all material will be destroyed.

Statistical Analysis

The data were analyzed using SPSS software. To assess H1, a Pearson product moment correlation coefficient (r) was calculated to assess the degree and direction of the relationship between hassles and the scores of the BES and a one-tailed significance test was used to determine probability. To assess H2, a Pearson product moment correlation coefficient (r) was calculated to assess the degree and direction of the relationship between uplifts and the scores of the BES and a one-tailed significance test was used to determine probability. To assess H3,
hierarchical multiple regression analysis was used to determine whether weight regain accounted for a significant amount of variance in scores of the Binge Eating Scale over and above that accounted for by current depression, pre-surgical binge eating, and months post-surgery and to determine whether hassles and uplifts accounted for a significant amount of variance in the BES scores over and above that accounted for by current depression, pre-surgical binge eating, months post-surgery, and weight regain.

Summary

This chapter described the methodology used for this study. This chapter presented the study’s participation requirements. This chapter also provided an overview of the instruments, which included a demographic questionnaire, The Binge Eating Scale (BES) used to assess binge eating severity (Gormally et al., 1982), and the Combined Hassles and Uplifts (CHUS) used to assess the perception of stressful and positive experiences referred to as hassles and uplifts (Lazarus & Folkman, 1989). Additionally, this chapter presented the research procedures and the methods used for statistical analysis, including Pearson product moment correlation and hierarchical multiple regression analysis. The results of this study are presented in Chapter 4.
CHAPTER IV

RESULTS

The purpose of this study was to examine factors related to and predictive of binge eating among bariatric patients. The study examined the relationship between binge eating and stressful and positive experiences. The study also examined the predictive value of current depression, pre-surgical binge eating, time since surgery, weight regain, hassles severity, and uplifts intensity for severity of binge eating. Participants for this study were recruited through on-line support forums for bariatric patients and through the research investigators’ contacts through the use of convenience sampling. The results of the statistical data analysis for the study are presented in this chapter.

Demographic Information

Participants in this study included bariatric patients who were either identified by the research investigators through snowball sampling methods or were members of on-line discussion and support forums for bariatric patients. A total of 241 individuals consented to participate in this study. Of the 241 individuals, 184 completed the demographic and health history section of the questionnaire. Of the 184 individuals, 174 completed the Binge Eating Scale. The last section of the survey was the Combined Hassles and Uplifts (CHUS), of which 131 individuals completed. Five individuals who completed the survey in its entirety were eliminated because their surgery was scheduled, but they had not had the procedure yet and the selection criteria was for post-bariatric subjects only. The final data set consisted of 126 participants. The descriptive statistics were analyzed using a frequency distribution in the Statistical Package for the Social Sciences (SPSS) version 22. The demographic information is provided in Table 4.1.
### Table 4.1

**Demographic Information**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Percent of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>8.7</td>
</tr>
<tr>
<td>Female</td>
<td>91.3</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>80.9</td>
</tr>
<tr>
<td>Black/African American</td>
<td>7.9</td>
</tr>
<tr>
<td>‘Other’</td>
<td>11.2</td>
</tr>
<tr>
<td><strong>Relationship Status</strong></td>
<td></td>
</tr>
<tr>
<td>Married/Living with Partner</td>
<td>69.2</td>
</tr>
<tr>
<td>Divorced/Separated</td>
<td>9.4</td>
</tr>
<tr>
<td>Single, Never Married</td>
<td>21.4</td>
</tr>
<tr>
<td><strong>Children</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>34.9</td>
</tr>
<tr>
<td>No</td>
<td>65.1</td>
</tr>
<tr>
<td><strong>Currently Employed</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>80.2</td>
</tr>
<tr>
<td>No</td>
<td>19.8</td>
</tr>
<tr>
<td><strong>Educational Level</strong></td>
<td></td>
</tr>
<tr>
<td>Less than High School Diploma/High School Diploma/GED</td>
<td>19.0</td>
</tr>
<tr>
<td>Associates/Trade School/Some College</td>
<td>27.8</td>
</tr>
<tr>
<td>College Graduate</td>
<td>31.0</td>
</tr>
<tr>
<td>Post Graduate Degree</td>
<td>22.2</td>
</tr>
<tr>
<td><strong>Socioeconomic Status</strong></td>
<td></td>
</tr>
<tr>
<td>≤ $10,99-$24,999</td>
<td>11.9</td>
</tr>
<tr>
<td>$25,000-$49,999</td>
<td>18.3</td>
</tr>
<tr>
<td>$50,000-$74,999</td>
<td>26.2</td>
</tr>
<tr>
<td>$75,000-$124,999</td>
<td>28.6</td>
</tr>
<tr>
<td>$125,000-$149,999</td>
<td>6.3</td>
</tr>
<tr>
<td>≥$150,000</td>
<td>8.7</td>
</tr>
<tr>
<td><strong>Surgical Procedure</strong></td>
<td></td>
</tr>
<tr>
<td>Roux en Y Gastric Bypass</td>
<td>63.5</td>
</tr>
<tr>
<td>Laparoscopic Adjustable Gastric Band</td>
<td>7.1</td>
</tr>
<tr>
<td>Sleeve Gastrectomy</td>
<td>29.4</td>
</tr>
</tbody>
</table>

*(table continues)*
Table 4.1 (continued)

Demographic Information

<table>
<thead>
<tr>
<th>Variables</th>
<th>Percent of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical Revision</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4.8</td>
</tr>
<tr>
<td>No</td>
<td>95.2</td>
</tr>
<tr>
<td>Smoke</td>
<td></td>
</tr>
<tr>
<td>No, never smoked</td>
<td>69.0</td>
</tr>
<tr>
<td>No, quit</td>
<td>23.0</td>
</tr>
<tr>
<td>Yes</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Note N= 126

*Other combined variables that had less than 10 participants. The variables included Hispanic, Native American, Asian, and Other.

Participants provided information about their psychological and physical health. Of the 126 participants, 25.4% (n = 32) were currently working with a therapist, psychologist, psychiatrist, and/or other mental health professional not necessarily related to their weight loss issues. Additional health history data are included in Table 4.2, which consists of self-reported information about their pre-surgical and current co-morbidities.

Participants also provided information about their weight history and surgical procedures. Participants (n = 122) provided a retrospective account of their pre-surgical weight which ranged from 174–485 pounds, with an average weight of 303.4 pounds before surgery. Participants (n = 126) also reported their current weight which ranged from 112–360 pounds, with an average weight of 202.1 pounds after surgery. Pre-surgical and current BMI classification frequencies are presented in Table 4.3. The BMI classifications are based on participants’ pre-surgical and current weight.
Table 4.2

*Health Demographic Information*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Before Surgery</th>
<th>Currently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>27.8</td>
<td>3.2</td>
</tr>
<tr>
<td>Sleep Apnea</td>
<td>47.6</td>
<td>12.7</td>
</tr>
<tr>
<td>High Blood Pressure</td>
<td>49.2</td>
<td>6.3</td>
</tr>
<tr>
<td>Acid Reflux</td>
<td>45.2</td>
<td>23.8</td>
</tr>
<tr>
<td>Arthritis</td>
<td>42.9</td>
<td>34.1</td>
</tr>
<tr>
<td>Depression</td>
<td>70.6</td>
<td>44.4</td>
</tr>
<tr>
<td>Anxiety</td>
<td>57.9</td>
<td>45.2</td>
</tr>
<tr>
<td>Substance Abuse</td>
<td>5.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Binge Eating</td>
<td>71.4</td>
<td>23.8</td>
</tr>
<tr>
<td>Post-Traumatic Stress (PTSD)</td>
<td>18.3</td>
<td>15.1</td>
</tr>
</tbody>
</table>

*Note. N = 126*

Table 4.3

*Pre-Surgical and Current Body Mass Index Classifications*

<table>
<thead>
<tr>
<th>Classification</th>
<th>Pre-surgical N = 121</th>
<th>Current N = 124</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight (BMI ≤ 18.4)</td>
<td>0</td>
<td>0.8</td>
</tr>
<tr>
<td>Healthy Weight (BMI 18.5-24.9)</td>
<td>0</td>
<td>11.3</td>
</tr>
<tr>
<td>Overweight (BMI 25.0-29.9)</td>
<td>0</td>
<td>25.0</td>
</tr>
<tr>
<td>Class I Obesity (BMI 30.0-34.9)</td>
<td>0.8</td>
<td>34.7</td>
</tr>
<tr>
<td>Class II, Serious Obesity (BMI 35-39.9)</td>
<td>11.6</td>
<td>12.1</td>
</tr>
<tr>
<td>Class III Severe Obesity (BMI ≥ 40)</td>
<td>87.6</td>
<td>16.1</td>
</tr>
</tbody>
</table>

The Mean percent of excess weight loss (EWL) is presented in Table 4.4. To determine the mean percent of EWL, participants were divided into subgroups based on the number of months since the surgery and the type of surgical procedure. The subgroups were created
because both time since the surgery and the surgical procedure affect the rate of EWL. The mean percent of EWL was determined using the following calculation for each subgroup:

\[
\text{Average Percent of EWL} = \frac{(\text{Sum of Pre-Surgical Weight} - \text{Sum of Current Weight})}{(\text{Sum of Pre-Surgical Weight} - \text{Sum of Ideal Weight})} \times 100
\]

The range for percent of EWL was determined by calculating each participant’s percent of EWL with the following calculation:

\[
\text{Percent of EWL} = \frac{(\text{Pre-Surgical Weight} - \text{Current Weight})}{(\text{Pre-Surgical Weight} - \text{Ideal Weight})} \times 100
\]

After the percent of EWL was calculated, the highest and lowest percent of EWL for each subgroup was identified to determine the range, which is also presented in Table 4.4.

**Research Questions and Hypotheses**

This study included two research questions and three hypotheses. The results were analyzed with Statistical Packages for the Social Sciences (Version 22). The first research question inquired about the relationship between binge eating and both stressful and positive experiences. A Pearson Product Moment Correlation was used to address this research question and test the first two hypotheses. The second research question inquired about factors predictive of binge eating. A hierarchical multiple regression analysis was used to examine this research question and test the third hypotheses.
### Table 4.4

**Excess Weight Loss**

<table>
<thead>
<tr>
<th>Time since the Weight loss procedure</th>
<th>Average Percent of Excess Weight Loss Gastric Bypass</th>
<th>Average Percent of Excess Weight Loss Sleeve Gastrectomy</th>
<th>Average Percent of Excess Weight Loss Lapband</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) ≤ 6 months</td>
<td>( N = 12 ) 37% EWL</td>
<td>( N = 6 ) 39% EWL</td>
<td>( N = 0 )</td>
</tr>
<tr>
<td></td>
<td>Range of 17% to 101%</td>
<td>Range of 27%-56%</td>
<td></td>
</tr>
<tr>
<td>(2) 7–12 months</td>
<td>( N = 7 ) 72% EWL</td>
<td>( N = 6^* ) 66% EWL</td>
<td>( N = 0 )</td>
</tr>
<tr>
<td></td>
<td>Range of 63%-94%</td>
<td>Range of 51%-92%</td>
<td></td>
</tr>
<tr>
<td>(3) 13–24 months</td>
<td>( N = 10^* ) 78% EWL</td>
<td>( N = 11; ) 62% EWL</td>
<td>( N = 1 )</td>
</tr>
<tr>
<td></td>
<td>Range of 51% to 110%</td>
<td>Range of 35%-105%</td>
<td></td>
</tr>
<tr>
<td>(4) 25–36 months</td>
<td>( N = 14 ) 75% EWL</td>
<td>( N = 10 ) 89% EWL</td>
<td>( N = 1 )</td>
</tr>
<tr>
<td></td>
<td>Range of 47% to 100%</td>
<td>Range of 66%-115%</td>
<td></td>
</tr>
<tr>
<td>(5) 37–72 months</td>
<td>( N = 14^* ) 69% EWL</td>
<td>( N = 3 ) 55% EWL</td>
<td>( N = 5 )</td>
</tr>
<tr>
<td></td>
<td>Range of 0%-117%</td>
<td>Range of 37%-90%</td>
<td>Range of 36%-83%</td>
</tr>
<tr>
<td>(6) 73–119 months</td>
<td>( N = 8 ) 68% EWL</td>
<td>( N = 0 )</td>
<td>( N = 1^* ) 60% EWL</td>
</tr>
<tr>
<td></td>
<td>Range of 45%-95%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7) 120 months</td>
<td>( N = 9^* ) 84% EWL</td>
<td>( N = 0 )</td>
<td>( N = 0 )</td>
</tr>
<tr>
<td></td>
<td>Range of 41%-136%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 1 participant in the marked category did not provide a pre-surgical weight or current weight so their data was not included

*Note.* 3 gastric bypass patients did not give a date for their surgery so their data was not included
Binge Eating and Hassles

Hypothesis 1. There is a statistically significant positive relationship between the reported frequency and severity of hassles and the scores on the Binge Eating Scale among bariatric patients.

The Binge Eating Scale (BES) and the Hassles Subscale of the Combined Hassles and Uplifts Scale (CHUS) were examined to address hypothesis one through the use of a Pearson Product-Moment Correlation. The percent of participants for each binge eating group is presented in Table 4.5. BES Scores in this sample ranged from 0–35. The average BES score was 13.5 (sd = 8.9), and the median was 12.0.

Table 4.5

Binge Eating Group Percentages

<table>
<thead>
<tr>
<th>Binge Eating Group</th>
<th>Percent of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little or No Binge Eating Behavior (0–17)</td>
<td>68.3</td>
</tr>
<tr>
<td>Moderate Binge Eating Behavior (18–26)</td>
<td>20.6</td>
</tr>
<tr>
<td>Severe Binge Eating Behavior (27–46)</td>
<td>11.1</td>
</tr>
</tbody>
</table>

N = 126

The Hassles Subscale allows for the frequency and severity of hassles to be assessed. In this sample, hassles frequency scores ranged from 4–50. The mean hassles frequency score was 26.3 (sd = 9.7), the median was 27.0. For this sample, Hassles severity scores ranged from 5–115. The mean hassles severity score was 43.9 (sd = 21.0) and the median was 43.5.
The relationship between the BES score and hassles frequency was analyzed using the Pearson correlation. The results of the one-tailed Pearson correlation revealed a statistically significant moderate positive correlation between BES score and hassles frequency, \( r(124) = + .312, p < .01 \). The coefficient of determination, \( r^2 = .097 \) indicates 9.7% of the total variance in BES scores can be accounted for by scores on the “hassles” frequency subscale. The relationship between the BES and hassles severity was also analyzed using the Pearson correlation. The results of the one-tailed Pearson correlation revealed a significant moderate positive relationship between the BES scores and hassles severity, \( r(124) = + .366, p < .01 \). The coefficient of determination, \( r^2 = .133 \) indicates that without considering the influence of extraneous variables, 13.3% of the total variance in the BES scores can be accounted for by scores on the “hassles” severity subscale.

**Binge Eating and Uplifts**

*Hypothesis 2.* There is a negative relationship between the reported frequency and intensity of uplifts and the scores of the Binge Eating Scale among bariatric patients.

The scores from the BES and the Uplifts subscale of the Combined Hassles and Uplifts Scale (CHUS) were used to address hypothesis two. In this sample, uplifts frequency scores ranged from 3–51. The mean uplifts frequency score was 28.2 (sd = 9.8) and the median was 27.5. The uplifts intensity scores ranged from 7–116. The mean uplifts intensity score was 52.5 (sd = 21.7) and the median was 52.0.

The relationship between the BES scores and Uplifts frequency was analyzed using the Pearson correlation. The results of the one-tailed Pearson correlation revealed \( r(124) = -.137, p = .125 \), which demonstrates a negative relationship, but the relationship was not found to be significant. The relationship between the BES scores and Uplifts intensity was analyzed using
the Pearson correlation. The results of the one-tailed Pearson correlation revealed a statistically significant, but small negative relationship between BES scores and uplifts intensity, \( r(124) = -0.175, p = .050 \). The coefficient of determination, \( r^2 = 0.030 \) indicated 3% of the total variance in the BES scores can be accounted for by the uplifts intensity scores.

**Hypothesis 3.** Weight regain accounts for a significant amount of variance in scores of the Binge Eating Scale over and above that accounted for by current depression, pre-surgical binge eating, and months post-surgery. Hassles and Uplifts accounts for a significant amount of variance in the BES scores over and above that accounted for by current depression, pre-surgical binge eating, months post-surgery, and weight regain.

The binge eating scores were determined using the Binge Eating Scale (BES). The Combine Hassles and Uplifts Scale (CHUS) was used to determine the frequency and severity of hassles and the frequency and intensity of uplifts. Pre-surgical binge eating was determined by the participants’ retrospective, self-report by asking participants to select “yes” if they had pre-surgical binge eating or “no” if they did not. Current depression was also determined by the participants’ self-report. This information was obtained by asking participants to select “yes” if they currently experienced depression or “no” if they did not. The variable “months post surgery” was determined by computing the elapsed time between the month and year of the surgery and the month and year this survey was completed. Months were the selected unit of time and fractions were rounded to the nearest integer. Weight regain was determined by using the following calculation:

\[
\text{(Lowest Post-Surgical Weight - Current Weight)} / \text{(Pre-Surgical Weight - Lowest Post-Surgical Weight)}
\]
A hierarchical multiple linear regression analysis was used to analyze hypothesis three. The first step to this analysis involved testing the assumptions. The one-tailed Pearson correlation analysis revealed a strong significant relationship between Hassles Frequency and Hassles Severity, \( r(120) = .869, p < .01 \) and a strong significant relationship between the Uplifts Frequency and Uplifts Intensity, \( r(120) = .857, p < .01 \), which violates the assumption of multicolinearity. In response to the multicolinear relationships, two of the offending variables, Hassles Frequency and Uplifts Frequency, were removed from the analysis.

After removing the Hassles Frequency and Uplifts Frequency, the regression was repeated and assumptions were re-tested. There was an independence of residuals as assessed by a Durbin-Watson statistic of 1.843. The assumptions of linearity, homoscedasticity, and normality of residuals were also satisfied. Multicolinearity was assessed and the Pearson correlation revealed none of the independent variables were highly correlated and the tolerance values were all greater than 0.1, indicating the assumption of multicolinearity was satisfied. Casewise diagnostics did reveal one outlier, case number 9. Case number 9 had a standardized residual of 3.748; however, after further assessing the data, case number 9 did not reveal a large leverage or influence value so it was not removed from the analysis. Leverage values were assessed and all variables were considered safe (leverage value < 0.2) with the exception of case number 26, which was considered risky with a leverage value of .331. After further assessing the data, case number 26 did not reveal a large influence value nor was it an outlier, so it was not removed from the analysis. Cook’s distance was used to assess influential points. The Cook’s distance values were all less than 1, suggesting there were not any highly influential points.

The BES score was the dependent variable for this three step hierarchical regression analysis. In order to control for current depression, pre-surgical binge eating, and months post-
surgery, the three independent variables were entered in step one. Weight regain was entered in step two and Hassles Severity and Uplifts Intensity were entered in step three. The regression statistics are presented in Table 4.6 for each of the three steps.

Table 4.6

*Summary of Hierarchical Regression Analysis*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>B</th>
<th>Beta</th>
<th>Model 2</th>
<th>B</th>
<th>Beta</th>
<th>Model 3</th>
<th>B</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>8.65**</td>
<td></td>
<td></td>
<td>6.33**</td>
<td></td>
<td></td>
<td>6.54*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression Currently</td>
<td>3.32*</td>
<td>.18</td>
<td></td>
<td>1.67</td>
<td>.09</td>
<td></td>
<td>0.04</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Binge Eating Before</td>
<td>3.56</td>
<td>.18</td>
<td></td>
<td>5.41*</td>
<td>.27</td>
<td></td>
<td>5.20*</td>
<td>.26</td>
<td></td>
</tr>
<tr>
<td>Months Post-Surgery</td>
<td>0.02</td>
<td>.08</td>
<td></td>
<td>-0.04**</td>
<td>-.16</td>
<td></td>
<td>-0.03</td>
<td>-.14</td>
<td></td>
</tr>
<tr>
<td>Weight Regain</td>
<td>35.68**</td>
<td>.58</td>
<td></td>
<td>32.30**</td>
<td>.53</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hassles</td>
<td></td>
<td></td>
<td></td>
<td>0.11*</td>
<td>.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uplifts</td>
<td></td>
<td></td>
<td></td>
<td>-0.08*</td>
<td>-.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.075</td>
<td></td>
<td></td>
<td>0.342</td>
<td></td>
<td></td>
<td>0.427</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( F )</td>
<td>3.11*</td>
<td></td>
<td></td>
<td>14.81**</td>
<td></td>
<td></td>
<td>13.91**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \Delta R^2 )</td>
<td>0.075</td>
<td></td>
<td></td>
<td>0.267</td>
<td></td>
<td></td>
<td>0.085</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \Delta F )</td>
<td>3.11*</td>
<td></td>
<td></td>
<td>46.24**</td>
<td></td>
<td></td>
<td>8.32**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* N= 119  *p < .05, ** p < .001

The hierarchical multiple regression analysis revealed that the predictor variables including current depression, pre-surgical binge eating, and months post-surgery (step one) accounted for 7.5% of the variance in BES scores and was statistically significant, \( R^2 = .075, \)
F(3,115)= 3.108,  p =.029. The addition of weight regain to the prediction of scores on the BES (step two) led to a statistically significant increase in R² of .267 F(1,114) = 46.242,  p = .000. The combined independent variables in step one and step two accounted for 34.2% of the variance in BES scores. The addition of Hassles Severity and Uplifts Intensity to the prediction of BES scores (step three) also led to a statistically significant increase in R² of .085,  F(2,112) = 8.315,  p = .000. Four of the six independent variables were significant predictors of BES scores when entered at step three, including weight regain, hassles severity, pre-surgical binge eating, and uplifts intensity. The full model with all independent variable accounted for 43% of the variance in BES scores and was statistically significant, F(6,112) = 13.911,  p < .005.

**Summary**

This chapter provided a description of the post-bariatric sample population, including demographic information and a history of the individual’s weight changes and health status. The scores on the Binge Eating Scale determined participants’ degree of binge eating, which was the dependent variable for this analysis. The data revealed a significant moderate positive relationship between both the Hassles frequency and severity and the BES scores, which supported hypothesis one. A negative relationship between both Uplifts frequency and intensity and the BES scores was noted. However, only a weak relationship between Uplifts intensity and BES scores was significant, which partially supported hypothesis two. A hierarchical multiple regression analysis was used to determine the variables predictive of BES scores. Weight regain was the most important predictor of BES scores, predicting 26.7% of the 42.7% full model variance in BES scores. The data revealed hassles severity and uplifts intensity were predictive of 8.5% of the variance in BES scores above that accounted for by current depression, pre-surgical binge eating, months post-surgery, and weight regain which supported hypothesis three.
CHAPTER V
DISCUSSION

This chapter begins with a brief summary of the current study, which was an examination of variables predictive of binge eating among bariatric patients. The discussion of the findings is provided for Research Question One, which include a subsection on both hassles and uplifts. Research Question Two is then presented. A discussion of the findings and the implications for counseling are provided for each variable used in the hierarchical regression analysis including current depression, pre-surgical binge eating, time since the surgery, weight regain, hassles severity, and uplifts intensity. This chapter also presents the limitations of this study and concludes with recommendations for future research.

Summary

The purpose of this research was to examine variables that are related to and predictive of binge eating within the bariatric patient population. Bariatric patients identified through snowball sampling and self-selection sampling methods completed either a paper or electronic survey consisting of a demographic and health status questionnaire, the Binge Eating Scale (BES), and the Combined Hassles and Uplifts (CHUS). Emphasis was placed on the predictive value of weight regain and stressful and positive experiences after controlling for variables that existing research identified as predictors of post-surgical binge eating, including depression, pre-surgical binge eating, and the amount of time that has passed since the participant’s surgery date.

The results of this study offer recommendations for practical application and future research. There are several limitations to this study, including the demographics of the sample, the self-report nature of the questionnaires, and the broad variance of the time since surgery among the participants.
Research Question One

Is there a relationship between binge eating and stressful daily experiences and positive daily experiences?

Binge Eating and Hassles

The current research study was the first study to examine the relationship between binge eating and hassles within the bariatric patient population. This study was also unique because nearly 88% of the participants were either overweight or obese. Existing research has investigated the relationship between binge eating and stressors with a sample of healthy-weight college students (Crowther et al., 2001; Harrington, Crowther, Payne Henrickson, & Mickelson, 2006; Wolff et al., 2000). Consistent with the existing research (Crowther et al., 2001; Harrington et al., 2006; Wolff et al., 2000), the current findings revealed a statistically significant positive relationship between binge eating and both the severity and frequency of hassles within this sample of post-bariatric patients.

Correlational analyses are non-directional so this analysis is unable to identify whether stressors trigger binge eating or if binge eating leads to perceiving stressors as more severe. Because the direction of the relationship between binge eating and hassles is unknown, two possible rationales for this finding are provided. First, binge eating could functions as a maladaptive coping mechanism (Dymek-Valentine et al., 2005). Daily hassles have the potential to trigger binge episodes when individuals lack the resources and healthy coping mechanisms needed to manage stress. Binge eating could be an attempt to temporarily self-sooth, avoid stressors, or numb the feelings associated with stress. This rationale is consistent with Escape Model (Heatherton & Baumeister, 1991), which suggests that individuals with binge eating cope with negative emotions by seeking a state of cognitive deconstruction. In this emotionless,
disinhibited state, individuals narrow their focus from stressful thoughts to food and eating. This shift, which can become automatic and habitual, provides a temporary escape from distressful thoughts, feelings, and experiences. Second, binge eating is accompanied by feelings of distress; a defining characteristic of binge eating (APA, 2013). Individuals could attribute the distressful feelings associated with binge eating to external experiences; thus perceiving hassles as more frequent and severe. Identifying external factors as the source of stress could be less threatening to individuals who are not ready to address the disordered eating.

**Binge Eating and Uplifts**

This study was the first of its kind to examine the relationship between BES scores and the frequency and intensity of uplifts. The research on uplifts in general is limited. Because there is a need for more research on uplifts, it was worth examining its relationship to binge eating. As previously mentioned, prior research has revealed a positive relationship between hassles and binge eating (Crowther et al., 2001; Harrington et al., 2006; Wolff et al., 2000). Because uplifts are counter to hassles (Lazarus & Folkman, 1984), the relationship between uplifts and BES scores was presumed to be negative. The current findings revealed there was no indication of a significant relationship between BES score and uplifts frequency, and there was a weak negative relationship between binge eating and uplifts intensity for this sample.

This correlational study cannot determine the direction of the relationship so two rationales for this finding are provided. First, binge eating could be an attempt to manage feelings of distress. In doing so, people with binge eating become emotionally withdrawn from life (Johnston, 2000). Because binge eating temporarily numbs feelings, individuals may perceive experiences as less uplifting. Following binge episodes, individuals become preoccupied with the residual feelings of guilt and shame. This could also affect one’s ability to
perceive experiences as uplifting. Second, the negative relationship between binge eating and the intensity of uplifts could indicate that if uplifting experiences are lacking from one’s life, food is used to fill the void. The shame and stigma related to obesity can have lasting effects on one’s self-esteem (Latner & Stunkard, 2003), making it difficult to cultivate uplifting experiences. Therefore, food is used for temporary comfort and pleasure in place of uplifting experiences.

**Research Question Two**

What factors may be predictive of binge eating? The current study examined whether current depression, pre-surgical binge eating, time since the surgical procedure, weight regain, hassles severity, and uplifts intensity were predictors of binge eating. For each variable, the findings are interpreted and the implications for counseling are discussed.

**Depression**

Current depression was one of the variables analyzed in this study. The results of this study indicate a weak, positive relationship between depression and binge eating. However, after the influence of other variables was accounted for, current depression did not significantly contribute to the prediction of BES scores. The lack of statistical significance in the final model suggested that depression was not significantly predictive of binge eating for this sample. Thus, the current findings are not consistent with many of the existing findings regarding the positive correlation between depression and binge eating (Grucza et al., 2007; Jones-Corneille et al., 2012; Pagoto et al., 2007; Sherry et al., 2014).

The lack of support in this study for the existing research findings could be due to sample differences between the current and existing studies. The current study was examining depression and binge eating within the bariatric patient population. Previously mentioned
studies did not include bariatric patients, but rather community samples, undergraduate college students, and pre-surgical candidates for bariatric surgery. It is possible that for the current sample, depressive symptoms decreased after surgery due to the positive effects of weight loss surgery and therefore depression was not present to predict binge eating.

Both before and after surgery, the prevalence of depression was higher than the prevalence of all of the physical disorders for this sample. Nearly 71% of the current sample reported having depression before surgery and 44% reported having depression at the time of completing this survey after surgery. Ninety-five percent of the participants who reported postsurgical depression reported having pre-surgical depression, indicating that post-surgical depression either persists or recurs after surgery.

The prevalence of depression is likely due to the bidirectional relationship between obesity and depression (de Wit et al., 2010; Markowitz, Friedman, & Arent, 2008). Obesity is often accompanied by pervasive stigma, social isolation, and bullying (Puhl & Heuer, 2010). These negative social and psychological experiences contribute to depression and poorer quality of life (de Wit et al., 2010). Alternatively, depression can perpetuate obesity if food is used to manage depressive symptoms and regulate emotions. Given the cyclical relationship between obesity and depression, the incidence of depression for this sample was anticipated.

**Implications for Counseling**

Depression is prevalent among bariatric patients, both before and after surgery as indicated by current and previous findings (de Zwaan et al., 2011). Characteristics of depression include feelings of worthlessness and hopelessness. The depressive symptoms could be the residual effects of the stigma associated with obesity. A humanistic counseling approach, which is grounded in unconditional acceptance, could address the underlying causes of depression and
offer a curative experience. Interpersonal group therapy is also recommended. Group therapy provides an opportunity for individuals to experience a sense of connectedness, alleviating the feelings of isolation often related to depression and obesity.

**Pre-Surgical Binge Eating**

The current findings indicated that pre-surgical binge eating was predictive of post-surgical binge eating. Pre-surgical binge eating was reported by 71% of this sample. Nearly 32% of the current sample was identified as having moderate or severe binge eating after surgery based on the scores of the Binge Eating Scale. Among the 40 participants who had moderate or severe BES scores, 87.5% reported pre-surgical binge eating. This suggested that post-surgical binge eating is most often a reemergence of eating pathology that was present prior to surgery rather than a new phenomenon.

This finding was expected because without treatment, past behaviors best predict future behaviors. This implies that obesity treatment cannot replace binge eating treatment, just as Dr. Sara Niego, a recognized psychiatrist and researcher in this field, previously stated, “you cannot cure a mental disorder through surgery” (Olivero, 2014). Weight loss surgery may temporarily reduce the quantity of food consumed, but unless the underlying issues are dealt with, the cognitive, emotional, and behavioral aspects of binge eating will persist.

Existing studies reported mixed findings regarding the relationship between pre-surgical and post-surgical binge eating (Bocchieri-Ricciardi et al., 2006; de Zwaan, 2005; de Zwaan et al., 2010; Kalarchian et al., 2002; Lang et al., 2002; Mitchell et al., 2001; Niego et al., 2007). This is partly due to binge eating assessment methods. When studies used the *DSM-IV* criteria for Binge Eating Disorder, which includes eating an objective large amount of food at least twice a week, binge eating was rarely observed in patients after surgery. This is because bariatric
surgery changes the size of the stomach so it can be difficult, though not impossible, for an objectively large amount of food to be consumed, particularly within the first two years following the procedure. Consistent with the current findings, research was more likely to identify binge eating after surgery when the post-surgical diagnostic criteria focused on the cognitive and emotional characteristics of binge eating, rather than emphasizing the quantity of food (de Zwaan, 2005; de Zwaan et al., 2010; Kalarchian et al., 2002; Lang et al., 2002; Mitchell et al., 2001; Niego et al., 2007).

**Implications for Counseling**

The American Society for Metabolic and Bariatric Surgery (ASMBS) recommends that clinicians assess for binge eating before surgery, though this is not required (LeMont et al., 2004). Additionally, the ASMBS does not require treatment if binge eating is identified because candidates are more likely to forego surgery if it is postponed for psychosocial purposes (Applegate & Friedman, 2014). The ASMBS states that “potential psychosocial concerns must be considered in the context of the likely medical and functional benefits of moving forward with the surgery” (Applegate & Friedman, 2014, p. 40). The findings for this study indicated that bariatric patients who have binge eating after surgery most likely had binge eating before surgery. This finding illuminates the need to identify and begin treating binge eating before surgery.

In light of this finding, counselors should collaborate with other bariatric professionals to advocate for policy changes that would require binge eating to be assessed and treated during the preoperative phase and thereafter. Identifying and treating binge eating before surgery would minimize post-surgical relapses, improving psychosocial and weight-loss outcomes. Pre-surgical treatment would not necessarily postpone the surgery given that most insurance companies
require candidates to work on lifestyle changes for a six month period before surgery is approved. Psychotherapy would support the lifestyle changes required during this preoperative phase.

Preoperative therapy would also help the therapist and patient establish a therapeutic alliance. The quality of the therapeutic alliance is predictive of positive outcomes (Ardito & Rebellino, 2011). A humanistic counseling approach is recommended because it fosters an authentic relationship between the therapist and patient. If this relationship is established before surgery, patients will be more likely to continue therapy after surgery. Post-surgical therapy would help the patient effectively cope with binge eating lapses, which could prevent a complete relapse.

During the pre-surgical psychological evaluation, counselors should assess for the cognitive, emotional, and behavioral characteristics of binge eating as well as past and current stressors and traumas which are predictive of binge eating (Harrington et al., 2006). Treatment should be individualized to address the underlying issues based on information obtained during the clinical interview. Eye movement desensitization and reprocessing therapy (EMDR) is one approach that could be used to help patients reprocess emotional experiences through desensitization (Vanderlinden, 2008). EMDR would be beneficial for treating traumatic experiences or intense emotional responses to food exposure.

Psychotherapeutic treatments such as individual and group cognitive behavioral therapy (CBT) and interpersonal process therapy (IPT) groups were also identified as effective treatment modalities for eating disorders in the short-term (Cassin et al., 2008; Kalarchian & Marcus, 2003; Kinzl, Trefalt, Fiala, & Biebl, 2002; Leahey, Crowther, & Irwin, 2008; Saunders, 2004; Wilfley et al., 2002). CBT could be used to address the dysfunctional thoughts related to food,
eating, and the body which accompany binge eating disorder. IPT groups provide a forum for individuals to work on role disputes, role transitions, unresolved grief, and interpersonal deficits (Wilfley et al., 2002). IPT is an effective approach to treating binge eating because helping individuals develop healthier ways to relate to the world will also help them develop healthier ways to relate to food. IPT could also be incorporated into post-surgical treatment because it addresses unresolved grief and many bariatric patients grieve the loss of foods that were once a source of comfort.

Increasing opportunities for such therapies could help stabilize the patient before surgery and prevent binge eating relapse in the short-term. Although more research is still needed to determine the long-term effectiveness of CBT and IPT, there is some evidence to suggest that holistic approaches incorporating spiritual components and personal growth could be beneficial in supporting long-term recovery from binge eating (Boone, 2014). Given the heterogeneous nature of the bariatric population and the diverse experiences within the subgroup of bariatric patients with binge eating, providing a variety of therapeutic formats both before and after surgery would be helpful. The therapeutic approach should be personalized to address patients’ individual needs and flexible to adapt to the different needs that patients have after surgery. Both short-term and on-going therapies are necessary in order to address the dynamic needs of the patient because life-long maintenance is crucial for sustainable weight loss and eating disorder recovery.

**Time Since Surgery**

The third predictor variable entered into model one was the amount of time since having had the surgery. The time since the surgery was selected because binge eating is typically latent for a period after surgery because of the anatomical changes. The first 12–18 months after
surgery are referred to as the honeymoon phase due to the substantial weight loss and diminished appetite (Alger-Mayer, Rosati, Polimeni, & Malone, 2009; Bocchieri-Ricciardi et al., 2006). Since there is usually a period of binge eating remission after surgery, the present study examined the amount of time between the participant’s surgery date and survey completion to determine whether the time since surgery was predictive of binge eating. Additionally, time since having the surgery was entered to determine if weight regain, hassles, and uplifts were predictive of binge eating after time was controlled for in the analysis.

The current study found that time since the surgery was not a significant predictor of binge eating. This finding implies that the amount of time after surgery did not predict the recurrence or onset of binge eating. The lack of significance could be due, in part, to the range of time for this sample population. Participants were anywhere between 2 months to over 14 years post-surgery. It seems that after a period of time, the recurrence rate of binge eating would stabilize and the amount of time from the weight loss surgery would no longer be related. Because of this, the data was re-analyzed and included only those who had surgery up to 5 years ago. The findings for this subgroup revealed that the time from surgery was still not predictive of binge eating. An interesting observation for the current study was that among those with moderate to severe binge eating scores, 29% had weight loss surgery within the past 6–24 months. This finding was interesting because most research suggests that binge eating usually doesn’t emerge within the first two years after surgery (de Zwaan, 2005; Niego et al., 2007).

**Implications for Counseling**

The current finding indicated that this sample had moderate or severe binge eating between six months and 14 years after surgery. This finding implies that counselors should assess for binge eating within the first six months of the procedure. Additionally, binge eating
should be re-assessed by counselors on an on-going basis because it can recur at various times after the surgery.

**Weight Regain**

The fourth predictor variable entered was weight regain, which was entered in model two. The present study revealed weight regain had the greatest predictive power for identifying moderate to severe BES scores for this study. This finding implied that weight regain predicted binge eating for the current sample of post-bariatric patients. The more weight an individual regains after surgery, the more likely they were to experience binge eating.

The relationship between weight regain and binge eating could be accounted for by perfectionism, a characteristic often associated with binge eating (Sherry & Hall, 2009). Perfectionism is accompanied by thought distortions such as polarized thinking, a rigid form of thinking in extremes. Individuals with thought distortions such as polarized thinking could interpret slight weight gain as total failure. A small amount of weight gain could evoke feelings of inadequacy and hopelessness, particularly because those with binge eating tend to overvalue weight and shape (Grilo, Masheb, & White, 2010). Because most bariatric patients do not maintain their lowest weight, healthy coping mechanisms must be developed to challenge the thought distortions. If healthier coping mechanisms are not developed, the individual could revert to binge eating to deal with the psychological distress that accompanies the perceived failure of regaining weight.

In addition to the predictive value of weight regain, the descriptive statistics provided some interesting findings. Participants who had surgery between 18 and 60 months prior to data collection and did not exhibit binge eating at the time of data collection as indicated by their BES scores ($n = 33$), regained an average of 9% of their excess weight loss. Participants who were
between 18 and 60 months post surgery and did have moderate to severe binge eating at the time of data collection as indicated by their BES scores \((n = 25)\), regained an average of 20% of their excess weight loss. Essentially, those who had binge eating regained twice as much weight compared to those who did not have binge eating within the same time period. The 20% weight regain experienced by those with moderate to severe binge eating is a critical finding. This finding signifies that binge eating can undo the results that were initially achieved after surgery, which indicates treatment is vital.

**Implications for Counseling**

Weight regain was the strongest predictor of binge eating for the current sample. This finding is crucial to bariatric professionals because if weight gain is observed in bariatric patients, it could help alert bariatric professionals to refer the patient to counseling in order to assess for potential eating pathology. Because weight is an objective measure, it is easier to identify than psychological and emotional difficulties, which are more subjective. As the current findings imply, weight regain should function as an indicator to screen for binge eating and provide treatment when necessary.

A small amount of weight gain is expected after bariatric patients reach their lowest weight (Magro et al., 2008). It is important that individuals are aware of this and have realistic expectations before surgery. Counselors can assess patients during the pre-surgical evaluation to ensure patients clearly understand the expected short-term and long-term outcomes. Before the surgery, cognitive behavioral interventions can be used to help patients recognize their core beliefs about their weight and body. Therapists can help patients create experiences that challenge those beliefs. Altering one’s core belief about weight and body could minimize the power that weight has in one’s life. By doing so before surgery, patients will be better equipped
to emotionally handle the expected small amount of weight that is regained after patients reach their lowest weight.

Moreover, counselors should extend treatment models beyond the cognitive and behavioral aspects when treating perfectionism in eating disordered patients. This one symptom seems like the tip of the iceberg. Perfectionism implies a personality style that relates to their approach to all facets of life. Holistic models that address this need for “holism” will help treat the malady as much as cognitive behavioral protocols (Emmet, 2009). Thinking is one aspect of the person. Holistic models such as experiential, existential, spiritual, art, and dance/movement therapies will instill healthy body awareness and goals that relate to larger aspects of patients’ lives to promote the lasting motivational effects desired by the client (Burgard, 2009; Emmett, 2009; Wingate, 2009).

**Hassles and Uplifts**

The present study revealed that hassles severity and uplifts intensity were predictors of BES scores. The results imply that stressors and positive experiences were predictive of binge eating for this sample after accounting for depression, pre-surgical binge eating, time, and weight regain.

This study is distinct because it examines hassles and uplifts with a sample consisting of bariatric patients, which has not been observed in the literature. Additionally, no existing research was identified that had examined whether uplifts predicted binge eating. Several studies have indicated that hassles were predictive of binge eating, mostly within a college student or healthy weight population (Freeman & Gil, 2004; Harrington et al., 2006; Sulkowski, Dempsey, & Dempsey, 2011). The findings for the current study are consistent with those studies.
The escape model (Heatherton & Baumeister, 1991) could provide a theoretical rationale for why hassles severity predicts binge eating. The escape model proposes that binge eating is an attempt to escape negative self-awareness and distress. During a binge episode, focus narrows, shifting from self-awareness and distress to food and eating (Heatherton & Baumeister, 1991). Food functions as a temporary distraction and emotional anesthetic. For those individuals who use food to cope, stressors perceived as highly severe could precipitate binge eating.

Uplifts intensity was the final predictor variable entered into the regression model. Uplifts intensity, predicting a small amount of variance for BES scores, was a significant predictor. The beta weight for uplifts intensity was negative, which signifies that binge eating severity decreases as uplifts intensity increases. The negative predictive value of uplifts could indicate that uplifts have a protective health component (Jain et al., 2007). The negative predictive value of uplifts and its role as a protective health factor might suggest that increasing uplifts could aid in decreasing binge eating. Because the relationship between uplifts intensity and binge eating has not been examined in earlier research, there are no previous findings for direct comparison.

In addition to the predictive value of hassles severity and uplifts intensity, the descriptive statistics provided some interesting information. Correlational statistics were used to analyze the relationship between each item on the Combined Hassles and Uplifts Scale (CHUS) and the BES scores to examine whether there was a stronger relationship between binge eating and both the hassle and uplifts within particular areas of one’s life. A positive relationship between hassles and binge eating was strongest for the following items: physical appearance, exercise, eating at home, parents/in-laws, sex, and intimacy. Alternatively, a negative relationship between uplifts
and binge eating was strongest for the following items: physical appearance, health, physical abilities, sex, medical care, and intimacy. Though the direction of the relationship cannot be determined with correlational statistics, there is a theme that suggests a positive association between binge eating and stress related to one’s body and relationships. It also suggests a negative association between binge eating and feeling good about one’s body and relationships.

**Implications for Counseling**

Addressing stress before and after surgery could be beneficial given this study indicated hassles were a positive predictor and uplifts were a negative predictor of post-surgical binge eating. This recommendation is supported by existing findings that suggest coping, particularly emotion focused and avoidant coping mechanisms, can mediate the relationship between stress and binge eating (Freeman & Gil, 2004; Sulkowski et al., 2011). Considering the existing findings on coping and the current findings related to hassles and uplifts, it could be helpful for bariatric patients to identify causes of stress and develop healthy ways of coping with them.

Counseling can help patients learn how to effectively cope in the short-term while working on addressing the underlying issues that have contributed to the onset and maintenance of the eating disorder. Short-term coping techniques could incorporate aspects of dialectical behavior therapy (DBT), such as radical acceptance, to help individuals with distress tolerance (Corstorphine, Mountford, Tomlinson, Waller, & Meyer, 2007). Stress management techniques such as meditation, guided imagery, and deep breathing could also aid in providing temporary stress relief.

These stress management techniques can be used in conjunction with therapies suited more towards long-term recovery and healing. Given the positive relationship between binge eating and this sample’s stress about physical appearance, exercise, eating at home, parents/in-
laws, sex, and intimacy, on-going therapies such as family therapy and interpersonal process
therapy (IPT), existential therapies, experiential therapies, and dance/movement therapy could be
meaningful long-term treatment options. These long-term treatment options are further
supported by the negative relationship between binge eating and feeling good about physical
appearance, health, physical abilities, sex, medical care, and intimacy. Therapies focused on
improving patients’ relationships with their body and with others could help reduce binge eating
for bariatric patients. Both short-term techniques and long-term therapy should be introduced
before surgery in order to better prepare patients for new stressors that may arise after surgery
when patients are adapting to their new lifestyle and body.

The findings for this study offer insight about binge eating within the bariatric patient
population. Among the variables examined in this study, weight re-gain was the strongest
predictor of binge eating, though the analysis for each variable had important implications for
counseling. The findings and implications must be considered within the context of this study
with careful consideration given to the study’s limitations provided in the following section.

**Limitations of the Study**

The present study has several limitations related to sampling, data collection,
instrumentation, and research design. The current study used snowball sampling and self-
selection sampling techniques. Snowball sampling “yields a study sample through referrals
made among people who share or know of others who possess some characteristics that are of
research interest” (Biernacki & Waldorf, 1981, p. 141). Self-selection sampling identifies
research participants by advertising the study and providing directions for how to participate for
interested and qualified individuals. Both snowball sampling and self-selection sampling
techniques can pose a threat to external validity, the ability to generalize the research findings
(McMillan & Schumacher, 2006). The majority of the participants in the existing study were also identified through on-line bariatric support forums, also a threat to external validity, because those who use on-line support forums may not accurately depict the bariatric patient population at large.

Another limitation of this study is that the sample included participants who have had one of three bariatric procedures including RYGB, Lap Band, and the Gastric Sleeve. The different procedures typically attract different candidates and each procedure differs in terms of the rate of weight loss and weight loss maintenance, increasing the threat to internal validity due to extraneous variable. A more rigorous approach would have been to narrow the sample and only include participants who had one type of surgical procedure. Additionally, at the time of data collection, the current sample had bariatric surgery anywhere between 2 months and over 14 years ago. Because patient outcomes vary based on when the surgery occurred, the broad time range is a limitation of the current study.

Self-report questionnaires were used to collect data for the current study. Self-report data are a threat to internal validity due to possible response bias. Response bias is “a tendency for a respondent to answer in predictable ways, independent of the question content” (Beins, 2004, p. 214). Response bias could have been an issue for this study. Participants were asked about their weight and eating habits. Some participants may have altered their answers to appear more favorable. Some participants did not provide either a pre-surgical or current weight. It is possible they purposely refrained from answering questions that they perceived as having less favorable answers. Another example of response bias is when participants consistently select the same Likert scale rating for the various items on the questionnaire (Beins, 2004). The responses
on the CHUS could have been influenced by response bias as evidenced by the positive correlation between Hassles and Uplifts.

Another limitation to this study was the design of the demographic questionnaire. Dichotomous questions were used to identify both depression and pre-surgical binge eating. The participants were only asked if they experienced depression and binge eating and instructed to select yes or no. Framing the question in this manner is a limitation for two reasons. First, because variables were not defined, the participants disclosed whether they had depression or binge eating based on each individual’s understanding of the terms depression and binge eating so a shared meaning cannot be inferred. Because neither variables were defined nor measured, this is a threat to content validity. Content validity is “the degree to which a sample of items, taken together, constitute an adequate operational definition of a construct” (Polit & Beck, 2006, p. 490). Second, because this was a dichotomous question, there may not have been enough variance to contribute to the regression model. This study could be improved by providing definitions or including multi-dimensional assessment measures for depression and pre-surgical binge eating.

The demographic questionnaire also included retrospective questions. Retrospective questions are susceptible to recall bias. Recall bias, which is a threat to internal validity, is the tendency for participants to less accurately report past events. Recall bias can be affected by time. Subjective measures are more prone to recall bias and one’s current state can influence how an earlier state is recalled (Schmier & Halpern, 2004). In addition to the demographic questionnaire, recall bias could have influenced the responses on the BES and CHUS because participants were asked to consider the past 30 days when selecting their answers.
The Binge Eating Scale (BES) was used in this study to assess binge eating which could be an additional limitation. Previous research by Grupski et al. (2013) determined the scale had predictive validity for assessing binge eating within the bariatric candidate population. In other words, the BES accurately identified binge eating among individuals who were preparing to have weight loss surgery. However, the sample consisted of post-surgical patients in this study. The most accurate methods for detecting post-surgical binge eating have not yet been established in the literature. As a result, the potential threat to the predictive validity of the BES within the post-surgical population must be considered as a possible limitation to this study.

The present study used a correlational research design. Nonexperimental research designs such as correlational research cannot determine directionality, which threatens internal validity. That is to say, correlational research designs do not imply a cause-effect relationship between the independent and dependent variable (Beins, 2004). Specific to this study, it cannot be determined whether weight regain causes binge eating, binge eating causes weight regain, or an unaccounted extraneous variable is the cause. This limitation exists for all of the variables used in this study and should be taken into account when considering the practical application of the current findings.

**Recommendations for Future Research**

The current findings highlight the need for further inquiry. Future research could build upon the existing study by utilizing alternative data collection methods and refining the current research design. Rather than identifying depression through the use of a dichotomous question, future studies could incorporate a more comprehensive assessment such as the Beck Depression Inventory (BDI). Additionally, clinical interviews could supplement the use of surveys for evaluating depression and binge eating to enhance the overall reliability of this study.
Stress is a very broad concept. Daily hassles are an example of one type of stressor and the CHUS is only one way of measuring it. A recommendation for future research would be to examine the relationship between binge eating and other stressors such as life events. Future research could also explore the relationship between binge eating and stress related to particular life domains such as relationships or work. Other aspects related to stress could also be considered for future research including coping.

Future studies could also strive for a more homogenous sample in terms of the type of surgical procedure and the post-surgical timeframe. This study’s sample was comprised of individuals who have had RYGB, Lap Band, or the Gastric sleeve anywhere between 2 months to over 14 years ago. Having only one procedure represented in the sample within a similar post-surgical timeframe could decrease the possibility of confounding variables. It would also be interesting to compare the results between RYGB, Lap Band, and Gastric sleeve patients.

This study’s participants were mostly accessed through on-line bariatric discussion and support forums. This suggests that the participants had their procedures at different hospitals and likely had different pre-surgical and post-surgical experiences regarding preparation and support. Future research could replicate this study with participants from the same bariatric surgical site to control for confounding variables. Additionally, medical records could be used to identify pre-surgical binge eating and co-morbidities rather than relying on retrospective self-report.

Further research is also needed to examine factors that are predictive of weight regain. It would be valuable to have a better understanding of weight regain considering the physical and psychological implications. Research examining weight regain could also contribute to developing better preventive strategies.
Summary

Bariatric surgery is a transformational decision. The surgery is a weight loss tool. Patients work hard to change their diet and lifestyle in order to lose weight and improve their physical and psychological health. Unfortunately, some will regress to pre-surgical eating behaviors including binge eating. The purpose of this study was to gain a better understanding of factors that contribute to binge eating for bariatric patients.

The findings of this study highlight the importance of identifying and treating binge eating before surgery. The relationship between re-gaining weight and binge eating also emphasizes the need for post-surgical support and relapse prevention. Addressing stress during pre-surgical and post-surgical interventions could be beneficial considering the current findings. In collaboration with surgeons, nurses, and dieticians, professional counselors can educate patients and professionals about the gravity of binge eating, risk factors and indicators, and available treatment and supports in order to enhance the weight-loss process for bariatric patients.
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Appendix A

Demographic Data Questionnaire

Participant Code:_______

DEMOGRAPHIC DATA QUESTIONNAIRE

Part I Instructions: Read each question and make a (✓) or provide the information in the blank spaces.

1. What is your gender? (Please select one)
   _____ Male
   _____ Female

2. How old are you? _______ years

3. Please select your ethnicity or race:
   _____ White
   _____ Hispanic or Latino
   _____ Black or African American
   _____ Native American or American Indian
   _____ Asian / Pacific Islander
   _____ Other

4. What is your marital status?
   _____ Single
   _____ Married
   _____ Living with partner
   _____ Divorced
   _____ Widowed

5. Do you have children? _______
   If yes, how many? _______ Do they live with you? _______

6. What is your highest level of education? (Please select one)
   _____ Grade school
   _____ High school diploma/GED
   _____ Associates degrees/ Trade or Technical school/ Two years of college
   _____ College graduate (BA or BS)
   _____ Master’s degree
   _____ Doctorate degree

7. Are you currently employed?_______

8. What is your annual household income?
   _____ $10,999 or less
   _____ $ 11,000- $24,999
   _____ $25,000-$49,999
   _____ $50,000-$74,999
   _____ $75,000-$124,999
   _____ $125,000-$149,999
   _____ $150,000-$199,999
   _____ $200,000 or above
HEALTH HISTORY

Part II Instructions:
Read each question and make a (✓) or provide the information in the blank spaces.

1. How much do you currently weigh? ________
2. How tall are you? ________
3. How much weight do you expect to lose with surgery? ________
4. Which bariatric surgical procedure will you be having? __________________
5. What month & year is your surgery scheduled? ________
6. Do you smoke?
   _____ Yes
   _____ No, I quit. How many years did you smoke? _____ What year did you quit? _____
   _____ No, I never smoked.
7. Are you currently working with a therapist, psychologist, psychiatrist, or other mental health professional?
   _____ Yes
   _____ No
8. Please make a check (✓) next to all of the conditions below that apply to you:

<table>
<thead>
<tr>
<th>Depression</th>
<th>Type II Diabetes</th>
<th>Celiac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>High blood pressure</td>
<td>Irritable Bowel Syndrome</td>
</tr>
<tr>
<td>Substance Abuse</td>
<td>Sleep apnea</td>
<td>Ulcer</td>
</tr>
<tr>
<td>Binge eating</td>
<td>Thyroid disorder</td>
<td>Acid Reflux</td>
</tr>
<tr>
<td>Bulimia</td>
<td>Fibromyalgia</td>
<td>Arthritis</td>
</tr>
<tr>
<td>Suicidality</td>
<td>Stroke</td>
<td>Other</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>Seizures</td>
<td>Please list other conditions:</td>
</tr>
<tr>
<td>Bipolar Disorder</td>
<td>HIV/AIDS</td>
<td>____________________</td>
</tr>
<tr>
<td>Post-Traumatic Stress PTSD</td>
<td>Cancer</td>
<td>____________________</td>
</tr>
<tr>
<td>Under Stress</td>
<td>Pacemaker</td>
<td>____________________</td>
</tr>
</tbody>
</table>
Appendix B

Binge Eating Scale

EATING HABITS CHECKLIST

NAME: ___________________________ DATE: ___________________________

Instructions: Below are groups of numbered statements. Read all the statements in each group and put a ✓ mark next to the one that best describes the way you feel. These questions are about the problems you have controlling your eating behavior.

#1
1. I don’t feel self-conscious about my weight or body size when I’m with others.
2. I feel concerned about how I look to others, but it normally does not make me feel disappointed with myself.
3. I do get self-conscious about my appearance and weight which makes me feel disappointed in myself.
4. I feel very self-conscious about my weight and frequently, I feel intense shame and disgust for myself. I try to avoid social contacts because of my self-consciousness.

#2
1. I don’t have any difficulty eating slowly in the proper manner.
2. Although I seem to “gobble down” foods, I don’t end up feeling stuffed because of eating too much.
3. At times, I tend to eat quickly and then, I feel uncomfortably full afterward.
4. I have the habit of bolting down my food, without really chewing it. When this happens I usually feel uncomfortably stuffed because I’ve eaten too much.

#3
1. I feel capable to control my eating urges when I want to.
2. I feel like I have failed to control my eating more than the average person.
3. I feel utterly helpless when it comes to feeling in control of my eating urges.
4. Because I feel so helpless about controlling my eating I have become very desperate about trying to get in control.

#4
1. I don’t have the habit of eating when I’m bored.
2. I sometimes eat when I’m bored, but often I’m able to “get busy” and get my mind off food.
3. I have a regular habit of eating when I’m bored, but occasionally, I can use some other activity to get my mind off eating.
4. I have a strong habit of eating when I’m bored. Nothing seems to help me break the habit.

#5
1. I’m usually physically hungry when I eat something.
2. Occasionally, I eat something on impulse even though I really am not hungry.
3. I have the regular habit of eating foods that I might not really enjoy, to satisfy a hungry feeling even though physically, I don’t need the food.
4. Even though I’m not physically hungry, I get a hungry feeling in my mouth that only seems to be satisfied when I eat a food, like a sandwich, that fills my mouth. Sometimes, when I eat the food to satisfy my mouth hunger, I then spit the food out so I won’t gain weight.

#6
1. I don’t feel any guilt or self-hate after I overeat.
2. After I overeat, occasionally I feel guilt or self-hate.
3. Almost all the time I experience strong guilt or self-hate after I overeat.

#7
1. I don’t lose total control of my eating when dieting even after periods when I overeat.
2. Sometimes when I eat a “forbidden food” on a diet, I feel like I “blew it” and eat even more.
3. Frequently, I have the habit of saying to myself, “I’ve blown it now, why not go all the way” when I overeat on a diet. When that happens I eat even more.
4. I have a regular habit of starting strict diets for myself, but I break the diets by going on an eating binge. My life seems to be either a “feast” or “famine”.

#8
1. I rarely eat so much food that I feel uncomfortably stuffed afterward.
2. Usually about once a month, I eat such a quantity of food, I end up feeling very stuffed.
3. I have regular periods during the month when I eat large amounts of food, either at mealtime or at snacks.
4. I eat so much food that I regularly feel quite uncomfortable after eating and sometimes a bit nauseous.

#9
1. My level of calorie intake does not go up very high or go down very low on a regular basis.
2. Sometimes after I overeat, I will try to reduce my caloric intake to almost nothing to compensate for the excess calories I’ve eaten.
3. I have a regular habit of overeating during the night. It seems that my routine is not to be hungry in the morning but overeat in the evening.
4. In my adult years, I have had week-long periods where I practically starve myself. This follows periods when I overeat. It seems I have a life of either “feast or famine”.

#10
1. I usually am able to stop eating when I want to. I know when “enough is enough”.
2. Every so often, I experience a compulsion to eat which I can’t seem to control.
3. Frequently, I experience strong urges to eat which I seem unable to control, but at other times I can control my eating urges.
4. I feel incapable of controlling urges to eat. I have a fear of not being able to stop eating voluntarily.

#11
1. I don’t have any problem stopping eating when I feel full.
2. I usually can stop eating when I feel full but occasionally overeat leaving me feeling uncomfortably stuffed.
3. I have a problem stopping eating once I start and usually I feel uncomfortably stuffed after I eat a meal.
4. Because I have a problem not being able to stop eating when I want, I sometimes have to induce vomiting, use laxatives or diuretics to relieve my stuffed feeling.

#12
1. I seem to eat just as much when I’m with others (family, social gatherings) as when I’m by myself.
2. Sometimes, when I’m with other persons, I don’t eat as much as I want to eat because I’m self-conscious about my eating.
3. Frequently, I eat only a small amount of food when others are present, because I’m very embarrassed about my eating.
4. I feel so ashamed about overeating that I pick times to overeat when I know no one will see me. I feel like a “closet eater”.

#13
1. I eat three meals a day with only an occasional between meal snack.
2. I eat 3 meals a day, but I also normally snack between meals.
3. When I am snacking heavily, I get in the habit of skipping regular meals.
4. There are regular periods when I seem to be continually eating, with no planned meals.
#14
1. I don’t think much about trying to control unwanted eating urges.
2. At least some of the time, I feel my thoughts are preoccupied with trying to control my eating urges.
3. I feel that frequently I spend much time thinking about how much I ate or about trying not to eat anymore.
4. It seems to me that most of my waking hours are preoccupied by thoughts about eating or not eating. I feel like I’m constantly struggling not to eat.

#15
1. I don’t think about food a great deal.
2. I have strong cravings for food but they last only for brief periods of time.
3. I have days when I can’t seem to think about anything else but food.
4. Most of my days seem to be preoccupied with thoughts about food. I feel like I live to eat.

#16
1. I usually know whether or not I’m physically hungry. I take the right portion of food to satisfy me.
2. Occasionally, I feel uncertain about knowing whether or not I’m physically hungry. At these times it’s hard to know how much food I should take to satisfy me.
3. Even though I might know how many calories I should eat, I don’t have any idea what is a “normal” amount of food for me.

Scoring Key: For items 2, 5, 8, 9, 10, 11, 12, 14, 15 the scoring weights are 0,1,2,3

<table>
<thead>
<tr>
<th>Item #1</th>
<th>Item #3</th>
<th>Item #4</th>
<th>Item #6</th>
<th>Item #7</th>
<th>Item #13</th>
<th>Item #16</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,0,1,3</td>
<td>0,1,3,3</td>
<td>0,0,0,2</td>
<td>0,1,3</td>
<td>0,2,3,3</td>
<td>0,0,2,3</td>
<td>0,1,2</td>
</tr>
</tbody>
</table>
Appendix C

Permission to Use Binge Eating Scale

---Original Message----
From: “James Gormally” <jfgormally@yahoo.com>
To:“erinn@peoplesoakland.org” <erinn@peoplesoakland.org>
CC:
Sent:10/18/2011 1:13:41 PM
Subject: permission to use

Dear Erin Neuman, you have my permission to use the scale for your dissertation research; pls see attached; I wish you good luck, and easy data collection! Dr. Gormally
Appendix D

Combined Hassles and Uplifts Sample Questions

Directions:
HASSLES are irritants—things that annoy or bother you; they can make you upset or angry. UPLIFTS are events that make you feel good; they can make you joyful, glad, or satisfied. Some hassles and uplifts occur on a fairly regular basis and others are relatively rare. Some have only a slight effect, others have a strong effect.

When you respond to the items you must have a specific time period in mind. Please consider the past month when answering the questions.

This questionnaire lists things that can be hassles and uplifts in day-to-day life. During a given time period, some of these things will have been a hassle, some will have been an uplift. Others will have been both a hassle and an uplift.

Please think about how much of a hassle and how much of an uplift each item was for you in the time period shown above. Please indicate on the left-hand side of the page (under "HASSLES") how much of a hassle the item was by circling the appropriate number. Then indicate on the right-hand side of the page (under "UPLIFTS") how much of an uplift it was for you by circling the appropriate number.

Remember, circle one number on the left-hand side of the page and one number on the right-hand side of the page for each item.

Sample Questions:

<table>
<thead>
<tr>
<th>Hassles</th>
<th>Uplifts</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = None or not applicable</td>
<td>0 = None or not applicable</td>
</tr>
<tr>
<td>1 = Somewhat</td>
<td>1 = Somewhat</td>
</tr>
<tr>
<td>2 = Quite a bit</td>
<td>2 = Quite a bit</td>
</tr>
<tr>
<td>3 = A great deal</td>
<td>3 = A great deal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hassles</th>
<th>Uplifts</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3</td>
<td>Your spouse</td>
</tr>
<tr>
<td>0 1 2 3</td>
<td>Your appearance</td>
</tr>
</tbody>
</table>

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Appendix E

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Permission for Erin Neuman to reproduce 100 copies within one year of January 24, 2013

Hassles and Uplifts Scales
Instrument and Scoring Guide

Richard S. Lazarus, Ph.D.
&
Susan Folkman, Ph.D.

Published by Mind Garden, Inc.

info@mindgarden.com
www.mindgarden.com

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This is to confirm an extension of the license purchased for the Hassles and Uplifts by Erin Neuman-Boone on Jan 24, 2013, to a new expiration date of Jan 24, 2015.

Best,
Valorie Keller
Mind Garden, Inc,

---

Permission to Use Copyright Material for the Combined Hassles and Uplifts Scale

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To whom it may concern,

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Instrument: **Hassles and Uplifts Scale**

Authors: **Susan Folkman, Ph.D. & Richard S. Lazarus, Ph.D.**

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Sincerely,

Robert Most
Mind Garden, Inc.
www.mindgarden.com
Appendix F

IRB Approval

To: Erin Neuman  
From: Linda Goodfellow, IRB Chair  
Subject: Protocol #2014/04/26 - Approval Notification  
Date: 05/14/2014

The protocol An Examination of Factors that Contribute to Binge Eating Among Bariatric Candidates has been approved by the IRB Chair under the rules for expedited review on 05/14/2014.

The consent form is stamped with IRB approval and one year expiration date. You should use the stamped form as originals for copies that you distribute or display. University HIPAA Officer, Dr. Joan Kiel, has reviewed and approved the health information procedures as HIPAA-compliant.

The approval of your study is valid through 05/13/2015, by which time you must submit an annual report either closing the protocol or requesting permission to continue the protocol for another year. Please submit your report by 04/15/2015 so that the IRB has time to review and approve your report if you wish to continue it for another year.

If, prior to the annual review, you propose any changes in your procedure or consent process, you must complete an amendment form of those changes and submit it to the IRB Chair for approval. Please wait for the approval before implementing any changes to the original protocol. In addition, if any unanticipated problems or adverse effects on subjects are discovered before the annual review, you must immediately report them to the IRB Chair before proceeding with the study.

When the study is complete, please terminate the study via Mentor by completing the form under the Continual Renewal tab at the bottom of your protocol page and clicking on terminate. Please keep a copy of your research records, other than those you have agreed to destroy for confidentiality, over a period of five years after the study’s completion.

If you have any questions, feel free to contact me.

Linda Goodfellow, PhD, RN  
IRB Chair  
goodfellow@duq.edu
An Examination of Factors that Contribute to Binge Eating Among Bariatric Candidates and Patients.

VOLUNTEERS WANTED FOR A RESEARCH STUDY

You are being invited to participate in research that seeks to examine factors that contribute to binge eating for individuals who are candidates for or have had bariatric surgery. Participants will complete a self-report questionnaire taking approximately 15-20 minutes. The information will be kept confidential. Participants will have a chance to win a $250.00 VISA Gift Card. The researcher is a doctoral candidate in Duquesne University’s Counselor Education and Supervision (ExCES) program.

Your participation requires the following criteria:
1) Must be at least 18 years of age.
2) Must have had bariatric surgery or be a candidate for bariatric surgery

If you would like to complete the survey on-line, please visit:
https://www.surveymonkey.com/s/bariatricwls

If you are interested in participating in this study or would like more information, please contact:
Erin E. Neuman at
412-853-3833 or email at:
neumane@duq.edu

All communication is confidential.
Dear Sir/Madam,
My name is Erin Neuman, and I am a doctoral candidate in Duquesne University’s Counselor Education and Supervision (ExCES) program. I would like to invite you to participate in research that seeks to examine factors that contribute to binge eating for individuals who are candidates for or have had bariatric surgery. If you agree to participate in this research study, you will be asked to complete the on-line consent form and an on-line, self-report questionnaire taking approximately 15-20 minutes to complete. The information you provide will be kept anonymous and your responses may contribute to further professional understanding of the pre-bariatric and post-bariatric population. If you would like participate in this study, please visit https://www.surveymonkey.com/s/bariatricwls. You may also visit this website for further details about the study. If you have any questions please contact Erin Neuman at (412) 853-3833 or neumane@duq.edu

Thank you for your consideration!

Sincerely,
Erin E. Neuman, Doctoral Candidate, Duquesne University
Appendix I

Electronic Consent Form

DUQUESNE UNIVERSITY
600 FORBES AVENUE ♦ PITTSBURGH, PA 15282

Title:
An Examination of Factors that Contribute to Binge Eating Among Bariatric Candidates and Patients

Investigators:
Erin E. Neuman, M.Ed.
neumane@duq.edu
(412) 853-3833
Anthony Boone, Ph.D.
anthony.boone690@gmail.com
(412) 758-9966

Advisor:
Dr. David Delmonico
Professor, Counselor Education
delmonico@duq.edu
(412) 396-4032

Source of Support:
This study is being performed as partial fulfillment of the requirements for the doctoral degree in Counselor Education and Supervision (ExCES) at Duquesne University.

Purpose:
You are being asked to participate in a research study to examine the relationship between stressful experiences, positive experiences and binge eating among pre-bariatric candidates and post-bariatric patients.

Research Procedures:
As part of your participation, you will be asked to complete a demographic and health history questionnaire, the Binge Eating Scale, and the Combined Hassles and Uplifts Scale. Completion of the three questionnaires will take approximately 15-20 minutes.

Risk and benefits:
There are no risks associated with this study. You may experience minimal discomfort as you answer questions about your daily stress and eating habits, but this is not expected to be any more of a risk beyond those of everyday life. The benefits of the study include possible insight
into your daily stressful experiences, positive experiences, and eating habits. This study may also contribute to further professional understanding of the pre-bariatric and post-bariatric population.

**Compensation:**
Participants who complete all of the questionnaires will have their name entered for a chance to win a $250.00 VISA gift card. If you would like your name entered in the drawing, please complete the contact information section at the completion of this survey. The winner will be alerted at the conclusion of data collection. Additionally, there is no cost to participate in this study.

**Confidentiality:**
This survey is being administered using a survey system provided by a third party, SurveyMonkey. Any information you submit as part of this survey will be stored and processed by SurveyMonkey on our behalf, in accordance with its Privacy Policy at www.surveymonkey.com/privacypolicy.aspx. By continuing with this survey, you consent to the transfer of your information to SurveyMonkey. Nothing that identifies you will be used in the final research report. The investigators will download the data transmitted to SurveyMonkey on a password protected computer. The data will be securely maintained for up to five years.

**Right to Withdrawal:**
Your participation in this study is voluntary. You may decline the request to participate. You may withdrawal from this study at any time while completing the survey. However, after you have submitted your survey responses you will not be able to withdrawal due to the anonymous nature of this study.

**Summary of Results:**
A summary of the results of this research will be provided to you upon your request at no cost.

**Voluntary Consent:**
I have read the above statements and understand what is being requested of me. I also understand that my participation is voluntary and that I am free to withdraw my consent at any time during survey completion, for any reason. On these terms, I certify that I am willing to participate in this research project. In addition, if I have any questions regarding the research, I may contact Erin Neuman, Doctoral Candidate, at (412) 853-3833 or Dr. David Delmonico, research advisor at (412) 396-4032. I understand that should I have any further questions about the procedures involved in this study, I may call Dr. Linda Goodfellow, Chair of the Duquesne University Institutional Review Board (412) 396-6326.

I acknowledge that I have read the above consent form and I am of at least 18 years of age. I agree to consent to the terms and conditions of this study. By clicking “yes” and completing the survey, it reflects my consent to participate in this study
○ Yes
○ No
Appendix J

Instructions for Paper Version

DUQUESNE UNIVERSITY
600 FORBES AVENUE  ♦  PITTSBURGH, PA 15282

You are being invited to participate in a research study. The purpose of the study is to examine the relationship between stressful experiences, positive experiences, and binge eating among bariatric candidates and patients. Participation involves reading and signing the consent form, and completing 3 self-administered questionnaires. Participation should take approximately 20-30 minutes. If you complete all of the questionnaires, you will have your name entered for a chance to win a $250.00 VISA gift card. In order to have your name entered in the drawing, please complete the contact information form and place it in the envelope labeled “Gift Card Drawing”. The winner will be alerted at the completion of data collection. If you are interested in participating in this study, please do the following:

1. Read and sign the consent form
2. Complete the Demographic and Health History Questionnaire.
3. Complete the Eating Habits Checklist Questionnaire.
4. Complete the Combined Hassles and Uplifts Questionnaire.
5. Place all completed questionnaires in the envelope with the numerical code provided.
6. If you would like your name entered for a chance to win the $250.00 VISA Gift Card, complete the contact information form and place it in the envelope labeled “Gift Card Drawing”.
7. Return the envelopes to the researcher.

Thank you for your consideration. If you have any questions, please contact Erin Neuman or Dr. Anthony Boone.

Thank you,
Erin E. Neuman, Doctoral Candidate

(412) 853-3833  neumane@duq.edu

Dr. Anthony Boone

(412) 758-9966  anthony.boone690@gmail.com
Appendix K

Consent form for Paper Version

DUQUESNE UNIVERSITY
600 FORBES AVENUE • PITTSBURGH, PA 15282

Consent to Participate in Research Study

Title
An Examination of Factors that Contribute to Binge Eating Among Bariatric Candidates and Patients

Investigators
Erin E. Neuman, M.Ed.
neumane@duq.edu
(412) 853-3833
Anthony Boone, Ph.D.
anthony.boone690@gmail.com
(412) 758-9966

Advisor
Dr. David Delmonico
Professor, Counselor Education
(412) 396-4032
delmonico@duq.edu

Source of Support:
This study is being performed as partial fulfillment of the requirements for the doctoral degree in Counselor Education and Supervision (ExCES) at Duquesne University.

Purpose:
You are being asked to participate in a research study to examine the relationship between stressful experiences, positive experiences, and binge eating among pre-bariatric candidates and post-bariatric patients.

Research Procedures:
As part of your participation, you will be asked to complete a demographic and health history questionnaire, the Binge Eating Scale, and the Combined Hassles and Uplifts Scale. Completion of the three questionnaires will take approximately 20-30 minutes. You will place the signed consent form and the three completed questionnaires in the envelope provided and return it to the investigator upon completion.

Risk and benefits:
There are no risks associated with this study. You may experience minimal discomfort as you answer questions about your daily stress and eating habits, but this is not expected to be any more of a risk beyond those of everyday life.

The benefits of the study include possible insight into your daily stressful experiences, positive experiences, and eating habits. This study may also contribute to further professional understanding of the pre-bariatric and post-bariatric population.

Compensation
Participants who complete all of the questionnaires will have their name entered for a chance to win a $250.00 VISA gift card. If you would like your name entered in the drawing, please complete the contact information form included...
and place it in the envelope labeled “Gift Card Drawing.” The winner will be alerted at the conclusion of data collection. Additionally, there is no cost to participate in this study.

Confidentiality

You will only sign your name on the consent form. The consent form and three questionnaires will be assigned a numerical code. Because the numerical code is an identifier, the data will be secured in a locked file cabinet in the researcher’s home. Nothing that identifies you will be included in the final research report. All materials will be destroyed five years after the completion of the research.

RIGHT TO WITHDRAW:

Your participation in this study is voluntary. You may decline the request to participate. You may withdraw from this study at anytime. All incomplete surveys will be discarded and not used in the final report. If you are a candidate for bariatric surgery and have not yet had your procedure, your responses on the surveys do NOT influence any decisions regarding your readiness for surgery.

SUMMARY OF RESULTS:

A summary of the results of this research will be provided to you upon your request at no cost.

VOLUNTARY CONSENT:

I have read the above statements and understand what is being requested of me. I also understand that my participation is voluntary and that I am free to withdraw my consent at any time, for any reason. On these terms, I certify that I am willing to participate in this research project.

In addition, if I have any questions regarding the research, I may contact Erin Neuman, Doctoral Candidate, at (412) 853-3833 or Dr. David Delmonico, research advisor at (412) 396-4032. I understand that should I have any further questions about the procedures involved in this study, I may call Dr. Linda Goodfellow, Chair of the Duquesne University Institutional Review Board (412) 396-6326.

Participant’s Signature ___________________________ Date ___________________________

Researcher’s Signature ___________________________ Date ___________________________
Appendix L

Visa Gift Card Drawing

DUQUESNE UNIVERSITY
600 FORBES AVENUE ♦ PITTSBURGH, PA 15282

Please provide the following information to have your name entered for the $250 VISA Gift Card drawing. Please place this completed form in the enveloped labeled “Gift Card Drawing”. This information will only be used to contact the winner of the drawing and will be shredded once the winner has been selected. The winner will be contacted at the completion of data collection.

Name: _________________________________________________________

Phone Number: _________________________________________________

Email: ________________________________________________________

Address: ______________________________________________________