ABSTRACT

BOLTON, CLINTON STAFFORD. The Relationship Between Depression and Anxiety on Binge-eating Behaviors among African American Women seeking Weight Loss Surgery. (Under the direction of Marc A. Grimmett.)

Introduction: The following dissertation explores the relationship between depression, anxiety, and binge-eating behaviors among African American Women seeking weight loss surgery. In short, the review of the literature suggests that weight loss surgery is becoming a leading alternative for individuals who are struggling with morbid obesity. The role of mental health professionals working with this population is becoming more important as the amount of individuals seeking weight loss surgery increases.

Purpose: This purpose of this study is to expand the base of research within the counselor education community with this special population.

Research Questions: This research study was based on two primary research questions. The following research questions were specified for the current study: What is the relationship between Depression, Anxiety, and Binge-eating Behaviors among African American Women seeking weight loss surgery and to what extent do Depression and Anxiety influence Binge-eating Behaviors in African American Women seeking weight loss surgery and?

Method: A sample of 147 African American women seeking weight loss surgery completed the Beck Depression Inventory II, Beck Anxiety Indicator, and the Binge Eating Scale. Participants gave their age, relationship status, Body Mass Index, and education status. A multiple regression analysis was used to explore the relationships between the variables and to see the extent to which depression and anxiety had an impact on binge eating behaviors among the participants in the sample.
Results: Results of the analysis showed that the regression model explained about 5.2% of the variance accounted for in binge eating behaviors within the sample at a significance of $p<.05$ [$R = .256, R^2 = .065$, Adjusted $R^2 = .052; p<.008$]. The relationships between each variable showed some positive correlations as well. Results from this study somewhat complement research previously done in the literature. Further analysis showed that depression had a stronger relationship with binge eating than anxiety.

Conclusions: Mental health professionals will play a vital role in helping individuals who are seeking weight loss surgery and more research is necessary in order to help expand the services practitioners can offer for this population.
The Relationship between Depression and Anxiety on Binge-eating behaviors among African American Women seeking Weight Loss Surgery

by
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DEDICATION

I dedicate my dissertation work to my family and many friends. A special feeling of gratitude to my loving parents, Clinton and Lawanda Bolton whose words of encouragement and push for tenacity ring in my ears. My sister, McKenzie has never left my side and is also very special to me.
BIOGRAPHY

Clinton S. Bolton III is a Licensed Professional Counselor and National Certified Counselor. Clinton completed his Bachelor’s Degree in Psychology and Education from the University of Florida in Gainesville, Florida. He continued his education at the University of North Carolina at Chapel Hill where he received his Masters Degree in School Counseling. Clinton has experience working with a diverse array of clients. Specializing in a cognitive-behavioral approach to counseling, Clinton works with adults, children, and couples dealing with a variety of issues and stressors. Moreover, Clinton has worked extensively with the Bariatric Population in pre-operative and post-operative counseling of bariatric surgery patients. He has also done extensive work in conducting pre-surgical evaluations with clients seeking weight loss surgery. Clinton has conducted a vast amount of research studies in counseling, psychotherapy, stress management, and weight loss making him a well-rounded therapist. Clinton believes in a holistic approach to therapy by incorporating the mind, body, and spirit.
ACKNOWLEDGMENTS

I would like to express my gratitude and appreciation to Marc A. Grimmett, my committee chair and doctoral advisor. I would also like to thank my other committee members, Dr. Gayles, Dr. Gerler, and Dr. Nassar-McMillan. I appreciate their willingness to be flexible in their schedule to accommodate the various meetings and presentations needed in order for me to successfully conclude my doctoral experience. I would also like to thank Jason Osborne for his willingness to promptly answer my statistical questions. Finally, I would like to thank my parents, sister, and close friends for their ongoing support throughout the past summer as I prepared this proposal. I look forward to better serving the counselor education community with my current research and my future research endeavors.
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The Relationship Between Depression and Anxiety on Binge-eating Behaviors of African American Women Seeking Weight Loss Surgery

Chapter 1

This chapter offers an overview of the entire research study. The first section begins the overview by offering an introduction to the research variables and the population of interest. The next section will outline the purpose of the study, followed by a section devoted to the research questions and hypotheses. Following these sections is a rationale for conducting this study. The chapter concludes with a brief overview concerning the theoretical underpinnings of this research and overall outline of the dissertation.

Overview

Though binge-eating is not a new phenomenon, more people are struggling with binge-eating behavior than ever before (Johnson and Torgrud, 2001). Moreover, much of the binge-eating population is dealing with other antecedents. Johnson and Torgrud (2001) assert nutrition, body image dissatisfaction, and depression are all variables in binge-eating behavior. Redlin, Miltenberger, Crosby, Wolff, and Stickney (2002) conclude the primary antecedents for binge-eating behavior among obese eaters include being very busy throughout the day, being tired, and feeling irritable and down. Most importantly, however, Lemont et al. (2004) suggest at least thirty percent of patients seeking weight loss surgery struggle with some form of binge-eating disorder. Binge-eating behavior is often linked to the emergence of obesity because of their interconnectedness.
Over the past decade, obesity developed into a topic of mainstream dialogue within American Society. The prevalence of disease in the United States of America is apparent through the declining health of the overall population (CDC, 2006). Obesity can plague any race, gender, age group, or ethnicity within our culture. The United States Center for Disease Control and Prevention (CDC, 2006) suggests obesity is the nation’s leading health problem. Sixty-one percent of all Americans are classified as being overweight (CDC, 2006). Additionally, twenty-seven percent of the overall United States population meets the criteria for obesity.

In May 2012, the CDC convened for their annual *Weight of the Nation* Meeting. During this conference, it was predicted that by 2030 forty-three percent of the overall United States Population will be considered obese. If this projection is accurate, over the next 20 years 35 million more individuals in this country will be classified as overweight. Moreover, obesity is connected with other co-morbid conditions, which continue to afflict individuals throughout this country. Overall, morbid obesity is cited as the most predominant and costly problem in the United States of America (Hutchinson, 2009).

Obesity is also linked to a wide variety of other psychological, medical, and emotional issues currently plaguing the population of the United States of America. For example, individuals classified as obese tend to report lower levels of self-esteem and higher levels of depression and anxiety (Robinson, 2009). Moreover, obesity is the most salient factor in developing Type II Diabetes, which accounts for ninety-five percent of all new
cases of diabetes (American Diabetes Association, 2010). Numerous cognitive, behavioral, and social disturbances are linked to obesity as well (Robinson, 2009).

Within African American communities, obesity rates are even higher than the aforementioned statistics reported. More specifically, obesity rates among African American people are believed to be about twenty to fifty percent higher than the general population. African American women, in particular, are at a higher risk of morbid consequences related to obesity. For example, many African American women suffer greatly from hypertension, diabetes, and certain forms of cancer, more than any other social demographic group (Hargreaves, Schlundt, and Buchowski, 2002). All of these illnesses are directly connected to obesity. In a study performed by Pike, Dohm, Striegel-Moore, Wilfey, and Fairburn (2001), comparing White American women and African American women with binge-eating disorder, African American women with binge-eating disorder: binged more frequently, engaged in less dietary restraint, did not seek treatment as frequently, were less likely to be treated for an eating disorder, and had less concerns with eating, weight, and shape, than did White American women. This research suggests that this population is very susceptible to binge eating behaviors. Moreover, it also speaks to the importance in further exploring binge eating among this population.

Since the obese population is projected to be about fifty-six million by the end of 2012, many argue for interventions to alleviate this future burden (CDC, 2006). Fad diets such as the Atkins Diet®, Weight Watchers®, Slim Fast®, Nutri-System®, etc. have offered
obese individuals a viable option for losing weight. Though these alternatives are widely known and extremely popular to some, others argue they lack long-term consistency (Eddins, 2009). A leading alternative in the obesity movement is weight loss surgery, medically known as bariatric surgery.

Weight loss surgery has been around for the past fifty years, however with recent advances in medicine, the medical procedures are more safe and reliable (Eddins, 2009). Specifically, weight loss surgery is the leading alternative for many who struggle with morbid obesity (Robinson, 2009). Some medical professionals even suggest weight loss surgery offers the best long-term treatment for morbidly obese individuals (Eddins, 2009). Moreover, emerging research shows weight loss surgery may help to “cure” or “alleviate” some co-morbid conditions including: diabetes, high blood pressure, high cholesterol, sleep apnea, and acid reflux (Eddins, 2009). Many other psychological, emotional, and social benefits of weight loss surgery are also cited in the literature, such as increased self-esteem and decreased depression (Eddins, 2009).

Currently, two forms of weight loss surgeries are most common within the United States of America. The American Society for Metabolic and Weight loss surgery identify the Roux-en Y/Gastric Bypass® and the LAP-BAND® as the most common and widely studied weight loss procedures available to the general population (ASMBS, 2012). Though two totally different surgical procedures in method, the ultimate result of both is of weight loss and forced nutritional lifestyle changes. Individuals seeking weight loss surgery tend to have
eating behaviors and emotional disturbances that contribute to their excess weight including: snacking, portion control, late night eating, and unhealthy food choices (Johnson and Torgrud, 2001). Accurately assessing the emotional state, eating patterns, and other weight related behaviors is essential in better assisting clients in making health lifestyle changes before weight loss surgery.

Since weight loss surgery became a prominent alternative for weight loss over the past decade, many health care professionals are developing skills in order to effectively assist these individuals. More specifically, counseling and psychological services are a necessary requirement for most individuals who are seeking weight loss surgery. During the evaluative process, key elements of a patient’s nutritional background, psychological background, and behavior patterns are assessed. Patients seeking weight loss surgery tend to report high rates of depression, anxiety, weight fixation, mood disorders, and eating disorders (American Society for Metabolic and Weight loss surgery [ASMBS], 2011). Binge-eating is one of the eating behaviors directly related to obesity among those seeking weight loss surgeries.

**Purpose of the Study**

The purpose of this study is to understand the relationship that depression and anxiety have on binge-eating behaviors among African American women seeking weight loss surgery. Within the literature, depression and anxiety are noted as factors that contribute to weight gain. Robinson (2009) suggests that individuals who are classified as obese tend to report higher levels of depression and anxiety. Moreover, African American women struggle with obesity at a twenty to fifty percent higher rate than the general population. Additionally,
binge-eating behaviors are higher than ever before (Johnson and Torgrud, 2001) and show some connections of obesity, depression, and anxiety (Redlin, Miltenberger, Crosby, Wolff, and Stickney, 2002). Moreover, the ASMBS (2011) describes depression and anxiety as psychological disturbances that are reported at high rates among individuals seeking weight loss surgery. Additionally, African American women are a population seeking weight loss surgery and little research has been done on this specific population in respect to weight loss surgery and binge-eating behaviors.

**Research Questions**

The central research questions for this study are:

1. What is the relationship between Depression, Anxiety, and Binge-eating Behaviors among African American Women seeking weight loss surgery?

2. To what extent do Depression and Anxiety influence Binge-eating Behaviors in African American Women seeking weight loss surgery?

These questions are specifically derived from the thorough literature review completed before executing the research study.

**Hypotheses**

Given the amount of research connected to binge-eating and obesity, as well as the gaps in the literature, the following hypotheses are grounded in the review of the current research and literature. The null hypothesis is that there is no significant relationship with binge-eating behaviors among African American women seeking weight loss surgery that can be explained by depression and/or anxiety. Thus, the alternative hypothesis is that there
is a significant relationship with binge-eating behaviors among African American Women seeking weight loss surgery that can be explained by Depression and Anxiety.

**Rationale for Study**

This study is important and needed for several reasons. The primary goal of this current study is to bridge the gaps that exist between mental health practice and public health. As noted in the literature, binge-eating behaviors are at very high levels and are connected to many disturbances that are psychological in nature (Johnson and Torgrud, 2001). Moreover, the population of interest, African American women, needs to be studied more because of the health disparities within the population. For example, African American women suffer from high rates of depression, anxiety, obesity, cancer, diabetes, and hypertension (Hargreaves, Schlundy, and Buchowski, 2002).

Many counselors and other mental health providers do not fully understand the role they may have to play in working with individuals who are considered obese. As stated earlier, the standards set by the American Society for Metabolic and Weight loss surgery (2012) require each individual seeking any type of weight loss procedure undergo a mandatory psychological evaluation. Additionally, many of these individuals must also undergo counseling sessions pre-operatively and post-operatively. Furthermore, gaining a more comprehensive understanding of the risk factors associated with binge-eating among African American women may help give counselors greater insight into effectively serving these clients as they prepare for weight loss surgery.
Gaining a better understanding of Depression, Anxiety, and Binge-eating behaviors among African American Women seeking weight loss surgery may also help spur further research within the counseling field in how to offer better services to these individuals before making the step of having weight loss surgery. What’s more, a gap exists in counseling literature related to the relationships between obesity, physical health, and emotional/mental health. Hutchinson (2009) suggests that weight loss surgery alone does not make significant alterations in a patients’ global functioning. Moreover, Robinson (2009) suggests that pre-operative psychological support increases the number of individuals who experience a significant amount of success with weight loss surgery. Findings from this study may also shed more light into the psychological influences on binge-eating behaviors overall.

**Theoretical Underpinnings**

One of the most common behaviors of human beings is the act of eating. Eating is fundamental to the health and wellbeing of humans, and also a habit somewhat difficult to understand. Moreover, comprehending disturbed eating and eating behaviors can be difficult. Poor eating behaviors can be connected to many physiological, emotional, and psychological disturbances (Eddins, 2009). Consequently, obesity is one of the specific areas of concern for our society and has been connected to binge-eating behaviors. This particular research study aims to look at binge-eating behaviors from a psychological and counseling perspective. Moreover, the population of interest, African American women seeking weight loss surgery, is unique and one that has been rarely studied in the counseling field.
In an effort to further understand the influences on eating behaviors, obesity, and emotional disturbances among African American women, a critical analysis of William E. Cross’ Nigrescence Model (1971) and Jessor and Jessor’s Problem-Behavior Theory (1977) was conducted. Though these theories are not specific to eating behaviors, emotional disturbances, or obesity, they both describe the different influences connected to an individual’s behavior and identity in life. More specifically, Cross’ Nigrescence Model (1971) posits that a healthy racial identity is key to the healthy development of an African American person. Moreover, this theory provided a greater insight into the lived experience of an African American woman. Additionally, Jessor and Jessor’s Problem-Behavior (1977) Theory guided by provided a structure for understanding binge-eating behavior as a problem behavior within the culture of the United States of America. Each theory served as a solid foundation for the overall research study.

Outline of Dissertation

This dissertation is divided into five chapters. The first chapter provided a brief introduction to the overall study. Chapter two presents a comprehensive review of the literature. The third chapter describes the research methods including how participants were selected, the forms of data collection, and how data was analyzed. Chapter four presents and highlights the results of the multiple regression analysis. The last chapter discusses the results of the study, the implications for theory development, practice, future research, strengths and limitations of the study, conclusion, lessons learned, as well as the references used in all the chapters of this dissertation.
Chapter 2

Literature Review

The following review of the current literature surrounding the topics of this study will discuss the major themes and variables connected to the research questions. The review of the literature is structured around the two theoretical foundations to this research study. The review begins with a discussion surrounding Jessor & Jessor’s Problem-Behavior Theory (1977) and its connection to binge-eating behaviors. Along with binge-eating behaviors, a general overview of obesity is explored due to the interconnectedness between each. Depression and Anxiety are also examined as noted risk factors potentially leading to the problem-behavior of binge-eating.

Following the discussion surrounding Problem-Behavior, a review of William E. Cross’ Nigrescence Theory (1971) is explored along with its connection to the importance of studying the population of interest, African American women. Within this section of the review, the relatedness of each variable to the population of interest is appraised. More specifically, a discussion around binge-eating behaviors, obesity, depression, and anxiety id reviewed. Concluding the review of literature will be a synthesis of the information gathered showing the connections that were made, along with the gaps in the literature.

Jessor & Jessor’s Problem-Behavior Theory

According to Richard Jessor (2001), problem-behavior is defined as “any behavior that is socially defined as a problem, as a source of concern, or as undesirable by the social
and/or legal norms of conventional society and its institutions of authority”. Though the definition is succinct in nature, the magnitude of problem behavior is extremely vast. Problem-behavior can be seen within a variety of settings among a diverse array of demographics. Moreover, problem-behavior can be looked at differently depending on the lived experience of an individual. Thus, further complicating the definition of problem-behavior.

In order to better comprehend problem-behavior, many researchers have developed models, assumptions, and theories to explain the phenomena. One of the theories most widely used within the arena of understanding problem behavior is Jessor and Jessor’s Problem-Behavior Theory (1977). Problem-Behavior Theory (PBT) was formally introduced to the research community in order to help researchers and practitioners understand the social contexts of behaviors and how to eradicate the emergence of problem-behaviors. The theory was first conceptualized in the early 1960’s and later solidified in 1977 following a research study. Since then, the theory has been widely used and accepted throughout the research community. Problem-behavior theory (1977) has been revised and extended since its original conception. Moreover, the knowledge behind problem-behavior has expanded immensely over the past 30 years.

Problem-behavior theory (1977) is noted as a conceptual framework that is comprehensive and mildly complex. The foundation of the theory is based on the following three systems of variables:

1. The Perceived-Environment System
2. The Personality System

3. The Behavior System

Within each system, Jessor & Jessor (1977) posit that there are variables that serve as instigators for engaging in problem-behavior or as controls against engaging in problem behaviors. The degree to which one has a balance between instigators and controls determines their proneness for problem-behavior within each system. Thus, each system is operationally defined to determine what variables are instigators and which are controls in the development of problem-behavior. The revised theory changes the term instigator to risk factors and controls to protective factors. This change has been noted in much of the literature regarding problem-behavior and psychosocial development. For the purposes of this study, depression and anxiety are noted as risk factors (instigators) to the problem-behavior of binge-eating.

Problem-behavior theory was in development long before the research community received it in 1977. The general framework of the theory was developed in 1960 in order to guide a study of alcohol abuse and other risk-taking behavior within a small community. Based on the data gathered in that study, Jessor & Jessor enhanced the framework to use it for a longitudinal study with high school and college students. The information gathered from this study and the use of the original framework built the foundation to Problem-Behavior Theory (1977) as it is known today. Furthermore, Problem-Behavior Theory has been expanded and redefined over the years (Jessor, 1991). Specifically, concepts such as pro-social behavior, health-compromising behaviors, and health-enhancing behaviors have
been attached to the theory. Moreover, the theory helps practitioners with a primary preventive approach to problem-behavior instead of a secondary or tertiary (reaction-based) approach. Additionally, this theory has been the basis for other research paradigms being used today. Without this particular theory, much of the research we know about problem-behavior may have not been well developed.

Problem-Behavior Theory (1977) is generally based on three guiding assumptions. These assumptions constitute the foundational framework of the overall theory. The first assumption is that each individual is in a perceived-environment system. More specifically, Jessor & Jessor (1977) posit that social controls, models, and support are a functional part of development. Within this assumption, Jessor & Jessor (1977) argue that an individual is prone to engage in problem behavior when there is low parent disapproval and control of problem behavior, high peer approval and modeling of problem behavior, and low peer controls. Within this framework, peer influences and parent influences are the main function.

Secondly, Jessor & Jessor (1977) argue that the personality system of an individual can lead to problem-behavior. Within this system, the values, expectations, beliefs, and attitudes of an individual are explored. Jessor & Jessor (1977) states that low value on academic achievement, high independence, low religiosity, and lower self-esteem all lead to problem behavior. This assumption has been confirmed through many empirical studies.

Finally, Jessor & Jessor (1977) assume that one’s behavior system include both problem behaviors and conventional behaviors. Conventional behaviors are noted as behaviors that are socially approved, expected, and appropriate for individuals. Within this
systemic framework, Jessor & Jessor (1977) conjecture that involvement in any one problem-behavior will increase the likelihood of engaging in other problem behaviors. According to Jessor & Jessor (1977), problem behaviors include alcohol use, problem drinking, cigarette smoking, marijuana and other drug use, delinquency, risky driving, and risky sexual behavior. These can all be viewed as problem-behaviors; however, one could argue that there are more behaviors that could be considered problem behaviors. For example, as noted earlier, poor eating habits, such as overeating and binge-eating could be seen as a problem-behavior given the short-term and long-term impact it can have on an individual.

Unlike developmental theories such as Erikson’s (1950) life-span development theory (Erikson, 1950) or Piaget’s cognitive development theory (Phillips, 1969), the Problem-Behavior Theory (1977) does not specify ages or specific time frames in which individuals transition through any particular stage or level. Unlike Cross’ Nigrescence Theory (1971), this theory is not a stage theory either; however, it is more of a comprehensive conceptual structure that helps explain and organize the development of problem-behaviors.

The systemic structure of Problem-Behavior Theory (1977) is conceptually sound and relevant to healthy development. For example, Brofenbrenner (1977) suggested that individuals are infused within different systemic levels. Problem-Behavior Theory assumes that individuals adopt their beliefs, behaviors, perceptions and values from their systems as noted earlier. Thus, agreeing with the conceptual framework of Brofenbrenner’s Ecological Systems Theory (1977). There is a lot reference to the effects that family values and mores, school culture, community involvement, and peer network in problem-behaviors. The
messages individuals receive regularly from their immediate systems tend to affect how they interpret and process messages, beliefs, and values from outside systems (Brofenbrenner, 1977).

Problem behavior is a phenomenon that will always be relevant in our society. Moreover, problem behavior has expanded and increased over the past 40 years. Much of the work done by counseling professionals is helping clients and their families with problem behaviors. Problem behaviors encompass many issues that counselors assist clients with daily. Understanding the causes and the controls of problem behavior will help counseling professionals assist clients better. According to the National Research Council and Institute of Medicine (2009) about $247 million dollars is spent annually in treating problem behaviors (National Research Council and Institute of Medicine, 2009).

Although it is very difficult to define and measure all problem-behavior, this theory lays a foundation in order for these behaviors to be tested. Moreover, the expansions of the theory offer greater insight into the phenomena and greater understanding of the complex structure of the theory. As mentioned earlier, a specific problem behavior in plaguing our culture currently is that of binge-eating. Binge-eating behaviors are directly linked to obesity. In order to explore this problem, an overview of binge-eating will be discussed. Following the review of binge-eating as a problem-behavior, obesity will be discussed as the potential outcome of engaging in binge-eating behaviors. Depression and Anxiety will be explored as likely risk factors (instigators) in engaging in binge-eating behaviors.
Binge-eating as a Problem-Behavior

Binge-eating is another phenomena difficult to fully comprehend and define in the public health, mental health, and overall healthcare community. Stunkard (1959) first defined binge-eating as the intake of large amounts of food in a short period of time with an associated feeling of loss of control. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), binge-eating disorder is defined as “eating an amount of food that is considered to be significantly larger than the amount that others would eat in two hours while in the context of losing control” (p. 550). Binge-eating disorder is considered a form of an eating disorder; however, binge-eating behaviors are seen frequently in relatively healthy populations. The DSM-IV also outlines warning signs of binge-eating disorder, which include rapid weight gain and obesity, depressed mood, and/or anxious mood. Additionally, binge-eating disorder is connected directly to obesity, depression, and anxiety. Thus, engaging in binge-eating behaviors can lead to these medical consequences. The following table (Table 1.1) outlines the diagnostic criteria of binge-eating disorder according to the DSM-IV (2000). It is important to note, many individuals engage in binge-eating behaviors without meeting the diagnostic criteria for binge-eating disorder.

Contributing factors to binge-eating. Johnson and Torgrud (2001) assert nutrition, body image dissatisfaction, and depression are all variables in binge-eating behavior. Redlin et al. (2002) conclude the primary antecedents for binge-eating behavior among obese eaters include being very busy throughout the day, being tired, and feeling irritable and down. Recent literature suggests many correlates connected to binge-eating. Grissett and Fitzgibbon
(1997) imply that depression, weight, and ideal body image are connected to binge-eating behaviors. Thirty-percent of patients seeking weight loss surgery struggle with some form of binge-eating behavior (Lemont et al., 2004).

Table 1.1: Proposed DSM-IV Criteria for Binge-eating Disorder

<table>
<thead>
<tr>
<th>A. Recurrent episodes of binge-eating, characterized by both of the following:</th>
</tr>
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<tr>
<td>(1) Eating in a discrete period (e.g., within any two hour period), an amount of food that is larger than most would eat in a similar period of time under similar circumstances</td>
</tr>
<tr>
<td>(2) A sense of lack of control over eating during the episode</td>
</tr>
</tbody>
</table>

B. The binge-eating episodes are associated with at least three of the following:

| 1. Eating much more rapidly than normal |
| 2. Eating until feeling uncomfortably full |
| 3. Eating large amounts of food when not feeling physically hungry |
| 4. Eating alone because of being embarrassed by how much one is eating |
| 5. Feeling disgusted with oneself, depressed, or very guilty after overeating |

C. Marked distress regarding binge-eating is present

D. The binge-eating occurs, on average, at least 2 days a week for 6 months

E. The binge-eating is not associated with the regular use of inappropriate compensatory behaviors (e.g., purging, fasting, excessive exercise) and does not occur exclusively during the course of Anorexia Nervosa or Bulimia Nervosa.

Assessing binge-eating behaviors. Overall, eating behaviors among adults have been assessed in a variety of ways. Sjoden, Fellenius, and Lappalainen (1986) posit five methods of dietary assessment, including: dietary history, 24-hr recall, 7-day recall, 7-day record, and food frequency. Self-reporting is also extensively used to assess overall eating behaviors. Maruyama et al. (2008) concluded participants who self report eating until full and eating quickly are associated with being overweight.
More valid and reliable instruments, such as the Power of Food Scale (PFS) are becoming more widely accessible. The PFS is a tool to assess the psychological impact of food. Cappelleri et al. (2009) recently used exploratory and confirmatory factor analyses to investigate the effectiveness of the PFS. Their preliminary conclusions suggest a high correlation between the PFS, obesity, and feeling of being controlled by food. The Dutch Eating Behavior Questionnaire (DEBQ) is another assessment tool used to assess restrained, emotional, and external eating behavior (van Strien, Frijters, Bergers, and Defares, 1986). The DEBQ has high internal consistency and factorial validity. Another widely used formal assessment of eating is the Minnesota Eating Behavior Survey (Klump, McGue, and Iacono, 2000). The MEBS has been used and developed to assess eating attitudes and behaviors. Many forms of assessment have been used to assess binge-eating. Goldfein, Walsh, LaChaussee, and Kissileff (1993) argue for a self-report method of assessment in regard to binge-eating behavior. The self-reporting approach encourages clients to monitor themselves while binge-eating behavior occurs and assess the remote antecedents. Self-reporting is also used often in cognitive–behavioral interventions.

Another commonly used assessment in assessing binge-eating behavior and binge-eating disorder is the Binge-eating Scale (BES). Gormally, Black, Daston, and Rardin developed the Binge-eating Scale in 1982. The assessment is a 16-item questionnaire that assesses the behavioral aspects associated with binge-eating as well as the feelings and emotions associated with binge-eating. The assessment is based on the diagnostic criterion outlined in the DSM-IV for binge-eating disorder. Individuals can score between 0 and 46 on
the scale. Lower scores (those below 17) suggest little to no binge-eating behaviors. Moderate scores (those between 18 and 26) suggest moderate binge-eating behavior. Higher scores (those above 27) suggest severe binge-eating behavior and higher prevalence of binge-eating disorder.

**Obesity as an outcome of Binge-Eating Behaviors**

As noted in the DSM-IV, one of the warning signs of binge-eating behaviors is rapid weight gain and obesity. Obesity is hard to specifically define for many reasons. The most salient reason is simply because the medical community uses different measures to determine ideal weights (Valdez and Williamson, 2002). Until recently, obesity was simply measured by assessing an individual’s raw weight. This was seen as being an inaccurate measure because other variables were not considered. Over the past 20 years obesity is now measured based on an individual’s Body Mass Index (BMI). Specifically, the BMI is measured by taking a person’s weight in kilograms and dividing the number by their height in meters squared (Valdez & Williamson, 2002). According to the National Institute of Health [NIH], 2012), overweight is a BMI of over 27.3. Individuals with a BMI over 30 are considered obese.

Within the medical community, obesity is generally defined as a BMI of greater than 35. This does not mean much to the average person because BMI is a medical term often misunderstood. Many people think of obesity as simply being overweight, however, obesity is a health epidemic causing major problems within the society. According to the ASMBS (2012), over twenty million people have BMI’s over 35. Having a BMI over 35 is a general
requirement for an individual to qualify for weight loss surgery according to the ASMBS (2012). Thus, over twenty million people currently qualify for some form of weight loss surgery.

Obesity is also linked to many health problems and aids in decreasing the quality of life for many individuals. Valdez and Williamson (2002) posit obesity results when body-fat accumulation becomes excessive and threatens an individual’s health. Obesity is now a prevalent and costly problem in the United States of America and according to the CDC (2006) also the nation’s leading health problem.

**Obesity and co-morbidities.** The short-term and long-term health risks of obesity not only lead to a variety of co-morbid conditions, but are also connected to increased mortality (Pi-Sunyer, 2002). For example, according to the American Diabetes Association, 24 million Americans have Type II Diabetes. Type II diabetes is a major co-morbid condition linked to obesity. In addition, fifty-seven million Americans have pre-diabetes and are at risk of developing Type II diabetes. Other co-morbid conditions associated with obesity include high blood pressure, high cholesterol, sleep apnea, acid reflux, and chronic fatigue. Obesity is also linked to the development of certain forms of cancer (Calle, Rodriguez, Walker, and Thun, 2003). According to a study performed by Calle et al. (2003) individuals with a BMI of 40 or more were found to have higher death rates from all cancers combined. Specifically, rates are about fifty-two percent higher for men and sixty-two percent higher for women than the death rates in normal weight men and women. Women tended to show higher rates of
cancer than men, however, the overall conclusion showed a significant increase in the prevalence of cancer among individuals who were considered obese.

Other psychological problems are directly connected with obesity. The World Federation for Mental Health (2010) suggests eating disorders, distorted body image, and low self-esteem are all higher in obese individuals. More specifically, for individuals who are obese and seeking weight loss surgery, higher rates of depression and lower levels of self-esteem are reported when compared to other obese individuals. Markowitz, Friedman, and Arent (2010) conducted a quantitative analysis to study the relationship between obesity and depression. Their research study concluded there is a stronger relationship between obesity and depression among individuals who were seeking weight loss surgery in comparison to individuals who were obese but not seeking weight loss surgery. Scott et al. (2008) found similar findings in their research connecting obesity with other mental health disturbances. This research suggests the obese population seeking weight loss surgery is actually at higher risk of having heightened mental health co-morbidities from obesity.

**Weight loss surgery for obesity.** Weight loss surgery has been around for the past 50 years and with recent advances in medicine, the medical procedures have become more safe and reliable (Eddins, 2009). Specifically, weight loss surgery has become the leading alternative for many individuals who struggle with morbid obesity (Robinson, 2009). Some medical professionals even suggest weight loss surgery offers the best long-term treatment for morbidly obese individuals (Eddins, 2009). Recent research suggests after five years, only two to five percent of obese individuals maintain weight loss through dieting and exercise
alone. More astonishingly, research also suggests less than one percent of obese individuals maintain weight loss through medication such as diet pills. After a five-year follow-up 50 to 70 percent of individuals maintain weight loss through weight loss surgery (Eddins, 2009).

Emerging research shows that weight loss surgery may help to cure or alleviate some co-morbid conditions, including diabetes, high blood pressure, high cholesterol, sleep apnea, and acid reflux (Eddins, 2009). Many weight loss surgery patients experience complete resolution for Type II diabetes (Robinson, 2009). Many psychological benefits come from weight loss surgery as well. Increased self-esteem and decreased levels of depression are connected to losing weight after weight loss surgery. Some research also suggests evidence of reductions in anxiety, depression, and negative perception of body shape at 6-month postoperative follow-up for people who have undergone weight loss surgery (Kincey, Neve, Soulsby, and Taylor 1996).

Currently, two primary weight loss surgeries are most common in the United States of America. The ASMBS (2011) identify the Roux-en Y/Gastric Bypass® and the LAP-BAND® as the main bariatric procedures. Though the Roux-en Y®/Gastric Bypass and LAP-BAND® are two totally different surgical procedures, the ultimate result of both is that of weight loss, nutritional lifestyle changes, and disease prevention/intervention. Individuals seeking weight loss surgery tend to have some eating behaviors and emotional problems that contribute to their excess weight including: snacking, portion control, late night eating, and bad food choices (Johnson and Torgrud, 2001). In order to better assist clients in making lifestyle changes before surgery, accurately assessing their emotional state, eating patterns,
and weight-related behaviors to narrow the focus of support needed to assist with this adjustment is essential.

In addition to these procedures, other weight loss procedures are available for individuals seeking weight loss surgery. The Duodenal Switch and the Gastric Sleeve are other procedures that assist in weight loss. According to the American Gastrointestinal Endoscopic Surgeons (2011), these two procedures are less common because of the long-term and short-term risks associated with them. Additionally, limited amounts of research are connected with these two procedures in comparison to the Roux-en Y®/Gastric Bypass and the LAP-BAND®.

**Depression as a Risk Factor in Binge-Eating Behaviors**

Depression is a major mental health disorder. Depression is associated with disability and poor quality of life for the individual and high costs for society as a whole. In 2000, depression was found to be the fourth most common cause of global disease burden (World Health Organization, 2001). Depression is a disorder characterized by feelings of constant sadness, loss of interest or pleasure in life, guilt feelings, low self esteem, disturbed sleep and appetite, inability to concentrate, lack of energy and suicidal ideation (Ma and Xiao, 2010). Terms that are used synonymously with depression are major depressive disorder, major depression, unipolar depression, unipolar disorder, or clinical depression.

In 1975, Martin Seligmann described depression as the *common cold* of psychology and psychiatry. Today, an estimated one hundred and twenty one million individuals in the
world have some form of depression (World Health Organization, 2001). Moreover, some research suggests at least twenty-percent of the overall world population will have an episode of depression at some time during their lives (Ma & Xiao, 2010). Additionally, the incidence of depressive symptoms increases in all groups of age and in all western cultures (Klerman and Weissman, 1992). According to the World Health Organization (2001) depression is now the leading cause of disability in the world. Also, the World Health Organization predicts that, of all diseases, in 2020 depression will impose the second-largest burden of ill health worldwide. Depression statistics and predictions are similar to the earlier discussion about the increasing rates of obesity within the next ten to twenty years.

**Contributing factors to depression.** Many factors contribute to the development of depression. Many experts believe social, biological, and psychological factors play a role in causing depression (Rubertson, Wickberg, Gustvsson, and Raderstad, 2005). Genetic predisposition, early childhood experiences, a history of a psychiatric disorder, psychosocial factors, and coexisting disease are all noted as contributing factors in the development of depression (Lichenstein, Laska, and Clair, 2002). Twin studies have shown that there is a sixty percent risk of one twin developing recurrent depression if the other has the condition, indicating a biological genetic link (Basu, Chwastiak, and Bruce, 2005). Early childhood and/or inadequate parental care are shown to predispose a person to the development of depression (Rubertson, Wickberg, Gustvsson, and Raderstad, 2005). Additionally, children of women who are depressed are themselves more likely to be depressed (Angelino and Treisman, 2001). Psychosocial factors that appear to be of importance in the development of
depression are poor socio-economic status, being single, perceived level of social support and exposure to stressful life events (McCarty et al., 2009). Stress and depression can form a vicious cycle, which can be broken by social support, support from the partner and by a sense of belonging (Gariepy, Nitka, and Schmitz, 2010).

**Assessing depression.** Many rating scales are used in research or as screening tools to detect depression. The main purpose of these scales is not to diagnose depression but to establish the presence and severity of symptoms of depression. Most of the scales have cut off scores above which a diagnosis of depression is considered likely. One of the most relevant, concise, and psychometrically sound instruments to assess depression is the Beck Depression Inventory (Beck, 2006). The Beck Depression Inventory is commonly used in counseling and is a useful psychometric tool to help assess a client’s depressive state. Green, Scott, Hallendgren, and Davids (2009) used the Beck Depression Inventory to assess the eating behaviors of clients to determine if depressive symptoms were a function of eating problems and found a significant correlation between the two variables.

**Diagnosing depression.** As stated earlier, depression is connected to a specific set of symptoms present over a certain period of time. Many individuals may experience symptoms of depression without meeting the clinical criteria for Major Depressive disorder. This is very similar to the previous discussion regarding binge-eating disorder. Table 1.2 shows the DSM-IV criteria for Major Depressive Disorder.
Table 1.2: DSM-IV Criteria for Major Depressive Disorder

A. Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.

Note: Do not include symptoms that are clearly due to a general medical condition, or mood-incongruent delusions or hallucinations.

(1) Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). Note: In children and adolescents, can be irritable mood.

(2) Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others)

(3) Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. Note: In children, consider failure to make expected weight gains.

(4) Insomnia or hypersomnia nearly every day

(5) Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down)

(6) Fatigue or loss of energy nearly every day

(7) Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)

(8) Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)

(9) Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide

B. The symptoms do not meet criteria for a Mixed Episode.

C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism).

E. The symptoms are not better accounted for by Bereavement, i.e., after the loss of a loved one, the symptoms persist for longer than 2 months or are characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation.

**Depression and obesity.** Johnson and Torgrud (2001) assert that nutrition, body image dissatisfaction, and depression are all variables in binge-eating behavior. Obesity was traditionally viewed as a public health concern more than a mental health concern. Though the physical health implications of obesity are great, the mental health effects of obesity are significant as well. Luppino, et. al. (2010) conducted a systemic review of longitudinal
studies dealing with obesity and depression and found that obese individuals had a fifty-five percent increased risk of developing depression over time. Moreover, Luppino, et. al. (2010) also found that fifty-eight percent of depressed persons were at increased risk of becoming obese which pointed to a bi-directional relationship between obesity and depression.

**Anxiety as a Risk Factor in Binge-Eating Behaviors**

Anxiety is another major mental health disorder classified in the DSM-IV. Anxiety is generally associated with a state of worry, fear, or concern. Different forms of anxiety are clinically classified; similar to different forms of depression. Davison (2008) defines anxiety as a psychological and physiological state characterized by somatic, emotional, behavioral, and cognitive components. Though anxiety in itself is a natural response to a stressor, an overwhelming sense of anxiety could be considered an anxiety disorder. An enhanced amount of stress is linked to higher rates of anxiety. The National Institute of Health (2010) suggests that about twenty-six percent of Americans deal with some form of mood disorder due to anxiety.

Anxiety can be specific to a certain stimuli and situation or it can be a general state of anxiety. When anxiety is overwhelming and in a general state, it is referred to as Generalized Anxiety Disorder. Generalized Anxiety Disorder is classified in the DSM-IV as a mental health disorder in which an individual has an excessive amount of worry surrounding many different areas of life that limits optimal functioning. Symptoms typically include: disturbances in sleep, irritability, muscle tension, difficulty paying attention, fatigue, and restlessness. According to Ballenger et al. (2001), Generalized Anxiety Disorder is the most
common form of disability in the workplace in the United States of America. Evidence from the National Co-Morbidity Survey (2005) suggests that fifty-eight percent of individuals who are considered depressed also report higher rates of anxiety disorders.

**Contributing factors to anxiety.** Many factors contribute to the levels of anxiety a person may experience in their life. The most common contributor to anxiety is stress. According to the United States Center for Disease Control and Prevention (2006), stress is defined as forces from the outside world affecting an individual. Though a succinct definition, the layers of stress can be very complex. Stress can be a neutral, negative, or positive experience; however, the negative experiences of stress are common factors in the development of anxiety. Markowitz, Friedman, and Arent (2010) found that assisting clients in managing stress is shown to have a positive impact on the anxiety level of an individual.

Other factors are shown to contribute to levels of anxiety in individuals. Laugharne, Lillee, and Janca (2010) found that psychological trauma increases the risk of anxiety disorders. Forms of trauma can include major life events or changes such as death, career changes, and other social disturbances. Another important factor contributing to anxiety is depression. Markowitz, Friedman, and Arent (2008) found that depressed individuals tend to make poorer choices and think more negatively, thus leading to higher levels of anxiety. However, less research is devoted to understanding the contributing factors leading to anxiety compared to the vast amount of literature connected to depression.
Diagnosing anxiety. The clinical criteria for diagnosing anxiety are not clear-cut. Part of the reason why this is the case is simply because there are multiple types of anxiety disorders. As with other mental health disorders, individuals can experience various symptoms of anxiety without necessarily meeting the clinical criteria outlined by the DSM-IV. For the nature of looking at anxiety and the general symptoms of anxiety, Table 1.3 shows the DSM-IV criteria for Generalized Anxiety Disorder, which is the most common form of anxiety disorder.

Table 1.3: DSM-IV Criteria for Generalized Anxiety Disorder

A. At least 6 months of "excessive anxiety and worry" about a variety of events and situations. Generally, "excessive" can be interpreted as more than would be expected for a particular situation or event. Most people become anxious over certain things, but the intensity of the anxiety typically corresponds to the situation.
B. There is significant difficulty in controlling the anxiety and worry. If someone has a very difficult struggle to regain control, relax, or cope with the anxiety and worry, then this requirement is met.
C. The presence for most days over the previous six months of 3 or more (only 1 for children) of the following symptoms:
   1. Feeling wound-up, tense, or restless
   2. Easily becoming fatigued or worn-out
   3. Concentration problems
   4. Irritability
   5. Significant tension in muscles
   6. Difficulty with sleep
D. The symptoms are not part of another mental disorder.
E. The symptoms cause "clinically significant distress" or problems functioning in daily life. "Clinically significant" is the part that relies on the perspective of the treatment provider. Some people can have many of the aforementioned symptoms and cope with them well enough to maintain a high level of functioning.
F. The condition is not due to a substance or medical issue
Assessing anxiety. Assessing anxiety has been shown in the literature to be quite complicated. Many of the instruments used to assess anxiety require the test administrator to be trained in the use of the assessment. Moreover, many of these assessment tools are lengthy. The GAD-7 was developed by Spitzer, Kroenke, Williams, and Lowe (2006) to assess Generalized Anxiety Disorder. This psychometric tool is a 7-item self-report measure of symptoms related to anxiety. One of the first instruments developed to assess anxiety is the Hamilton Anxiety Rating Scale. Hamilton (1959) developed this scale in order to assess symptoms of psychic anxiety and somatic anxiety. This instrument contains fourteen items that are rated by the clinician. Each item is scored between 0 and 4. The range of scores can be between 0 and 56, with 56 being the highest reported measure of anxiety.

Very similar to the Hamilton Anxiety Rating Scale is the Beck Anxiety Inventory (BAI). Beck and Steer (1993) developed this instrument in order to allow clinicians a way to assess the general anxiety level of individuals. This measure is a self-report assessment and not a clinician-rated instrument. The Beck Anxiety Inventory assessment consists of twenty-one items that assess how an individual has been feeling over the past week in regard to symptoms of anxiety. These symptoms of anxiety include: numbness and tingling, sweating, fear of the future, and other common symptoms. This instrument is designed for adults between the ages of seventeen years old to eighty years old.

Anxiety and obesity. As stated earlier, a strong connection exists between obesity and mental health disorders. Anxiety is another common mental health disorder shown to have a
A recent meta-analysis performed by Gariepy, Nitka, and Schmitz (2010) found a positive relationship between levels of anxiety and obesity. Additionally, patients who are seeking weight loss surgery tend to report high levels of anxiety according to the American Society for Metabolic and Weight loss surgery (2011). Generalized anxiety disorder and other forms of anxiety are closely related to binge-eating behaviors. According to Antony, Johnson, Carr-Nangle, and Abel (1994), individuals with Binge-eating Disorder show elevated levels of trait anxiety disorders. Moreover, individuals with binge-eating disorder have been shown to have higher rates of anxiety disorders when compared to those who do not binge eat (Mussell et al., 1996).

**William E. Cross’ Nigrescence Theory**

Over the past decade, the demographics of the United States of America have changed exponentially. Projections from the 2000 Census suggest that the racial profile in the United States continues to diversify (Perez & Hischman, 2009). Moreover, with a *salad bowl* of ethnic/racial makeup in the country, racial identity is becoming even more salient within the American society. Though seemingly not important to some, one’s racial identity development is quite important. Charmaraman and Grossman (2010) found that racial identity is extremely important in the lives of adolescents and can differ among different groups. Their research suggests that from an early age, we attach meaning to our racial identity that can be filled with pride and triumph or negativity and shame. Moreover, racial identity development has been connected to one’s overall attitudes toward race (Charmaraman & Grossman, 2010).
Due to the complexity associated with racial identity development, several individuals developed theories and models in order to seek clarity about the identity development process. In 1971 William E. Cross published a theory of African American identity development to better understand the processes by which African Americans go through in accepting their racial identity. Since the original publication of the model, the theory was revised in 1991 (Cross, 1991) and 2001 (Cross and Vandiver, 2001). This theory has been widely used and accepted among researchers studying African American identity development.

The five stages of Cross’ (1971) theory are summarized as follows. PRE-ENCOUNTER stage of Cross’ Nigrescence Theory (1971) is the initial stage in which the individual has adopted many of the beliefs and values of the dominant White culture. The next stage is termed as the ENCOUNTER stage and is marked by the individual having an encounter with racism. The third stage is IMMERSION/EMERSION. This stage focuses on the African-American surrounding themselves with their own racial symbols and rejecting the symbols of whiteness or the majority culture. During this stage individuals redefine themselves and affirm their race. INTERNALIZATION is the fourth stage of African American identity development according to Cross. This stage is characterized by an individual beginning to establish relationships with Whites and other members of oppressed groups. During this stage, individuals are still maintaining their connections with black peers. The final stage of Cross’ theory is INTERNALIZATION-COMMITMENT. It is here that one develops and maintains a positive sense of racial identity. Additionally, this theory has been
adapted and revised since 1971 to make it more relevant and applicable to the current state of our population. In 1991, the theory was revised to reflect four stages instead of five. More importantly, the identities within each stage evolved. For example, during the internalization stage, the final identity was termed multiculturalist (Worrell, Cross, and Vandiver, 2001). Moreover, in 2000, the model was expanded to reflect changes in the multiculturalist identity (i.e., Multiculturalist Racial and Multiculturalist Inclusive) in the revised model.

One of the main assumptions in the Nigrescence model is the notion that the White race is the majority culture (Cross, 1971). Though Whites still make up the majority of the American population, there has been a significant shift that has occurred in the demographics within the U.S. (D’Andrea & Daniels, 2001). Furthermore, when Cross first developed his theory in 1971, there were very few Blacks that were visible, accessible, and held in positive regard (Stein and Berardinille, 2009).

Cross’ (1971) theory of Nigrescence has received a great amount of respect and use since it’s conception. Nigrescence, or the process of becoming Black, has become a useful theoretical base for a vast amount of research both quantitatively and qualitatively. For example, Glass (1995) studied the relationship between racial identity and psychiatric symptoms among the African American population. Glass (1995) used Cross’ Nigrescence model as the theoretical underpinning of his research. Specifically for the field of counseling, studies have been performed that suggest that counselors who understand racial identity development may be more culturally sensitive to clients than practitioners who do not understand healthy racial identity (Pomales, Claiborn, and LaFromboise, 1985). Therefore,
racial identity development is not only useful but also an important knowledge base for practitioners to possess.

Cross’s Nigrescence theory has an overall usefulness in that it has been the stimulus for others to study racial identity development. This theory of racial identity development is being explored in current research regarding integration of identity development models based on the increasing diversity of the United States (Sneed, Schwartz, and Cross, 2006). Furthermore, Cross’s theory has been expanded and redefined over the years (Worrell, Cross, and Vandiver, 2001). Additionally, this model has been the basis for other studies and research theories that are being used today, such as the in-depth analysis of the classic doll study (Cross, 1991). Without this particular theory/model, much of the research we know about identity development may not have been well developed.

Unlike developmental theories such as Erikson’s (1950) life-span development theory (Erikson, 1950) or Piaget’s cognitive development theory (Phillips, 1969), the Nigrescence model (1971) does not specify ages or specific time frames in which individuals transition through each stage. This fact may make it difficult for someone to really understand where an individual is in developing a healthy identity. Overall, Cross’ Nigrescence Theory encourages researchers to gain a better understanding of African American communities in varying contexts. Thus, this research study seeks to understand relationships African American women who are seeking weight loss surgery have with binge-eating, depression, and anxiety. This research not only adds to the discussion around identity development, but also leads to an enhanced sense of cultural competence within the counseling community.
Nigrescence Model and Cultural Competence

One of the most desired traits of a counseling professional is cultural competence. Cultural competence has been described and defined in a myriad of ways throughout the years. For example, Sue (1998) believes that cultural competence is extremely important and can be defined as “the belief that people should not only appreciate and recognize other cultural groups but also be able to work effectively with them” (p.440). Cultural competence can also be defined as “preparation and practices that integrate multi-cultural and culture-specific awareness, knowledge, and skills into counseling interaction” (Arredondo et al., 1996, p. 43). No matter the definition used, the focus is on the importance of cultural competence in counselors.

As noted earlier, the demographics and cultural influences in the U.S. have changed over the past 40 years (D’ Andrea & Daniels, 2001). Projections from the most recent census show that the racial profile of the United States of America continues to diversify (Perez & Hirschman, 2009). With that said, the professional counseling world has seen a paradigm shift. For example, most of the counselor training in the past has been based on acquiring data and tendencies of various groups of people (Brown, 2009). Many counselors and counselor supervisors today were trained based on learning sets of skills based on a certain population or demographic (Brown, 2009). Because the Nigrescence Model is the leading identity developmental model used in counseling for African Americans, many counselors and counselors in training use this theory in order to develop their cultural competence with this population.
Racial identity development is a difficult phenomenon to study and research; however, understanding cultural competence is a theme in the counseling profession. With that said, an importance lies in studying different phenomena within cultures, specifically the African American community. One these areas of interest within our current society is eating behaviors. For the purposes of this dissertation, binge-eating behaviors among African American women seeking weight loss surgery are explored in order to enhance counselors’ cultural competence in working with this population. Additionally, a discussion around depression, anxiety, and weight loss surgery is reviewed in relation to African American women.

**Binge-eating and African American women.** Research is limited on the prevalence of binge-eating among minority populations, including African American women. In a study performed by Pike, Dohm, Striegel-Moore, Wilfey, and Fairburn (2001), comparing White American women and African American women with binge-eating disorder, African American women with binge-eating disorder: binged more frequently, engaged in less dietary restraint, did not seek treatment as frequently, were less likely to be treated for an eating disorder, and had less concerns with eating, weight, and shape, than did White American women.

Some recent studies explored the connections between binge-eating behaviors and African American women in the United States. Jarozs, Dobal, Wilson, and Schram (2007) examined eighty-eight African American women who were obese. Through the use of various quantitative assessments of eating they found African American women reported
significant levels of binge-eating. Moreover, their research suggests the behavior of binge-eating may contribute to the development and/or maintenance of obesity. Another study conducted by Azarbad, Corsica, Hall, and Hood (2010) aimed to compare the severity of binge-eating behavior and binge-eating disorder diagnosis in Hispanic, African American, and White American women presenting for gastric bypass surgery and to examine the impact of depressive symptoms and stress on binge-eating behavior. Results indicated African American women endorsed greater levels of stress than White American women. Thus, suggesting African American women experience greater levels of stress leading to higher binge-eating behaviors. Moreover, other research suggests a strong connection between body image and binge-eating behaviors. Shuttlesworth and Zotter (2011) conducted a study assessing disordered eating in three hundred and one female university students. With the use of multiple quantitative measures of eating behaviors, they found binge-eating behaviors differed between racial populations and the contributing factors differed as well. More specifically, African American women had higher levels of binge-eating behaviors caused by body-image dissatisfaction than White American women. Additionally, ethnic identity played a positive role in the overall body image of African American women.

**Obesity and African-American women.** Research suggests African American communities are plagued by many health problems and disparities (Hargreaves, Schlundt, and Buchowski, 2002). Obesity is one of the health problems very prevalent in African American communities. African American people tend to have higher incidences of obesity than any other non-Hispanic, White American people (Kumanyika, 1993). Moreover, African
American women tend to report higher levels of many health problems. Hargreaves et al. (2002) suggest African-American women are facing a health crisis. Hargreaves et al. (2002) report the rates of hypertension, obesity, diabetes, and some forms of cancer are higher among African-American women.

Obesity-related conditions such as high blood pressure and high cholesterol tend to occur more frequently in African American populations than in White American populations (Kumanyika, 1995). African-American women are two times more likely than White American women to be overweight (Kumanyika, 1997) and more than two-thirds of African American women are overweight (Price, Reed, and Guido, 2000). As a group, African American women are more likely to suffer from mortality related to obesity than White American women. (Klesges, DeBon, and Meyers, 1996).

African American women also tend to report higher rates of mental health problems connected to obesity as well. Obese women, in general, tend to have stronger associations with depression, anxiety, low self-esteem, distorted body image, and overall low confidence in comparison to men who are obese. Within African American communities, women tend to report significantly higher rates of depression related to obesity than any other population. Gavin and Takeuchi (2010) performed a study in order to better understand the racial and ethnic differences in the association between depression and obesity. Their research suggested that African American women who are obese struggle with depression at higher rates than other racial and ethnic groups.
Weight loss surgery and African American women. As stated earlier, obesity affects African American people disproportionally. Specifically, African American people have the highest rate of obesity in the United States according to the United States Department of Health and Human Services (2012). According to Schauer et al. (2000), sixty-nine percent of African American women are living overweight or obese. Moreover, the rates of co-morbidities such as Type II Diabetes, high blood pressure, high cholesterol, and sleep apnea are higher among African American populations.

Fortunately, weight loss surgery is shown to resolve many of these conditions in African American communities. For example, Schauer et al. (2000) report there is an eighty-three to ninety-five percent rate of success in resolving Type II diabetes after having weight loss surgery. Wittgrove and Clark (2000) conducted a study to conclude sixty-nine percent of African American people who had high blood pressure before weight loss surgery reported resolution of the disease after having weight loss surgery. Sixty-four percent of individuals also reported lower rates of cholesterol following weight loss surgery. Similarly, a study conducted by Buchwald et al. (2004) concluded eighty-four percent of African Americans were free of sleep apnea following weight loss surgery.

Depression and African American women. Depression is twice as likely to affect women than men and is most likely to occur in the childbearing years from 15 to 44 (Saunders, 2006). Worldwide it is the leading cause of disease-related disability in women (Angelino and Treisman, 2001). The gender differences emerge at puberty (Angelino & Treisman, 2001). A number of theories have been put forward as to why there is a gender difference
that include: women approaching problems in a more redundant way; increased numbers of women working has led to a redefining of women’s role; more women are single parents and have to deal with issues of poverty; and the demands of multiple roles (Angelo & Treisman, 2001).

**Anxiety and African American women.** In general, women tend to report higher levels of anxiety than men. Johnson, Spitzer, and Williams (2001) found that anxiety disorders were more prevalent in female primary care patients who reported markedly poorer functioning and higher levels of psychological stress and health problems. Bulik, Sullivan, and Kendler (2002) found that obese women with binge-eating reported a higher lifetime prevalence of anxiety disorders and phobias/trait anxiety. Hargreaves, Schlundt, and Buchowski (2002) conducted a focus group with African American women and found that higher levels of stress played significant roles in the overall functioning of their lives. Participant statements suggested that stress and anxiety played a significant role in their eating behaviors and happiness level. Moreover, the roles women tend to play in society (i.e. being a mother, wife, worker, etc.) can also play a role in their overall anxiety level.

**Synthesis of Major Themes Related to Research Study**

The comprehensive literature shows a few emergent themes. The first theme to recognize is the interconnectedness between the variables of binge-eating, depression, and anxiety. The research surrounding each shows some connections. For example, Johnson and Torgrud (2001) assert that depression and anxiety are variables connected to binge-eating behavior. Grissett and Fitzgibbon also imply that depression and anxiety are connected to
binge-eating behaviors. Though much of the literature confirms the interconnectedness of depression and anxiety with binge-eating behaviors, other variables are also noted within the literature. Body-image dissatisfaction, nutrition, weight, and self-control are all noted as contributing factors to binge-eating as well (Johnson and Torgrud, 2001; Pike, Dohm, Striegel-Moore, Wilfey, and Fairburn, 2001; Grissett and Fitzgibbon, 1997). These variables could even play a role in the cause of depression and/or anxiety. For example, an individual with a lower body image may report higher levels of depression and/or anxiety. These connections are important to note and discuss upon the completion of the study.

The connection between depression and anxiety with rates of obesity is significantly found within the research as well. Luppino, et. al. (2010) found that fifty-eight percent of the people in their longitudinal study who were depressed were at risk of becoming obese. Moreover, Gariepy, Nitka, and Schmitz (2010) found a positive relationship between levels of anxiety and obesity. Because obesity is a warning sign for binge-eating behavior, the connections made with depression and anxiety are also important to discuss as well. Overall, the majority of the research regarding binge-eating behaviors, specifically in the bariatric community, comes from practitioners outside of the mental health arena.

A second theme emerging from the literature review is a lack of understanding regarding the role of mental health practitioners with individuals seeking weight loss surgery. This study aims to help mental health practitioners gain a better understanding of the role of counseling in the supportive services offered to individuals seeking weight loss surgery. A previous report of preoperative patients at Montefiore Medical Center of the Albert Einstein
College of Medicine, has documented an unusually high rate of current preoperative psychiatric disorders. Fifty percent of the individuals seeking weight loss surgery through this hospital already had a diagnosis of some mental health disorder; twenty-three percent of individuals assessed were on some form of psychotropic medication; twenty-two percent reported a history of sexual abuse; and seventeen percent of clients reported a history of physical abuse (Latner, Wetzler, Goodman, and Glinski, 2004).

Another theme shown through the review of the literature is the gaps in research surrounding African American women. African American women are shown to have very high rates of depression, anxiety, obesity, and other mental and/or physical disorders, yet the research surrounding this population is either underdeveloped or not being put into action to help this population. The literature review has also helped to guide the research design, research hypotheses, and the research questions. Much of the literature points to the use of quantitative measures to initially understand the extent to which depression and anxiety have an impact on binge-eating behaviors among African American women seeking weight loss surgery. This has helped to guide the research design into using a multiple regression analysis to interpret the relationships between the variables.

In an effort to further understand the influences on eating behaviors, obesity, and emotional disturbances among African American women, a critical analysis of William E. Cross’ Nigrescence Model (1971) and Jessor and Jessor’s Problem-Behavior Theory (1977) was conducted as well. These theories helped serve as the basis in guiding the literature review. More specifically, Cross’ Nigrescence Model (1971) posits that a healthy racial
identity is key to the healthy development of an African American person. Moreover, this theory provided a greater insight into the lived experience of an African American woman. This theory helped guide the literature review in understanding African American women and their connection with binge eating, depression, anxiety, obesity, and weight loss surgery. Additionally, Jessor and Jessor’s Problem-Behavior (1977) Theory guided by provided a structure for understanding binge-eating behavior as a problem behavior within the framework of this study. In viewing binge-eating behavior as a problem-behavior, this allowed for depression and anxiety to be viewed as risk factors for binge eating behaviors. Moreover, obesity was shown to be one of the outcomes of binge eating behaviors based on the literature. Each theory served as a solid foundation for the overall research study.

The current study aims to understand the relationship between depression, anxiety, and binge-eating behaviors, among African American women seeking weight loss surgery. This research will ultimately serve as a foundation for future research surrounding weight loss surgery and other populations of interest. The ultimate goal of this study is to add to the research publications in the professional counseling and counselor education regarding binge-eating, African American women, and weight loss surgery since they are not topics widely cited within current counseling literature.
Chapter 3

Research Methodology

The purposes of the current study was to investigate the relationships between depression, anxiety, and binge eating among African American women seeking weight loss surgery along with seeing the impact both depression and anxiety had on binge eating behaviors with this population. Three measurement scales were used in total to assess each one of the variables. This section outlines the methods used in conducting this research study. First, an overview regarding the research questions and hypotheses is given. Following this brief discussion, a detailed section is devoted to participant selection and screening. Subsequently, an overview of the measures that and the variables in the research study are discussed. Finally, the overall procedure of data collection and data analysis is provided.

Hypotheses and Research Questions

The null hypothesis was that there is no significant relationship with binge-eating behaviors among African American women seeking weight loss surgery that can be explained by depression and/or anxiety. Thus, the alternative hypothesis was that there is a significant relationship with binge-eating behaviors among African American Women seeking weight loss surgery that can be explained by Depression and Anxiety.

This research study was based on two primary research questions. The following research questions were specified for the current study:

What is the relationship between Depression, Anxiety, and Binge-eating

Behaviors among African American Women seeking weight loss surgery?
To what extent do Depression and Anxiety influence Binge-eating Behaviors in African American Women seeking weight loss surgery?

Participants

The population of interest in this study was African American women seeking weight loss surgery. Because this population is very specific and overall limited in scope, a convenience sample was used. Convenience sampling is a type of non-probability sampling that does not involve random sampling and involves the selection of a group of respondents who are simply accessible to the researcher (Black, 1999). A criticism towards convenience sampling is that it can be a source of sampling bias and may yield an unrepresentative sample (Gay and Airasian, 2003). Though this is true for most studies, this particular study is different. The sample used in this study had to complete the assessment tools as part of their preparation for weight loss surgery. Moreover, the only main requirement was that each participant was an African American women seeking weight loss surgery. Because this population is so specific, the sample was representative of the population of interest.

Participants recruited for this study were 147 African American women seeking weight loss surgery between the ages of eighteen and sixty years old. Each participant had already gone through the process of completing the necessary mental clearance in order to qualify for weight loss surgery. As part of their mental health clearance process, the participants completed the Beck Depression Inventory II, Beck Anxiety Inventory, and the Binge-eating Scale. Thus, each participant also completed the relevant assessments.
connected to this research study. Participants were recruited from a total of five prominent weight loss surgery clinics in a moderately sized metropolitan area in the United States. Though participants were recruited from different weight loss surgery clinics, all passed through the same mental health counseling office to receive psychological support and clearance in preparation for weight loss surgery. It is important to note that this particular office receives the majority of referrals for individuals seeking weight loss surgery in this particular geographic region. Thus, each participant experienced the same conditions during their completion of their various assessments.

Each participant also completed an informed consent during their intake process with the understanding that some of the information they provide will be used for research purposes in the future to help the counseling community offer better services in the future. Moreover, demographic data was recorded and used as part of the results. The demographics reported included:

1. Age
2. Weight/BMI
3. Education Status (No High School, High School, College, Professional Degree)
4. Relationship Status (Single, Divorced, Married, Partnered)

**Sample Size.** According to Tabachnik and Fidell (1983) a suggested formula to meet sample size requirements for multiple regression is:

\[ N > 50 + 8(m) \]

\[ N = \frac{Sample \ Size}{Participants} \]
For the purposes of this study, there were two independent variables. On the basis of this formula, the following equation represents the number of participants needed to have a sufficient sample size within this multiple regression model:

\[ 147 > 50 + 8 (2) = 66 \]

The sample size for this study is 147 participants and was far above the minimum required to complete a multiple regression analysis. It is important to note that this formula is one of the strictest in relation to sample size in multiple regression. Howell (2002) suggests that an adequate sample size for multiple regression is: \( N > p + 40 \), with \( N \) referring to the sample size and \( p \) referring to the number of predictive variables.

**Variables and Measures**

This study involves an exploration of the relationships between three variables, which are: depression, anxiety, and binge eating behaviors. In order to assess depression, participants completed the Beck Depression Inventory II (Beck, 2006). Measures of anxiety were assessed through the use of the Beck Anxiety Indicator (Beck and Steer, 2003). Finally, the Binge Eating Scale (Gormally, Black, Daston, & Rardin, 1982?) was used to assess binge-eating behaviors. Each variable was discussed in depth in Chapter 2 and each assessment will be discussed in this chapter.

Three measures were used overall to help answer the guiding research questions. In order to assess depression, participants completed the Beck Depression Inventory II (Beck, 2006). Measures of anxiety were assessed through the use of the Beck Anxiety Indicator
(Beck and Steer, 2003). Finally, the Binge Eating Scale (Gormally, Black, Daston, and Rardin, 1982) was used to assess binge-eating behaviors. These three measures are described in the following subsection. A short overview surrounding the limitations to self-report measures is also discussed.

**Beck Depression Inventory II**

The Beck Depression Inventory II was developed in 1996 as a revision to the first two versions of the instrument (BDI and BDI-A). This instrument is one of the most widely used tools measuring the depth of depression among adults (Beck, 2006). This tool is a twenty-one item multiple-choice assessment where individuals self-report their answers in reference to the past two weeks. The cutoffs for each tier of depression are as follows:

- 0–13: minimal depression;
- 14–19: mild depression;
- 20–28: moderate depression;
- 29–63: severe depression.

In short, higher total scores indicate more severe depressive symptoms. This assessment is designed for individuals older than the age of thirteen. In this particular study, all participants were well over this minimum age. The tool is psychometrically sound and has shown to have high test-retest reliability, construct validity, factorial validity, and internal consistency (Dozois et. al, 1998). According to Beck et. al (1996), the test showed to have a one-week test–retest reliability ($Pearson r =0.93$), suggesting that it was not overly sensitive to normal daily variations in mood. Additionally the internal consistency of the test was $\alpha=0.91$ (Beck
et. al., 1996). Some research suggests; however, that the tool does lack some content validity in that it only covers six out of the nine DSM-IV criteria for Major Depressive Disorder (Dozois et. al, 1998). This measure served as one of the independent variables within the research design.

**Beck Anxiety Inventory**

The Beck Anxiety Inventory is another psychometrically sound instrument that measures an individual’s level of anxiety. Beck and Steer (1993) developed this instrument in order to allow clinicians a way to assess the general anxiety level of individuals. The assessment is made up on twenty-one items that assess how an individual has been feeling over the past week in regard to symptoms of anxiety. These symptoms of anxiety include: numbness and tingling, sweating, fear of the future, and other common symptoms. This instrument is designed for adults between the ages of seventeen years old to eighty years old. For each item of the assessment, there are four possible answer choices:

1. Not at all (0 Points)
2. Mildly (1 Point)
3. Moderately (2 Points)
4. Severely (3 Points)

The score range for this instrument is from 0 – 63 points. The score categories are divided in four groups:

- 0-7: minimal level of anxiety
The Beck Anxiety Inventory is also considered to be psychometrically sound. According to Beck, Epstein, Brown, and Steer (1988), the internal consistency of the instrument ranges from .92 to .94 (Cronbach’s alpha) and the test-retest reliability is \( r = .75 \) (Pearson \( r \)). The concurrent validity \( (r = .51) \) was measured with the use of the Hamilton Anxiety Rating Scale and was .51. This instrument served as another independent variable in the research design.

**Binge-Eating Scale**

The Binge-eating Scale was developed by Gormally, Black, Daston, and Rardin in 1982. The BES is a sixteen-item questionnaire that describes the behavioral aspects and the cognitive/emotive correlates that are associated with binge-eating. The scale is representative of the diagnostic criteria and characteristics of binge-eating disorder according to the DSM-IV. The binge-eating scale is shown to categorize individuals into categories from no binge-eating behavior, moderate binge-eating behavior, and severe binge-eating behavior. The range is as follows:

- Non-binging; less than 17
- Moderate binging; 18-26
- Severe binging; 27 and greater

Thus, higher scores on the BES indicate more binge-eating and lower scores on the BES indicate less binge-eating. Gormally et al. (1982) found the internal validity and internal
consistency of the BES to be strong after comparing the BES scores and self reports of binge-eating severity of multiple samples of women who were seeking behavioral treatment for obesity. Specifically, Gormally et al. (1982) found a moderately high internal consistency of the instrument at .85 (Cronbach’s Alpha). Timmerman (1999) found the internal and concurrent validity to be statistically significant ($r = .39$ and $r = .40$) when comparing scores on the BES with 28-day food records. Additionally, Gormally et al. (1982) compared BES scores with self-report measures of binge-eating severity and found a significant correlation. Thus, supporting the Binge-Eating Scale can discriminate between different levels of binge-eating severity. This assessment tool was used as the dependent variable within the research design to assess the severity of binge-eating behaviors among the African American women seeking weight loss surgery in this study.

**Data Collection**

It is important to note that the data collected and analyzed in this study were secondary data. Though the researcher was involved in the data collection process, the nature of the study is closer aligned to secondary data analysis in that the original purpose of the participants completing the assessment was part of their evaluation in preparation for weight loss surgery. The use of secondary data gives the researcher access to a wide number of participants in the population of interest. One of the main limitations of secondary data is that sometimes the data collected may not be fully representative of the research questions proposed. In this particular study; however, this is not a limitation because each research question can be answered through the data that has been collected.
Participants completed their assessments in one testing session; however, data were collected for two years (2010-2012). This study was completed by first obtaining the mental health assessment records of the African Women who had underwent psychological clearance procedures for weight loss surgery within the past two years at a counseling practice in a moderately sized metropolitan area. As mentioned earlier, though each participant’s assessments were completed at one counseling practice, they were recruited from five local weight loss surgery clinics.

**Data Analysis**

The overall purpose of quantitative research is to test hypotheses, look at cause and effect, understand relationships, and/or make predictions (Johnson and Christensen, 2008). Because the total intention of this study is to understand statistical relationships among variables, a quantitative approach is posited. Moreover, the results of this study are to make possible predictions to a broader population in order to enhance the quality of services within the field of counseling which is a characteristic of quantitative methods. The research design of this study was a non-experimental survey design that used correlation and multiple regression analyses to measure the relationships of the predictive variables (Depression and Anxiety) and the outcome variable of binge-eating behaviors among African American women seeking weight loss surgery.

A survey design is one in which information is collected through the completion of questionnaires by respondents representative of the population or the interviewer (Atonus, 2003). Information gathered from surveys helps enable inferences regarding the nature of
correlations between variables. In this study the three psychometrically sound assessments measuring depression, binge eating behaviors, and anxiety serve as the questionnaires for this survey design.

Correlation and multiple regression analyses can be very useful in helping practitioners better understand relationships between different variables. Multiple regression is based on correlation; however, each analytical method is used to explore different constructs. The objective of a correlation analysis is to determine if there is a relationship between two or more variables (Creswell, 2002). Since one of the research questions aims to look at relationships among variables, it is important to understand the nature of correlation. The other research question seeks to understand the impact depression and anxiety has on binge eating behaviors. This research question can be answered through the use of multiple regression.

The data used to answer the research questions were gathered through the completion of various psychometric tools from the chosen sample. Each assessment tool was a self-report of the construct being measured.

**Correlation**

Correlation was one of the statistical approaches used to analyze the data. Correlation explores the relationship between two or more variables. More specifically, the change in one variable is associated with change in another variable (Creswell, 2002). The correlation between variables can be either positive or negative (Pallant, 2001). The strength of the
relationship between two variables can be strong, medium, or weak depending on the correlation value.

Values for correlation can be between -1 and +1. The statistic typically reported as correlation is the Pearson r. A correlation gets stronger as the Pearson r gets closer to +1 or -1. Alternatively, a correlation gets weaker as the Pearson r gets closer to 0 (Creswell, 2002). Correlation was used in this study to answer the first research question relating to the overall relationship between all three variables of depression, anxiety, and binge eating.

**Multiple Regression**

Multiple regression was one of the methods used to analyze the data, as it is based on correlation. Multiple regression explores the relationship between one dependent variable and two or more independent variables (Creswell, 2002; Pallant, 2001). More specifically, multiple regression is concerned with the extent to which two or more predictors or independent variables are able to predict the dependent variable (Pallant, 2001). In order to determine which predictive variables in this study had a significant relationship to the outcome variable, a simultaneous multiple regression was used. This method of regression is typically used when the researcher has no logical or theoretical structure for the data being analyzed. Moreover, this form of regression analysis is used to explore and maximize prediction (Pedhazur, 1997).

In the analysis for this study, depression and anxiety are specified as predictors, whereas binge-eating behavior is specified as the dependent variable or outcome variable. Although references are made to prediction, no assumptions about causal relationships
between the variables are made. This study does not involve active control or manipulation of any of the variables by the researcher, which would lead to causal inferences. Rather, the study involves the observation of pre-existing characteristics, as well as the nature of the relationships between these, thereby leading to inferences about correlation (Black, 1999). On this basis, multiple regression analysis examined the strength with which each of the independent variables influences the dependent variable (Foster, Barkus, & Yavorsky, 2006). In addition, the relationship between the two independent variables was also examined. As a result, interpretation of the results included an observation of the relationships between all three variables.

The primary multiple regression model shows the relationship between the independent variables and the dependent variable. Semi-partial correlations were also analyzed to see the unique relationship between each independent variable with the dependent variable. Additionally, the squared semi-partial correlations were analyzed to see the unique variance shared between each independent variable with the dependent variable. These analyses will helped answer the guiding research questions and help prove or disprove the hypotheses.

One limitation; however, associated with any analysis using multiple regression is that causation cannot be assumed. More specifically, just because two variables are highly correlated or show significance in a regression equation, does not mean that one variable caused a change in another variable. Simply put, because causation cannot be made through a multiple regression analysis, the only real conclusions to explore will be based on the
relationships between variables. Though causation cannot be inferred through regression analyses, data in this study will be analyzed to show unique relationships between the independent variables and the dependent variable, which will help further the understanding of the relationships among the variables.

**Assumptions of Multiple Regression**

Initially, the data were cleaned in order to be sure accurate data analysis. The skew and kurtosis of each variable was viewed to ensure data are clean and does not need to be transformed. Moreover, the data were reviewed for any potential outliers. After cleaning data and performing various statistical tests to ensure normality of the independent variables, analysis of the data began. The data were analyzed through the use of a multiple regression model.

The following assumptions must be met before data analysis can be concluded. First, a Komlorgov-Smirnov Test (K-S Test) was conducted in order to conclude that the data is normally distributed. The necessary assumptions of independent observations of data and error-free data collection were met by viewing the Durbin-Watson statistic. The assumption of a linear relationship and homeoscedasticity was met through plotting the standardized residuals in comparison to the standardized predicted scores. In this model, the scores from the Beck Depression Inventory II and the Beck Anxiety Inventory served as the independent variables. The scores from the Binge-eating Scale served as the dependent variable.

Each assessment mentioned earlier was reviewed and organized for analysis. For each assessment tool, the raw scores were recorded and placed into the statistical program, *SPSS,*
for data analysis. The relevant demographic data was also reviewed and organized for analysis. This information was recorded and placed into the same statistical program. Chapter 4 outlines the results found from the analysis.
Chapter 4

Results

The results of the current study are presented in the following chapter. This chapter begins with an in depth description of the sample population used in the study. Following an overview of the sample, another brief overview will be given on the dependent and independent variables involved in the study. The remainder of this chapter will be devoted to the multiple regression analysis and the results.

Sample Description

The sample in this study consisted of 147 participants. All participants were African American females who were preparing for weight loss surgery. Each participant varied in age, relationship status, body mass index, and education status. The following sections will give you information about the demographics of the sample.

Age of Sample

The age of the sample ranged from 18 to 60 years old. The average age of the sample was approximately 38 years old ($M=38.37$) with a standard deviation of approximately 11 years ($s=11.193$). Age and BMI demographics are shown in Table 4.1.

Body Mass Index of Sample

The Body Mass Index of the sample ranged from 33 to 65. The average BMI of the sample was approximately 47 ($M=47.01$) with a standard deviation of approximately 8 ($s=7.776$). As mentioned in Chapter 2, the BMI typically needed to qualify for weight loss surgery is typically 35.
Table 4.1: Age and BMI of Sample

<table>
<thead>
<tr>
<th>Participant Demographics</th>
<th>Age</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average (M)</td>
<td>38.37</td>
<td>47.01</td>
</tr>
<tr>
<td>Standard Deviation (s)</td>
<td>11.193</td>
<td>7.776</td>
</tr>
</tbody>
</table>

**Relationship Status of Sample**

The relationship status of the sample varied. Fifty-nine of the participants had a relationship status of single (40%). Twenty-three of the participants reported being divorced or separated (16%). Fifty-five of the participants reported being married (37%). Ten of the participants reported having a partner (7%). This information is displayed in Figure 4.1.

**Education Status of Sample**

The education status of the sample was diverse. Fifty of the participants reported completing high school only (34%). Seventy-one of the participants had completed some
form of college (48%). Twenty-six of the participants reported completing an advanced or professional degree (18%). This information is displayed in Figure 4.2.

**Figure 4.1: Relationship Status of Sample**

**Figure 4.2: Education Status of Sample**
Variables of Interest

The variables involved in the study were depression, anxiety, and binge eating behaviors. Binge eating behaviors was specified as the dependent variable. Depression and anxiety were the independent variables for the multiple regression analysis. Moreover, within this regression analysis, the observation of the relationships between the independent variables or predictors and the dependent variable is allowed. Additionally, the correlation between the two predictors can be observed as well. The correlation between all three variables can be observed through multiple regression analysis.

The variables described were measured through the use of three psychometrically sound tools. In order to assess depression, participants completed the Beck Depression Inventory II (Beck, 2006). Measures of anxiety were assessed through the use of the Beck Anxiety Indicator (Beck and Steer, 2003). Finally, the Binge Eating Scale (Gormally, Black, Daston, and Rardin, 1982) was used to assess binge-eating behaviors.

Assumptions of Multiple Regression

Before conducting a multiple regression analysis, certain assumptions must be met to ensure accurate data analysis. First, a Komlorgov-Smirnov Test (K-S Test) was conducted in order to conclude that the data was normally distributed. The necessary assumptions of independent observations of data and error-free data collection were met by viewing the Durbin-Watson statistic. The assumption of a linear relationship and homeoscedasticity was met through plotting the standardized residuals in comparison to the standardized predicted scores. Additionally, the independent variables were analyzed to be sure they were not
collinear. Finally, a brief discussion regarding outliers will be mentioned as well. Each of these assumptions is further discussed in this section.

**Assumption of Normal Distribution**

In order to meet the assumption that the data were normally distributed; a Komlorgov-Smirnov Test (K-S Test) was conducted. The K-S Test indicated that $p > .05$ which confirms that the data were normally distributed. In this test, the null hypothesis states that the data were normally distributed. The alternative hypothesis was that the data were not normally distributed. Because the significance of this test is great that .05, the null hypothesis that the data were normally distributed can be accepted.

**Assumption of Error-Free Data and Independence of Observations**

As with all data collected and gathered from human beings, there is always a chance of error. In order to be sure that errors associated with one observation are not correlated with errors associated with another observation, a Durbin-Watson Test was performed. The results of this analysis confirm a high confidence in the independence of observations. Table 4.2 shows the results of the analysis. The closer the Durbin-Watson result is to 2, the more confidence that can be put in assuming independence of observations.

**Assumption of Linear Relationship and Homeoscedasticity**

To meet the assumptions of normality, linearity, and homeoscedasticity, a residual scatter plot was run for the dependent variable of Binge Eating. Residuals refer to “the differences between the obtained and the predicted dependent variable scores” (Pallant, 2001, p.137). The Normal Probability Plot of the regression standardized residuals in Figure
4.3 depicts a roughly diagonal straight line from bottom left to top right. According to Pallant (2001), this serves as an indication that no major deviation from normality has occurred and a multiple regression analysis can be performed.

**Table 4.2: Durbin-Watson Test**

<table>
<thead>
<tr>
<th>Model</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.065</td>
<td>5.044</td>
<td>2</td>
<td>144</td>
<td>.008</td>
<td>1.818</td>
</tr>
</tbody>
</table>

b. Dependent Variable: BES

**Figure 4.3: Normal Probability Plot of Binge Eating**
Collinearity

Collinearity is defined by instances in which independent variables correlate highly with one another (Howell, 2002). The main reason for avoiding collinearity between independent variables is to ensure that each variable measures a distinct construct that justifies the inclusion of that variable in the analysis. As shown in Table 4.3, the correlation between Depression and Anxiety is .099. According to Pallant (2001), correlation values of .7 or higher between the independent variables denote a correlation that is too high. In these cases, the independent variables are considered collinear and one must be removed from the analysis. None of the independent variables had to be removed for data analysis in the study, however, because the correlation is very low. Thus, both independent variables were retained in the study.

Table 4.3 Test of Collinearity

<table>
<thead>
<tr>
<th>Pearson Correlation (r)</th>
<th>BDI (Depression)</th>
<th>BAI (Anxiety)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI (Depression)</td>
<td>1.000</td>
<td>.099</td>
</tr>
<tr>
<td>BAI (Anxiety)</td>
<td>.099</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Outliers

Outliers refer to extreme values that are either far above or far below the majority of other cases and have an overall effect on the interpretation of the data (Pallant, 2001). For the
dependent variable and independent variables, an outlier identification analysis was run through SPSS to determine if there were any outliers outside of 3 standard deviations from the mean. According to the analysis there were no extreme values or outliers among all three variables. After viewing the boxplots of each variable, SPSS did not report any outliers.

Validity

Validity is defined as the extent to which logical conclusions can be drawn regarding the variables involved in a study (Trochim, 2006). Logical conclusions refer to those that best represent the closest truth, or are most accurate, by reducing the potential error when drawing conclusions. For the purposes of this study, conclusion and external validity were considered because of their relevance to correlation and regression study designs.

Conclusion Validity

Trochim (2006) refers to conclusion validity as the certainty with which one can conclude or infer that there is a relationship between variables of interest in a study. Potential threats to conclusion validity include the use of an unsuitable research design, not meeting the assumptions of the method used to analyze the data, or the use of insufficient statistical power to make inferences.

The threat to conclusion validity related to research design was addressed in this study. The research questions consider relationships between and among variables, therefore a multiple regression study was selected using two predictors and one dependent variable. Moreover, all of the assumptions for multiple regression were met before data analysis occurred and justified the research design. Lastly, a significance level of $p < .05$ was used to
ensure that there is sufficient statistical power to conclude whether there is a relationship between depression, anxiety, and binge eating behaviors. Additionally, each measure used for the variables in the study showed high reliability coefficients and validity. The specific psychometric properties of each instrument were presented in Chapter 3. Moreover, the sample size of 147 participants is sufficient enough to enhance conclusion validity based on the discussion in Chapter 3 surrounding the number of participants needed to enhance validity of a multiple regression research design.

**External Validity**

According to Trochim (2006), external validity is the extent to which the results obtained by a researcher can be generalized to other contexts, such as people, times, and places. This study has considerably high external validity in that the population of interest was very specific and each participant in the sample fit the specific criteria (i.e., African American females seeking weight loss surgery). Each participant had to complete the Beck Depression Inventory II, Beck Anxiety Indicator, and the Binge Eating Scale as part of their pre-operative steps in seeking weight loss surgery. This is evident of each individual who has to prepare for weight loss surgery, thus making it applicable to others in the same population. Certain conditions and requirements must be met in order to be a candidate for weight loss surgery. The results from the study, therefore, could be applicable to others in the same population. Moreover, the sample was large enough ($N=147$) to improve generalizability.
Multiple Regression Analysis Results

Multiple regression explores the relationship between one dependent variable and two or more independent variables (Creswell, 2002; Pallant, 2005). More specifically, multiple regression is concerned with the extent to which two or more predictors or independent variables are able to predict the dependent variable (Pallant, 2001). In order to determine which predictive variables in this study had a significant relationship to the outcome variable, a simultaneous multiple regression was used. Moreover, this form of regression analysis is used to explore and maximize prediction (Pedhazur, 1997).

A multiple regression analysis was run to determine the relationships between the dependent and independent variables. The assumptions to perform a multiple regression were met and presented in previous sections. The overall multiple regression analysis included all 147 participants. The scores of the Beck Depression Inventory II and Beck Anxiety Indicator were used as the independent measures and the score on the Binge Eating Scale was used as the dependent measure. The average score on The Beck Depression Inventory was $M=8.21$ with a range between 0 and 38. The average score on the Beck Anxiety Indicator was $M=.836$ with a range between 0 and 36. Finally, the average score on the Binge Eating Scale was $M=12.6$ with a range between 1 and 45. This is represented in Table 4.4.
Table 4.4: Average Scores of Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Average (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression (Beck Depression Inventory)</td>
<td>8.21</td>
</tr>
<tr>
<td>Anxiety (Beck Anxiety Inventory)</td>
<td>.836</td>
</tr>
<tr>
<td>Binge Eating (Binge Eating Scale)</td>
<td>12.6</td>
</tr>
</tbody>
</table>

Correlation was used in this study to answer the first research question relating to the overall relationship between all three variables of depression, anxiety, and binge eating. Correlation explores the relationship between two or more variables. More specifically, the change in one variable is associated with change in another variable (Creswell, 2002). The correlation between variables can be either positive or negative (Pallant, 2001). The strength of the relationship between two variables can be strong, medium, or weak depending on the correlation value. Values for correlation can be between -1 and +1. The statistic typically reported as correlation is the Pearson r. A correlation gets stronger as the Pearson r gets closer to +1 or -1. Alternatively, a correlation gets weaker as the Pearson r gets closer to 0 (Creswell, 2002).

Table 4.5 shows that there is a statistically significant positive correlation between depression and binge eating behaviors \((r = .226; \ p < .05)\). Similarly, there is a statistically significant positive correlation between anxiety and binge eating behaviors \((r = .143; \ p < .05)\). Though there is a small positive correlation between the independent variables of depression and anxiety, it is not statistically significant because \(p > .05\).
The second research question exploring the impact of depression and anxiety on binge eating behaviors among African American women seeking weight loss surgery was answered through the use of multiple regression analysis. Multiple regression explores the relationship between one dependent variable and two or more independent variables (Creswell, 2002; Pallant, 2001). More specifically, multiple regression is concerned with the extent to which two or more predictors or independent variables are able to predict the dependent variable (Pallant, 2001). In order to determine which predictive variables in this study had a significant relationship to the outcome variable, a simultaneous multiple regression was used.

Table 4.5: Correlation Between Depression, Anxiety, and Binge Eating Behaviors

<table>
<thead>
<tr>
<th></th>
<th>BES</th>
<th>BDI</th>
<th>BAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binge Eating</td>
<td>1.000</td>
<td>.226</td>
<td>.143</td>
</tr>
<tr>
<td>Depression</td>
<td>.226</td>
<td>1.000</td>
<td>.099</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.143</td>
<td>.099</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binge Eating</td>
<td></td>
<td>.003</td>
<td>.042</td>
</tr>
<tr>
<td>Depression</td>
<td>.003</td>
<td></td>
<td>.116</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.042</td>
<td>.116</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>147</td>
<td>147</td>
<td>147</td>
</tr>
</tbody>
</table>
In the analysis for this study, depression and anxiety are specified as predictors, whereas binge-eating behavior is specified as the dependent variable or outcome variable. On this basis, multiple regression analysis examined the strength with which each of the independent variables influences the dependent variable (Foster, Barkus, & Yavorsky, 2006). Table 4.6 depicts the model summary. This model evaluation depicts the amount of variance in the dependent variable (Binge Eating Behaviors) that can be explained by both independent variables (Depression and Anxiety). The Adjusted R Square in the SPSS analysis indicates the extent to which Depression and Anxiety explains the dependent variable. The adjusted r square can be multiplied by 100 to give an actual percentage of the variance explained for by the independent variables of Depression and Anxiety. In short, 5.2% of the variance in Binge Eating Behaviors can be explained by the model. Table 4.7 shows the Analysis of Variance table which depicts that this result is statistically significant \([R=.256, R \text{ Square}=.065, \text{Adjusted R Square} = .052; p<.008]\). The adjusted r square is also known as the effect size for this analysis. The effect size is a measure of the strength of the relationship between two statistical variables (Pallant, 2001). Cohen (1988) suggests that an effect size of .10 (10%) is low, .30 (30%) is medium, and .50 (50%) is very high. With an effect size of .052 (5.2%) the measure of the impact is low. Though the effect size is small, it is still statistically significant.

Table 4.8 evaluates the contribution of each independent variable (depression and anxiety) to the prediction of the dependent variable of binge eating behaviors. This specific part of the analysis shows if each of the independent variables makes a more significant
contribution to the variance in binge eating behaviors. According to the results of the analysis, the independent variable of depression had a significant contribution to the prediction of binge eating behaviors. This is based on looking at the beta coefficients. The measure for depression had a standardized beta coefficient of .213 that was statistically significant, as compared to the measure for anxiety, which had a standardized beta coefficient of .122 that was not statistically significant. These coefficients can also be interpreted as Semi-squared partial correlations. Specifically, the semi-squared partial correlation for depression is the standardized beta coefficient of .213, meaning that 21.3% of the variance in binge eating behaviors can be explained by the unique relationship with depression. It is also important to note that the unique contribution of depression on binge eating behaviors is statistically significant at $p<.05$; however, the unique contribution of anxiety on binge eating behaviors is not statistically significant because $p>.05$. Because of this, anxiety can be ruled out as a significant predictor in this regression model.

Table 4.6: Depression and Anxiety Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.256$^a$</td>
<td>.065</td>
<td>.052</td>
<td>8.603</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Anxiety, Depression
b. Dependent Variable: Binge Eating
Table 4.7: Analysis of Variance of Overall Regression Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>746.659</td>
<td>2</td>
<td>373.329</td>
<td>5.044</td>
<td>.008</td>
</tr>
<tr>
<td>Residual</td>
<td>10658.239</td>
<td>145</td>
<td>74.016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11404.898</td>
<td>147</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Anxiety, Depression
b. Dependent Variable: Binge Eating

Table 4.8: Unique Relationships to Dependent Variable of Binge Eating

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>(Constant)</td>
<td>10.137</td>
<td>1.055</td>
</tr>
<tr>
<td>Depression</td>
<td>.213</td>
<td>.081</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.135</td>
<td>.090</td>
</tr>
</tbody>
</table>

a. Dependent Variable: BES

Overall, the regression model shows some statistically significant findings. There was a significant positive correlation between each measure for depression and anxiety with binge eating behaviors. Both of these correlations were statistically significant. Moreover, there was a higher amount of unique variance explained by depression as an independent variable over anxiety. This was also statistically significant. In the next chapter, the findings obtained from this study will be discussed in detail.
Chapter 5

Discussion of Findings

This chapter presents the discussion and interpretation of results in Chapter 4 of this dissertation. The chapter also includes a discussion on the limitations of the current study, recommendations for future research, and conclusions made through the research. The first section will offer a brief background of the study, including a review of the research questions, hypotheses, theoretical underpinnings, variables of interest, and measures. The next section includes a discussion surrounding the overall findings of the study. More specifically, results of the study will then be discussed in relation to the guiding research questions outlined for this particular study. The following section will explore the limitations of the study. The remainder of this chapter will be dedicated to implications and recommendations for future research within counseling and a conclusion.

Background of Study and Research Questions

The primary goal of this study was to understand the relationships between depression and anxiety with binge eating behaviors of African American women seeking weight loss surgery. More specifically, this study set out to determine the extent to which depression and anxiety had an impact on binge eating behaviors among African American women seeking weight loss surgery. The following represent the guiding research questions for this study:

*What is the relationship between Depression, Anxiety, and Binge-eating Behaviors among African American Women seeking weight loss surgery?*
To what extent do Depression and Anxiety influence Binge-eating Behaviors in African American Women seeking weight loss surgery?

Hypotheses. The hypotheses, which guided this study, were grounded in the literature review in Chapter 2. The null hypothesis stated within Chapter 1 was:

Null Hypothesis: There is no significant impact on binge-eating behaviors among African American women seeking weight loss surgery that can be explained by depression and/or anxiety.

Thus, the alternative hypothesis was:

Alternative Hypothesis: There is a significant impact on binge-eating behaviors among African American Women seeking weight loss surgery that can be explained by Depression and Anxiety.

The prevailing goal of this research study was to determine if the alternative hypothesis should be accepted and the null hypothesis be rejected. These hypotheses were aligned directly with the research questions of the study.

Variables. Depression, an independent variable/predictor in this study, refers to a major mental health disorder that is associated with disability and poor quality of life for the individual. Depression is a disorder characterized by feelings of constant sadness, loss of interest or pleasure in life, guilt feelings, low self esteem, disturbed sleep and appetite, inability to concentrate, lack of energy and suicidal ideation (Ma and Xiao, 2010). Anxiety, another independent variable/predictor in this study, is another major mental health disorder
generally associated with a state of worry, fear, or concern. Davison (2008) defines anxiety as a psychological and physiological state characterized by somatic, emotional, behavioral, and cognitive components. Binge-eating behaviors, the dependent variable/outcome variable in this study, is loosely defined as the intake of large amounts of food in a short period of time with an associated feeling of loss of control (Stunkard, 1959). This study sought to determine the nature of the relationships between all three variables and the significance of the relationship in respect to the unique population of interest, African American women seeking weight loss surgery.

**Theoretical underpinnings.** Two theoretical frameworks formed the basis of this study. The most salient theoretical underpinning of this study was Jessor and Jessor’s (1977) Problem-Behavior Theory. Problem-Behavior Theory (PBT) was formally introduced to the research community in order to help researchers and practitioners understand the social contexts of behaviors and how to eradicate the emergence of problem-behaviors. According to Richard Jessor (2001), problem-behavior is defined as any behavior that is socially defined as a problem, as a source of concern, or as undesirable by the social and/or legal norms of conventional society and its institutions of authority. Using Jessor’s definition, binge-eating behaviors were viewed in the framework of a problem-behavior. Moreover, based on the literature surrounding binge-eating behaviors, depression and anxiety were viewed as risk factors in the development of the problem behavior of binge eating.
Additionally, William E. Cross’ Nigresence Theory (1971) was used as a theoretical underpinning to guide the discussion around African American women, the population of interest in this study. This theory has been widely used in understanding African American identity development over the years and is relevant to enhancing the cultural competence of counseling professionals. One of the most fundamental skills of a counseling professional is cultural competence and this study seeks to enhance the competence of counselors working with this population. Specifically, cultural competence can be defined as “preparation and practices that integrate multi-cultural and culture-specific awareness, knowledge, and skills into counseling interaction” (Arredondo et al., 1996, p. 43). The Nigresence Theory (1977) was used within this research to guide the discussion connected to African American women in order to potentially enhance cultural competence among counseling practitioners who may work with this population.

Measures. Three measures were used to execute the analysis and determine the findings of this study presented in Chapter 4. In order to assess depression, participants completed the Beck Depression Inventory II (Beck, 2006). Measures of anxiety were assessed through the use of the Beck Anxiety Indicator (Beck and Steer, 2003). Finally, the Binge Eating Scale (Gormally, Black, Daston, and Rardin, 1982) was used to assess binge-eating behaviors. All of these measures were outlined extensively in Chapter 3 of this research study and all showed high reliability and validity overall. Each participant completed these psychometrically sound tools, which served as the measures for the multiple regression analysis conducted.
The average score on The Beck Depression Inventory II among the sample used in this study was $M = 8.21$ with a range between 0 and 38. This tool is a twenty-one item multiple-choice assessment where individuals self-report their answers in reference to the past two weeks. The cutoffs for each tier of depression are as follows:

- 0–13: minimal depression;
- 14–19: mild depression;
- 20–28: moderate depression;
- 29–63: severe depression.

The average participant experienced a minimal level of depression within the two weeks prior to them taking the assessment. The average score on the Beck Anxiety Indicator among the sample used in this study was $M = 8.36$ with a range between 0 and 24. The overall score range for this particular instrument is from 0 – 63 points. The score categories are divided into four groups:

- 0-7: minimal level of anxiety;
- 8-15: mild anxiety;
- 16-25: moderate anxiety;
- 26-63: severe anxiety.

The average score of all the participants at 8.36 showed a mild level of anxiety. Finally, the average score on the Binge Eating Scale among the sample used in this study was $M=12.6$ with a range between 1 and 35. The score categories are divided into three groups:

- 0 - 17: Non-binging;
18-26: Moderate binging;
27 and greater: Severe binging.

Thus the average participant reported non-binging behaviors. This is important to note because based on all three assessments, the average participant showed low levels of all three of the constructs being measured (i.e., depression, anxiety, and binge eating).

Analysis. Multiple regression analysis was used to analyze the data because it is based on correlation. These analyses were run through SPSS after all relevant assumptions were met. In the analysis for this study, depression and anxiety are specified as predictors, whereas binge-eating behavior is specified as the dependent variable or outcome variable. Although references are made to prediction, no assumptions about causal relationships between the variables are made. In addition, the relationship between the two independent variables was also examined. As a result, interpretation of the results included an observation of the relationships between all three variables.

The primary multiple regression model showed the relationship between the independent variables and the dependent variable. Semi-partial correlations were also analyzed to see the unique relationship between each independent variable with the dependent variable. Additionally, the squared semi-partial correlations were analyzed to see the unique variance shared between each independent variable with the dependent variable. These analyses helped answer the guiding research questions and helped prove/dispute the hypotheses.
Discussion of Results with Research Questions

This research study was based on two primary research questions. The following research questions were specified for the current study:

*What is the relationship between Depression, Anxiety, and Binge-eating Behaviors among African American Women seeking weight loss surgery?*

*To what extent do Depression and Anxiety influence Binge-eating Behaviors in African American Women seeking weight loss surgery?*

As indicated earlier, the multiple regression analyses were run to answer each of the research questions specified above. The primary regression analysis was run to understand and reveal the extent to which depression and anxiety influence binge eating behaviors within the population of interest. Further exploration of the correlations between each variable was explored as well to answer the subsequent research question regarding the relationships between all three variables.

For the overall analysis, there were positive correlations between each variable. Specifically, there was a positive relationship between binge eating behaviors and depression, depression and anxiety, as well as anxiety and binge eating binge-eating behaviors. These findings were also true in the multiple regression model with depression and anxiety as predictors of binge eating behaviors. These overall findings correspond with previous research concerning these variables.

In regards to the first research question, the relationships between the variables varied significantly. Though all the correlation coefficients were positive, they varied in strength
and significance. There was a statistically significant positive correlation between depression and binge eating behaviors \((r = .226; p<.05)\). The strength of the relationship between those two variables was stronger than the strength of the relationship between anxiety and binge eating behaviors. The correlation between anxiety and binge eating behaviors \((r = .143; p<.05)\) was also positive, however, not as strong. As mentioned earlier, though there was a small positive correlation between the independent variables of depression and anxiety \((r = .099)\), it is not statistically significant because \(p>.05\). This was important to note because this confirmed that the two-predictor variables were not collinear.

These findings are mostly consistent with previous research. Many researchers point to some relationship between depression, anxiety, and binge eating behaviors. As mentioned earlier, Luppino, et. al. (2010) also found a bi-directional relationship between binge eating, anxiety, and depression. The DSM-IV also outlines warning signs of binge-eating disorder, which include rapid weight gain and obesity, depressed mood, and/or anxious mood. Moreover, all of these variables have been found to be present at higher rates among people seeking weight loss surgery. Patients seeking weight loss surgery tend to report high rates of depression, anxiety, weight fixation, mood disorders, and eating disorders (American Society for Metabolic and Weight loss surgery [ASMBS], 2011).

In regards to the second research question, the extent to which depression and anxiety had an impact on binge eating behaviors among African American women seeking weight loss surgery, the effect size was low. The alternative hypothesis in this study was that depression and anxiety would have a significant impact on binge eating behaviors of African
American women seeking weight loss surgery. In looking at the results of the overall regression model, there is a statistically significant positive relationship between both predictors (Depression and Anxiety) on binge eating behaviors \[ R = .256, \, R^2 = .065, \, \text{Adjusted } R^2 = .052; \, p < .008 \]. Though this would seem to somewhat prove the alternative hypothesis, only 5.2% of the variance in Binge Eating Behaviors can be explained by the overall model. Moreover, anxiety did not have a significant impact within the model. The only variable that showed a significant impact on binge-eating behaviors was depression.

About 5.2% of the variance observed in binge eating behaviors could be explained by the overall model at a significance level of \( p < .05 \). The analysis of the data suggests that the regression model did not have a large impact on binge eating behaviors among African American women seeking weight loss surgery because the effect size was so low; however, it was statistically significant. A study conducted by Azarbad, Corsica, Hall, and Hood (2010) may help shed light on these findings. These researchers aimed to compare the severity of binge-eating behavior and binge-eating disorder diagnosis in Hispanic, African American, and White American women presenting for gastric bypass surgery and to examine the impact of depressive symptoms on binge-eating behavior. Results indicated African American women endorsed greater levels of depression than White American women. Thus, possibly suggesting African American women experience greater levels of depression, which may lead to validate the statistically positive relationship to binge-eating behaviors observed in this study.

Another item to explore in reference to African American women and the possible
connections between binge eating and depression goes back to Cross’ Nigresence Theory (1977). According to William E. Cross’ Nigresence Theory (1977), identity development can be adversely affected by the negative view of one’s own culture. For the purposes of this research, one could argue that the overall health crisis facing African American women could be a cause of depression for African American women. For example, research suggests that African American women tend to report higher levels of many health problems. Hargreaves et al. (2002) suggest African-American women are facing a health crisis. Hargreaves et al. (2002) report the rates of hypertension, obesity, diabetes, and some forms of cancer are higher among African-American women. Obesity-related conditions such as high blood pressure and high cholesterol tend to occur more frequently in African American populations than in White American populations (Kumanyika, 1995). If African American women internalize the health crisis facing their population, this could lead to unhealthy identity development. Thus, according Nigresence Theory (1971) can lead to outcomes such as depression, isolation, and/or distrust.

Throughout the review of the literature, many researchers found strong relationships between depression and binge eating behavior overall. Johnson and Torgrud (2001) found depression to be strongly related to binge-eating behavior. Redlin et al. (2002) concluded that the primary antecedents for binge-eating behavior among obese eaters include being very busy throughout the day, being tired, feeling irritable and down, which are common symptoms of depression. Grissett and Fitzgibbon (1997) also implied that depression is connected to binge-eating behaviors. The unique relationship between depression and binge
eating behaviors among African American women seeking weight loss surgery seems to align with the current research connected to the two variables.

The demographics of the population sample used in this study is also important to discuss in relation to depression and binge eating behaviors. The average age of the participants used in this study was $M=38.37$ with ages ranging from 18 to 60 years old. Age is an interesting demographic to point out because depression has been found to be twice as likely to affect women than men and is most likely to occur in the childbearing years from 15 to 44 (Saunders, 2006). Since the average age of the participants in the study was within this age range, this could help explain why rates of depression are more strongly connected with binge eating behaviors in this sample than anxiety.

Another important demographic characteristic to consider is Body Mass Index (BMI) numbers. The average Body Mass Index number for the participants in the study was $M=47.01$ with a range of 33 to 65. The link between obesity and binge eating behaviors and obesity and depression has been shown to be bi-directional. Luppino, et. al. (2010) conducted a systemic review of longitudinal studies dealing with obesity and depression and found that obese individuals had a fifty-five percent increased risk of developing depression over time. Moreover, Luppino, et. al. (2010) also found that fifty-eight percent of depressed persons were at increased risk of becoming obese which pointed to a bi-directional relationship between obesity and depression. Additionally, the DSM-IV notes that one of the warning signs of binge-eating behaviors is rapid weight gain and obesity. This could also help to
explain the statistically significant relationship between depression and binge eating behaviors among African American women seeking weight loss surgery.

According to the results of the multiple regression analysis, anxiety did not have a significant contribution to the variance accounted for in the overall regression model. These results are not that surprising. As mentioned in the review of the literature, less research is available on the connections between anxiety and binge eating behaviors overall. Moreover, anxiety is a more difficult construct to assess due to the varying types of anxiety. Additionally, research suggests a high co-morbidity rate between depression and anxiety. For example, evidence from the National Co-Morbidity Survey (2005) suggests that fifty-eight percent of individuals who are considered depressed also report higher rates of anxiety disorders. This could further complicate being able to accurately assess and connect anxiety to binge eating behaviors.

Prior research suggests that individuals with binge-eating disorder have been shown to have higher rates of anxiety disorders when compared to those who do not binge eat (Mussell et al., 1996). According to Antony, Johnson, Carr-Nangle, and Abel (1994), individuals with Binge-eating Disorder show elevated levels of trait anxiety disorders. Sullivan, and Kendler (2002) also found that obese women with binge-eating behaviors reported a higher lifetime prevalence of phobias/trait anxiety. This is interesting to note because the measure used to assess anxiety in the present study was a measure of Generalized Anxiety Symptoms and not trait anxiety symptoms. This could help explain the reason for the low significance and effect of anxiety with binge eating behaviors among
African American women seeking weight loss surgery in this study. Additionally, this offers an opportunity for future research.

Overall, the findings from this study are extremely interesting when comparing these results to those from prior research studies. Much of the research concerning binge-eating behaviors suggests depression and anxiety as predictors. However, this could be different among this specific population. The sample used in this study were all preparing for weight loss surgery and completing their assessment tools in order to receive psychological clearance for surgery. This is very important because there is a strong possibility that some participants may have underreported their levels on all 3 scales of the variables being studied due to fear of being denied from having weight loss surgery. Moreover, they may present as less depressed and anxious in order to present as competent to follow through with weight loss surgery. Results could be different if these assessments were not given as part of psychological clearance for weight loss surgery. Additionally, having a control group may also help to reduce participant bias. This control group could be a group of individuals who are part of the population and just not seeking weight loss surgery. Though it is hard to control for participant bias, these are some ways that could help to control for participant bias within this specific population.

An additional point to consider is the construct of anxiety. The clinical criteria for diagnosing anxiety are not clear-cut. Part of the reason why this is the case is simply because there are multiple types of anxiety disorders. As with other mental health disorders, individuals can experience various symptoms of anxiety without necessarily meeting the
clinical criteria outlined by the DSM-IV. Some research suggests that trait anxiety is a better predictor of binge eating behaviors than measures of generalized anxiety. Sullivan and Kendler (2002) found that obese women with binge eating behaviors reported a higher lifetime prevalence of phobias/trait anxiety than other populations. Other researchers have found similar findings. For example, Antony et al. (1994) found that individuals with binge-eating disorders showed elevated levels of trait anxiety disorders. The measure used in this study measured generalized anxiety levels. In thinking about future research, the effect size may be larger and more significant if levels of trait anxiety are explored rather than generalized anxiety levels.

**Limitations of Study**

As with any research design, some limitations may exist that can threaten the validity and/or the reliability of the research study. This research study is no exception to the rule. Limitations of any study may constrain the reliability, validity, and generalizability of findings; however, reporting the limitations helps to guide future studies and may help strengthen the overall conclusions of the study.

One of the primary limitations of conducting a research study with the use of self-report measures is simply the accuracy of the responses by the individual completing the assessment. Specifically, in this study, participants knew that they were being screened in order to qualify for weight loss surgery. Many individuals are unaware of what may not make them a good candidate for weight loss surgery as it relates to their responses to the measures. For example, if an individual believes that their response on one of the psychometric tools
may delay or even deny them from being psychologically cleared for weight loss surgery, they may score themselves lower on a statement than what is actually true. Overall, this could have lead to some participants falsely reporting levels of depression, anxiety, and/or binge eating because of their desired outcome of having weight loss surgery. As mentioned earlier, this was somewhat noted in the results of the measures. Specifically, The average score on The Beck Depression Inventory II among the sample used in this study was $M = 8.21$ with a range between 0 and 38. Thus, the average participant experienced a minimal level of depression within the two weeks prior to them taking the assessment. The average score on the Beck Anxiety Indicator among the sample used in this study was $M = 8.36$ with a range between 0 and 24. Thus, the average score of all the participants at 8.36 showed a mild level of anxiety. Moreover, the average score on the Binge Eating Scale among the sample used in this study was $M = 12.6$ with a range between 1 and 35. Thus, the average participant also reported non-binging behaviors. This is important to note because based on all three assessments, the average participant showed low levels of the three constructs being measured. This threat to the reliability of scores and validity was difficult to control; however, with the high amount of participants in the study ($N=147$), the threat was somewhat minimized. Participant bias is very difficult to control in self-report measures; however, self-reporting often helps minimize researcher bias due to the fact that the data is being collected directly from the participants.

Another limitation of this study that is important to discuss is the use of multiple regression. Correlation and multiple regression analyses can be very useful in helping
practitioners better understand relationships between different variables. One limitation associated with any analysis using multiple regression, however, is that causation cannot be assumed. More specifically, just because two variables are highly correlated or show significance in a regression equation, does not mean that one variable caused a change in another variable. Simply put, because causation cannot be made through a multiple regression analysis, the only real conclusions to explore are based on the relationships between variables. Data in this study were analyzed to show unique relationships between the independent variables and the dependent variable, which helped to further the understanding of the relationships among the variables. Moreover, looking at these unique relationships helped control for the limitation of not being able to imply causation because it still offers the research community an intricate and detailed perspective in looking at the variables within the study.

Another important element to discuss is the use of the measures within the study. The Beck Depression Inventory II, Beck Anxiety Indicator, and Binge Eating Scale were the three measures used to quantify the variables in the study. Though these measures showed some high reliability and validity measures, they were not directly normalized on the population of interest. Moreover, as stated earlier, the measure for anxiety may have yielded different results if it measured levels of trait anxiety instead of generalized anxiety. This may be an opportunity for further research and a recommendation for researchers interested in studying the same constructs.
Though not a primary limitation, it is also important to note that the data collected and analyzed in this study was secondary data. The nature of the study is closely aligned to secondary data analysis in that the original purpose for the participants completing the assessment was part of their psychological evaluation in preparation for weight loss surgery. The use of secondary data gives the researcher access to a wide number of participants in the population of interest. However, one of the main limitations of secondary data is that sometimes the data collected may not be fully representative of the research questions proposed. In this particular study, however, secondary data is not a significant limitation because each research question can be answered through the data collected.

**Implications for Future Research**

When considering implications for future research related to this study, it is important to note that future research outcomes may prove more conclusive if the limitations described in the previous section are addressed effectively. Overall, this study offers researchers in the field of counseling opportunities to learn, explore, and study a multitude of areas. The results of this study show some relationships between depression and anxiety with binge eating behaviors among African American women seeking weight loss surgery. Overall, the regression model shows modest statistically significant findings. There was a significant positive correlation between each measure for depression and anxiety with binge eating behaviors. Both of these correlations were statistically significant. Moreover, this research is cutting edge in the counselor education community because the connections between these variables have not been deeply explored within the population of interest.
As mentioned earlier, Johnson and Torgrud (2001) assert that depression and anxiety are variables connected to binge-eating behavior. Grissett and Fitzgibbon also imply that depression and anxiety are connected to binge-eating behaviors. Though much of the literature confirms the interconnectedness of depression and anxiety with binge-eating behaviors, the research is limited in relation to these variables and African American women and/or individuals seeking weight loss surgery. Overall, the majority of the research regarding binge-eating behaviors thus far, specifically within the bariatric community, comes from practitioners outside of the mental health arena. This study is the beginning to address gaps in research within the field of counseling.

As stated throughout the literature review and discussion, obesity has been shown to be a warning sign to binge-eating behaviors. The connection between depression and anxiety with rates of obesity is also found within the research as well. Luppino, et. al. (2010) found that fifty-eight percent of the people in their longitudinal study who were depressed were at risk of becoming obese. Moreover, Gariepy, Nitka, and Schmitz (2010) found a positive relationship between levels of anxiety and obesity. The current study speaks to these findings in that every participant in the sample was obese. Further research may help to further explore the connections between obesity, binge-eating behaviors, depression, and anxiety within the bariatric population. In understanding the interconnectedness of these variables more, better services for the populations of interest can be determined and studied.
Another important implication for future research deals directly with expanding this study. For example, participants gave their age, BMI, relationship status, and education status. It would be interesting to explore if the same results would be found among differing groups. Specifically, is there a difference in the impact that depression and anxiety have on binge eating behaviors between individuals who are older or younger? Moreover, the same concept could be applied to basically all the demographics collected in the study. For example, as mentioned earlier, some research suggests that depression rates are higher among women between the ages of 15 and 44 (Johnson, 2006). Could there be a difference if the samples were compared between individuals who were younger than 44 and those that were older than 44? Though the sample was diverse, the number of participants would need to be expanded in order to explore these particular constructs in the future.

**Implications for Counselors and Counselor Educators**

Another important implication is related to the role of mental health practitioners with individuals seeking weight loss surgery. This study aimed to help mental health practitioners gain a better understanding of the role of counseling in the supportive services offered to individuals seeking weight loss surgery.

A previous report of preoperative patients at Montefiore Medical Center of the Albert Einstein College of Medicine, has documented an unusually high rate of current preoperative psychiatric disorders. Fifty percent of the individuals seeking weight loss surgery through this hospital already had a diagnosis of some mental health disorder; twenty-three percent of...
individuals assessed were on some form of psychotropic medication; twenty-two percent reported a history of sexual abuse; and seventeen percent of clients reported a history of physical abuse (Latner, Wetzler, Goodman, and Glinski, 2004). These statistics show how important counseling services are for this population. Moreover, the amount of individuals seeking weight loss surgery continues to grow. Robinson (2009) suggests that weight loss surgery is the leading alternative for the treatment of obesity among the morbidly obese. Further research is crucial because this population is growing immensely. Morbid obesity is cited as the most predominant and costly problem in the United States of America (Hutchinson, 2009).

The professional organization responsible for enhancing the research and knowledge among practitioners who work with individuals seeking weight loss surgery is the American Society for Metabolic and Bariatric Surgery (ASMBS). Part of their role is setting standards for practitioners working with this population. The standards set forth by the American Society for Metabolic and Weight loss surgery (ASMBS, 2011) for pre-operative counseling include four distinct areas of interest for mental health professionals. First, mental health professionals are required to make a formal assessment of an individual’s overall behaviors. This particular part of assessment includes gaining a clear understanding of the eating behaviors, exercise routines, and substance abuse behaviors of an individual who is seeking weight loss surgery. Secondly, the ASMBS (2011) asserts that counseling for pre-operative weight loss surgery patients should include an assessment of the individual’s cognitive and
emotional state. This includes gaining an understanding of their cognitive functioning, coping skills, and emotional regulation. This particular area is very important and directly connected to the current study. Depression, anxiety, and binge eating behaviors are all areas in which mental health professionals must assess and understand. In understanding the relationships between these variables, mental health professionals may be able to build a stronger rapport and offer specialized services to these individuals. The ASMBS (2011) also suggests that mental health professionals understand and assess the current life situation of the bariatric candidate in order to address other life stressors the individual may need assistance in dealing with before having weight loss surgery. Finally, the standards set forth by the ASMBS (2011) require mental health professionals to assess the motivation each weight loss surgery candidate has in seeking weight loss surgery.

Though there are standards set forth by the ASMBS (2012) for pre-operative assessment and counseling for individuals seeking weight loss surgery, much confusion still remains in how to accurately prepare and assess individuals before weight loss surgery. Merani, Gill, Sharma, Birch, and Kamali (2011) suggest individuals who have some mental illnesses (e.g., depression and/or anxiety) present pre-operatively should be approved for surgery because of the psychological benefits of weight loss surgery. Others, including the ASMBS (2012), suggest having a highly depressed emotional state is not a good predictor of post-operative success.
This leads specifically to the role of counselor educators who are responsible for adding to the research within the field of counseling. Many of the discrepancies in practice mentioned previously in relation to the assessment and counseling for individuals seeking weight loss surgery could have more clarity if there was a better understanding of the connections between different mental health illnesses and their relationship with obesity. For example, if practitioners knew that depression and anxiety were shown to have very strong relationships with binge eating behaviors among all individuals seeking weight loss surgery, counselors could develop services to address those concerns for individuals who were preparing for surgery. Moreover, this would put counselor educators in an arena of research that connects the mental health field with public health research and practice. More specifically, having this research focus can open the door for counselor educators to potentially work with healthcare professionals in the ASMBS in order to develop best practices for offering services to this population of individuals.

**Conclusion**

With the role of assessment and counseling within the population of individuals seeking weight loss surgery becoming more pressing for mental health practitioners, research must continue to enhance the quality of services offered to these populations. This is key in expanding the scope of services offered, as well as enhancing cultural competence among counseling practitioners. Though weight loss surgery has been around for 50 years, the medical procedures are more safe and reliable, which is drawing more people into choosing this option for weight loss (Eddins, 2009). Because this population will continue to grow, the
research connected to it must expand as well. The opportunity for counselor educators to use this study for further research is welcomed and strongly suggested.
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