

2010

Relationships between binge eating, psychological and behavioral covariates, and health care utilization on college campuses: Results from a national sample of college students

Summar Reslan

Follow this and additional works at: <http://commons.emich.edu/theses>



Part of the [Psychology Commons](#)

Recommended Citation

Reslan, Summar, "Relationships between binge eating, psychological and behavioral covariates, and health care utilization on college campuses: Results from a national sample of college students" (2010). *Master's Theses and Doctoral Dissertations*. 282.
<http://commons.emich.edu/theses/282>

This Open Access Thesis is brought to you for free and open access by the Master's Theses, and Doctoral Dissertations, and Graduate Capstone Projects at DigitalCommons@EMU. It has been accepted for inclusion in Master's Theses and Doctoral Dissertations by an authorized administrator of DigitalCommons@EMU. For more information, please contact lib-ir@emich.edu.

Relationships between binge eating, psychological and behavioral covariates, and health care utilization on college campuses: Results from a national sample of college students.

by

Summar Reslan

Thesis

Submitted to the Department of Psychology

Eastern Michigan University

in partial fulfillment of the requirements

for the degree of

MASTER OF SCIENCE

in Clinical Psychology

Thesis Committee

Karen K. Saules, PhD, Chair

Thomas Schmitt, PhD

Heather Janisse, PhD

August 24, 2010

Ypsilanti, Michigan

Abstract

The purpose of this investigation was to examine the factors which moderate service utilization among college students, as well as risk factors for binge eating disorder (BED). Candidate moderators included binge eating, obesity, gender, ethnicity, psychological comorbidity, body image, and emotional dysregulation. Data from the Healthy Minds Study (HMS) 2010 were utilized. Two samples of participants were analyzed: the full HMS 2010 national sample of undergraduate college students ($N = 17,995$) and a subsample of undergraduate students ($N = 969$) from Eastern Michigan University (EMU) who participated in the HMS. Results suggested that psychological comorbidity significantly impacted psychological service utilization among HMS respondents with BED. Psychological comorbidity, namely depression and heightened emotional dysregulation, significantly impacted risk for BED among EMU respondents. The implication of these findings is that BED should be targeted for intervention early, as early interventions for BED may prevent the progression into more severe psychopathology.

TABLE OF CONTENTS

Abstract	ii
List of Tables	iv
List of Figures	iv
Chapter 1: Introduction	1
Chapter 2: Literature Review.....	3
Chapter 3: Methods.....	22
Chapter 4: Results.....	45
Chapter 5: Discussion.....	60
Chapter 6: Conclusion	72
References	74
Appendix A: Description of Study and Consent Form.....	91
Appendix B: Demographic Variables.....	94
Appendix C: PHQ-9.....	97
Appendix D: PHQ Item # 5.....	99
Appendix E: QEWP-R Items.....	101
Appendix F: New HMS Items - Defining an eating binge.....	102
Appendix G: New HMS Item - MSBRQ-AS.....	103
Appendix H: Substance abuse items.....	104
Appendix I: Healthcare Utilization Items.....	105
Appendix J: New HMS items – DERS.....	106

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1 Demographic Variables for Full HMS Sample vs. Eastern Michigan University Sample.....	23
2 World Health Organization Body Mass Index Classification Table	43
3 Psychopathology and Service Utilization Rates for Undergraduates from the Full HMS sample versus Eastern Michigan University Sample	46
4 Percentages of Participants with BED and Psychological Comorbidity (either depression, anxiety, binge drinking, smoking)	52
5 Mean Number of Comorbid Conditions among Individuals with BED who sought Medical or Mental Health Services within the past 12 months.....	52
6 Comparison of the Risk for Seeking Psychological and Medical Services as a function of BED and Obesity amongst EMU participants versus the National Sample of HMS participants (excluding EMU respondents)	57

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1 Impact of ethnicity and gender on risk for seeking psychological services within the past 12 months.....	51
2 Path analysis of the relationship between BED and service utilization (both psychological and medical).....	59
3 Path analysis of the relationship between BED and psychological and medical service utilization as a function of depression and emotional dysregulation.....	59

Relationships between binge eating, psychological and behavioral covariates,
and health care utilization on college campuses: Results
from national sample of college students.

Introduction

Statement of Purpose

Obesity and overweight rates have been steadily rising for the past two decades. Between 1991 and 1998, the prevalence of obesity, as defined by having a body mass index greater than 30 kg/m², increased from 12% to 18% (Mokdad, Serdula, Dietz, Bowman, Marks, & Koplan, 1999). Between 1998 and 1999, prevalence of obesity continued to increase from 18% to 19%. Obesity is linked with a number of negative health consequences, behavioral changes (e.g., binge eating), and severe psychopathology (e.g., Dansky, Brewerton, & Kilpatrick, 1998; Kruger, Shugar, & Cooke, 1994; McElroy, Kotwal, & Keck, 2001). One important behavioral component contributing to elevated obesity levels is binge eating (e.g., Delinsky & Wilson, 2008; Linde et al., 2004; Lloyd-Richardson, King, Forsyth, & Clark, 2000). Disturbed eating patterns, like binge eating, are associated with a variety of mental and physical health problems (e.g., Barry, Grilo, & Masheb, 2002; Kopelman, 2000; Reagan & Hersch, 2005); however, less than half of individuals with binge eating disorder (BED) have ever sought treatment for this condition (Hudson, Hiripi, Pope, Kessler, 2007). Research also suggests that in general, college students may be underutilizing services. Among college students experiencing significant levels of distress, approximately three fourths have never sought treatment for these problems (Rosenthal & Wilson, 2008). The main purpose of the current investigation was thus to examine the factors which moderate psychological and medical service utilization among college students. Candidate

moderator variables included binge eating, obesity, gender, ethnicity, and psychological comorbidity (e.g., depression, anxiety, and substance use). The risk factors for developing BED were also investigated, as well as factors which may impact service utilization among individuals with BED. Proposed risk factors included body image and impulsivity. Although these variables have been extensively studied in relation to bulimia nervosa and anorexia nervosa (e.g., Claes, Vandereycken, & Vertommen, 2005; Gray, Ford, & Kelly, 1987, Smith, 1995; Killen et al., 1996; Sobara & Geliebter, 2002; Streiger, Lehoux, & Gauvin, 1999), few studies, if any, have been completed linking these variables to binge eating disorder (BED).

The literature review that follows examines the empirical work on the prevalence of obesity and BED. The moderating factors impacting psychological and medical health care utilization (e.g., binge eating, gender, ethnicity, psychological comorbidity, and obesity), and the factors moderating service utilization among college students who have BED (e.g., body image and impulsivity) were also examined. Then, empirical literature on both BED and health care utilization among college students is reviewed. This is followed by an examination of the available literature on the relationship between BED and health care utilization, underscoring the need for future research in this area.

Literature Review

Obesity

Numerous studies have referred to the problem of obesity as an “epidemic” (Mokdad et al., 1999; Mokdad, Marks, Stroup, & Gerberding, 2000; Popkin & Doak, 1998). Reports from the American Medical Association indicate that in 2003-2004, 17% of U.S. children and adolescents and 32% of adults were obese (Ogden, Carroll, Curtin, McDowell, Tabak, & Flegal, 2006). Among Americans aged 20 and older, over 145 million are overweight, and over 74 million individuals have been defined as obese (BMI greater than or equal to 30 kg/m²). Although these rates vary by individual factors like gender and ethnicity (Hill & Peters, 1998), the general trend is that obesity and overweight prevalence is on the rise. Between 1991 and 1999, among adults over the age of 18, the prevalence of obesity increased from 12% to 19% (Mokdad et al., 1999). A large body of research links obesity to a number of negative health consequences, behavioral changes (i.e., binge eating), and severe psychopathology (Dansky et al., 1998; Kruger et al., 1994; McElroy et al., 2001).

Hill and Peters (1998) speculate that rising obesity rates can be attributed to environmental factors. Specifically, environmental agents are thought to promote high energy intake and low energy output through increased portion sizes, food availability, high fat diets, and advances in technology and transportation that result in reductions in utilitarian activity (e.g., walking to work). Other research has linked individual level factors like socioeconomic status to elevated obesity levels (Kopelman, 2000). Those from lower socioeconomic groups tend to have higher BMI's than those from higher socioeconomic groups. This finding is consistent with that of Reagan and Hersch (2005) who report that those from a higher socioeconomic status (SES)

are less likely to binge eat than those from a lower SES. However, these findings are inconsistent with that of Hills and Peters (1998), who report that those with greater food availability are more inclined to over consume, and subsequently binge eat, more often than those who do not have a readily accessible food source. These discrepant findings may be partially reconciled by the findings of studies which suggest that although individuals from lower socioeconomic statuses may not have a readily accessible food source, the food that they do have access to is often cheaper, more unhealthy, food served in large portions (Darmon & Drewnowski, 2008; Darmon, Ferguson, & Briand, 2002; de Irala-Estevéz, Groth, Johansson, Oltersdorf, Prattala, & Martínez-González, 2000).

There are a number of long-term health consequences associated with obesity. The estimated number of deaths attributed to obesity alone is approximately 350,000 annually (Allison, Fontaine, Manson, Steven, & VanItallie, 1999). Obesity is strongly associated with the development of type 2 diabetes, coronary heart disease, certain forms of cancer, sleep and breathing disorders, and decreased life expectancy (Kopelman, 2000). Research suggests that being overweight or obese typically takes a lifelong course, that is, elevated body weight continues to increase until approximately age 50 to 60 (Kopelman, 2000). Thus, early interventions to combat this problem are clearly necessary.

Binge Eating Disorder

One important behavioral component contributing to elevated obesity levels is binge eating (e.g., Delinsky & Wilson, 2008; Linde et al., 2004; Lloyd-Richardson, King, Forsyth, & Clark, 2000). Studies report that, among those seeking weight loss treatment, approximately 15% to 30% of both obese men and women report engaging in some form of binge eating (Womble et

al., 2001). A provisional disorder within the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition-Text Revision (DSM-IV-TR; 2000) has thus emerged to capture what is currently referred to as binge eating disorder (BED; American Psychiatric Association [DSM-IV-TR], 2000). The DSM-IV-TR defines BED as experiencing recurrent episodes of binge eating in a discrete period of time while also experiencing a lack of control over eating during these episodes. This binge eating must be associated with three or more 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, or 5. feeling disgusted with oneself for over-eating. In addition, this binge eating behavior occurs at least twice a week for six months and marked distress must be experienced in response to binge episodes (American Psychiatric Association [DSM-IV-TR], 2000).

While BED, bulimia nervosa (BN), and anorexia nervosa (AN) share a few features (e.g., self-evaluation is unduly influenced by body shape and weight), BED is distinguishable by the presence of a couple characteristics. BN is an eating disorder characterized by recurrent binge eating that must be followed by some form of compensatory behavior (i.e., self-induced vomiting or use of laxatives) to counter the large amount of food eaten. Similar to BED, BN requires one to feel a sense of guilt and lack of control over the eating binge (American Psychiatric Association [DSM-IV-TR], 2000). Although the BED diagnosis is similar to the BN diagnosis in a variety of ways, one major difference between the two disorders is that BED is “ruled out” if compensatory behaviors are present, while the presence of compensatory behaviors is fundamental for the diagnosis of BN. Binge eating behavior is uncommon in those with AN.

Rather, AN is characterized by a refusal to maintain a body weight at or above the normal weight for one's age and height. Associated with this condition is an intense fear of gaining weight or becoming fat, even though one is clearly underweight (American Psychiatric Association [DSM-IV-TR], 2000).

In non-treatment seeking samples, the diagnosis of BED ranges from three to six percent (e.g., Grucza, Przybeck, Cloninger, 2007). Of those seeking mental health treatment, one percent of this population is reported to have BED (Hoek & van Hoeken, 2003). Thus, because the prevalence of BED among those seeking treatment (1%) is less than the prevalence of BED in the general population (3% to 6%), it is reasonable to hypothesize that those with BED may be under-utilizing mental health services. Additional study of BED is thus warranted because current research has found that BED is a pervasive, stable, and chronic condition (Hudson et al., 2007).

Gender and BED

BED is more prevalent than both anorexia nervosa and bulimia nervosa. Lifetime prevalence of these disorders are 3 to 6%, .9%, and 1.5%, respectively (Barry, Grilo, & Masheb, 2002; Striegel-Moore & Bulik, 2007). Notably, binge eating *behavior* (i.e., rapidly eating large amounts of food, but not necessarily with a sense of loss of control or distress) is more prevalent among males (2%) than both anorexia (.3%) and bulimia (.5%) (Hudson et al., 2007). However, the events that precipitate an eating binge for males and females have been observed to differ (Barry et al., 2002; Reagan & Hersch, 2005; Womble et al., 2007). Binge eating is more often associated with negative emotions like anger in men, while binge eating is more often linked to diet failures in women (Barry et al., 2002). Additionally, men often have a history of substance

abuse preceding their binge patterns, while women report using binge eating as a coping mechanism (Barry et al., 2002).

The social environment plays a large role in determining patterns of binge-eating among women (Reagan & Hersch, 2005). Marital and socioeconomic statuses are more strongly associated with binge eating in women than men. Married women tend to binge eat more often than non-married women, as do women from lower SES groups (Reagan & Hersch, 2005). Age impacts the pattern of binge eating among both sexes. For both men and women, those who are older are less likely to binge eat than their younger counterparts (Reagan & Hersch, 2005).

Men and women also have different definitions for what constitutes an eating binge (LaPorte, 1997). Research consistently shows that, relative to males, females are more inclined to label their own eating as a binge. The primary factor females consider when labeling behavior as a binge is the quantity of food consumed. Conversely, males require a larger quantity of food, increased speed of consumption, and feeling gastrointestinal consequences before labeling their behavior as a binge episode (LaPorte, 1997). Females thus appeared to have a looser definition of a binge episode, which may partially explain why females are more likely to define their behavior as a binge.

Ethnicity and BED

There is a cultural misperception that pathological eating behaviors rarely occur among ethnic minorities. This expectation may be based on the abundance of research on eating disorders which has been conducted among Caucasian samples (Pike & Walsh, 1996; Striegel-Moore, & Smolak, 2000). More recent research investigating ethnic differences in eating pathology indicate, however, that there is a higher prevalence of BED among ethnic minorities

(e.g., Striegel-Moore, Wilfley, Pike, Dohm, & Fairburn, 2000) than among Caucasians. Grilo, Lozano, and Masheb (2005) indicate that among recruited clinic samples of women, black women report more binge episodes per week ($M = 4.4$, $SD = 2.4$) than white women ($M = 4.2$, $SD = 3.9$). In addition, one study indicates that amongst women in the San Francisco area, approximately 2% of Caucasian women but 5% of both African American and Hispanic women, met criteria for BED (Bruce & Agras, 1992).

The cultural misperception that pathological eating behavior, namely BED, is more common among Caucasians may emerge because ethnic minorities are less likely to seek treatment for these disturbed eating patterns than Caucasians (Striegel-Moore et al., 2007). Research suggests that when ethnic minorities do seek mental health treatment, they are less likely to receive treatment for an eating disorder. This finding holds even among those who self-report an eating problem (Becker, Franko, Speck, & Herzog, 2003). Specifically, African Americans, Latinos, and Native Americans are significantly less likely to receive a recommendation or referral for further evaluation for their eating pathology than Caucasians (Becker et al., 2003; Striegel-Moore et al., 2003).

The majority of research has found differential patterns of psychological treatment seeking and referral for members of different ethnicities; however, minimal research has looked at the differences within members of the same ethnic group with regard to treatment seeking. For example, are treatment-seeking African Americans with BED significantly different than non-treatment-seeking African Americans with BED? Few studies suggest that there are differential treatment-seeking patterns among members of the same ethnicity that are a function of both age and weight. African American women with BED typically do not seek treatment until they are

older and heavier (Grilo et al., 2005), a similar pattern observable among Caucasian treatment seekers (Eisenberg, Golberstien, & Gollust, 2007).

With regard to the type of eating disorder one is most likely to be diagnosed with, the majority of research finds that there are differences between ethnicities (Striegel-Moore et al., 2007). In particular, higher rates of purging behavior are observed among whites, while higher rates of binge-only behavior have been reported among African Americans (Striegel-Moore et al., 2007). The presence of purging behavior may make Caucasians more likely to meet lifetime BN criteria, while the presence of binge behavior may make African Americans more likely to meet the diagnostic criteria for BED.

Body image and BED

Distorted body image is strongly associated with the onset of BED. Pesa, Syre, and Jones (1999) found that females with BED suffer lower self-esteem, which may be attributable in part to body image dissatisfaction. Similarly, research finds that binge eaters exhibit more body image discrepancy and have more body dissatisfaction than non-binge eaters (Sobara & Geliebter, 2002). Unlike the criteria for BN, “self-evaluation influenced by body shape and weight” is not a requirement for the diagnosis of BED. However, research suggests that at least among the obese, body image dissatisfaction is greater among individuals who meet criteria for BED versus those who do not meet the diagnostic criteria for BED (Masheb & Grilo, 2003). Body image dissatisfaction has been found to be associated with adult teasing and lower self-esteem as well (Masheb & Grilo, 2003; Matz, Foster, Faith, & Wadden, 2002).

Impulsivity and Binge Eating

Those with eating disorders manifest poorer impulse control than those without eating disorders (Killen et al., 1996). Some research indicates that the urge to binge eat is different among those who are bulimic and high in impulsivity in comparison to those who are bulimic and low in impulsivity (Steiger, Lehoux, & Gauvin, 1999). In particular, among those who are bulimic and high in impulsivity, binge eating is more often associated with diminished inhibitory controls, whereas among those who are bulimic and low in impulsivity, the urge to binge eat is more often associated with poor dietary restraint (Steiger et al., 1999).

Research has established a link between impulsivity and bulimia (Claes et al., 2005; Killen et al., 1996; Steiger et al., 1999), thus, one study sought to investigate how impulsivity should be defined as it relates to individuals with bulimia (Fischer, Smith, & Anderson, 2003). For that investigation, impulsivity was defined in two ways. First, impulsivity was defined as a lack of premeditation: that is, having an inability to delay action before thinking about consequences, or, in other words, the inability to plan. The second way in which impulsivity was defined was as a sense of urgency: that is, having a predisposition to act in the face of negative emotion. The results of that investigation indicated that when one is referring to heightened levels of impulsivity, as it is being used to describe individuals with bulimia, impulsivity must be operationalized as a sense of urgency: that is, the predisposition to act rashly in the face of negative emotions, not as a lack of planning (Fischer et al., 2003).

No specific research studies have investigated the direct relationship between BED and impulsivity; however, some research indicates that binge eating *behavior* is highly correlated with heightened levels of impulsivity (Claes et al., 2005). A review article by Dawe and Loxton

(2004) concludes that binge eating is typically accompanied by a feeling a loss of control, which is influenced by impulsiveness. They indicate that one particular behavioral manifestation of impulsivity is heightened reward sensitivity, which they suggest increases vulnerability to binge eating.

BED and Comorbidities

Psychiatric comorbidity is elevated among those who meet criteria for BED. Among treatment-seeking individuals with BED, 74% report having at least one additional lifetime psychiatric disorder, and 43% report having at least one current psychiatric disorder (Grilo, White, & Masheb, 2009). Specifically, BED is highly comorbid with substance use (specifically, alcoholism and tobacco use; Dansky et al., 1998), bipolar disorder (Kruger et al., 1994; McElroy et al. 2001), mood disorders (Bijl & Ravelli, 2000), major depressive disorder, panic disorder, and phobias (Bulik, Sullivan, Kendler, 2002). The most well-established link between binge eating and psychiatric comorbidity relates depressive symptomology to patterns of binge eating. Specifically, compared to the general population, symptoms of anxiety and depression are most common among both men and women with BED (Reichborn-Kjennerud, Bulik, Tambs, & Harris, 2004b).

Although the comorbidity of depression and binge eating disorder is high (36% of males who binge eat also report symptoms of depression; 47% of women who binge eat also report symptoms of depression; Reichborn-Kjennerug et al., 2004), depression appears to be an impediment for those seeking weight-loss treatment (Linde et al., 2004). Depression seems to predict poorer weight loss in women, although this relationship does not necessarily hold for men. Thus, further research investigating the relationship between emotional states (e.g.,

depression or anxiety) and BED are important, especially in relation to individuals motivated to seek treatment. Some research suggests that obesity treatment can lessen depression (Stunkard, Faith, & Allison, 2003); however, this relationship appears to be moderated by a variety of factors, including adverse childhood relationships, poor eating habits (e.g., binge eating), decreased physical activity, teasing in childhood, and elevated stress levels.

BED is also highly comorbid with well documented mortality risk factors. In 2000, the leading cause of death was tobacco (18%), poor diet and physical inactivity (17%), and alcohol consumption (4%; Mokdad, Marks, Stroup, & Gerberding, 2000). These findings are relevant because BED is highly comorbid with all of these elevated risk factors for death. In particular, BED is strongly associated with obesity (Hudson et al., 2007).

Binge Eating and Obesity

A lifetime history of binge eating disorder is significantly associated with obesity in its most severe form (BMI greater than or equal to 40 kg/m²; Hudson et al., 2007). Individuals with BED have been found to display a greater vulnerability to obesity than healthy controls (Fairburn, Doll, Welch, Davies, & O'Connor, 1998). Specifically, a moderate overlap between the genetic liability for obesity and BED has been noted (Bulik, Sullivan, & Kendler, 2003). Approximately 15% to 30% of obese treatment-seekers report some form of binge eating behavior (Womble et al., 2001). Thus, the present study was designed to advance our understanding of the co-occurrence between these two phenomena, as well as their impact on health care utilization.

The average age of onset for BED, and the age at which there has been the greatest increase in obesity and overweight prevalence, is between 18 and 29 (Nelson, Story, Larson,

Neumark-Sztainer, & Lytle, 2008; Racette, Deusinger, Strube, Highstein, & Deusinger, 2008).

This coincides with the age of traditional college students. Research shows that 38% of undergraduate women report having a problem with binge eating (Mintz & Betz, 1988). Of these women, the mean number of binges per month was 5.2 with a range of up to 90. In addition, 14% of these women noting a problem with binge eating also reported engaging in this behavior 10 or more times per month.

Binge Eating in College Students: Eating Habits and Weight Gain

In their first year of college, 13% of students cite obesity as their main psychological and physical concern (Fletcher, Bryden, Schneider, Dawson, & Vandermeer, 2007). From 1991 to 1999, the greatest magnitude of increase in obesity was found among 18-29-year-olds and among those with some college education (Mokdad et al., 1999). Upon matriculation, 15% of college students are overweight or obese. By the end of the senior year, however, the prevalence of obesity and overweight rises to about 23% (Racette et al., 2008). A college student's risk for gaining weight during the first year of school is often referred to as the "Freshman Fifteen" (Delinsky & Wilson, 2008; Hoffman, Policastro, Quick, & Lee, 2006). Recent findings suggest that although individuals, particularly males, tend to gain weight during their first collegiate year (Cluskey & Grobe, 2009; Racette et al., 2008), this weight gain is modest: between 1.7 +/- 4.5 pounds for females and between 4.2 +/- 6.4 pounds for males (Racette et al., 2008).

In an attempt to explain this weight gain throughout one's college career, Hoffman et al. (2006) has asserted that behavioral changes during one's freshman year predispose an individual to increase food intake while decreasing energy output. Conversely, others argue that the transition to college is a period of high stress, which may predispose an individual to develop

disordered eating patterns like binge eating (Delinsky & Wilson, 2008). Research has consistently found a variety of risk factors contribute to the weight fluctuation during one's college career (e.g., Cluskey & Grobe, 2009; Holm-Denoma, Joiner Jr., Vohs, & Heatherton, 2008; Nelson et al., 2008; Pliner & Saunders, 2008; Racette et al., 2008). Factors affecting both males and females include dietary restraint and living on campus (Cluskey & Grobe, 2009; Pliner & Saunders, 2008). Additional risk factors include decreased exercise and poorer dietary patterns (Nelson et al., 2008; Racette et al., 2008), lack of family support and absence of routines (Cluskey & Grobe, 2009), and increases in fast food and soft drink consumption.

Several risk factors associated with weight change during college are sex specific. Holm-Denoma et al. (2008) found that for men, increased vigorous exercise and sporting activities (ultimately resulting in increased muscle mass), in combination with decreased quality of relationships with parents, were predictive of weight gain during college. In addition, Cluskey and Grobe (2009) found that alcohol consumption increased risk of weight gain during college for men. On the other hand, among females, positive parental relationships (Holm-Denoma et al., 2008) and heightened academic workload (Cluskey & Grobe, 2009) were predictive of weight change.

Although much research has focused on the risk factors contributing to weight gain during college, less attention has been paid to the particular protective factors that may prevent an individual from experiencing these weight changes. One study found that living at home is an important protective factor decreasing susceptibility to weight gain during college (Pliner & Saunders, 2008). Understanding the risk and protective factors that impact weight gain during

college are important. Specifically, by understanding characteristics of persons who are at risk, one could gain a better understanding for whom to target for intervention.

Health Care Utilization among College Students

Due to sudden weight gain and poor eating patterns, on-campus mental and medical services have become increasingly important to help college students combat these issues. However, past research illustrates that not all college students are willing to utilize the available on-campus mental and medical health care services (Eisenberg, Golderstein, & Gollust, 2007; Fletcher et al., 2007; Rosenthal & Wilson, 2008; Yorgason, Linville, & Zitzman, 2008). Rosenthal and Wilson (2008) report that approximately three fourths of students who have significant levels of distress do not utilize mental health care services to combat these issues. Although certain individuals may feel distressed, they may believe that help is not needed or they may be skeptical about the effectiveness of treatment (Eisenberg et al., 2007). Research shows that only 41% of those experiencing a mental disorder in the past year utilized services. Further, there was a median delay of 11 years between the onset of the mental disorder and accessing services. Treatment seeking is impacted by gender, age, and sexual orientation (Eisenberg et al., 2007). Females, older students, and those who identify as homosexual tend to utilize mental health services more often than their male, younger, and heterosexual counterparts. Growing up poor and being Asian or Pacific Islander also predicted under-utilization of mental health services.

Consistent with the Health Belief Model, which emphasizes barriers as important determinants of help seeking, research has explored barriers to health care utilization among college students. Common barriers to mental health service use are being male, living off

campus, and being in college for a shorter period of time (Yorgason et al., 2008). Some research has reported that perceived stigma of mental health care services also serves as a barrier, inhibiting individuals from seeking mental health care services (Jambekar, Masheb, & Grilo, 2003); however, more current research dispels this notion and instead suggests that for university students, perceived stigma of mental health care services is not a strong barrier to utilizing services (Golberstein, Eisenberg, & Gollust, 2008).

Research has consistently found that untreated health problems in the young adult population are a primary reason for first-year college attrition (Fletcher et al., 2007). Younger adults typically view themselves as immune to infirmity and rarely believe that they need assistance with health problems (Fletcher et al., 2007). In related research, findings suggest that individuals with disturbed eating patterns may not perceive their problem as severe enough to warrant the utilization of mental health services, and rather, these individuals look to other sources for help, including primary care physicians, mothers, and close female friends (Mond et al., 2006).

Health Care Utilization and BED

Many studies have investigated the utilization of mental health services on college campuses (e.g., Cellucci, Krogh, & Vik, 2006; Eisenberg et al., 2007; Golberstein et al., 2008; Yorgason et al., 2008), but few have focused on the specific impact that BED may have on service utilization (e.g., Becker, Franko, Speck, & Herzog, 2003; Hepworth & Paxton, 2007; Hoffman et al., 2006). Findings highlight that the majority of individuals who binge eat, and subsequently develop binge eating disorder or bulimia, experience severe role impairment but rarely seek treatment (Hudson et al., 2007). That is, less than one half of those with BN or BED

had ever sought treatment for their eating disorder; however, the majority of people with AN, BN, or BED have sought treatment at some point for an emotional problem (Hudson et al., 2007).

One of the primary aims of this current investigation is thus to examine the frequency of medical and mental health service utilization among college students who have BED. Although the research linking BED and healthcare utilization among college students is minimal, it can be extrapolated from research involving other psychological problems (e.g., binge drinking) that services are being underutilized by the college-age population. In particular, although 67% of students who report frequent binge drinking also report a perceived need for help, only 38% actually received psychotropic medication or had at least one visit to a therapist/counselor in the past year for this problem (Cellucci et al., 2006). This relationship is significant because there is a developing theoretical and empirical evidence base which argues that binge eating may operate similarly to binge drinking and therefore should also be considered an addiction (Cassin & von Ranson, 2007; Davis & Carter, 2009). Since the etiology of binge drinking and binge eating may be related, the frequency of service utilization among college students with each of these conditions may also be comparable. The proposed investigation thus highlights the importance of improving access to prevention and intervention programs among college students with BED. In particular, the effectiveness of the initiatives designed to address this issue among college students may be enhanced if health professionals recognize that there may be substantial unmet needs for treatment.

Current Aims

The primary aims of this investigation were two-fold. First, this investigation focused on understanding the moderating factors impacting psychological and medical service utilization among college students. Second, this investigation paid particular attention to the factors impacting psychological and medical service utilization among college students with BED, as well as the potential risk factors for developing BED. In contrast to previous research (Spoor, Stice, Burton, & Bohon, 2007), the proposed study aims to understand factors related to BED among university students, rather than bulimia nervosa. This investigation focuses on BED because although less than 10% of college women report engaging in compensatory behaviors to control their weight (Mintz & Betz, 1988), 38% of college women report having a problem with binge eating.

Studies have yet to utilize a national sample of college students to assess the relationship between BED and psychological and medical health care utilization. Additionally, studies have yet to investigate the relationship between BED and other psychological comorbidities, as they impact the rate of utilization for both psychological and medical services. The disorders most highly comorbid with BED are mood, anxiety, and substance use disorders (Grilo et al., 2009). The specific focus of this investigation thus revolved around the differential frequency of psychological and medical service utilization among those with BED alone versus patterns of service utilization among those with comorbid BED and substance use disorders, BED and major depression, and BED and generalized anxiety. The high comorbidity between BED and obesity (Hudson et al., 2007; Mokdad et al., 1999; Womble et al., 2001) has also motivated this

investigation to probe whether BED and obesity confer greater mental and medical health risk than BED alone.

Although past research has investigated the relationship among impulsivity and eating disorders (Kane, Loxton, Staiger, & Dawe, 2004; Killen et al., 1996), studies have not focused specifically on the link between BED and impulsivity. This study thus investigated this relationship further. Previous findings report that heightened impulsivity, as defined as acting rashly in the face of negative affect (Fischer et al. 2003), is associated with binge eating behavior in individuals with bulimia. It was thus hypothesized that levels of impulsivity amongst individuals with BED would be greater than impulsivity levels among individuals without BED.

Studies have yet to investigate why individuals with BED are seeking treatment. Some research suggests that the majority of those with an eating disorder have sought help for an emotional problem, but less than half have sought treatment for their eating disturbance (Hudson et al., 2007). One of the primary aims of the current investigation was thus to evaluate whether those with BED sought mental or medical services for their eating pathology, or whether these individuals sought services for a different mental or medical issue.

The final goal of this study was to investigate the relationship between BED, body dissatisfaction, and service utilization. Sorbara and Geliebter (2002) note that individuals with BED have a substantially greater concern about both their weight and shape; however, past research has yet to probe this relationship between body dissatisfaction and BED in relation to seeking mental health services among college students. Overall, the results from the current investigation will help to determine which individuals are at high risk and should be targeted for early intervention.

Primary Research Questions

Understanding the relationship between gender and service utilization. *Hypothesis 1:*

It was hypothesized that college women and Caucasians would utilize mental health services more frequently than men and ethnic minorities. This hypothesis has received support from recent research which finds that lower rates of help-seeking behaviors for eating problems are noticeable among males (Guerdijkova, McElroy, Kotwal, & Keck, 2007) and ethnic minorities (Streigel-Moore et al., 2007).

Understanding those with BED who are most at risk for service utilization.

Hypothesis 2: It was also hypothesized that psychological and medical service utilization would be heightened amongst individuals with BED and some other psychological comorbidity in comparison to individuals with BED alone. Previous research suggests that individuals who binge eat seek treatment more often when their binge eating is comorbid with feelings of depression, anxiety, and/or poor self esteem (e.g., Fitzgibbon, Stolley, & Kirschenbaum, 1993; Hepworth & Paxton, 2007; Higgs, Wade, Cescato, Atchison, Slavotinek, & Higgins, 1997).

Hypothesis 3: The comorbidity between BED and obesity was also hypothesized to confer greater risk for medical and mental health service utilization. That is, obese individuals who met criteria for BED were expected to be more inclined to utilize both medical and psychological services than their non-obese counterparts.

Secondary Research Questions

Understanding the relationship between gender and the definition of “binging.”

Hypothesis 4: It was hypothesized that women, who are more likely to define their eating

behavior as a “binge” (LaPorte, 1997), would define a binge as eating a smaller amount of food than males.

Understanding risk factors for BED. *Hypothesis 5:* The fifth hypothesis was that, among college students, heightened behavioral and emotional dysregulation would confer greater risk of BED.

Hypothesis 6: It was also hypothesized that body dissatisfaction would moderate the relationship between BED and service utilization. That is, it was expected that, among those who met criteria for BED, those higher in body dissatisfaction would be more likely to utilize medical and mental health.

Understanding those with BED who are most at risk for service utilization.

Hypothesis 7: The final hypothesis was that those who met BED criteria and who had sought mental or medical health treatment would be likely to have sought treatment for a different problem, e.g., emotional issue, rather than seeking treatment for their disordered eating alone. This hypothesis emerged from the finding that less than half of individuals with an eating disorder have sought treatment for that disorder; however, the majority of those with an eating disorder and comorbid emotional/mood disorder have sought treatment for their emotional problems (Hudson et al., 2007).

Methods

Participants

The full Healthy Minds Study (HMS) sample was utilized to test hypotheses 1, 2, and 3. This sample was based on an internet survey of 24,396 college students from 26 different colleges across the nation, enrolled in the winter 2010 semester. This sample was primarily female ($N = 15,099$; 62%) and between the ages of 18 and 22 ($N = 16,337$; 68%). This sample was 68% Caucasian, 13% Asian, 8% Hispanic, 5% African American, 1% Arab/Middle Eastern, 1% Native American, 1% Pacific Islander, and 3% Multi-racial. The majority of respondents were heterosexual ($N = 22,262$; 93%) and reported that their current financial situation was “tight, but doing fine,” ($N = 13,620$; 57%). Half of respondents were single, while 31% reported being in a relationship. Participants primarily lived either off-campus, in non-university housing ($N = 10,304$; 43%), or in a campus residence hall ($N = 8,147$; 34%). The average height of respondents was 66.94 inches, and the average weight was 153 pounds. The average BMI of respondents was 24.53 ($SD = 5.24$). Participants primarily reported being in pursuit of a bachelor’s degree ($N = 17,914$; 75%). For a complete summary of all demographic information, see Table 1. Since a larger proportion of respondents were at the undergraduate academic level, all individuals in graduate school were excluded from analyses. Graduate students tend to be more heterogeneous than undergraduate students, and thus, by eliminating graduate students from these analyses, the generalizability of results (to the typical undergraduate population) should be enhanced. After excluding graduate students from the analyses, the total number of participants was reduced to 17,995. For a complete summary of all undergraduate demographic information, see Table 1. EMU students who participated in the HMS were excluded from all

Table 1

Demographic Variables for Full HMS Sample vs. Eastern Michigan University Sample

	Overall Sample <i>N</i> = 24,396	Overall Sample (Undergraduates) <i>N</i> = 17,995	EMU <i>N</i> = 1, 143	EMU (Undergraduates) <i>N</i> = 969
Age				
18 years old	10.7% (2566)	13.4% (2412)	11.9% (134)	11.6% (112)*
19 years old	16.4% (3950)	20.9% (3766)	13.3% (149)	13.7% (133)***
20 years old	15.4% (3711)	20.0% (3595)	13.4% (150)	13.8% (134)***
21 years old	15.4% (3710)	19.9% (3583)	12.9% (145)	13.7% (133)**
22 years old	10.1% (2433)	11.2% (2022)	11.0% (124)	11.5% (111)
23 - 25 years old	13.4% (3211)	7.5% (1342)	13.4% (151)	13.5% (131)**
26 – 30 years old	10.9% (2611)	3.5% (627)	9.3% (105)	8.6% (83)**
31- 35 years old	3.4% (824)	1.3% (233)	4.8% (54)	4.0% (39)*
36-40 years old	1.6% (393)	0.8% (145)	3.8% (43)	3.5% (34)*
41 + years old	2.6% (616)	1.5% (265)	6.1% (68)	6.1% (59)**
Gender				
Female	63.1% (15119)	63.9% (11484)	65.1% (729)	64.0% (619)
Male	36.3% (8848)	36.1% (6474)	34.9% (391)	36.0% (348)
Ethnicity				
Caucasian	67.8% (16246)	68.3% (12256)	72.9% (819)	73.3% (710)**
African American	4.7% (1126)	5.0% (889)	13.3% (149)	12.8% (124)***
Hispanic	8.2% (1968)	9.1% (1627)	3.1% (35)	3.1% (30)**
American Indian	1.0% (245)	1.1% (194)	1.3% (15)	1.3% (13)
Middle Eastern	1.4% (338)	1.4% (248)	2.6% (29)	2.6% (25)
Asian	12.5% (3004)	10.9% (1962)	4.3% (48)	4.3% (42)**
Pacific Islander	1.0% (231)	1.2% (212)	0.4% (5)	0.5% (5)
Multi-racial	3.3% (791)	3.2% (568)	2.0% (23)	2.1% (20)
BMI	24.53(5.24)	23.85 (4.73)	26.44(6.40)	26.13(6.22)*
Sexual Orientation				
Heterosexual	92.5% (22147)	92.6% (16640)	90.7% (1014)	90.5% (874)*
Bisexual	2.9% (705)	2.9% (526)	4.7% (52)	4.9% (47)*
Gay/Lesbian/Queer	2.7% (647)	2.5% (451)	2.9% (32)	2.9% (28)
Questioning	0.7% (171)	0.7% (130)	0.7% (8)	0.7% (7)
Other	1.1% (268)	1.2% (219)	1.1% (12)	1.0% (10)
Residence				
Campus residence	33.5% (8028)	40.5% (7286)	20.3% (228)	20.4% (197)***

Fraternity/Sorority House	1.3% (304)	1.6% (289)	0.9% (10)	1.0% (10)
Other university housing	7.2% (1721)	6.5% (1175)	2.8% (31)	3.1% (30)*
Off-campus, non-university housing	43.2% (10351)	35.0% (6305)	49.3% (553)	49.0% (474)***
Parent/ guardians home	13.1% (3146)	15.1% (2715)	23.6% (265)	24.0% (232)***
Other	1.7% (412)	1.2% (220)	3.1% (35)	2.6% (25)
Degree Program				
Associates Degree	3.5% (843)	3.0% (540)	6.7% (69)	6.3% (61)*
Bachelor's Degree	74.5% (17807)	97.0% (17455)	89.9% (914)	93.3% (927)*
Master's Degree	14.6% (3488)	N/A	3.4% (34)	N/A
JD	1.7% (415)	N/A	0.1% (1)	N/A
MD	0.7% (176)	N/A	0.1% (1)	N/A
PhD or equivalent	5.9% (1411)	N/A	0.2% (2)	N/A
Other	2.3% (543)	N/A	4.9% (50)	N/A
Religiosity				
Very religious	12.1% (2893)	12.5% (2246)	12.7% (129)	11.9% (115)
Fairly religious	29.7% (7091)	31.0% (5561)	37.3% (379)	36.4% (353)**
Not too religious	29.7% (7110)	29.5% (5305)	29.2 (297)	29.8% (289)
Not religious at all	28.5% (6812)	27.0% (4852)	20.8% (212)	21.9% (212)**
Current Financial Situation				
It's a financial struggle	18.6% (4456)	18.9% (3385)	29.7% (332)	29.8% (288)***
It's tight but I am doing fine	57.4% (13722)	56.4% (10125)	57.6% (644)	57.8% (559)
Finances aren't really a problem	23.9% (5717)	24.7% (4436)	12.7% (142)	12.4% (120)***
Relationship Status				
Single	50.3% (11992)	55.2% (9881)	43.3% (485)	43.6% (422)***
In a relationship	38.8% (9255)	39.4% (7055)	39.8% (446)	40.7% (394)
Married	9.9% (2365)	4.7% (838)	14.6% (163)	13.4% (130)***
Divorced	0.9 (209)	0.7% (118)	2.2% (25)	2.3% (22)
Widowed	0.1 (20)	0.1% (10)	0.1% (1)	0.1% (1)

Note: Data are presented as percentages (number of participants) for all variables except BMI, which is presented as *M* (SD), with * $p < .05$, ** $p < .01$, *** $p < .001$ as indicators that EMU undergraduates were significantly different than the overall sample of undergraduates.

analyses in which the full HMS sample was directly compared to the EMU sample, and thus, for these analyses, the total number of participants was reduced to 16,965. This was done to ensure that these samples were in fact independent.

A smaller sample ($N = 1,143$) was utilized to test hypotheses 4, 5, 6, and 7. These analyses utilized data from a subsample of the full HMS dataset, composed of 1,143 students respondents were heterosexual ($N = 1014$; 91%) and reported that their current financial situation attending Eastern Michigan University (EMU) in the winter 2010 semester. This sample was primarily female ($N = 729$; 65%) and between the ages of 18 and 22 ($N = 702$, 63%). This sample was 73% Caucasian, 13% African American, 4% Asian, 3% Hispanic, 3% Arab/Middle Eastern, 1% Native American, 0.4% Pacific Islander, and 2% Multi-racial. The majority reported their current financial situation as “tight, but doing fine,” ($N = 644$; 58%). Approximately 43% of respondents were single, while 40% reported being in a relationship. Participants primarily lived either off-campus, in non-university housing ($N = 553$; 49%) or in a parent or guardian’s home ($N = 265$; 24%). The average height of respondents was 67.36 inches, and the average weight was 171 pounds. The average BMI of respondents was 26.44 ($SD = 6.40$). Participants reported primarily reported being in pursuit of a bachelor’s degree ($N = 914$; 90%). For a complete summary of all demographic information, see Table 1. Since a larger proportion of respondents were at the undergraduate academic level, all individuals in graduate school were excluded from analyses. Graduate students tend to be more heterogeneous than undergraduate students, and thus, by eliminating graduate students from these analyses, the generalizability of results (to the undergraduate population) should be enhanced. Once graduate students were eliminated from the

analyses, the total number of respondents was reduced to 1,030. Sixty-one of these individuals failed to complete more than 50% of the entire HMS survey, including the associated custom questions necessary to assess the secondary research questions; thus, their data was unusable. This reduced the sample of EMU undergraduate participants to 969. For a complete description of the demographic information for the EMU undergraduate sample, see Table 1.

Brief overview of HMS

HMS is an annual national survey administered online, which examines mental health issues among university students. Utilizing data from the HMS, one is able to evaluate a range of mental health topics including the prevalence of mental health conditions (i.e., depression and anxiety), utilization of mental health services, potential barriers to utilizing mental health services, the association between mental health and a variety of demographic variables, and positive mental health (“flourishing”). A limited number of customized items of our choosing were added to the HMS online survey. HMS allows institutions who pay a \$4,000 fee to include up to 10 customized items to be administered to a subsample of HMS participants. This subsample of participants is always drawn from the specific institution creating the custom questions.

Participating institutions were asked to submit a list of undergraduate and graduate students to CSS (Center for Student Studies). CSS then drew a simple random sample from each institution to take the HMS survey. CSS first identified the people from each institution that would be solicited for participation. CSS then contacted the host institution and requested additional information on the proposed subjects. CSS then received the necessary information to draw this sample electronically from participating institutions via a password-protected, 128-bit

SSL-encrypted web environment. The necessary information that was transmitted to CSS included student name, student ID (or a school-provided e-mail address that serves as a unique identifier), e-mail address, undergraduate/graduate status, primary mailing address (including complete, 5-digit postal code), race, ethnicity, sex, secondary mailing address (such as a permanent address), date of birth or age, year in school or program, field of study or degree, GPA, in-state/out-of-state residency, and international/temporary resident status (for non-US citizens). Upon receipt of these sample identifiers, CSS provided each respondent with a random identifier. This practice separated identifying information from project data, and CSS did not allow any other parties to access identifying information. These potential subjects were then contacted and asked about their willingness to participate.

The aid of each institution's Information Technology department (IT) was required to develop the list of students from which CSS drew its sample. At EMU, this process consisted of submitting a request for service (RoS) and IT student request form to the IT department. The assistance of IT was necessary to enable CSS to acquire the necessary information to send the e-mails to potential participants, while also ensuring that all of the email addresses/domains/IP Addresses of CSS were whitelisted. This also ensured that emails to potential participants did not get blocked by SPAM filters.

Procedure

After receiving the contact information of potential respondents (see above), a postal letter was sent out to these select individuals. This letter invited individuals to take part in an online survey about mental health issues among university students. In the letter, a \$1 incentive to participate was included. Five days later, e-mail invitations were distributed to these same

students. In this e-mail, there was a link to the research instrument and a random identifier. Depending on when they completed the survey, students received up to three reminder e-mails, distributed within three-day increments. For a full description provided to participants regarding the purpose of this study, see Appendix A. After reading this description of the study, participants indicated their consent by clicking a link to begin the online survey. Participants were able to opt out of future contact by replying to the e-mail and requesting to be removed from the study. This survey was administered online and took approximately 15-20 minutes to complete. Data were collected at each university during a two-week window that varied across four time frames, based on the university's schedule. The scheduled data collection period for EMU participants ran from February 1 through February 16. Four months after the end of the data collection period, CSS provided each institution with a compact disc including all of the necessary data required to facilitate analysis.

Sampling Error

Approximately 4,000 EMU students were originally selected to be sampled; however, the target goal was to obtain at least 1,000 responders from EMU alone. Of the 4,000 EMU students selected, 3,000 were selected to receive only e-mail contact, while the remaining 1,000 were to receive both e-mail and postal mail contact. However, 379 of these 1,000 individuals received two different unique identification numbers; that is, these individuals received a different identification number in the mailing letter than through e-mail correspondence. Of those receiving duplicate ID numbers, 123 of them accessed the survey. Demographic information was gathered for these respondents in an attempt to pin each line of data to the correct student.

Approximately 90 of the 123 students were identified through this process, and the remaining 33 students were eliminated from the analysis prior to our receipt of the cleaned data file.

Measures

The full HMS web survey assesses demographics, positive mental health (i.e., flourishing and languishing in life), depression, anxiety, panic disorder, pathological eating behaviors, substance abuse, perceived need for and utilization of mental health services, and barriers to health care utilization. The standardized measures of most importance are summarized below. These measures were administered to all individuals who chose to participate in the HMS.

In addition to the full survey, 10 new items were added to this measure administered only to the sample of college students attending Eastern Michigan University in the winter 2010 semester. These additional items assessed how one defines an eating binge, weight gain/loss during college, self-classification of weight, location of, and reason for, health care utilization, emotional dysregulation, and athletic involvement. The additional items of most importance are summarized below. These measures were administered only to the subsample of EMU participants.

Demographic characteristics. Information was collected on a variety of demographic variables including age, gender, race/ethnicity, sexual orientation, living arrangements, academic level, religiosity, financial status, relationship status, height, and weight (see Appendix B). For this investigation, two demographic variables were utilized: gender and race/ethnicity. The height and weight variables were utilized to calculate BMI (body mass index).

Patient Health Questionnaire depression screening. The Brief Patient Health Questionnaire Mood Scale (PHQ-9; Kroenke, Spitzer, & Williams, 2001) is an instrument based

upon the nine diagnostic criteria in the DSM-IV-TR required for a diagnosis of a major depressive episode, see Appendix C. This measure assesses an individual's experience with depressive symptoms over the past two weeks on a 4-point scale: 0 = *Not at all*, 1 = *Several days*, 2 = *More than half the days*, and 3 = *Nearly every day*. Note that on the actual survey, items were scored on a 4-point scale: 1 = *Not at all*, 2 = *Several days*, 3 = *More than half the days*, and 4 = *Nearly every day*; however, items were re-coded before data analysis to be in line with the standard scoring of zero to three. Scores on the PHQ-9 range from 0 to 27, with specific cut-points for mild (5-9), moderate (10-14), moderately severe (15-19), and severe depression (20-27). No items on this measure are reverse scored. Sample items include, "Over the last 2 weeks, how often have you been bothered by feeling little interest or pleasure in doing things?" and "Over the last 2 weeks, how often have you been bothered by feeling down, depressed, or hopeless?" The following scoring algorithm for the PHQ-9 was utilized to categorize people into the following groups: major depression, other depression (dysthymia or depression not otherwise specified), any depression (either major depression or other depression), or neither. Major depression was diagnosed if five or more of the nine depressive symptoms were reported to be present at least "more than half the days" and one of the symptoms was depressed mood or anhedonia. For this particular investigation, only individuals who met the criteria for major depression were considered.

The PHQ-9 has been demonstrated to be sensitive to changes in depression severity (.98) (Spitzer et al., 1999). Reliability for this measure was established based on internal consistency ($\alpha = .89$) and test-retest reliability (*intraclass correlation coefficient* = .84 within 48 hours) (Kroenke, Spitzer, & Williams, 2001). The diagnostic validity of the PHQ-9 was examined in a

sample composed of eight primary care and seven obstetrical clinics. These findings indicated that PHQ-9 scores greater than 10 had a sensitivity and specificity of .88 for major depression (Kroenke et al., 2001). The PHQ-9 was originally validated in medical settings (Kroenke et al., 2001), but more recently, this instrument was validated for use in the general population as well (Martin, Rief, Klaiberg, & Braehler, 2006).

Patient Health Questionnaire anxiety screening. Item five of the Patient Health Questionnaire (PHQ; Spitzer, Kroenke, & Williams, 1999) is a seven-question module assessing symptoms of generalized anxiety disorder (see Appendix D). This module begins with the following question, “Over the last 4 weeks, how often have you been bothered by feeling nervous, anxious, on edge, or worrying a lot about different things?” This item is measured on a 3-point scale: 1 = *Not at all*, 2 = *Several days*, and 3 = *More than half the days*. Persons endorsing either a two or three on this item were then asked to complete six additional questions concerning other generalized anxiety symptoms. Scores on this measure ranged from 1 to 21, with higher scores indicating more severe anxiety symptoms. The following algorithm was used to screen for the presence of clinically significant anxiety and was based on the DSM-IV-TR criteria for generalized anxiety disorder. Individuals were classified as having any anxiety if they endorsed the initial screening question and endorsed ratings of “more than half the days” for three or more of the follow-up questions. For this investigation, only participants whose scores indicated that they had some form of anxiety were considered. The full PHQ anxiety scale has shown specificity and sensitivity for generalized anxiety disorder (.97; Spitzer et al., 1999).

Questionnaire on Eating and Weight Patterns – Revised (QEWP-R; Spitzer, Yanovski, Marcus, 1994). The QEWP-R is a 28-item measure commonly used as a screening

instrument to identify and diagnose individuals with binge eating disorder and bulimia nervosa according to the DSM-IV-TR criteria. In this investigation, the QEWP-R also assessed the type and frequency of behaviors associated with overeating, binge eating, and weight control strategies over the past six months. Three items from the QEWP-R were included in the HMS questionnaire, see Appendix E. These items included, “During the past six months, did you often eat within any two hour period what most people would regard as an unusually large amount of food?” “During the times when you ate this way, did you often feel you couldn’t stop eating or control what or how much you were eating?” and “During the past six months, how often, on average, did you have times when you ate this way—that is, large amounts of food plus the feeling that your eating was out of control?” The first two items were dichotomously scored (1= *Yes*, 2= *No*). For all the dichotomous items in this measure, a greater number of “yes” responses indicated endorsing a greater number of the criteria associated with pathological eating patterns (e.g., binge eating disorder). The third question mentioned above was measured on a 5-point scale: 1 = *Less than one day a week*, 2 = *One day a week*, 3 = *Two or three days a week*, 4 = *Four or five days a week*, and 5 = *Nearly every day*. For this item, higher scores indicated greater difficulty controlling eating. The primary variable of interest for this investigation was BED; thus, individuals meeting the DSM-IV-TR criteria for BED were of particular interest. To meet the diagnostic criteria, individuals must have endorsed both dichotomously scored items, as well as respond with a 3 or higher on item three.

Internal consistency reliability for this measure has been examined in a weight control sample ($\alpha = .75$) and a community sample ($\alpha = .79$; Spitzer et al., 1994). The test-retest reliability of the QEWP-R in the diagnosis of BED within a sample of self-referred binge eaters and a

control sample was adequate ($k = .58$ over a four week period; Nangle, Johnson, Carr-Nangle, & Engler, 1994). The QEWP-R items are able to correctly identify 88% of women diagnosed with BED through a clinical interview. It also has an adequate positive predictive value ($ppv = .82$) of true binge eating (Borges, Morgan, Claudion, & de Silveira, 2005).

Definition of an eating binge. Among the additional items added to the HMS survey instrument, the first inquired about the definition of an eating binge, see Appendix F. This item acted as a quantitative index of a binge and was utilized to assess the different ways of defining an eating binge that may differ based on gender. Based on previous research (LaPorte, 1997), it was hypothesized that females would define bingeing by eating a smaller quantity of food than males. Possible response options were adopted from Allison and Timmerman (2007), who analyzed bingeing episodes and the types of foods consumed during a binge based on a 14-day food diary. This item, which stated, “Please check the response that most accurately captures what you consider to be the SMALLEST amount of food necessary to constitute an eating binge,” was measured on a 6-point scale: 1 = *A salad and 1 tablespoon of dressing*, 2 = *1 slice of pizza and a 20 oz. soft drink*, 3 = *1 large (family size) bag of potato chips*, 4 = *1 full-size loaf of bread with a tub of butter*, 5 = *2 dozen cookies*, and 6 = *1 half gallon tub of ice cream and 2 slices of cake*. Scores on this item ranged from 1 to 6, with higher scores indicating that a larger quantity of food (based upon caloric content) was necessary to constitute an eating binge. Caloric information for each food item was obtained from the website Sparkpeople.com. This website provides a nutrition calculator in which the type of food can be specified and the associated caloric, fat, and carbohydrate information is provided. The psychometric properties for this item have yet to be established.

Multidimensional Body Self-Relations Questionnaire-Appearance Scale (MBSRQ-AS; Cash, 2000). The MBSRQ-AS is a 34-item self-report questionnaire measuring attitudinal aspects of body image. The MBSRQ-AS specifically assesses the cognitive, affective, and behavioral components of appearance and body image. For this investigation, only one item from the two-item SCWT subscale of the MBSRQ-AS was included based on the limited number of items able to be added to this survey instrument, see Appendix G. This item facilitated the investigation of the relationship between binge eating and “weight problem perception” (WPP) (Saules et al., 2009). This item, which was used to identify self-perception of weight status, asked for participants to finish the following statement, “I think I am” is measured on a 5-point scale: 1 = *Very underweight*, 2 = *Somewhat underweight*, 3 = *Normal*, 4 = *Somewhat overweight*, and 5 = *Very overweight*. Higher scores were indicative of perceiving and labeling yourself as having a higher weight. Psychometric data on the single item from the SCWT being utilized is not available; however, past researchers have utilized this item in investigating the relationship between self-classification of weight and binge eating (Saules et al., 2009). These findings suggest that across overweight and non-overweight groups, those who believed they were overweight are significantly more likely to binge eat (Saules et al., 2009).

Substance use. All questions which assessed substance use in the HMS survey instrument were drawn from the College Student Life Survey (CSLS; Boyd & McCabe, 2009). This is a comprehensive survey instrument utilized to assess life characteristics and behaviors, including alcohol and other drug use, among college students. The questions on this instrument assess a variety of topics including heavy episodic drinking, drinking motivations, living arrangements, college grade point average, and past problem behaviors. The CSLS questionnaire

drew items adopted from numerous other studies (e.g., Johnston, O'Malley, & Bachman, 2000). One sample item adopted from the CSLS for the HMS relevant to this investigation concerned cigarette use (see Appendix H). This item, which read, "On average, how many cigarettes did you smoke in the past 30 days?" was measured on a 9-point scale: 1 = *None*, 2 = *Less than one cigarette per day*, 3 = *One to five cigarettes per day*, 4 = *About one-half pack per day*, 5 = *About one pack per day*, 6 = *About one and one-half packs per day*, 7 = *2 or more packs per day*, 8 = *Don't know*, and 9 = *Refused to answer*. All individual responses at an 8 or 9 were coded as missing data. Thus, possible scores on this item ranged from 1 to 7, with higher scores indicating heavier smoking. All individuals who reported smoking within the last 30 days were considered "smokers" for this investigation. Unfortunately, measures assessing the quantity and frequency of substance use among college students are nearly impossible to validate, thus, there are no reliability and validity coefficients available to report. However, the CSLS does utilize standardized questions from other studies in an attempt to counteract this drawback.

The College Alcohol Study (CAS; Wechler, Davenport, Dowdall, Moeykens, & Castillo, 1994) is a 20-page survey instrument utilized to assess student drinking behavior and other health issues. This instrument specifically inquires about patterns of binge drinking and the negative consequences experienced from your own, or others', binge drinking patterns. This instrument includes a two-item assessment of binge drinking patterns (see Appendix H). Items included, "Think back over the last two weeks. How many times have you had five or more drinks in a row?" and "During the last two weeks, how many times have you had four drinks in a row?" These items were measured on an 8-point scale: 1 = *None*, 2 = *Once*, 3 = *Twice*, 4 = *3 to 5 times*, 5 = *6 to 9 times*, 6 = *10 or more times*, 7 = *Don't know*, and 8 = *I refuse to answer this*.

These items are gender specific. The first item captured binge drinking among males, while the latter attempted to capture the number of females who binge drink in college. All responses at either a “7” or “8” were coded as missing data in this analysis. Scores were not summed across items because each item is gender specific; however, higher scores on either item indicated more problematic drinking behavior. Since this investigation was specifically interested in binge drinking, only individuals who met the criteria for frequent binge drinking were utilized. Consistent with the standard definition of binge drinking (NIAAA Newsletter, 2004), binge drinking status was defined as having consumed five drinks in a row for a male and four drinks in a row for females, at least once in the past two weeks. The same problem concerning reliability and validity that exists for the CSLS also exists for the CAS. That is, there was no available reliability or validity data to report.

Health care utilization. The Healthcare for Communities Study (HCS; Wells, Sturm, & Burnam, 2004) is a study designed to provide information on how the healthcare system is functioning and changing for people with alcohol, drug abuse, and mental health conditions. This study tracks changes in health policy, health care delivery, access to care, and costs and outcomes of care. HCS links primary data collected from households, employers, and public agencies with secondary data sources. For this investigation, participants’ responses on two items assessing the utilization of mental health and medical services over the past year, adopted from the HCS and included in the full HMS web-based survey, were of particular interest (see Appendix I). These items asked, “In the past 12 months, have you received counseling or therapy for your mental or emotional health from a health professional (such as a psychiatrist, psychologist, social worker, or primary care doctor)?” and “In the past 12 months, have you

visited any medical provider, such as a primary care doctor or other type of doctor, for a check-up or any other health reasons?" These items were dichotomously scored (1 = *Yes*, 2 = *No*). Lower scores on either item indicated a greater utilization of mental health or medical services within the past 12 months. Since one of the primary aims of the current investigation was to assess service utilization disparities among college students, responses to these items were of great importance. The same problem concerning reliability and validity that exists for the CSLS and CAS, however, also exists for the HCS. That is, there is no available reliability or validity data to report.

One item added to the HMS investigated the frequency with which persons with self-reported eating problems sought treatment for these difficulties, see Appendix I. This item specifically assessed whether individuals who reported binge eating, who have sought help for some medical/psychological issue, actually sought help for their binge eating. Past research indicates that this is not necessarily true. Specifically, less than one half of those with BN or BED had ever sought treatment for their eating disorder. However, the majority of people with AN, BN, or BED have sought treatment at some point for an emotional problem (Hudson et al., 2007). Thus, this item, which asked, "If you sought help for an emotional, mental health, or behavioral problem, what was the problem you were experiencing?" was treated as an open-response item. No restrictions were placed on the response a participant was able to provide. The purpose of this item was to compare self-reported eating problems with an individual's reason for seeking medical/mental health services. Psychometric properties for this item have yet to be established.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The final two additional items added to the HMS were derived from the DERS. The DERS is a 41-item self-report measure used to assess difficulties in emotion regulation. This measure is composed of six subscales: nonacceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotional regulation strategies, and lack of emotional clarity. Research finds that the majority of the items on the DERS are correlated with one another (Gratz & Roemer, 2004). Due to this finding, and the limited number of questions allowed to be added to the HMS 2010 online survey, only two items from the impulse control difficulties subscale of the DERS were included in this investigation (see Appendix J). These items asked one to rate, “When I’m upset, I have difficulty controlling my behaviors,” and “I experience my emotions as overwhelming and out of control.” on a 5-point scale: 1 = *Almost never*, 2 = *Sometimes*, 3 = *About half the time*, 4 = *Most of the time*, 5 = *Almost always*. These items were selected to facilitate the investigation of the effect emotional and behavioral dysregulation exert on binge eating behavior. These two particular items were selected from the impulsivity subscale based on having the highest factor loadings (.72 and .52, respectively). Higher scores on the former item indicated a higher level of behavioral dysregulation, while higher scores on the latter indicated a higher level of emotional dysregulation.

Data Analysis

Data analysis was conducted utilizing SPSS version 18.0. Based on the aforementioned hypotheses, this assessed the risk factors for both service utilization and BED. In addition, amongst those with and without BED, this investigation assessed the factors elevating risk for

service utilization. Follow-up analyses investigating the factors of most importance in modulating the relationship between medical and mental health service utilization and BED were also investigated. These follow-up analyses included binary logistic regressions and structural equation modeling (SEM).

SEM. Mplus version 5.21 (Muthén & Muthén, 1998-2007) was utilized to estimate model parameters. SEM models were estimated using the full information maximum likelihood estimation procedure. The Montecarlo integration procedure was also utilized, given that the data to be analyzed included categorical outcomes and lacked item level indicators (Muthén & Muthén, 1998-2007). When utilizing SEM with categorical indicators, logistic regression analysis procedures are employed; thus, the typical overall model fit statistic (χ^2) was not generated, and instead, the log likelihood ratio was compared for each hypothesized model to assess superior model fit. Additional fit indices produced included the Akaike Information Criterion (ACI; Akaike, 1974) and Bayesian Information Criterion (BCI; Schwartz, 1978). Although no criteria cut-off scores are suggested for comparing these fit indices, it is suggested that when comparing competing models, a higher log likelihood ratio and lower ACI and BCI indices are preferred. These values are utilized as indications of superior model fit amongst the competing models (Bollen & Long, 1993).

Non-response weight. To account for non-response, a non-response weight was applied. This weight helped to account for any response bias due to differential non-response patterns that existed between groups. Administrative data on gender, academic level, GPA, and race/ethnicity were utilized to construct this non-response weight. Each of these variables was utilized as predictors in a regression equation, estimating the likelihood of an individual responding based

on these demographic features. Each of the HMS study respondents were then assigned a “predictive probability” of response based on this equation. The non-response adjustment weight was defined as the multiplicative inverse of that “predictive probability.”

Group formation. In order to investigate the factors which moderated service utilization, a variety of new variables was created. The first variable included all survey respondents, differentiating those who met criteria for BED and those who did not. To be classified as having BED, participants must have endorsed eating a large amount of food in a short period of time while also feeling as though their eating was out of control during this time (see Appendix E). In addition, participants must have endorsed the third item of the QEWP-R, which states, “During the past six months, how often, on average, did you have times when you ate this way—that is, large amounts of food plus the feeling that your eating was out of control?” at “two to three times per week.” All participants who did not meet these criteria were classified as not having BED.

To investigate the impact that comorbidity exerted on service utilization, two new variables were created. The first variable differentiated between those with and without major depression. To be classified as having major depression, the following standardized algorithm for the PHQ-9 was utilized. Major depression was diagnosed if five or more of the nine depressive symptoms of the PHQ-9 questionnaire were endorsed at least “more than half the days” and one of the symptoms was depressed mood or anhedonia (see Appendix C). The second variable differentiated between those with anxiety and those without. To be classified as having any anxiety, the following standard algorithm for the generalized anxiety module of the PHQ was utilized. This algorithm entailed classifying participants as having any anxiety if one answered yes to the initial screening question, as well as answering “more than half the days,” for three or

more of the follow-up questions (see Appendix D). The number of comorbid conditions was then summed to facilitate the use of a t-test analysis to examine whether service utilization was heightened amongst those with a greater number of comorbid conditions in comparison to those with BED alone.

To investigate the moderating effect of BED and obesity on service utilization, BMI was computed. BMI was computed based on the following standardized algorithm. Specifically, $BMI = (\text{Weight in Pounds} / (\text{Height in inches}) \times (\text{Height in inches})) \times 703$. To be classified as being “obese,” one must have had a BMI greater than or equal to 30 kg/m^2 .

Primary research questions.

Hypothesis/analysis one. It was expected that college women and Caucasians would be more inclined to utilize mental and medical services over males and ethnic minorities. To begin hypothesis testing, a logistic regression analysis was conducted, with gender, race/ethnicity, and their interaction as predictors of health care utilization.

Hypothesis/analysis two. Next, it was expected that those utilizing services would be more likely to have BED and comorbid psychopathology rather than manifesting BED alone. First, it was necessary to establish that individuals with BED were utilizing services at a greater frequency than individuals without BED. Then, it was necessary to compare whether individuals with BED who also had comorbid psychological problems (e.g., depression, anxiety, heavy alcohol use, or smoking) utilized services at a higher frequency than those manifesting BED alone. Thus, a new variable, BED plus comorbidities, was created to distinguish between individuals with BED alone and individuals with BED plus other psychopathology. A logistic regression analysis was then conducted with BED status (yes/no) and BED plus comorbidities as

predictors of health care utilization. The final step in hypothesis testing involved assessing whether the number of comorbid conditions individuals with BED had impacted rates of service utilization. A t-test was utilized to test this hypothesis after the necessary variables were created. The first variable was a dichotomous variable encompassing individuals with BED who utilized services and individuals with BED who did not utilize services. The second variable created was a count of the number of comorbid conditions an individual reported, which included depression, anxiety, binge drinking, and cigarette use. This hypothesis was supported if a higher number of comorbid conditions amongst those with BED who utilized services were reported over those with BED who did not utilize services.

Hypothesis/analysis three. It was also hypothesized that the comorbidity between BED and obesity would confer greater risk for medical and mental health service utilization. That is, individuals who were obese, who also endorsed full BED criteria, would be at the greatest risk for seeking medical or psychological services in comparison to non-obese individuals with BED. To begin hypothesis testing, logistic regression analyses was conducted, with BED, obesity (as measured by BMI), and their interaction as predicting medical and mental health service utilization. Follow-up analyses (e.g., chi-square tests of independence) were run to assess whether service utilization differed by obesity classification (see Table 2).

Secondary research questions.

Hypothesis/analysis four. It was hypothesized that men and women would differ in the quantity of food necessary to constitute an eating binge. Specifically, it was hypothesized that women would define a binge as eating a smaller quantity of food than men. To create an objective index of binge size, a single close-ended response item assessing the amount of food

Table 2

World Health Organization Body Mass Index Classification Table

Classification	BMI (kg/m)
Underweight	<18.50
Normal Range	18.50 - 24.99
Overweight	≥25.00
Obese	≥30.00

required to constitute an eating binge was utilized (see Appendix F). A t-test was then conducted comparing men and women on the calories each gender required to constitute an eating binge. Post-hoc analyses were run to ensure that the relationship between these variables was not solely a function of weight.

Hypothesis/analysis five. It was hypothesized that college students with heightened behavioral and emotional dysregulation would be at greater risk for BED. To test this hypothesis, a three variable logistic regression analysis was conducted, with behavioral dysregulation, emotional dysregulation, and their interaction predicting BED.

Hypothesis/analysis six. It was hypothesized that body dissatisfaction would moderate the relationship between BED and service utilization. To begin hypothesis testing, a new variable was created encompassing the interaction between body dissatisfaction and BED. This variable was computed by taking the product of BED status and level of body dissatisfaction (as determined by one's score on one item from the MBSRQ-AS; see Appendix G). A three variable logistic regression analysis was then conducted with BED status (presence/absence), body dissatisfaction, and their interaction predicting service utilization.

Hypothesis/analysis seven. Finally, it was hypothesized that those who had sought mental or medical health treatment and had BED would have sought treatment for a different problem, e.g., emotional issue, rather than seeking treatment for their disordered eating alone. To assess reasons for seeking medical/mental treatment, subjects were asked, “If you sought help for an emotional, mental health, or behavioral problem, what was the problem you were experiencing?” These qualitative responses were placed into one of three mutually exclusive categories: 1. those seeking treatment for primarily an eating problem, 2. those seeking treatment for an eating problem and another psychological problem, and 3. those seeking treatment for other psychological problem. A 2 x 3 chi-square analysis was then conducted comparing BED status (present/absent) to reason for seeking treatment (see the three groups listed above). For this hypothesis to be supported, a high chi-square value must be obtained indicating that our observations do not match our expectations.

Follow-up analyses. As mentioned above, amongst the significant factors impacting both BED and service utilization, follow-up analyses investigating which factors are of most importance in modulating this relationship were also investigated. These follow-up analyses employed the use of binary logistic regression analyses and SEM modeling (see the “SEM” section above for full-description of the procedure employed to conduct this analysis).

Results

In order to compare independent samples, it was first necessary to remove all EMU responders from the full HMS sample. Thus, the following analyses, which directly compared these two samples, are comparisons of HMS undergraduate respondents (excluding EMU participants) to EMU respondents. Hypothesis one through three, however, utilized all undergraduate respondents who participated in the HMS (including EMU respondents), given that there were no direct comparisons between the *full* HMS and EMU sample in these analyses. Similarly, hypotheses four through seven were tested utilizing the *full* sample of EMU respondents. It should be noted that the response rate among EMU students to the HMS survey was 29%, which was relatively low compared to the average response rate from other universities completing the HMS during the same two week window, which was approximately 42%. This low response rate is partially attributable to the fact that at the time the HMS survey was being administered to EMU students, several other campus-wide student surveys were also being conducted.

Preliminary Analysis

Differences between Undergraduates from HMS and EMU.

HMS undergraduates. Preliminary analysis indicated that 10% of participants met full criteria for a major depressive disorder, and 11% endorsed experiencing some form of anxiety within the past 4 weeks, see Table 3. In addition, 17% of respondents endorsed smoking at least once in the past 30 days, and 48% endorsed binge drinking, that is, consuming five or more drinks in a row for males or four or more drinks in a row for females, at least once within the

Table 3

Psychopathology and Service Utilization Rates for Undergraduates from the Full HMS sample versus Eastern Michigan University Sample

	Overall Sample (Excluding EMU respondents) <i>N</i> = 16,965	Eastern Michigan University <i>N</i> = 969	
Major Depression			
Yes	9.6% (1579)	11.5% (111)	n.s.
No	90.4% (14801)	88.5% (857)	
Any Anxiety			
Yes	11.4% (1860)	14.1% (137)	n.s.
No	88.6% (14393)	86.5% (832)	
Binge Eating Behavior			
Yes	31.6% (5124)	33.2% (321)	n.s.
No	68.4% (11092)	66.8% (647)	
Binge Eating Symptom			
Yes	13.9% (2259)	15.7% (152)	n.s.
No	86.1% (13949)	84.2% (816)	
Binge Eating Disorder			
Yes	7.1% (1154)	9.3% (90)	*
No	92.9% (15048)	91.3% (878)	
Smoked in past 30 days			
Yes	17.0% (2732)	23.8% (230)	***
No	83.0% (13351)	76.2% (737)	
Obese			
Yes	8.7% (1373)	22.3% (212)	***
No	91.3% (14477)	77.7% (737)	
Binge Drinker			
Yes	47.7% (7652)	36.4% (351)	***
No	52.3% (8386)	63.6% (612)	
Psychological Service utilization (past 12 months)			
Yes	16.9% (2691)	16.0% (155)	n.s.

No	83.1% (13249)	84.0% (812)	
Currently in Therapy			
Yes	6.4% (1022)	6.0% (58)	n.s.
No	93.6% (14915)	94.0% (909)	
Medical service utilization			
Yes	80.2% (13038)	79.3% (759)	n.s.
No	19.8% (2750)	20.7% (198)	

Note: Data are presented as M (SD), with n.s. = not significant, * $p < .05$, *** $p < .001$.

past two weeks. The average BMI of respondents was 23.83 ($SD = 4.64$), and although this value falls into the “normal” weight category according to the World Health Organization BMI classification table (WHO, 2006; see Table 2), 9% of this sample had a BMI greater than 30 kg/m^2 , thus being classified as “obese.”

The two primary variables of interest in this investigation were binge eating and health care utilization. There are three ways in which binge eating was conceptualized in this investigation. That is, binge eating was considered a *behavior* (those who consume an unusually large amount of food in a short period of time), a *symptom* (those who feel a loss of control during a binge episode), and an eating *disorder* (for the full criteria of BED, see above). Binge eating was prevalent in this sample with 32% of respondents reporting engaging in binge eating *behavior*, 14% endorsing binge eating as a *symptom*, and 7% meeting full BED criteria. In terms of health care service utilization, 80% of this sample reported seeking some form of medical service in the past 12 months, 17% reported receiving therapy from some form of mental health service within the last 12 months, and 6% of respondents reported currently being in therapy.

EMU undergraduates. Preliminary analysis indicated 12% of participants met full criteria for a major depressive disorder, and 14% endorsed experiencing some form of anxiety

within the past 4 weeks (see Table 3). In addition, 24% of respondents endorsed smoking at least once in the past 30 days, and 36% endorsed binge drinking, that is, consuming five or more drinks in a row for males or four or more drinks in a row for females, at least once within the past two weeks. The average BMI of respondents was 26.36 ($SD = 6.35$). This value falls within the “overweight” range on the BMI scale (WHO, 2006; see Table 2), and 22% of this sample had a BMI greater than 30 kg/m^2 , thus being classified as “obese.” Binge eating was prevalent in this sample with 33% of respondents reporting engaging in binge eating *behavior*, 16% endorsing binge eating as a *symptom*, and 9% meeting full BED criteria. In terms of health care service utilization, 79% of this sample reported seeking some form of medical service in the past 12 months, 16% reported receiving some form of mental health service within the last 12 months, and 6% of respondents reported currently being in therapy.

Differences between HMS undergraduates and EMU undergraduates. Post-hoc analyses were conducted to determine whether these two samples were significantly different (see Table 3). Results indicated that EMU undergraduates were significantly more likely to meet full criteria for BED, $X^2(1) = 5.43, p < .05$, have smoked within the past 30 days, $X^2(1) = 28.45, p < .001$, and be classified as “obese,” $X^2(1) = 111.53, p < .001$. These samples were also different with regard to self-reported binge drinking. That is, undergraduates from EMU were significantly less likely than undergraduate students from across the nation to have engaged in a binge drinking episode within the past two weeks, $X^2(1) = 18.10, p < .001$.

Primary Research Questions

Hypothesis one. It was expected that undergraduate women and Caucasians would be more inclined to utilize mental and medical services over males and ethnic minorities. A binary

logistic regression analysis indicated that females were 72% more likely to utilize psychological services within the past 12 months than males, $OR = 1.723$; 95% $CI[1.537, 1.932]$, $p < .001$, and nearly twice as likely to utilize medical services within the past 12 months, $OR = 1.996$; 95% $CI[1.786, 2.231]$, $p < .001$, over males. Ethnicity also impacted rates of seeking psychological and medical services. That is, African Americans, $OR = 0.508$; 95% $CI[0.428, 0.603]$, $p < .001$, and Asians, $OR = 0.636$; 95% $CI[0.440, 0.920]$, $p < .05$, utilized psychological services significantly less than their Caucasian counterparts. Interestingly, individuals who identified themselves as “Multi-Racial” were 72% more likely than Caucasians to utilize psychological services within the past year, $OR = 1.715$; 95% $CI[1.045, 2.814]$, $p < .05$, a finding which was not initially expected. In terms of medical service utilization, African Americans, $OR = 0.512$; 95% $CI[0.451, 0.580]$, $p < .001$, Hispanics, $OR = 0.691$; 95% $CI[0.592, 0.806]$, $p < .001$, Arabs, $OR = 0.586$; 95% $CI[0.419, 0.818]$, $p < .01$, and Asians, $OR = 0.448$; 95% $CI[0.338, 0.593]$, $p < .001$, were all significantly less likely to utilize services than Caucasians.

A follow-up analysis to assess whether the relationship between ethnicity and service utilization varied solely as a function of current financial situation was conducted. Results indicated that ethnicity still significantly impacted both psychological and medical service utilization, even after the variance in service utilization explained by current financial situation was accounted for. Specifically, rates of psychological service utilization were still significantly lower among African Americans, $OR = 0.487$; 95% $CI[0.416, 0.517]$, $p < .001$ and Asians, $OR = 0.454$; 95% $CI[0.387, 0.533]$, $p < .001$, while individuals who identified as “Multi-Racial” were still significantly more likely to utilize psychological services within the past 12 months, $OR = 0.1.717$; 95% $CI[1.040, 2.651]$, $p < .001$, than Caucasians. African Americans, $OR = 0.564$; 95%

$CI[0.503, 0.633]$, $p < .001$, Hispanics, $OR = 0.790$; 95% $CI[0.693, 0.901]$, $p < .001$, Arabs, $OR = 0.670$; 95% $CI[0.456, 0.984]$, $p < .05$, and Asians, $OR = 0.689$; 95% $CI[0.613, 0.774]$, $p < .001$, were all still significantly less likely to utilize medical services than Caucasians as well.

The interaction between gender and ethnicity significantly impacted risk for seeking psychological service utilization, $OR = 1.715$; 95% $CI[1.045, 2.814]$, $p < .05$, but had no significant impact on medical service utilization, see Figure 1. Post-hoc analyses (e.g., chi-square analyses) were conducted to better understand the nature of this interaction. Results indicated that African American females were more likely to utilize psychological services than African American males. That is, 7.2% of African American females utilized psychological services within the last 12 months, while only 4.2% of African American males report utilizing these services, $X^2(1) = 5.54$, $p < .05$. This finding suggests that African American males are less likely to have utilized mental health services in the past year than their female counterparts.

Hypothesis two. It was also expected that those utilizing medical and mental health services would meet full BED criteria and endorse comorbid psychopathology rather than manifesting BED symptoms alone. Individuals with BED were twice as likely to seek mental health services within the last 12 months, $OR = 2.065$; 95% $CI[1.819, 2.344]$, $p < .001$; however, the presence of BED did not confer increased risk for medical service utilization within the past year, $OR = 1.084$; 95% $CI[0.939, 1.251]$, $p > .05$. Individuals with BED plus comorbid psychopathology were 51% more likely to utilize mental health services within the past 12 months than individuals manifesting BED alone, $OR = 1.509$; 95% $CI[1.115, 2.041]$, $p < .01$;

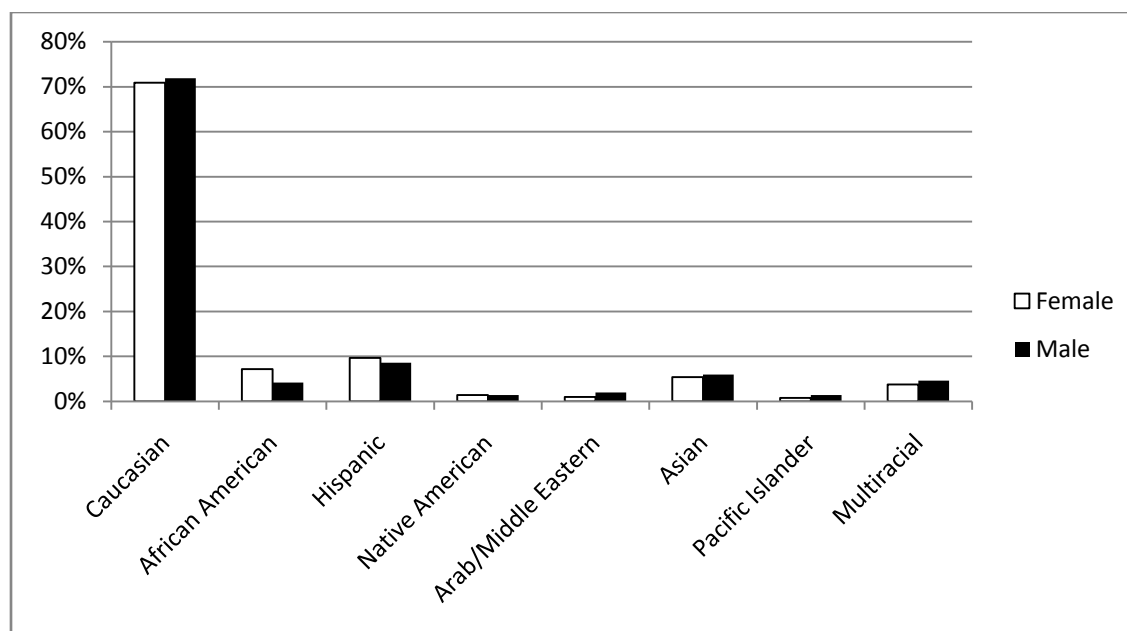


Figure 1: This figure illustrates the impact of ethnicity and gender on risk for seeking psychological services within the past 12 months. Differing rates of psychological service utilization were only significant as a function of gender and ethnicity concerning African American males and females.

however, individuals with BED and comorbid psychopathology were no more likely to seek medical services, $OR = 0.969$; 95% $CI[0.696, 1.348]$, $p > .05$.

Approximately 54% of individuals with BED reported at least one comorbid psychological problem (e.g., depression, anxiety, alcohol abuse, or smoking; see Table 4). Amongst individuals with BED, 81% utilized medical services within the past 12 months, while only 27% utilized mental health services. Individuals with BED who sought medical services within the past year, however, were no more likely to have comorbid psychopathology than individuals with BED who did not seek medical services, $t(1314) = -1.09$, $p > .05$ (see Table 5). Results indicated that individuals with BED who sought mental health services within the past 12 months, however, did have significantly more comorbid psychopathology than individuals with

Table 4

Percentages of Participants with BED and Psychological Comorbidity (either depression, anxiety, binge drinking, smoking)

Number of Comorbid Conditions	Percentage of Individuals with BED endorsing other comorbidity
0	45.6%
1	33.7%
2	16.0%
3	3.8%
4	0.8%

Note: Data are presented as percentages.

Table 5

Mean Number of Comorbid Conditions among Individuals with BED who sought Medical or Mental Health Services within the past 12 months

Medical Services	
Yes	1.377 (1.065)
No	1.296 (0.993)
Psychological Services	
Yes	1.603 (1.115)
No	1.271 (1.012)

Note: Data are presented as M (SD).

BED who did not seek mental health services, $t(1333) = -5.191, p < .001$, see Table 5.

The initial hypothesis was partially confirmed, as results indicated that comorbid psychopathology significantly impacted risk for seeking mental health services within the past year, but a greater number of comorbid psychological conditions had no impact on the likelihood of seeking medical services. Although individuals with BED may utilize medical services more frequently than psychological services, risk for medical service utilization is not heightened amongst those with BED compared to individuals who do not have BED. Comorbid

psychopathology did appear to impact rates of mental health service utilization amongst those with BED, as these individuals tended to seek mental health services at a greater frequency than individuals with BED who lacked comorbid psychopathology.

Hypothesis three. It was also expected that the comorbidity between BED and obesity (as measured by BMI) would confer greater risk for medical and mental health service utilization. That is, individuals who were obese and had BED were expected to be more likely to seek medical and psychological services than non-obese individuals suffering from BED. Results of the logistic regression analyses indicated that obesity significantly *reduced* risk for utilizing medical services, $OR = .98$; 95% $CI[0.977, .991]$, $p < .001$, and obesity did not appear to impact risk for utilizing mental health services within the past 12 months, $OR = 0.997$; 95% $CI[0.989, 1.005]$, $p > .05$. In addition, the interaction between BED and obesity did not impact risk for seeking medical or psychological services within the past 12 months. Follow-up analyses were thus run to further investigate this relationship.

Chi-square tests of independence were conducted to identify whether BMI *classification* impacted risk for medical or mental health service utilization. BMI was categorized based on the World Health Organization's BMI Classification Table (WHO, 2006; see Table 2). Results indicated that BMI classification significantly impacted medical service utilization, $X^2(3) = 38.70$, $p < .001$. A follow-up binary logistic regression analysis was conducted to examine where the expected frequencies deviated from the observed counts. Results suggested that individuals classified as "normal" weight were 20% more likely to utilize medical services than those classified as "obese," $OR = 1.201$; 95% $CI[1.077, 1.339]$, $p < .01$. This deviated from what was initially expected; that is, it was hypothesized that individuals classified as "obese" would be

more likely to utilize medical services specifically because increased medical problems are typically comorbid with obesity (Kopelman, 2000).

Results also indicated that BMI classification was significantly associated with mental health service utilization, $X^2(3) = 32.78, p < .001$. A follow-up binary logistic regression analysis was conducted to further examine where the expected frequencies deviated from the observed counts. Findings suggested that individuals classified as “normal” weight were significantly less likely to seek psychological services, $OR = 0.839; 95\% CI[0.747, 0.942], p < .01$, than the obese; however, individuals classified as “overweight” were 30% more likely to seek psychological services within the past year, $OR = 1.293; 95\% CI[1.071, 1.561], p < .01$, than individuals classified as obese. Thus, although risk for psychological service utilization was not highest among individuals classified as “obese,” it was more common among individuals classified as “overweight.”

Secondary Research Questions

Hypothesis four. A large portion of EMU undergraduates endorsed that eating a family size bag of potato chips is the smallest amount of food needed to consume to constitute an eating binge ($N = 408, 47\%$). The hypothesis that this opinion would differ based on gender was confirmed. That is, men and women differed significantly in the quantity of food used to define a binge, as women tended to define a binge as eating a smaller quantity of food than men, $t(868) = 3.20, p < .001$. To ensure that this relationship was not solely a function of weight-related gender differences, an ANOVA analysis was conducted, employing BMI as a covariate. Results indicated that even after controlling for BMI, women still defined an eating binge as a smaller quantity of food (e.g., fewer calories) than males, $F(1, 927) = 9.42, p < .01, \eta^2 = .01$.

Hypothesis five. The expectation that college students with heightened behavioral and emotional dysregulation would be at greatest risk for developing BED was partially confirmed. Results indicated that individuals with heightened emotional dysregulation had greater than a three-fold risk for meeting BED criteria, compared to individuals with lower self-reported emotional dysregulation, $OR = 3.391$; 95% $CI[1.978, 5.473]$, $p < .001$. Heightened behavioral dysregulation, however, did not confer increased risk for meeting BED criteria, $OR = 1.396$; 95% $CI[0.786, 2.480]$, $p > .05$. Moreover, the interaction between emotional and behavioral dysregulation did not appear to impact the development of BED, $OR = 0.856$; 95% $CI[0.715, 1.025]$, $p > .05$.

Hypothesis six. Results did not support the original assertion that body dissatisfaction would moderate the relationship between BED and service utilization. Rather, results indicated that BED alone conferred more than a 16-fold increase in risk for psychological service utilization, $OR = 16.11$; 95% $CI[1.362, 190.63]$, $p < .05$. Neither body dissatisfaction alone, $OR = 1.09$; 95% $CI[0.859, 1.382]$, $p > .05$, nor the interaction between BED and body dissatisfaction, $OR = 0.61$; 95% $CI[0.328, 1.119]$, $p > .05$, conferred increased risk for psychological service utilization. Results further demonstrated that neither BED, body dissatisfaction, nor their interaction significantly increased risk for seeking medical services within the past 12 months.

Hypothesis seven. BED was common in this sample, with approximately 9% ($N = 77$) endorsing full BED criteria. Amongst those with BED, approximately 27% ($N = 20$) reported seeking psychological services within the past 12 months, and 88% ($N = 68$) reported seeking services from a medical provider. It was expected that among those meeting criteria for BED, those who sought mental or medical health treatment would have done so for a non-BED

problem (e.g., an emotional or medical issue) rather than for their disordered eating. This hypothesis was significant, but minimal conclusions can be drawn, as very few ($N=3$) participants answered the question regarding why they sought treatment. Results indicated that 67% ($N = 2$) of individuals with BED who also sought either psychological or medical services reported seeking services for an emotional problem only, while only 33% ($N = 1$) endorsed seeking services for their eating or weight problem alone. Given that only three individuals with BED who sought services provided an answer to this question, it was concluded that this information was not very meaningful. It was speculated that because this qualitative item was the final item on the online survey, respondents became tired and merely skipped this last question.

Follow-up analyses. Amongst the primary research questions, one specific hypothesis, which speculated that there would be an increased risk for medical service utilization among individuals who were obese and met full criteria for BED, was not supported. To better understand if this relationship differed among participants from EMU, a follow-up binary logistic regression analysis was conducted (see Table 6). Results indicated that among EMU respondents, obesity did not impact risk for seeking medical services within the past month, $OR = 0.98$; 95% $CI[0.958, 1.009]$, $p > .05$. This finding was unlike the result found among the national sample of HMS respondents (excluding EMU respondents), in which obesity decreased risk for seeking medical services (see Table 6). Results suggested, however, that BED conferred more than a two-fold risk for medical service utilization among EMU respondents, $OR = 2.27$; 95% $CI[1.105, 4.675]$, $p < .05$. Amongst EMU respondents, similar to the respondents from the

Table 6

Comparison of the Risk for Seeking Psychological and Medical Services as a function of BED and Obesity amongst EMU participants versus the National Sample of HMS participants (excluding EMU respondents)

		B	S.E	df	Exp(B)	Significance	CI ₉₅	
	Medical Service Utilization							
Eastern Michigan University Sample (N = 969)	BED	0.82	.37	1	2.27	$p < .05$	1.11; 4.68	
	BMI	-.02	0.1	1	.98	$p > .05$.96; 1.01	
	Psychological Service Utilization							
	BED	.73	.29	1	2.08	$p < .05$	1.17; 3.69	
		BMI	.00	.02	1	1.00	$p > .05$.97; 1.03
	Medical Service Utilization							
HMS National Study Sample (N = 16,965)	BED	1.10	.29	1	1.10	$p > .05$.62; 1.95	
	BMI	-.02	.00	1	.98	$p < .001$.98; .99	
	Psychological Service Utilization							
	BED	.56	.27	1	1.76	$p < .05$	1.04; 2.97	
		BMI	-.00	.00	1	.45	$p > .05$.99; 1.01

national sample (excluding EMU respondents), obesity did not appear to impact on risk for seeking psychological services within the past 12 months, $OR = 1.00$; 95% $CI[0.971, 1.030]$, $p > .05$. Results indicated, however, that BED alone conferred more than a two-fold risk for seeking psychological services within the past 12 months, $OR = 2.08$; 95% $CI[1.174, 3.686]$, $p < .05$.

Structural equation modeling. To more fully understand the relationship between service utilization and BED, the variables which may impact this relationship must be considered. Based on the findings of this investigation thus far, emotional dysregulation and

psychological comorbidity were found to impact risk for BED. In addition, among EMU respondents, the presence of BED appeared to impact both risk for psychological and medical service utilization within the past 12 months. SEM modeling was conducted to clarify whether BED alone increased risk for service utilization or whether emotional dysregulation and psychological comorbidity, namely depression, compound the severity of BED among EMU respondents, which would, in turn, heighten the probability of service utilization.

Two alternative SEM models with categorical outcome variables were specified for comparison using binary logistic regression modeling (see Figures 2 and 3). Results indicated that the more complex model, encompassing emotional dysregulation and depression as predictors of BED, *log likelihood ratio* = -1173.51, *ACI* = 2361.02, *BIC* = 2395.12, was superior to the simpler model, which, hypothesized that the presence of BED alone would elevate risk for psychological and medical service utilization, *log likelihood ratio* = -1206.83, *ACI* = 2423.68, *BIC* = 2448.05. The likelihood ratio test indicated that these models were significantly different, $D(2) = 66.64, p < .001$, thus indicating that emotional dysregulation and depression were in fact influential factors compounding the severity of BED, which, in turn, motivated service utilization. In the more complex model, results suggest that emotional dysregulation conferred more than a two-fold risk for BED, $OR=2.015$, while individuals with BED were 81% more likely to be depressed. The presence of BED conferred more than a two-fold risk for psychological service utilization, $OR = 2.194, p < .01$, and although individuals with BED were 77% more likely to seek medical services within the past 12 months, $OR = 1.773$, this elevated risk for medical service utilization was not significant, $p > .05$.

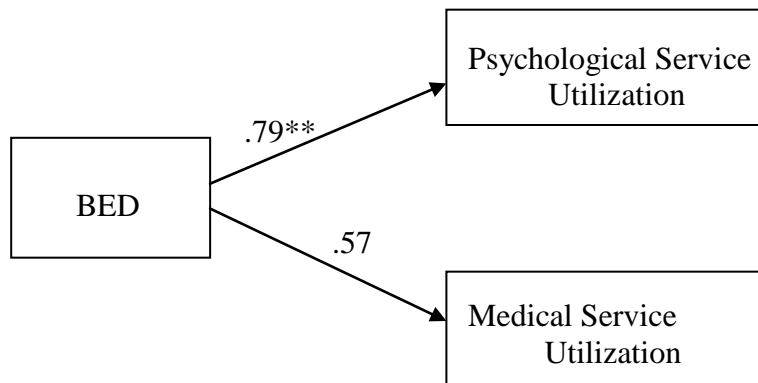


Figure 2: Path analysis of the relationship between BED and service utilization (both psychological and medical). Values presented are standardized regression/path coefficients. ** $p < .01$

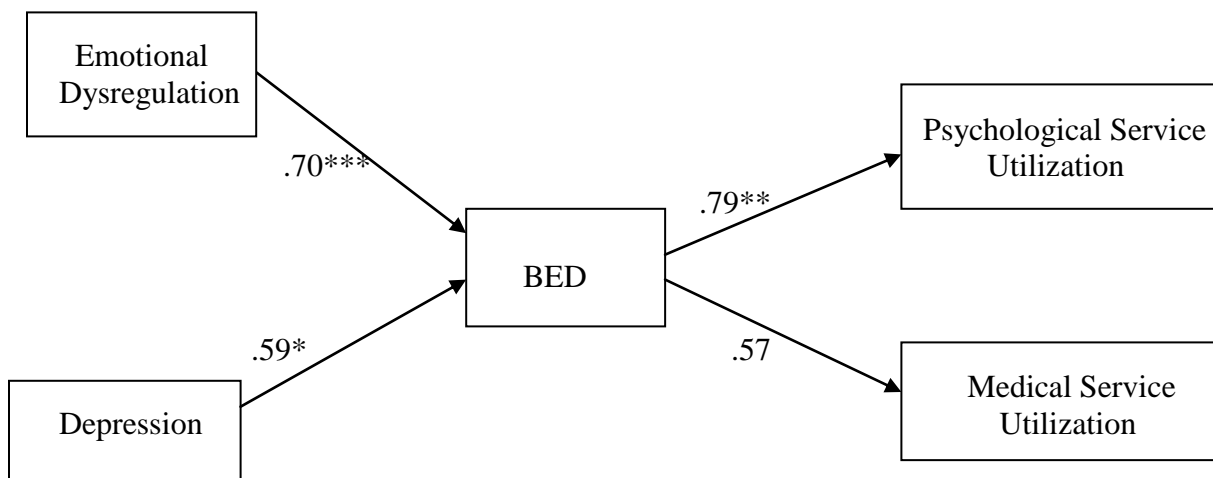


Figure 3: Path analysis of the relationship between BED and psychological and medical service utilization as a function of depression and emotional dysregulation. Values presented are standardized regression/path coefficients. * $p < .05$ ** $p < .01$ *** $p < .001$

Discussion

Primary Research Questions

As hypothesized, results indicated that gender and ethnicity interact to influence risk for seeking psychological services, and African American men appeared to have the lowest risk for seeking psychological services within the past 12 months of any group. Overall, females were significantly more likely to seek psychological and medical services than males. Research suggests that females are more likely to seek social support or some form of assistance when distressed (Green and Pope, 1999), which may partially help to understand the finding of the current investigation. Specifically, women are more likely to take on the “sick” role and miss more days at work due to physical ailments. The results of the current investigation also suggest that African Americans and Asians utilized psychological services significantly less frequently, and African Americans, Hispanics, Arabs, and Asians utilized medical services significantly less, than Caucasians. It is important to note that regardless of current financial status, the relationship between ethnicity and service utilization was still significant. Thus, because current financial situation did not appear to impact the relationship between ethnicity and service utilization, sociocultural factors may help to better explain this differential risk for service utilization as a function of ethnicity. African Americans and Asians utilized psychological services less frequently than Caucasians, and this finding can partially be explained based on differing attitudes toward service usage. That is, previous research suggests that negative attitudes concerning service utilization, which vary as a function of ethnicity, tend to inhibit utilization among those most at risk (Leaf, Bruce, Tischler, Holzer, 1987). Although research finds that Asians do tend to suffer a range of mental health problems (Uba, 1994), culturally informed

conceptions of mental illness may inhibit service utilization. Tracey, Leong, and Glidden (1986) demonstrate that some Asians consider behaviors as signs of mental illness only if they are upsetting to the social group. Even after the acknowledgement of distress, Asians are reluctant to report problems due to feelings of shame and stigma associated with psychological difficulties (Root, 1985). Thus, targeting attitudes and behaviors that vary as a function of both gender and ethnicity may be an effective strategy for enhancing service utilization behavior among those underserved populations.

One unexpected finding was that individuals who identified as multi-racial had an increased risk for psychological service utilization. This finding suggests that multi-racial individuals may face greater adversity and assimilation issues affiliated with their ethnicity, which may put them at greater risk for psychological distress and utilization of services. This assumption is bolstered by the finding of Ivezaj et al. (2010), who reported higher levels of psychological distress among bi/multi-racial individuals than all other racial/ethnic groups.

In the full HMS sample, approximately 7% of respondents met full BED criteria, which is typical of studies investigating the prevalence of BED among college students (Ivezaj et al., 2010) and in a community sample (Grucza, Prybeck, Cloninger, 2007). Overall, BED appeared to confer increased risk for psychological, but not medical, service utilization. Comorbid psychopathology amongst individuals with BED was high, which is similar to the finding of Mitchell and Mussell (1995), who report that the presence of binge eating may serve as a marker for psychopathology. Comorbid psychopathology, however, only appeared to confer increased risk for psychological service utilization while having no effect on risk for medical service

utilization. These findings suggest that BED is both prevalent and severe, and it should be targeted for intervention.

Respondents sought psychological services at a higher frequency when BED was comorbid with other psychopathology, which suggests that individuals with BED may not be seeking mental health services for their disordered eating alone, and rather, only begin to seek services at a higher frequency when their problem elevates in severity and becomes comorbid with other conditions. Indeed, empirical evidence suggests that disordered eating patterns may elevate risk for experiencing comorbid psychopathology (Grilo et al., 2009; Stunkard & Allison, 2003), and thus, additional prevention efforts should be enacted to target problematic eating behaviors among high school students and undergraduates, ideally before additional complications have a chance to emerge. Future prospective research should seek to determine if early intervention with problematic eating behavior might minimize the likelihood that those who binge eat will develop comorbid psychopathology.

It was reasoned that obesity would compound risk of medical problems and related service utilization. Results of this investigation, however, failed to find an association between BED, obesity, and risk for medical service utilization. One of the primary limitations of the current investigation, however, was that the presence or absence of comorbid medical conditions was not assessed. Thus, if comorbid medical problems (e.g., heart disease or diabetes) have yet to result as a function of binge eating, the utilization of medical services would not be expected to be heightened among individuals with BED and comorbid obesity.

In terms of the comorbidity between BED and obesity, results unexpectedly suggested that the interaction between BED and obesity did not significantly impact risk for psychological

or medical service utilization. Among HMS respondents, it appeared as though obesity alone significantly reduced risk for utilizing medical services within the past 12 months but had no effect on risk for psychological service utilization. Research exists to support the notion that obesity often precedes a host of impairing medical comorbidities including diabetes, heart disease, high cholesterol (Kopelman, 2000), and even death (Allison et al., 1999). Although individuals who are obese do experience medical problems at a greater frequency than the non-obese, the current findings of this investigation suggested that there are certain barriers which may inhibit service utilization among the obese. That is, obese individuals may be more reluctant to seek psychological or medical services due to restricted mobility; this would diminish their capacity to move around freely, thus decreasing their ability to seek services, even though they may be required. In addition, the majority of respondents were relatively young; thus, perhaps the expected medical problems which are often comorbid with obesity (e.g., diabetes, heart disease, and high cholesterol) have yet to emerge, and therefore, the motivation to seek treatment may not yet be present. Further, obesity is often socially stigmatized (Brink, 1994); thus, failing to seek services could partially be a function of embarrassment due to one's physical appearance or an unwillingness to admit that weight is a problem. This assertion was partially supported by the follow-up analysis conducted which suggested that "normal" weight individuals were 20% more likely to seek medical services than the obese, and "overweight" individuals were 30% more likely to seek psychological services than the obese.

Secondary Research Questions

Among EMU undergraduates, the definition of an eating binge varied as a function of gender, as women required a smaller quantity of food (as measured by caloric content) to

constitute an eating binge. After controlling for BMI, thus controlling for gender-related weight differences, this relationship was still significant, with women considering a lower caloric content eating episode as an eating binge. This finding is consistent with past literature (Laporte, 1997) and may be partially attributed to sociocultural factors (Seim & Fiola, 1990). That is, women tend to be more cognizant of what they are eating, more accustomed to dieting (Seim & Fiola, 1990), more likely to pay attention to the nutritional content of foods consumed, and subsequently, based on sociocultural conditioning, believe that eating a smaller quantity of food is a “binge.”

One of the psychodiagnostic criteria for diagnosis of BED is that an individual often lacks the control to stop eating (American Psychiatric Association, [DSM-IV-TR], 2000). Thus, it was hypothesized that those EMU undergraduates with heightened behavioral and emotional dysregulation would be at greatest risk for BED. This assertion was partially supported; heightened emotional dysregulation conferred increased risk for BED, while behavioral dysregulation and the interaction between emotional and behavioral dysregulation was not significant. Empirical evidence exists to suggest that heightened impulsivity, as defined as acting rashly in the face of negative affect (Fischer et al. 2003), is associated with binge eating behavior among individuals with bulimia, and the present findings extend the generalizability of this assertion to individuals with BED. The results of this investigation also lend support to the notion that emotional eating is common amongst individuals with disordered eating patterns (Eldredge and Agras, 1996). The lack of support for the hypothesis that heightened behavioral dysregulation would confer increased risk for BED suggests that although binge eating is diagnostically required to be a behavior which is perceived as “out of control,” individuals

engaging in this behavior may not perceive the rest of their daily behaviors as out of control or even problematic. Two studies have suggested that individuals with BED exhibit high levels of perfectionism (de Zwaan et al., 1993; Raymond, Mussell, Mitchell, de Zwaan, & Crosby, 1995), and thus, similar to individuals with other eating disorders, are very scheduled and rigid in their daily routines (Walsh & Devlin, 1998). This implies that binge eating may be the only “out of control” behavior they experience. It is intriguing to consider that binge eating may be utilized by these individuals as a coping strategy to free themselves from their otherwise rigid and strict lifestyles.

Body dissatisfaction did not appear to influence the relationship between BED and either psychological or medical service utilization among EMU undergraduates. Although BED and associated features, like body dissatisfaction, did not appear to confer risk for service utilization, BED and other comorbidities (e.g., depression, anxiety, alcohol use, and cigarette use) did. Previous research suggests that individuals high in body dissatisfaction are at greater risk for binge eating and experiencing psychological problems (Saules et al., 2009); however, results of this investigation suggest that individuals with BED and body dissatisfaction are not experiencing problems severe enough to warrant service utilization as individuals with BED and other psychopathological comorbidity may be. It may thus be the case that instead of body dissatisfaction being directly related to BED, perhaps body dissatisfaction is related to the onset of other psychological comorbidities, such as cigarette use. Previous research suggests that a large portion of individuals who smoke are actually weight-control smokers; that is, they initiate smoking to prevent weight gain (Tomeo, Field, Berkey, Colditz, & Frazier, 1999). Furthermore, related research suggests that a large percentage of individuals continue smoking from fear of

post-cessation weight gain (Pomerleau & Kurth, 1996; Saules, Tate, & Pomerleau, 2009). Thus, the findings of this investigation lend support to the notion that body dissatisfaction may operate indirectly, through its contribution to the onset of other forms of psychological comorbidity, rather than through its direct relationship with BED. This once again emphasizes the need to tailor interventions to target individuals with BED early, in order to prevent the exacerbation of their disordered eating and dissatisfaction with their body.

Certain data in this investigation were unusable, specifically, the data which were meant to assess whether individuals who met BED criteria and sought therapeutic services for a problem actually sought services for their disordered eating rather than some other psychological problem. Given that 88 participants from EMU endorsed full BED criteria and said that they had sought either psychological or medical services, but only three of those individuals provided an answer to the question regarding the condition for which services were sought, little was gathered from these results. Minimal responding to this item may partially be a function of the items qualitative nature or this item being the final item on the survey. Respondents may have become tired and skipped this question, or perhaps individuals with BED were reluctant to admit their reason for seeking services.

Structural Equation Modeling

Emotional dysregulation and depression were found to be influential factors compounding the severity of BED, and the presence of BED appeared to have a significant impact on risk for psychological service utilization. Given that emotional dysregulation and depression appear to impact the severity of BED, interventions targeting those with these elevated risk factors should be developed and evaluated. That is, the findings of the present

investigation suggest that emotional dysregulation and depression are important variables to assess during the treatment of BED, as these factors can provide an indication for which factors promote the likelihood of treatment seeking in the presence of BED. These findings also indicated that the best model of service utilization as a function of BED includes the emotional dysregulation and depression as relevant predictors of BED; and this model performs better than the model suggesting that BED alone confers increased risk for service utilization. The findings of Telch and Stice (1998) also suggest that regarding psychiatric diagnoses, individuals with BED have a higher lifetime prevalence rate for major depression. Given that BED alone was not as strong a predictor of service utilization as it was when comorbid with other factors, results suggest that individuals with BED may have a better prognosis and a lower risk for service utilization when they have BED alone, rather than when these individuals with BED develop comorbid emotional dysregulation and/or depression.

Generalizability of Results

Results indicated that the EMU undergraduate sample was significantly different than the full HMS sample of undergraduate students (excluding EMU responders) from across the nation. Specifically, EMU students were significantly more likely to meet full BED criteria, have smoked within the past 30 days, and be classified as obese. EMU undergraduates were also significantly less likely to engage in binge drinking than other undergraduate college students from across the nation. These samples of undergraduates also appear to differ in regard to the impact that BED and obesity may have on service utilization. Among EMU undergraduates, BED conferred nearly a two-fold risk for both medical and psychological service utilization. Obesity also did not reduce risk for seeking medical services amongst EMU respondents, which

opposes the nature of the relationship between obesity and medical service utilization among the full sample of HMS undergraduate responders. In both samples, however, obesity did not appear to impact risk for seeking psychological services.

These findings may be partially attributable to the finding that EMU undergraduates were significantly older than HMS undergraduate responders. EMU undergraduates may have had more time to develop certain problems and be less likely to binge drink, which tends to be a phenomenon of the younger age groups. These differences may also suggest that EMU undergraduates may be atypical college students, that is, they tend to drink less, and smoke and binge eat more frequently. These findings do, however, suggest that EMU undergraduates may be similar to the average “American,” rather than the average “college undergraduate.” The CDC (2006) suggests that approximately 21% of Americans are current smokers, and the NAASO (2006) suggests that approximately 26% of Americans 18 and older are obese. These rates are similar to the rates of cigarette use and obesity among EMU respondents, and much higher than smoking and obesity rates among the national sample of HMS undergraduate college students. Although it was outside the scope of the current investigation, the specific impact that obesity, smoking, and BED may have on service utilization among different populations of individuals should be the focus of future research.

Limitations

This study was not without its own set of limitations. In particular, this study investigated research questions utilizing two different study samples, and supplemental questions of interest were posed only to the EMU sample. This reduced the generalizability of certain findings, and future research should better assess this constellation of research questions among the same

sample of participants in order to enhance confidence in the generalizability of significant findings. This study was also limited based on the population studied, that is, results are only generalizable to college undergraduates. Support for the exclusion of graduate students emerged upon close inspection of the data, given that much of the data provided by graduate students appeared inaccurate, that is, individuals from EMU reported enrollment in a J.D. or M.D. program, although neither of these programs are offered at EMU. To minimize anomalies in the data and increase the homogeneity of the samples, only undergraduate students were studied. Future research, however, should assess the relationship between BED and service utilization and how this relationship is influenced by other variables like depression and emotional dysregulation, among graduate students. This research would be important given that graduate students are typically older than undergraduates (Serras, Saules, Cranford, & Eisenberg, 2010), and research exists to suggest that service utilization is heightened among older individuals (Eisenberg et al., 2007).

Another limitation was low response rate, particularly among EMU students (29%). At the time of data collection, there were several other campus-wide student surveys also being administered; thus, future efforts should focus on being more proactive about anticipating this situation and try to coordinate data collection at a time when few other student surveys are also being administered. Further, one of the open-ended items assessing the final secondary research question generated unusable data due to low response rate. Future research should thus focus on assessing one's motivation to seek services more efficiently, perhaps by offering a greater incentive to participate in the survey itself, which could ultimately generate better quality responses among survey participants. Interestingly, although the response rate of EMU

participants was low when compared to the other universities completing this survey within the same two-week window (42%), the response rate of EMU participants was actually higher than the total response rate from the 26 universities (27%) participating in the 2010 HMS.

Another limitation of this investigation involved the utilization of specific items from validated scales, rather than the employment of the entire scale itself. Due to the limited number of items that were allowed to be added to the HMS survey, the utilization of specific items appeared to be the only feasible option for testing specific hypothesis of interest. Minimum empirical support exists, however, for the utilization of single items as indicators of what is meant to be assessed by a scale-level constructs. For example, only two items from the DERS impulsivity subscale (Gratz & Romer, 2004) were utilized; however, empirical evidence suggests that the use of all six items on this subscale generates a better assessment of one's level of impulsivity. Although only items which loaded highest on each factor were selected for use, results may have been stronger if entire scales, rather than individual items, were employed. Whenever feasible, future research should utilize the full scale to assess the pertinent research questions of interest, such as, what is the impact of behavioral and emotional dysregulation on the development of BED, and how does body dissatisfaction and BED interact to impact rates of service utilization, to fully understand the nature of these relationships.

The final limitation of this study involved the investigation of service utilization as a function of BED and other comorbidities. In particular, the comorbidity between BED and obesity did not appear to impact risk for either psychological or medical service utilization. However, medical comorbidities, like cholesterol, diabetes, and heart disease, were not assessed. Thus, this relationship may have generated non-significant findings because individuals who are

obese, who do not have significant medical comorbidities, may be less motivated to seek medical services. Although this was not assessed in the current investigation, it should be the focus of future research studies. In regard to the relationship between BED and other psychological comorbidity (e.g., depression, anxiety, alcohol use, or cigarette use), it was unclear as to whether the problematic eating behavior emerged first or comorbid psychopathology preceded the onset of the problematic eating patterns. Future research should thus focus on clarifying the chronology of this relationship, and if it is found that eating behaviors precede psychological comorbidity, interventions tailored to target early problematic eating behaviors, before comorbid psychopathology develops, should be enacted.

Conclusions

Based on the findings of this investigation, it can be concluded that HMS undergraduates and EMU undergraduates are similar in a variety of respects but do differ in regard to certain fundamental variables like age, binge drinking, smoking, obesity, and BED diagnosis. It appears that BED may confer a two-fold risk for psychological and medical service utilization among EMU undergraduates, but have no effect on risk for service utilization among HMS undergraduate respondents. Obesity appeared to reduce risk for medical service utilization and had no impact on psychological service utilization among HMS respondents; however, obesity did not impact psychological or medical service utilization among EMU respondents.

Overall, women and Caucasians were more likely to utilize both medical and psychological services within the past 12 months, except in regard to multiracial individuals, who were actually at an increased risk of psychological service utilization, while African American men were least likely to utilize psychological services. Psychological comorbidity appeared to impact rates of psychological service utilization among respondents but had no effect on risk for medical service utilization.

Among EMU undergraduate respondents, females endorsed a smaller amount of food necessary to constitute an eating binge. In regard to the factors which impact the relationship between BED and service utilization, heightened emotional, not behavioral, dysregulation appeared to confer increased risk for BED, and body dissatisfaction did not appear to significantly impact on the relationship between BED and service utilization.

These findings highlight that BED is common and should be targeted for intervention early, given the high risk of BED as a function of depression and emotional dysregulation. Early interventions for this condition may prevent the progression into more severe psychopathology.

References

- Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control*, *19*(6), 716–723.
- Allison, S., Timmerman, G. M. (2007). Anatomy of a binge: Food environment and characteristics of nonpurge binge episodes. *Eating Behaviors*, *8*, 31-38.
- Allison, D. B., Fontaine, K. R., & Manson, J. E. (1999). Annual deaths attributable to obesity in the United States. *Journal of the American Medical Association*, *282*(16), 1530-1538.
- American Psychiatric Association. (2000). Diagnostic and statistical manual of mental disorders (Revised 4th ed.). Washington, DC: Author.
- Barry, D. T., Grilo, C. M., & Masheb, R. M. (2002). Gender differences in patients with binge eating disorder. *International Journal of Eating Disorders*, *31*, 63-70.
- Becker, A. E., Franko, D. L., Speck, A., & Herzog, D. B. (2003). Ethnicity and differential access to care for eating disorder symptoms. *International Journal of Eating Disorders*, *33*(2), 205-212.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*, 238-246.
- Bollen, K. A., & Long, J. S. (1993). *Testing structural equation models*. Newbury Park, CA: Sage.
- Borges, M. B., Morgan, C. M., Claudino, A. M., & da Silveira, D. X. (2005). Validation of the Portuguese version of the Questionnaire on Eating and Weight Patterns-Revised (QEWP-R) for the screening of binge eating disorder. *Revista Brasileira Psiquiatria*, *27*(4), 319–322.

- Boyd, C. J., & McCabe, S. E. (2009). *University of Michigan Student Life Survey*. Retrieved December 12, 2009 from http://sitemaker.umich.edu/umsarc/student_life_survey#summary.
- Brink, P. J. (1994). Stigma and Obesity. *Clinical Nursing Research*, 3(4), 291-293.
- Bruce, B., & Agras, W. S. (1992). Binge eating in females: A population-based investigation. *International Journal of Eating Disorders*, 12, 365-373.
- Bulik, C. M., Sullivan, P. F., & Kendler, K. S. (2002). Medical and psychiatric morbidity in obese women with and without binge eating. *International Journal of Eating Disorders*, 32(1), 72-78.
- Bulik, C. M., Sullivan, P. F., & Kendler, K. S. (2003). Genetic and environmental contributions to obesity and binge eating. *International Journal of Eating Disorders*, 33, 293-298.
- Cachelin, F. M., Striegel-Moore, R. H., & Regan, P. C. (2006). Factors associated with treatment seeking in a community sample of European American and Mexican American women with eating disorders. *European Eating Disorders Review*, 14(6), 422-429.
- Cash, T. F. (2000). *Manual for the Multidimensional Body-Self Relations Questionnaire* (3rd rev.). Retrieved December 12, 2009 from <http://www.body-images.com>.
- CDC. Cigarette smoking among adults --- United States, 2006. *MMWR*, 54, 1121-1124.
- Cellucci, T., Krogh, J., & Vik, P. (2006). Help seeking for alcohol problems in a college population. *The Journal of General Psychology*, 133(4), 421-433.
- Claes, L., Vandereycken, W., & Vertommen, H. (2005). Impulsivity-related traits in eating disorder patients. *Personality and Individual Differences*, 39, 739-749.
- Cohen, J. (1992). A power primer. *Quantitative Methods in Psychology*, 112(1), 155-159.

- Cranford, J. A., Eisenberg, D., Serras, A. (2009). Substance use behaviors, mental health problems, and use of mental health services in a probability sample of college students. *Addictive Behaviors, 34*, 134-145.
- Dansky, B. S., Brewerton, T. D., & Kilpatrick, D. G. (2000). Comorbidity of bulimia nervosa and alcohol use disorders: Results from the national women's study. *International Journal of Eating Disorders, 27*(2), 180-190.
- Darmon, N., Drewnoski, A. (2008). Does social class predict diet quality? *American Journal of Clinical Nutrition, 87*, 1107-1117.
- Darmon, N., Ferguson, E. L., Briend, A. (2002). A cost constraint along has adverse effects on food selection and nutrient density: An analysis of human diets by linear programming. *The Journal of Nutrition, 132*, 3764-3771.
- Dawe, S., & Loxton, N. J. (2004). The role of impulsivity in the development of substance use and eating disorders. *Neuroscience & Biobehavioral Reviews. Special Issue: Festschrift in Honour of Jeffrey Gray- Issue 1: Anxiety and Neuroticism, 28*(3), 343-351.
- de Irala-Estevez, J., Groth, M., Johansson, L., Oltersdorf, U., Prattala, R., & Martinez-Gonzalez, M. A. (2000). A systematic review of socio-economic differences in food habits in Europe: Consumption of fruits and vegetables. *European Journal of Clinical Nutrition, 54*, 706-714.
- Delinsky, S. S., & Wilson, G. T. (2008). Weight gain, dietary restraint, and disordered eating in the freshman year of college. *Eating Behaviors, 9*(1), 82-90.
- de Zwaan, M., Mitchell, J. E., Seim, H. C., Specker, S. M., Pyle, R. L., Raymond, N. C., &

- Crosby, R. B. (1993). Eating related and general psychopathology in obese females with binge eating disorder. *International Journal of Eating Disorders, 15*, 43-52.
- Drewnowski, A., Hopkins, S. A., & Kessler, R. C. (1988). The prevalence of bulimia nervosa in the US college student population. *American Journal of Public Health, 78*(10), 1322-1325.
- Dunn, E. C., Larimer, M. E., & Neighbors, C. (2002). Alcohol and drug-related negative consequences in college students with bulimia nervosa and binge eating disorder. *International Journal of Eating Disorders, 32*, 171-178.
- Eldredge, K. L., & Agras, W. S. (1996). Weight and shape overconcern and emotional eating in binge eating disorder. *International Journal of Eating Disorders, 19*(1), 73-82.
- Eisenberg, D., Golberstein, E., & Gollust, S. E. (2007). Help-seeking and access to mental health care in a university student population. *Medical Care, 45*(7), 584-601.
- Fairburn, C. G., Doll, H. A., Welch, S. L., Davies, B. A., & O'Connor, M. E. (1998). Risk factors for binge eating disorder. *Archives of General Psychiatry, 55*, 425-432.
- Faith, M. S., Matz, P. E., & Jorge, M. A. (2002). Obesity-depression associations in the population. *Journal of Psychosomatic Research. Special Issue: Depression and Mental Disorders and Diabetes, Renal Disease, and Obesity and Nutritional Disorders, 53*(4), 935-942.
- Fichter, M. M., Quadflieg, N., & Hedlund, S. (2008). Long-term course of binge eating disorder and bulimia nervosa: Relevance for nosology and diagnostic criteria. *International Journal of Eating Disorders, 41*(7), 577-586.
- First, M. B., Spitzer, R. L., Gibbon, M., Williams, J. B. W. (2002). *Structured Clinical Interview*

for DSM-IV-TR Axis I Disorders, Research Version, Non-patient Edition (SCID-I/NP).

New York, NY: Biometrics Research, New York State Psychiatric Institute.

Fischer, S., Smith, G. T., & Anderson, K. G. (2003). Clarifying the role of impulsivity in bulimia nervosa. *International Journal of Eating Disorders, 33*, 406-411.

Fitzgibbon, M. L., Stolley, M. R., & Kirschenbaum, D. S. (1993). Obese people who seek treatment have different characteristics than those who do not seek treatment. *Health Psychology, 12*(5), 342-345.

Fletcher, P. C., Bryden, P. J., Schneider, M. A., Dawson, K. A., & Vandermeer, A. (2007). Health issues and service utilization of university students: Experiences, practices & perceptions of students, staff and faculty. *College Student Journal, 41*(2), 482-493.

Golberstein, E., Eisenberg, D., & Gollust, S. E. (2008). Perceived stigma and mental health care seeking. *Psychiatric Services, 59*, 392-399.

Gratz, K. L. & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment, 26*(1), 41-54.

Gray, J. J., Ford, K., & Kelly, L. M. (1987). The prevalence of bulimia in a black college population. *International Journal of Eating Disorders, 6*, 733-740.

Green, C. A., & Pope, C. R. (1999). Gender, psychosocial factor and use of medical services: a longitudinal analysis. *Social Science and Medicine, 48*(10), 1363-1372.

Grilo, C. M., Lozano, C., & Masheb, R. M. (2005). Ethnicity and sampling bias in binge eating

- disorder: Black women who seek treatment have different characteristics than those who do not. *International Journal of Eating Disorders*, 38(3), 257-262.
- Grilo, C. M., White, M. A., & Masheb, R. M. (2009). DSM-IV psychiatric disorder comorbidity and its correlates in binge eating disorder. *International Journal of Eating Disorders*, 42(3), 228-234.
- Grucza, R. A., Przybeck, T. R., Cloninger, C. R. (2007). Prevalence and correlates of binge eating disorder in a community sample. *Comprehensive Psychiatry*, 48(2), 124-131.
- Guerdjikova, A. I., McElroy, S. L., Kotwal, R., & Keck, P. E. (2007). Comparison of obese men and women with binge eating disorder seeking weight management. *Eating Weight Disorders*, 12, 19-23.
- Hepworth, N., & Paxton, S. J. (2007). Pathways to help-seeking in bulimia nervosa and binge eating problems: A concept mapping approach. *International Journal of Eating Disorders*, 40(6), 493-504.
- Higgs, M. L., Wade, T., Cescato, M., Atchison, M., Slavotinek, A., & Higgins, B. (1997). Differences between treatment seekers in an obese population: Medical intervention vs. dietary restriction. *Journal of Behavioral Medicine*, 20(4), 391-405.
- Hill, J. O., & Peters, J. C. (1998). Environmental contributions to the obesity epidemic. *Science*, 280(5368), 1371-1374.
- Hoek, H. W., & van Hoeken, D. (2003). Review of the prevalence and incidence of eating disorders. *International Journal of Eating Disorders*, 34(4), 383-396.
- Hoffman, D. J., Policastro, P., Quick, V., & Lee, S. (2006). Changes in body weight and fat mass

- of men and women in the first year of college: A study of the "freshman 15". *Journal of American College Health*, 55(1), 41-45.
- Holm-Denoma, J. M., Joiner, T. E., Vohs, K. D., Heatherton, T.F. (2008). The "Freshman Fifteen" (the "Freshman Five" actually): Predictors and possible explanations. *Health Psychology*, 27(1 Suppl), S3–S9.
- Hudson, J. I., Hiripi, E., Pope, H. G., & Kessler, R. C. (2007). The prevalence and correlates of eating disorders in the national comorbidity survey replication. *Biological Psychiatry*, 61, 348-358.
- Ivezaj, V., Saules, K. K., Hoodin, F., Alschuler, K., Angelella, N., Collings, A. S., Saunders-Scott, D., Wiedemann, A. (2010). The relationship between binge eating and weight status on depression, anxiety, and body image among a diverse college sample: A focus on bi/multiracial women. *Eating Behaviors*, 11, 18-24.
- Jambekar, S. A., Masheb, R. M., & Grilo, C. M. (2003). Gender differences in shame in patients with binge-eating disorder. *Obesity Research*, 11(4), 571-577.
- Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (2000). Monitoring the future: National survey results on drug use, 1975-1999. *NIH Publication*, Bethesda, MD: Department of Health and Human Services.
- Kane, T. A., Loxton, N. J., Staiger, P. K., & Dawe, S. (2004). Does the tendency to act impulsively underlie binge eating and alcohol use problems? an empirical investigation. *Personality and Individual Differences*, 36(1), 83-94.
- Keyes, C. L. M. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of Health and Social Research*, 43, 207-222.

- Killen, J. D., Taylor, B., Hayward, C., Hydel, F. K., Wilson, D. M., Hammer, L., Kraemer, H., Blair-Greiner, A., & Strachowski, D. (1996). Weight concerns influence the development of eating disorders: A 4-year prospective study. *Journal of Consulting and Clinical Psychology, 64*(5), 936-940.
- Keel, P. K., Dorer, D. J., Franko, D. L., Jackson, S. C., & Herzog, D. B. (2005). Postremission predictors of relapse in women with eating disorders. *American Journal of Psychiatry, 162*(12), 2263-2268.
- Kinzl, J. F., Traweger, C., Trefalt, E., Mangweth, B., & Biebl, W. (1999). Binge eating disorder in females: A population-based investigation. *International Journal of Eating Disorders, 25*(3), 287-292.
- Kopelman, P. G. (2000). The nature of obesity as a medical problem. *Nature, 404*, 635-643.
- Kroenke, K., Spitzer, R. L., Williams, J. B. (2001). The PHQ-9. Validity of a brief depression severity measure. *Journal of General Internal Medicine, 16*, 606-613.
- Krüger, S., Shugar, G., & Cooke, R. G. (1996). Comorbidity of binge eating disorder and the partial binge eating syndrome with bipolar disorder. *International Journal of Eating Disorders, 19*(1), 45-52.
- LaPorte, D. J. (1997). Gender differences in perceptions and consequences of an eating binge. *Gender Roles, 36*(7/8), 479-489.
- Leaf, P. J., Bruce, M. L., Tischler, G. L., Holzer, C. E. (1987). The relationship between demographic factors and attitudes toward mental health services. *Journal of Community Psychology, 15*(2), 275-284.
- Linde, J. A., Jeffery, R. W., Levy, R. L., Sherwood, N. E., Utter, J., Pronk, N. P., et al. (2004).

- Binge eating disorder, weight control self-efficacy, and depression in overweight men and women. *International Journal of Obesity*, 28(3), 418-425.
- Llyod-Richardson, E. E., King, T. K., Forsyth, L. H., & Clark, M. M. (2000). Body image evaluations in obese females with binge eating disorder. *Eating Behaviors*, 1(2), 161-170.
- Martin, A., Rief, W., Klaiberg, A., Braehler, E. (2006). Validity of the Brief Patient Health Questionnaire Mood Scale (PHQ-9) in the general population. *General Hospital Psychiatry*, 28, 71-77.
- Masheb, R. M., & Grilo, C. M. (2003). The nature of body image disturbance in patients with binge eating disorder. *International Journal of Eating Disorders*, 33(3), 333-341.
- McCabe, S. E. (2002). Gender differences in collegiate risk factors for heavy episodic drinking. *Journal of Studies on Alcohol*, 63(1):49-56.
- McElroy, S. L., Kotwal, R., & Keck, P. E., Jr. (2006). Comorbidity of eating disorders with bipolar disorder and treatment implications. *Bipolar Disorders*, 8(6), 686-695.
- Meyer, D. F. (2001). Help-seeking for eating disorders in female adolescents. *Journal of College Student Psychotherapy*, 15(4), 23-36.
- Mintz, L. B., & Betz, N. E. (1988). Prevalence and correlates of eating disordered behaviors among undergraduate women. *Journal of Counseling Psychology*, 35(4), 463-471.
- Mitchell, J. E., & Mussell, M. P. (1995). Comorbidity and binge eating disorder. *Addictive Behaviors*, 20(6), 725-732.
- Mond, J. M., Marks, P., Hay, P. J., Rodgers, B., Kelly, C., Owen, C., et al. (2007). Mental health

- literacy and eating-disordered behavior: Beliefs of adolescent girls concerning the treatment of and treatment-seeking for bulimia nervosa. *Journal of Youth and Adolescence*, 36(6), 753-762.
- Mokdad, A. H., Marks, J. S., Stroup, D. F., Gerberding, J. L. (2000). Actual causes of death in the United States, 2000. *Journal of the American Medical Association*, 291(10), 1238-1245.
- Mokdad, A. H., Serdula, M. K., Dietz, W. H., Bowman, B. A., Marks, J. S., & Koplan, J. P. (1999). The spread of the obesity epidemic in the United States, 1991-1998. *Journal of the American Medical Association*, 282(16), 1519-1522.
- Muthen, L. K., & Muthen, B. O. (1997-2008). Mplus User's Guide. Fifth Edition. Los Angeles, CA: Muthen & Muthen.
- NAASO: North American Association for the Study of Obesity. (2006). Obesity Statistics: U.S. obesity trends. Retrieved 06-23-2010 < http://web.archive.org/web/20060206185213/www.naaso.org/statistics/obesity_trends.asp>.
- Nangle, D. W., Johnson, W. G., Carr-Nangle, R. E., & Engler, L. B. (1994). Binge eating disorder and the proposed DSM-IV-TR criteria: Psychometric analysis of the questionnaire of eating and weight patterns. *International Journal of Eating Disorders*, 16(2), 147-157.
- NIAAA Newsletter (Winter, 2004). NIAAA council approves definition of binge drinking. *Department of Health and Human Services: National Institute of Health*, 3, 1-4.
- Ogden, C. L., Carroll, M. D., Curtin, L. R., McDowell, M. A., Tabak, C. J., & Flegal, K. M.

- (2006). Prevalence of overweight and obesity in the United States, 1999-2004. *Journal of the American Medical Association*, 295(13), 1549-1555.
- Pesa, J. A., Syre, T. R., & Jones, E. (2000). Psychosocial differences associated with body weight among female adolescents: The importance of body image. *Journal of Adolescent Health*, 26(5), 330-337.
- Pike, K. M., Walsh, B. T. (1996). Ethnicity and eating disorders: implications for incidence and treatment. *Psychopharmacological Bulletin*, 32, 265-273
- Pi-Sunyer, X. (2003). A clinical view of the obesity problem. *Science*, 299(5608), 859-860.
- Pomerleau, C. S., & Kurth, C. L. (1996). Willingness of female smokers to tolerate postcessation weight gain. *Journal of Substance Abuse*, 8(3), 371-378.
- Popkin, B. M., & Doak, C. M. (1998). The obesity epidemic is a worldwide phenomenon. *Nutrition Reviews*, 56(4), 106-114.
- Prouty, A. M., Protinsky, H. O., & Canady, D. (2002). College women: Eating behaviors and help-seeking preferences. *Adolescence*, 37(146), 353-363.
- Racette, S. B., Deusinger, S. S., Strube, M. J., Highstein, G. R., Deusinger, R. H. (2008). Changes in weight and health behaviors from freshman through senior year of college. *Journal of Nutrition Education and Behavior*, 40(1), 39-42.
- Raymond, N. C., Mussell, M. P., Mitchell, J. P., de Zwaan, M., & Crosby, R. D., (1995). An age-matched comparison of subjects with binge eating disorder and bulimia nervosa. *International Journal of Eating Disorders*, 18, 135-143.
- Reagan, P. & Hersch, J. (2005). Influence of race, gender, and socioeconomic status on binge

- eating frequency in a population-based sample. *International Journal of Eating Disorders*, 38(3), 252-256.
- Reichborn-Kjennerud, T., Bulik, C. M., Tambs, K., Harris, J. R. (2004b). Psychiatric and medical symptoms in binge eating in the absence of compensatory behaviors. *Obesity Research*, 12, 1445–1454.
- Root, M. P. P. (1985). Guidelines for facilitating therapy with Asian American clients. *Psychotherapy*, 22, 349-356.
- Rosenthal, B., & Wilson, W. C. (2008). Mental health services: Use and disparity among diverse college students. *Journal of American College Health*, 57(1), 61-67.
- Saules, K. K., Collings, A. S., Hoodin, F., Angelella, N. E., Alschuler, K., Ivezaj, V., Saunders-Scott, D., Wiedemann, A. A. (2009). The contributions of weight problem perception, BMI, gender mood, and smoking status to binge eating among college students. *Eating Behaviors*, 10, 1-9.
- Saules, K. S., Tate, J. C., Pomerleau, C. S. (2008). Weight control smoking in women (ch. 4). In K. P. Tolson & E. B. Veksler. *Research Focus on Smoking and Women's Health*. Hauppauge, New York: Nova Science Publishers Inc.
- Schwarz, G. E. (1978). Estimating the dimension of a model. *Annals of Statistics*, 6(2), 461–464.
- Seim, H. C., & Fiola, J. A. (1990). A comparison of attitudes and behaviors of men and women toward food and dieting. *Family Practice Research*, 10(1), 57-63.
- Serras, A., Saules, K. K., Cranford, J. A., & Eisenberg, D. (2010). Self-injury, substance use, and

- associated risk factors in a multi-campus probability sample of college students. *Psychology of Addictive Behaviors*, 24(1), 119-128.
- Shear, M. K., Greeno, C., Kang, J., Ludewig, D., Frank, E., Swartz, H. A., & Hanekamp, M. (2000). Diagnosis of nonpsychotic patients in community clinics. *The American Journal of Psychiatry*, 157, 581-587.
- Simon, J., Schmidt, U., & Pilling, S. (2005). The health service use and cost of eating disorders. *Psychological Medicine*, 35(11), 1543-1551.
- Smith, D. E. (1995). Binge eating in ethnic minority groups. *Addictive Behaviors*, 20(6), 695-703.
- Smith, D. E., Marcus, M. D., Lewis, C. E., Fitzgibbon, M., & Schreiner, P. (1998). Prevalence of binge eating disorder, obesity, and depression in biracial cohort of young adults. *Annals of Behavioral Medicine*, 20(3), 227-232.
- Sobara, M., & Geliebter, A. (2002). Body image disturbance in obese outpatients before and after weight loss in relation to race, gender, binge eating, and age of onset of obesity. *International Journal of Eating Disorders*, 31, 416-423.
- Spitzer, R. L., Kroenke, K., & Williams, J. B. W. (1999). Validation and utility of a self-report version of PRIME-MD; The PHQ Primary Care Study. *Journal of the American Medical Association*, 282, 1737-1744.
- Spitzer, R. L., Yanovski, S. Z., & Marcus, M. D. (1994). Questionnaire on Eating and Weight Patterns – Revised. Mclean, VA: Behavioral Measurement and Database Services (Producer) BRS Search (Vendor).
- Spoor, S. T. P., Stice, E., Burton, E., & Bohon, C. (2007). Relations of bulimic symptom

- frequency and intensity to psychosocial impairment and health care utilization: Results from a community-recruited sample. *International Journal of Eating Disorders*, 40(6), 505-514.
- Steiger, H., Lehoux, P. M., & Gauvin, L. (1999). Impulsivity, dietary control, and the urge to binge in bulimic syndromes. *International Journal of Eating Disorders*, 26, 261-274.
- Steiner, J. L., Tebes, J. K., Sledge, W. H., & Walker, M. L. (1995). A comparison of the structured clinical interview for DSM-III-R and clinical diagnoses. *Journal of Nervous and Mental Disease*, 183(6), 365-369.
- Striegel-Moore, R. H., DeBar, L., Wilson, G. T., Dickerson, J., Rosselli, F., & Perrin, N., et al. (2008). Health services use in eating disorders. *Psychological Medicine*, 38(10), 1465-1474.
- Striegel-Moore, R. H., Smolak, L. (2000). The influence of ethnicity on eating disorders in women. In R. M. Eisler & M. Hersen. (Eds.), *Handbook of Gender, Culture, and Health* (pp. 227-254). Mahwah, NJ: Lawrence Erlbaum Associates.
- Stunkard, A. J., & Allison, K. C. (2003). Binge eating disorder: Disorder or marker? *International Journal of Eating Disorders*, 34(S1), S107-S116.
- Stunkard, A. J., Faith, M. S., & Allison, K. C. (2003). Depression and obesity. *Biological Psychiatry*, 54(3), 330-337.
- Telch, C. F., & Stice, E. (1998). Psychiatric comorbidity in women with binge eating disorder: Prevalence rates from a non-treatment seeking sample. *Journal of Consulting and Clinical Psychology*, 66(5), 768-776.
- Thoma, A., Sprague, S., Veltri, K., Duku, E., & Furlong, W. (2005). Methodology and

- measurement properties of health-related quality of life instruments: A prospective study of patients undergoing breast reduction surgery. *Health and Quality of Life Outcomes*, 3, 44-54.
- Tomeo, C. A., Field, A. E., Berkey, C. S., Colditz, G. A., & Frazier, A. L. (1999). Weight concerns, weight control behaviors, and smoking initiation. *Pediatrics*, 104(4, pt 1), 918-924.
- Tracey, T. J., Leong, F. T. L., Glidden, C. (1986). Help seeking and problem perception among Asian Americans. *Journal of Counseling Psychology*, 33(3), 331-336.
- Uba, L. (1994). *Asian Americans: Personality patterns, identity, and mental health*. New York: Guilford.
- Walsh, B. T., & Devlin, M. J. (1998). Eating disorders: Progress and problems. *Science*, 29(280), 1387-1390.
- Wechsler, H., Davenport, A., Dowdall, G., Moeykens, B., & Castillo, S. (1994). Health and behavioral consequences of binge drinking in college. *Journal of the American Medical Association*, 272, 1672-1677.
- Wells, K. B., Sturm, R., & Burnam, A. (2004). *National Survey of Alcohol, Drug, and Mental Health Problems* [Healthcare for Communities], 2000-2001. [Codebook].
- Wolff, G. E., Crosby, R. D., Roberts, J. A., & Wittrock, D. A. (2000). Differences in daily stress, mood, coping, and eating behavior in binge eating and nonbinge eating college women. *Addictive Behaviors*, 25(2), 205-216.
- Womble L. G., Williamson, D. A., Martin, C. K., Zucker, N. L., Thaw, J. M., & Netermeyer, R.,

et al. (2001). Psychosocial variables associated with binge eating in obese males and females. *International Journal of Eating Disorders*, 30(2), 252-256.

World Health Organization, *Obesity: Preventing and Managing the Global Epidemic* (World Health Organization, Geneva, 1998).

WHO: World Health Organization. (2006). Global Database on Body Mass Index. Retrieved on June 4, 2010 from < http://apps.who.int/bmi/index.jsp?introPage=intro_3.html>.

Yorgason, J. B., Linville, D., & Zitzman, B. (2008). Mental health among college students: Do those who need services know about and use them? *Journal of American College Health*, 57(2), 173-181.

APPENDICES

Appendix A: Description of Study and Consent Form

Who is doing this study?

This study is a partnership between Daniel Eisenberg, PhD, Assistant Professor at the University of Michigan School of Public Health, and Dr. Karen Saules, PhD, Professor at Eastern Michigan University and Director of the Eastern Michigan University Psychology Clinic.

Why are you doing this research?

We are trying to better understand issues related to undergraduate and graduate students' well-being, sources of support, and mental and emotional health. This study is important to furthering knowledge about how students are handling the stresses of university life and how well their mental and emotional health needs are being met. We will provide the results (without any individually identifiable information) to school administrators and other community members to help them think about how to improve student life.

What will taking this survey be like?

The survey takes 10-20 minutes for most students to complete, though it may take less or more time for some students. You must be 18 or older to take this survey. You will be asked questions about your moods and emotions, mental health and emotional issues you have experienced, support you may or may not have received, and your academic life. While in the survey, you will be able to stop at any time by closing your browser. You may then return to the questionnaire later. All responses you had entered and submitted will be saved. We ask that you complete the survey within 14 days.

What are the risks associated with my participation?

Some of the questions will ask you about sensitive or personal information such as your emotional health. These questions might make you feel uncomfortable or anxious. You can skip any questions you do not want to answer. At the conclusion of the survey you will receive a list of resources on campus that can provide you with help and support. If responding to any questions makes you feel worried or unhappy, we urge you to call any of the resources listed. Your participation is voluntary -- your refusal to participate will involve no penalty of any sort. You may discontinue participation at any time.

Who will benefit from my participation in this research?

We expect this research to be used to improve student life, so students at your school and nationwide may ultimately benefit from the knowledge obtained in this study.

Additionally, you will be entered into a sweepstakes to be conducted on June 15, 2010 for cash prizes totaling \$4,000 (ten \$250 prizes and three \$500 prizes) regardless of whether you complete the survey. The drawing will be conducted by the Survey Sciences Group, LLC on 220 E. Huron St. in Ann Arbor, MI. The chance of winning a prize is approximately 1 in 300. Winners will be notified immediately by email, and prizes will be mailed as checks.

How will my privacy and confidentiality be protected?

Your confidentiality will be maintained to the degree permitted by the technology used. Specifically, no guarantees can be made regarding the interception of data sent via the Internet by any third parties. The survey was designed to protect your privacy and confidentiality. The Survey Sciences Group, LLC (SSG), has been hired to help ensure your confidentiality by maintaining all study records. They will use Secure Sockets Layer (SSL) encryption technology to ensure that your responses are not intercepted in transmission, and will provide physical and logical restrictions to protect your data once it has been collected. The researchers will never know your name, email address, or any other identifiable information. Any reports or articles that we write will describe the data in the aggregate and will contain no information that could allow somebody to identify you. Survey Sciences Group, LLC has conducted several studies of sensitive issues among college student populations, and they use the most sophisticated technology available to assure security and confidentiality. The security and confidentiality maintained by the Survey Sciences Group has never been breached.

The data from this study, without any identifiable information, will be retained in a secure repository for future research purposes. Records will be kept confidential to the extent provided by federal, state, and local law. However, the Institutional Review Board, the sponsor of the study, or university and government officials responsible for monitoring this study may inspect these records. Also, please be aware that even though researchers will not know your name, the data collection firm will have your name in order to send you follow up emails if necessary. If you participate in the present study, you may be contacted in future years for a follow-up study.

To provide additional protections to your privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose information that may identify you, even by a court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings. The researchers will use the Certificate to resist any demands for information that would identify you, except as explained below. The Certificate cannot be used to resist a demand for information from personnel of the United States Government that is used for auditing or evaluation of

federally funded projects or for information that must be disclosed in order to meet the requirements of the federal Food and Drug Administration (FDA). You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the Certificate to withhold that information. The Certificate of Confidentiality does not prevent the researchers from disclosing voluntarily, without your consent, information that would identify you as a participant in the research project if you indicate that you are at imminent and serious risk to harm yourself or others.

What if I have questions about the survey?

If you have questions about this research, the survey questions, or this consent process, you can contact the researchers at hms@ssgresearch.com or (734) 213-4600, ext 470. You may also contact the PI of this study, Dr. Daniel Eisenberg at (daneis@umich.edu) or 734-615-7764.

Should you have questions regarding your rights as a research participant or feel that you have been harmed by this research, please contact the Institutional Review Board at the University of Michigan, 540 E. Liberty Street, Suite 202, Ann Arbor, MI 48104-2210, (734) 936-0933, email: irbhsbs@umich.edu.

Please click the link at the bottom of the screen if you wish to print a copy of this consent form.

- I have read the information given above, I am at least 18 years old, and I CONSENT to participate in this study.
- I do not wish to participate in this study and understand that there is no penalty for not participating.

Appendix B: Demographic Variables

A1. How old are you? *(You must be 18 years or older to complete this survey)*

- 1 18 years old
- 2 19 years old
- 3 20 years old
- 4 21 years old
- 5 22 years old
- 6 23-25 years old
- 7 26-30 years old
- 8 31-35 years old
- 9 36-40 years old
- 10 41+ years old

A2. What gender are you?

- 1 Female
- 2 Male
- 3 Other(specify)

A3. How do you usually describe your race and/or ethnicity? *(Check all that apply)*

- 1 White or Caucasian, non-Hispanic, non-Arab
- 2 African American/Black, non-Hispanic
- 3 Hispanic/Latino
- 4 American Indian/Alaskan Native
- 5 Arab/Middle Eastern or Arab American
- 6 Asian/Asian-American
- 7 Pacific Islander
- 8 Other (specify)
- 9 Not applicable—I would prefer not to identify my race/ethnicity

A4. How would you describe your sexual orientation?

- 1 Heterosexual
 - 2 Bisexual
 - 3 Gay/Lesbian/Queer
 - 4 Other (specify)
-

A5. Where do you live?

- 1 Campus residence hall
- 2 Fraternity or sorority house
- 3 Other University housing
- 4 Off-campus, non-university housing
- 5 Parent or guardian's home
- 6 Other (specify)

A6. What year are you in your current degree program?

- 1 1
- 2 2
- 3 3
- 4 4
- 5 5
- 6 6
- 7 7
- 8 8
- 9 9+

A7. In what degree program are you currently? (*Check all that apply*)

- 1 Associate's degree
- 2 Bachelor's degree
- 3 Master's degree
- 4 JD
- 5 MD
- 6 PhD or equivalent
- 7 Other (specify)

A8. How religious would you say you are - very religious, fairly religious, not too religious, or not religious at all?

- 1 Very religious
- 2 Fairly religious
- 3 Not too religious
- 4 Not religious at all

A9. How would you characterize your current financial situation?

- 1 It's a financial struggle
 - 2 It's tight but I'm doing fine
 - 3 Finances aren't really a problem
-

A10. How would you characterize your current relationship status?

- 1 Single
 - 2 In a relationship
 - 3 Married or domestic partnership
 - 4 Divorced
 - 5 Widowed
-

A11. How tall are you?

_____ feet _____ inches

A12. How much do you currently weigh?

_____ lbs (pounds)

Appendix C: PHQ-9

B1. Over the LAST 2 WEEKS, how often have you been bothered by any of the following problems?

B1a. Little interest or pleasure in doing things

- 1 Not at all
 - 2 Several days
 - 3 More than half the days
 - 4 Nearly every day
-

B1b. Feeling down, depressed or hopeless

- 1 Not at all
 - 2 Several days
 - 3 More than half the days
 - 4 Nearly every day
-

B1c. Trouble falling or staying asleep, or sleeping too much

- 1 Not at all
 - 2 Several days
 - 3 More than half the days
 - 4 Nearly every day
-

B1d. Feeling tired or having little energy

- 1 Not at all
 - 2 Several days
 - 3 More than half the days
 - 4 Nearly every day
-

B1e. Poor appetite or overeating

- 1 Not at all
 - 2 Several days
 - 3 More than half the days
 - 4 Nearly every day
-

B1f. Feeling bad about yourself--or that you are a failure or have let yourself or your family down

- 1 Not at all
- 2 Several days
- 3 More than half the days
- 4 Nearly every day

B1g. Trouble concentrating on things, such as reading the newspaper or watching television

- 1 Not at all
- 2 Several days
- 3 More than half the days
- 4 Nearly every day

B1h. Moving or speaking so slowly that other people could have noticed? Or the opposite--being so fidgety or restless that you have been moving around a lot more than usual

- 1 Not at all
- 2 Several days
- 3 More than half the days
- 4 Nearly every day

B1i. Thoughts that you would be better off dead or of hurting yourself in some way

- 1 Not at all
- 2 Several days
- 3 More than half the days
- 4 Nearly every day

{ask if any of B1a-B1i \geq 2}

B1j. If you checked off *any* problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

- 1 Not difficult at all
- 2 Somewhat difficult
- 3 Very difficult
- 4 Extremely difficult

Appendix D: PHQ Item # 5

B4a. Over the LAST 4 WEEKS, how often have you been bothered by feeling nervous, anxious, on edge, or worrying a lot about different things?

- 1 Not at all
 - 2 Several days
 - 3 More than half the days
-

{ IF B4a=2-3 ASK B4b-g OTHERWISE GO TO B5 }

B4. Over the LAST 4 WEEKS, how often have you been bothered by any of the following problems?

B4b. Feeling restless so that it is hard to sit still.

- 1 Not at all
 - 2 Several days
 - 3 More than half the days
-

B4c. Getting tired very easily

- 1 Not at all
 - 2 Several days
 - 3 More than half the days
-

B4d. Muscle tension, aches, or soreness

- 1 Not at all
 - 2 Several days
 - 3 More than half the days
-

B4e. Trouble falling asleep or staying asleep

- 1 Not at all
 - 2 Several days
 - 3 More than half the days
-

B4f. Trouble concentrating on things, such as reading a book or watching TV

- 1 Not at all

- 2 Several days
 - 3 More than half the days
-

B4g. Becoming easily annoyed or irritable

- 1 Not at all
 - 2 Several days
 - 3 More than half the days
-

Appendix E: QEWP-R Items

1. During the past six months, did you often eat within any two hour period what most people would regard as an unusually large amount of food?

- 1 Yes
 - 2 No
-

2. During the times when you ate this way, did you often feel you couldn't stop eating or control what or how much you were eating?

- 1 Yes
 - 2 No
-

3. During the past six months, how often, on average, did you have times when you ate this way—that is, large amounts of food plus the feeling that your eating was out of control? (*There may have been some weeks when it was not present—just average those in.*)

- 1 Less than one day a week
- 2 One day a week
- 3 Two or three days a week
- 4 Four or five days a week
- 5 Nearly every day

Appendix F: New HMS Items - Defining an eating binge

Please check the response that most accurately captures what you consider to be the SMALLEST amount of food necessary to constitute an eating binge

- 1 A salad with 1 tablespoon of dressing
 - 2 1 slice of pizza and a 20 oz. soft drink
 - 3 1 large (family size) bag of potato chips
 - 4 1 full-size loaf of bread with a tub of butter
 - 5 2 dozen cookies
 - 6 1 half gallon tub of ice cream with 2 slices of cake
-

Appendix G: New HMS Item - MSBRQ-AS

I think I am:

- 1 Very Underweight
- 2 Somewhat Underweight
- 3 Normal
- 4 Somewhat Overweight
- 5 Very Overweight

Appendix H: Substance abuse items**Cigarette Use**

C1. ON AVERAGE, how many cigarettes did you smoke in the PAST 30 DAYS?

- 1 None
- 2 Less than one cigarette per day
- 3 One to five cigarettes per day
- 4 About one-half pack per day
- 5 About one pack per day
- 6 About one and one-half packs per day
- 7 Two or more packs per day
- 8 Don't know
- 9 I refuse to answer this

Binge Drinking

1. Over the PAST 2 WEEKS, on how many occasions have you had 5 drinks in a row (male)?

- 1 None
- 2 Once
- 3 Twice
- 4 3 to 5 times
- 5 6-9 times
- 6 10 or more times
- 7 Don't know
- 8 I refuse to answer this

2. Over the PAST 2 WEEKS, on how many occasions have you had 4 drinks in a row (female)?

- 1 None
- 2 Once
- 3 Twice
- 4 3 to 5 times
- 5 6-9 times
- 6 10 or more times
- 7 Don't know
- 8 I refuse to answer this

Appendix I: Healthcare Utilization Items

Pre-existing items from HMS

E2. In the PAST 12 MONTHS have you received counseling or therapy for your mental or emotional health from a health professional (such as psychiatrist, psychologist, social worker, or primary care doctor)?

- 1 Yes
- 2 No

E2f In the PAST 12 MONTHS have you visited any medical provider, such as a primary care doctor or other type of doctor, for a check-up or any other health reasons?

- 1 Yes
- 2 No

New HMS item

If you sought help for an emotional, mental health, or behavioral problem, what was the problem you were experiencing?

[OPEN END RESPONSE]

Appendix J: New HMS items – DERS

1. When I'm upset, I have difficulty controlling my behaviors.

- 1 Almost never
 - 2 Sometimes
 - 3 About half the time
 - 4 Most of the time
 - 5 Almost always
-

2. I experience my emotions as overwhelming and out of control.

- 1 Almost never
 - 2 Sometimes
 - 3 About half the time
 - 4 Most of the time
 - 5 Almost always
-

