BINGE EATING DISORDER AND BODY DYSMORPHIC DISORDER: ASSESSING DIFFERENCES IN BODY IMAGE CONCERNS

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Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF PHILOSOPHY
July, 2021

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Date of Degree: JULY, 2021

Title of Study: BINGE EATING DISORDER AND BODY DYSMORPHIC DISORDER: ASESSING DIFFERENCES IN BODY IMAGE CONCERNS

Major Field: COUNSELING PSYCHOLOGY

Abstract: Traditionally, body dissatisfaction—characterized by the overvaluation of weight and shape—has been associated with eating disorders, whereas body dissatisfaction—associated with specific physical features, or features independent of weight and shape (e.g., nose, skin, hair)—has been associated with body dysmorphic disorder. Recent literature suggests individuals with eating disorders may experience dissatisfaction with specific physical features in addition to weight and shape dissatisfaction. Studies that have evaluated the co-occurrence of anorexia or bulimia nervosa and body dysmorphia suggest that individuals experiencing dissatisfaction with weight, shape, and specific physical features are at increased for worsened body image and eating pathology. There is limited research, however, about the co-occurrence of binge eating disorder and body dysmorphic disorder. To better understand how body image disturbance, including dissatisfaction with weight, size, and specific physical features vary between binge eating and body dysmorphic disorders, the present study sought to explore how weight, shape, and non-weight/shape body image concerns varied between college women with binge eating disorder, body dysmorphic disorder, and co-occurring disorders. It was hypothesized that college women who screened positive for body dysmorphic disorder would report significantly more non-weight/shape concerns; women who screened positive for binge eating disorder would report significantly more weight and shape concerns; and college women who screened positive for co-occurring disorders would report significantly more weight, shape, and non-weight/shape concerns. College women ($N = 236$) completed an online survey including measures assessing for binge eating, body dysmorphia, and weight, shape, and non-weight/shaped related body image concerns, and a demographics questionnaire. A one-way MANOVA demonstrated that college women who screened positive for co-occurring binge eating and body dysmorphic disorders reported all three types of body image concerns significantly and substantially more than college women who screened positive for only one disorder, supporting our third hypothesis. Findings suggest that college women who present with body dysmorphic disorder or binge eating disorder should be screened for all three types of body image concerns to address worsened body image and eating pathology.

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

Table Page

CHAPTER I

INTRODUCTION

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Body dissatisfaction is so prevalent that it is often referred to as "normative discontent," a form of distress that is expected for women, especially girls and young women (Cash & Smolak, 2011; Rodin et al., 1984). National surveys suggest that women commonly reported pre-occupation and dissatisfaction with their body weight, shape, and size (Cash & Henry, 1995; Kilpela et al., 2015; Tiggeman & Lynch, 2001). For example, in a large community sample of women ($N = 9667$), 89% reported body dissatisfaction, with 84.1% desiring a smaller silhouette (Swami et al., 2015). Similarly, in another community sample of 5,868 women, 91% reported body dissatisfaction, with 87% wanting a smaller silhouette (Runfola et al., 2013). Given the large prevalence of body dissatisfaction in Western culture, it comes as no surprise that eating disorders are widespread. In the United States, eating disorders are estimated to affect 20 million women and 10 million men throughout the lifetime (Wade et al., 2011). While not all eating disorders are characterized by body dissatisfaction, individuals who have body dissatisfaction as a part of their eating pathology often report symptoms for longer, have lower remission rates and are at the greatest risk for relapse (Cella et al., 2017; Fairburn et al., 1993; Rosen, 1990). Body image concerns and disordered eating are especially prevalent among young women, including college women.

In a systematic review by Goswami and colleagues (2012) across 96 studies on body satisfaction in women college students, they found that 13.54% of students were dissatisfied with their bodies. Similarly, Beiter and colleagues (2015) found that body image concerns were either considered a "moderate" or "extreme" source of stress for college students ($N = 374$). Findings from a study by Arigo and colleagues (2015) indicated that college women ($N = 454$) who screened positive for clinical disordered eating symptoms also reported greater body dissatisfaction and upward appearance comparison (i.e. comparing oneself to someone perceived as more physically attractive) than college women who did not meet the threshold. Further and notably, the peak onset of eating pathology, specifically Anorexia Nervosa, Bulimia Nervosa, and Binge Eating Disorder, occurs most frequently in women between the ages of 18 to 21 years old (Hudson et al., 2007; Stice et al., 2013).

Body dissatisfaction has been traditionally been reported in individuals with anorexia (AN) or bulimia nervosa (BN), such that the behavioral characteristics of these disorders are motivated by dissatisfaction with weight and shape (American Psychiatric Association, 2013: Smolak & Levine, 2015). Alternatively, behavioral characteristics of binge eating disorder are often motivated by emotional distress or emotional eating (American Psychiatric Association, 2013). However, in a systematic review of the eating disorder literature of the past two decades, Lewer and colleagues (2017) found that individuals with binge eating disorder experience comparable rates of body dissatisfaction to those with AN or BN, suggesting further inquiry about the variance of body dissatisfaction between these disorders.

Body image disorders that have been associated with disordered eating include body dysmorphic disorder as well as muscle dysmorphia, a specific type of body dysmorphia (American Psychiatric Association, 2013). While body dysmorphia and eating pathology are distinct disorders, they can and do co-occur (Dingemans et al., 2012) such that body image disturbance is a shared clinical symptom of body dysmorphic disorder and some eating disorders (Cash & Deagle, 1997; Lewer et al., 2017). Indeed, there have been increasing reports of the co-occurrence of body

dysmorphia and AN and BN (Cerea et al., 2018; Dingemans et al., 2012; Kollei et al., 2013). Individuals with co-occurring body dysmorphic disorder and AN or BN report greater body image disturbance and eating pathology than individuals with either body dysmorphic disorder or AN or BN (Cerea et al., 2018; Dingemans et al., 2012). This may be due to the individuals who meet the criteria for both disorders experiencing both the overvaluation of weight and shape characteristic of eating disorders as well as non-weight related concerns, including hair, teeth, and skin, characteristic of body dysmorphia.

If the co-occurrence of AN or BN and body dysmorphia increases the risk of symptom severity, including higher levels of body image disturbance and eating pathology, then it is also possible that the same may be true for individuals with comorbid binge eating and body dysmorphic disorders. Given that the co-occurrence of binge eating and body dysmorphia may produce multiple forms of body image disturbance, those with binge eating disorder might also experience non-weight/shape-related body image disturbance in addition to weight and shape concerns. Despite similar reported rates of body image disturbance in binge eating disorder (Lewer et al., 2017), little is known about the relationship between body dysmorphia and binge eating disorder. To better understand the variance of body image disturbance in binge eating and body dysmorphia so to improve diagnosis and treatment, it is imperative to understand whether individuals with comorbid binge eating disorder and body dysmorphic disorder are at increased risk for more severe symptomology similar to those with comorbid body dysmorphic disorder and AN or BN. We first review the origin of body image and eating pathology.

Sociocultural Influences and Objectification Theory

Broadly speaking, body image disturbance amongst girls and women stems from the societal pressures placed on women to be physically attractive. Body dissatisfaction often develops in adolescence and carries into later adulthood; however, it tends to decrease in older age (Kilpela et al., 2015; Runfola et al., 2013; Tiggemann & Lynch, 2001). Messages about physical appearance become more salient as young women began to evaluate themselves based on messages received from their

environment. Consequently, these evaluations contribute to the high prevalence of body image disturbance among adolescents and young adult women, including college students (Delene & Brogowicz, 1990; Tiggeman & Lynch, 2001; Wertheim et al., 2009). Objectification Theory helps to explain the origins of societal pressures, its related messages, as well as its effect on girls and women.

According to Objectification Theory, women are viewed by men and society at large as sexualized objects; that is, viewed as worth no more than what their physical appearance has to offer for consumption (Fredrickson & Roberts, 1997). How women come to internalize beliefs about how they should look (i.e. self-objection) is informed by the "appearance ideal" or "thin ideal," society's gold standard of beauty for a particular period. In consequence, young women begin to internalize the "thin ideal" and begin seeing their worth as linked to their value as a commodity (Fredrickson & Roberts, 1997; Thompson & Stice, 2001). Girls and women learn of, and come to internalize, their time period's appearance ideal through messages received from the media, their peers, and their parents (Keery et al., 2014).

Objectification and self-objectification result in young women developing an increased vulnerability for developing mental health concerns, including anxiety, depression, sexual dysfunction, and disordered eating (Fredrickson & Roberts, 1997). As such, numerous studies have identified strong relationships between self-objectification, body shame and disturbance, and disordered eating in undergraduate women (Tiggemann, 2011). Calogero and Thompson (2009) assessed self-objectification, sexual esteem, and disordered eating among two samples of women. In the first sample ($N = 104$), researchers found self-objectification to be both a direct predictor of disordered eating, as well as an indirect predictor as mediated through sexual self-esteem. In the second sample, with the inclusion of body shame as a variable, researchers found self-objectification to be both a direct predictor of disordered eating, as well as an indirect predictor of disordered eating with body shame as a mediator. Notably, Schaefer and Thompson (2018) point out in a systematic review of 53 cross-sectional studies assessing self-objectification and disordered eating disorders, none of the studies included binge eating as a possible outcome measure. To our knowledge, the

same is true for studies that have examined the Tripartite Model of Body Image Disturbance and Disordered Eating.

Tripartite Model

In the Tripartite Model of Body Image Disturbance and Disordered Eating, messages about appearance are communicated through the media, peers, and parents (Thompson et al., 1999). These messages are then internalized and correspondingly bring about social comparison, specifically, the comparison of one's physical appearance to another's, and body surveillance; notably, a form of self-objectification, is the consistent monitoring of one's physical appearance (Thompson et al., 1999). Both body surveillance and social comparison have been commonly observed in college women, which is thought to be attributed to the increased opportunities for social comparison (Fitzsimmons-Craft et al., 2015).

Particularly, an often strong and covert message that is instilled in girls during their adolescence is the belief that physical beauty is a form of power as well as social and economic success for women (Fredrickson & Roberts, 1997). Wolf (2002) argues that the sexualization of women in the marketplace, including the beauty and pornography industries, and methods to limit women's social and economic growth disproportionally equate a woman's value (e.g., physically, socially, mentally) on their physical appearance compared to men. Therefore, female bodies that deviate from the appearance ideal, including women in larger bodies and deemed having unattractive physical features, are seen a rebellious, irresponsible, and unwanted in the workforce and society. In recent years, these messages communicated to young women have been identified as a part of diet culture, which itself exacerbates body image disturbance and disordered eating.

Diet Culture

The larger cultural movement that perpetuates the appearance ideal in recent years has been referred to as diet culture (Fabello, 2014). A central tenet of diet culture is that thin, White, young,

and abled bodies are inherently better than other bodies (Harrison, 2019). Given the diversity of physical features that comprised the human appearance, it is inevitable that not everyone will achieve the appearance ideal. In fact, it could be further argued that no human can achieve the appearance ideal given that even the most attractive women in media are digitally edited before presented to the public—so much so that warning labels are required by some organizations to inform consumers that photos have been edited or altered (Krawitz, 2014). However, recent studies suggest no significant changes in body image issues for consumers who view edited images with or without labels (Fardouly & Holland, 2018; Tiggemann et al., 2017).

Diet culture is built on the foundation that one's appearance always requires improvement, insinuating that the human body is inherently flawed. Thus, despite the unattainability of achieving the appearance ideal, women often sacrifice their relationships, money, and time, in addition to their mental and physical health to nonetheless strive to obtain the appearance ideal (Stice & Presnell, 2007). Additionally, diet culture suggests that obesity results from a lack of willpower, dedication, and responsibility. Diet culture not only ignores the structural, social, genetic, and potential disordered eating determinants of obesity, but it is also fundamentally driven by, and thus invested in, disordered eating development (Harrison, 2019). Similarly, diet culture neglects the possibility of body image disturbance independent of weight or body mass index (BMI), neglecting body image disturbance, including non-weight concerns, in individuals with binge eating disorder with higher BMIs.

Inevitably, the inability to achieve the appearance ideal also creates a culture of body shaming, sizeism, and discrimination. Minoritized groups are often the targets of body shaming and discrimination, especially gay men, Latina women, trans youth, and individuals living in larger bodies (Cash & Smolak, 2011; National Eating Disorders Association [NEDA] & Trevor Project, 2018; Tomiyama, 2014). In addition to body weight and size, body shaming includes ridicule of specific physical characteristics such as facial features, body hair, and specific body parts, as seen in Body Dysmorphic Disorder (Weingarden et al., 2017). Given that diet culture aims to promote Whiteness,

thinness, and able-bodiedness, individuals with minoritized identities face even greater stigmatization and barriers to achieve the already-impossible appearance ideal (Harrison, 2019).

One form of body shaming is weight stigma, which has been found to contribute to internalized weight stigma, greater body image disturbance, and disordered eating (Meadows & Calogero, 2018). Furthermore, internalized weight stigma can lead to cyclical fad dieting, which may result in frequent, extreme, and short-lived changes in weight, disordered eating, and ultimately can become a risk factor for obesity (Tomiyama, 2014). In fact, provider bias related to obesity and weight can hinder medical and mental health providers' ability to recognize symptoms of body image disturbance and disordered eating (Pearl & Puhl, 2018; Puhl & Suh, 2015).

For example, in reviewing a vignette, a sample of mental health professionals who specialized in eating disorder treatment most commonly reported the beliefs that obesity is related to behavioral problems, and that patients in larger bodies will have poorer treatment outcomes compared with individuals within the BMI range deemed healthy. Furthermore, patient body size was related to greater levels of weight bias, such that providers with greater weight bias attributed obesity to behavior as oppose to environmental or medical causes (Puhl et al., 2014). This is of particular concern for individuals in larger bodies who experience binge eating disorder, body dysmorphic disorder, or co-occurring disorders. That is, body image disturbance (weight-related or non) and body dysmorphic disorder may not be screened appropriately for women in larger bodies.

Body Dysmorphic Disorder

Body dysmorphic disorder (BDD) is characterized by a preoccupation or obsession with a perceived physical defect or flaw, engagement in compulsive checking behaviors or mental acts, and severe impairment in life functioning (American Psychiatric Association, 2013). BDD is estimated to affect 0.7% to 2.4% of the general population, 2 to 13% of college students, and is most common among women (Bjornsson et al., 2010). Body dysmorphia usually develops in childhood or early adolescence and continues through adulthood (Cash & Smolak, 2011).

Body image disturbance in individuals with BDD typically differs from that observed in eating disorders. In body dysmorphia, body image disturbance is often focused on specific physical features rather than overall weight and size; the disturbance is seen as less easily fixable (e.g., fixing one's teeth as compared to manipulating weight or shape); and individuals with BDD have historically been characterized as having limited insight and sometimes delusional beliefs about the severity of their perceived or defects (Bjornsson et al., 2010; Cash & Smolak, 2011). The increased body image disturbance seen in individuals with co-occurring BDD and AN or BN may be explained by the joint experience of non-weight body image disturbance unique to BDD in addition to the weight and shape related body image disturbance in AN or BN. Despite the documented increase in body image and eating pathology diagnosed with co-occurring BDD and AN or BN, it remains to be seen whether individuals with comorbid BDD and binge eating disorder are similarly at risk for increased symptomology.

Types of Body Image Disturbance

The DSM-5 operationalizes body image disturbance differently for eating disorders and body dysmorphia (DSM-5; American Psychiatric Association, 2013). Within the context of eating disorders, body image disturbance is defined as a disturbance or the overvaluation of body weight and shape, where success is determined by one's ability to manage, manipulate, or control one's body weight or size (American Psychiatric Association, 2013). Such weight- and shape-based body image disturbance may lead to the development of extreme weight-loss behaviors, including dietary restraint, purging, excessive exercise, and other unhealthy compensatory behaviors (Fairburn, 2008).

Within the context of BDD, body image disturbance is defined as a concern or preoccupation with perceived flaws in one's physical appearance (American Psychiatric Association, 2013). Individuals with BDD tend to experience body image disturbance as a preoccupation with specific physical characteristics, such as skin, hair, and teeth (Bjornsson et al., 2010). Individuals with BDD put forth great effort to manage, manipulate, or control their perceived defect through camouflaging

(e.g., covering up body parts with loose clothing), excessive grooming (e.g., combing hair, applying make-up, extensive skincare routines), mirror-checking, and in extreme cases, cosmetic surgery.

Thus, although operationalized differently, body image disturbance is a shared clinical symptom of both eating disorders (i.e. AN, BN, and Binge Eating Disorder [BED]) and BDD (Cash & Deagle, 1997; Lewer et al., 2017). Given the overlap in body image concerns, numerous studies have examined the relationship between eating disorders (specifically, Anorexia and Bulimia Nervosa) and body dysmorphia (Dingemans et al., 2012; Kollei et al., 2013; Ruffolo et al., 2006). In one clinical sample of women ($N = 200$), Ruffolo and colleagues (2006) found that 32.5% of individuals with current eating disorders also experienced BDD at some point in their lifetime. In another sample, Kollei and colleagues (2013) found that 12% of women had current co-occurring BDD and eating pathology.

Commonly reported non-weight body image disturbance among women includes dissatisfaction with skin, height, teeth, nose, eyes, hair, and height (Gupta & Johnson, 2000). Amongst individuals with BDD specifically, frequently endorsed areas of disturbance include skin, hair, and nose (Bjornsson et al., 2010). In contrast, individuals with image disturbance marked by the overvaluation of weight and shape typically report fear of gaining weight and becoming overweight or obese (Kollei et al., 2003). The dissatisfaction of weight and shape is evident where there are discrepancies between one's ideal body size and one's actual body size (Vartanian, 2012). The same is true of other discrepancies including physical characteristics independent of weight, like hair, skin, and nose (Cash & Szymanski, 1995). Consequently, these disturbances may contribute to mental and emotional preoccupation and often result in unhealthy dieting behaviors (Bjornsson et al., 2010; Cash & Smolak, 2011).

Researchers have observed both weight/shape and non-weight/shape body image disturbances amongst individuals concurrently demonstrating eating pathology and symptoms of BDD (Cerea et al., 2018; Kollei et al., 2013). Thus, individuals with eating disorders may experience both the preoccupation of specific characteristics in BDD as well as the evaluation of weight and shape in

eating disorders. Similarly, individuals with BDD may experience the overvaluation of weight and shape in addition to non-weight/shape body image disturbance (Kittler et al., 2007). Indeed, researchers have found that individuals with AN, BN, and eating disorder not otherwise specified (EDNOS, including binge eating disorder) can experience non-weight/shape concerns as a part of their eating disorder symptomology (Cerea et al., 2018; Hrabrosky et al., 2009; Kollei et al., 2013; Ruffolo et al., 2006).

Across two studies, researchers found that individuals with AN reported disturbance specifically with their hair, nose, teeth, and height (Cerea et al., 2018; Kollei et al., 2013). Another study revealed that individuals with either AN or BN reported a disturbance with their face, hair, skin, stomach, and thighs (Ruffolo et al., 2006). The understanding that individuals diagnosed with eating disorders also experience body dysmorphia is particularly important given that individuals with eating disorders who experience weight and shape as well as non-weight/shape disturbance report greater body image disturbance, psychopathology, and eating pathology (Cerea et al., 2018; Dingemanns et al., 2012; Ruffolo et al., 2006). Much less is known, however, about the concurrent experience of body dysmorphia and binge eating disorder.

Binge Eating Disorder

Binge Eating Disorder (BED) is characterized by recurrent binge episodes, a sense of lack of control, and marked distress and guilt (American Psychiatric Association, 2013). It is currently the most prevalent eating disorder in the United States, estimated to affect between .2% and 3.5% of the general population, and is most prevalent in women (Allen et al., 2013; American Psychiatric Association, 2013; Kessler et al., 2013). BED often begins in the late teenage years and the beginning of young adulthood (Stice et al., 2013). Goldschimdt and colleagues (2010) identified in a sample of women with BED or other psychiatric diagnoses that the overvaluation of weight and shape was predictive of BED as compared to other psychiatric disorders. However, no research exists on non-weight/shape concerns in individuals with BED or co-occurring BDD. Although research has documented the comorbidity of body image disturbance concerns of those with BDD and AN or BN,

little is known about body image disturbance individuals with co-occurring BDD and BED. This may be due to the fact that BED was only introduced as a diagnosis in the most recent version of the Diagnostic and Statistical Manual of Mental Disorders, the DSM-5 (American Psychiatric Association, 2013). Thus, BED research was greatly limited before the publication of the DSM-5 (Lewer et al., 2017).

Additionally, in past research it has been suggested that body image disturbance may be a product of higher BMI or obesity. Accordingly, Smith and colleagues (1999) found obesity to predictive of body image disturbance, and Hills and Williams (1998) found significant and positive relationships between BMI status and body image issues, suggesting that these outcomes may be attributable to weight stigma. It could be argued that ingrainedness of the appearance ideal led both researchers and practitioners to assume that body image disturbance amongst individuals in larger bodies was a normal and in fact desired state, as larger bodies represent a deviation from the appearance ideal (Wolf, 2013). However, some studies have demonstrated mixed results about the relationship between BMI and body image concerns, but have identified that disordered eating behavior, including binge eating, is associated with body image issues independent of BMI status (Schwartz & Brownell, 2004).

There is some research on the relationship between body image disturbance, including body dissatisfaction and overconcern with weight and shape, obesity, and BED; however, the results are mixed (Lewer et al., 2017). De Zwaan and colleagues (1994) found a weak relationship between body dissatisfaction and binge eating when controlling for obesity status. Similarly, Keuhenel and Wadden (1994) found no significant differences in body dissatisfaction between participants with obesity and binge eating and participants with obesity without binge eating. However, more recent literature suggests that some body image concerns are related to binge eating behavior independent of BMI or obesity status (Legenbauer et al., 2011; Lewer et al., 2016). Both Lewer and colleagues (2016) and Legenbauer and colleagues (2011) found that individuals with obesity and binge eating reported significantly greater scores in the cognitive-affective component of body image disturbance,

including the evaluation of one's body, than individuals with obesity alone; however, they found no significant differences in the behavioral component, including body-avoidance behaviors, of body image disturbance between groups. These findings suggest that body image concerns may be related to binge eating behavior independent of BMI. Lewer and colleagues (2017) concluded that some studies suggest that body image disturbance was related to obesity status in individuals with BED, while other studies reported that body image disturbance was related to BED, independent of obesity status.

To date, only one study has examined the relationship between body dysmorphia and BED (Ruffolo et al., 2013). They found that 5.5% of the clinical sample experienced body dysmorphia at some point within their lifetime and that 2% of the sample experienced both disorders at the same time. Notably, however, at the time of Ruffalo and colleagues' (2013) study, BED was not a formal diagnosis. Instead, it was diagnosed as Eating Disorder Not Otherwise Specified (EDNOS) from the DSM-IV-TR (American Psychiatric Association, 2004). Thus, no known study has examined the relationship between BED and BDD in the context of the DSM-5 BED diagnosis.

The Present Study

Given the limited research on the co-occurrence of BED and BDD; the shared body image symptomology between BED and BDD; and that the co-occurrence of BDD with AN or BN is known to be related to greater symptomology and worse clinical outcomes, it is critical to developing a better understanding of the relationship between BED and BDD to better assess, diagnose, and provide appropriate treatment for individuals with comorbid BDD and BED. Since greater body image disturbance can be indicative of greater eating pathology and poorer remission rates, understanding how symptoms of body image disturbance overlap will help provide insight into more suitable treatment approaches for the co-occurrence of these disorders. Therefore, the present study aims to

examine whether the type of body image disturbance, specifically weight, shape, and non-weight/shape concerns, are different between individuals who screen positive for only BED *or* BDD and those who screen positive for both BED and BDD.

Therefore, the following research question was assessed: Are there significant differences in types of body image concerns (i.e. weight, shape, and non-weight/shape concerns) between individuals who screen positive for BED alone, BDD alone, and BED and BDD concurrently? It was first hypothesized that college women who screen positive for BDD would report non-weight/shape concerns significantly and substantially more than college women with BED only (H1). Second, it was hypothesized that college women who screened positive for BED would report weight and shape concerns significantly and substantially more than college women with BDD only (H2). Third, it was hypothesized that college women who screened positive for both BED and BDD would report all three types of body image disturbance concerns and substantially more than college women who screened positive for only BED or BDD (H3).

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CHAPTER II

METHOD

Participants

Inclusion and exclusion criteria

Currently enrolled college students in the United States over 18 years of age who identified as women were eligible to participate. Given the overlap in binge eating episodes in both BED and BN, individuals who screened positive for BN were removed from the final analysis, as were participants who did not screen positive for BED or BDD. The diagnostic category was determined by cut-off scores for BED and BDD on the appropriate measures as noted below.

Power Analysis

G*Power analysis 3.1.9.2 (Faul et al., 2009), a statistical analysis program, was used to determine the appropriate sample size. The experiment-wise alpha for the proposed study was .05, per convention (Cohen, 1992); a modified Bonferroni correction (Holland & Copenhaver, 1988) of .016 (.05/3) was used to control for Type I error. Power was set to .80 to maximize the chance of finding a significant effect in the population. Based on these parameters, the power analysis suggested a minimum of 150 participants for adequate power. An initial sample of 579 participants was obtained; after removing participants without enough data to identify their

diagnostic category or did not otherwise meet inclusion criteria, the final sample was 236 with the removal of two outlier cases.

Participant characteristics

Participants were 236 college women. The age of participants ranged from 18 to 57 (M = 23.53). The majority of the participants were White/non-Hispanic or Latinx (79.7%), followed by Native American/First Nation (8.1%), Black/African American (3%), Hispanic/Latinx (1.7%), Asian/Pacific Islander (1.7%), mixed (.08%), and multiracial (.04%). Additionally, the majority of the sample identified as heterosexual (75%), followed by participants who identified as bisexual (16.9%), pansexual (3.4%), asexual (2.1%), gay/lesbian (1.3%), and queer (.8%). Last, the majority of the participants were graduate students (23.7%) or college seniors (23.7%), followed by juniors (21.6%), sophomores (17.8%), and freshmen (12.7%), and reported a childhood household income of over $100,000 (28%), followed by $50,000 to $74,999 (21.6%), $75,000 to $99,999 (17.8%), $35,000 to $49,999 (17.4%), $20,000 to $34,999 (10.6%), and less than $20,000 (3.8%). For the distribution of participants across diagnostic groups, see Table 1.

Design

The present study was a three-group, ex post fact between-subjects design. The independent variable was the diagnostic category with three levels: BED, BDD, and co-occurring BED and BDD. Diagnostic categories were determined based on participants' scores on the Binge Eating Scale (BES; Gormally et al., 1982) and the Dysmorphic Concern Questionnaire (DCQ; Ossthuizen et al., 1998) as detailed below. The three dependent variables were the two types of body image disturbance: Weight disturbance and shape disturbance as measured by the Weight Concern and Shape Concern subscales of the Eating Disorder Examination Questionnaire (EDE-Q: Fairburn & Beglin, 1994) and non-weight/shape disturbance as measured by the Body Image Concern Inventory (BICI; Littleton et al., 2005).

Measures

Demographic Questionnaire

A demographic questionnaire included questions regarding race/ethnicity, gender, sexual orientation, academic class, and childhood socioeconomic status (see Appendix B).

Screening Question for Bulimia Nervosa Behaviors

The screening question was designed to identify behaviors consistent with Bulimia Nervosa (BN) for the purposes of removing participants who reported behaviors consistent with BN, because there is no single screening measure that assesses frequency or type of compensatory behaviors in BN. The question was listed as follows: "During the past 3 months (DSM-5, American Psychiatric Association, 2013), have you regularly (at least 1x per week) engaged in compensatory behaviors, such as self-induced vomiting, excessive exercise, use of diuretics or laxatives in efforts to manipulate, manage, or lose weight?" Participants who selected "yes" to this question were removed from the final analyses. This was for two reasons: First, for diagnostic clarity, because binge eating is shared symptom of BN and BED, and second, to rule out the possible influence of purging on the frequency and severity of binge eating episodes.

Binge Eating Scale

The Binge Eating Scale (BES; Gormally et al., 1982) is a 16-item, self-report questionnaire that assesses cognitive, affective, and behavioral components of binge eating behavior. Participants are asked to select one statement out of the four possible statements per item that best describes their behavior. Each statement was assigned a value from 0, referring to no symptoms of binge eating to 3, the highest severity of binge eating symptoms. To calculate an individual's total score, responses are summed, resulting in a potential range of 0 to 32. A score less than 17 points indicates none to mild binge eating problems, a score of 17 to 26 indicates

moderate binge eating symptoms, and a score of 27 or greater indicates severe binge eating problems. Participants with a score of 17 or greater are categorized as having a positive screen for binge eating disorder behaviors (Grupski et al., 2013).

Timmerman (1999) demonstrated convergent validity for BES with a community sample of women ($N = 68$). Participants recorded a food log for 28 days to assess for objective and subjective binge eating and completed the BES. The BES demonstrated a significant and moderate association with objective binge eating behaviors ($r = .39$ - $.40$, $p < .05$) and subjective and objective binge eating severity combined ($r = .42$ to $.48$, $p < .01$). In a sample of bariatric surgery candidates ($N = 530$), results indicated that the BES demonstrated good internal consistency ($\alpha = .87$, Hood, 2013).

Dysmorphic Concern Questionnaire

The Dysmorphic Concern Questionnaire (DCQ; Ossthuizen et al., 1998) is a 7-item, self-report questionnaire that assesses cognitive and behavioral symptoms of body dysmorphic concerns. Participants are asked to rate their concern on a 4-point, Likert-type scale, from 0 (*not concerned at all)* to 3 (*extremely concerned*). To calculate an individual's score, responses are summed, resulting in a potential range from 0 to 21 where higher scores indicate greater severity of body dysmorphic concerns. Scores of 9 or greater indicate a positive for Body Dysmorphic Disorder (BDD). In a psychiatric adult sample ($N = 65$) presenting with BDD, the DCQ demonstrated strong internal consistency ($\alpha = .80$) and construct validity with loading values ranging from .40 to .87 in a one-factor model (Jorgenson et al., 2001).

Eating Disorder Examination Questionnaire Weight and Shape Concerns Subscales

The Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994) is a self-report version of the Eating Disorder Examination clinical interview (EDE; Fairburn & Cooper, 1993). The EDE-Q is a 36-item, mixed-format scale (i.e. Likert-type scales and open-ended questions) that assesses for disordered eating concerns. The EDE-Q contains four subscales: Restraint, eating concerns, shape concerns, and weight concerns. The weight and shape concern subscales were used for the present study. For these subscales, respondents rate from 0 to 6 either the severity (8 items) or frequency (5 items) of their weight and shape concerns over the past 28 days. To calculate an individual's score, the items are summed and divided by the number of items (i.e. item-level means). The Weight Concern subscale is a 5-item subscale for which scores range from 0 to 6. Higher scores indicate a greater severity or frequency of weight concerns. The Shape Concern subscale is an 8-item subscale for which scores range from 0 to 6. Higher scores indicate a greater severity or frequency of shape concerns.

Psychometric support for the EDE-Q was based on three samples, including a sample of women with an eating disorder ($N = 935$), a general population sample without an eating disorder ($N = 235$) and a sample of women with obesity without eating disorder ($N = 321$) (Aardoom et al., 2012). Internal consistencies were good across the three samples combined ($N = 1491$), including the subscales of restraint ($\alpha = .85$), eating concerns ($\alpha = .81$), weight concerns ($\alpha = .83$), shape concerns ($\alpha = .91$), and the global EDE-Q score ($\alpha = .95$) (Aardoom et al., 2012). Additionally, in a systematic review of the psychometric properties of the EDE-Q (Berg et al., 2012), researchers found evidence of strong convergent validity through significant correlations between the EDE-Q weight ($r = .76$, $p < .05$) and shape concerns ($r = .61$, $p < .05$) subscales of the EDE-Q and the Body Shape Questionnaire, between the EDE-Q restraint ($r = .54$, $p < .05$), eating ($r = .37$, $p < .05$), weight concerns ($r = .36$, $p < .05$), and shape concerns ($r = .35$, $p < .05$)

and Eating Attitudes Test dieting subscale, and the EDE-Q ($r = .36$, $p < .05$) restraint subscale and Three-Factor Eating Questionnaire restraint subscale (Loeb et al., 1994).

Body Image Concern Inventory

The Body Image Concern Inventory (BICI; Littleton et al., 2005) is a 19-item, self-report measure of dysmorphic concerns. Respondents rate items on a Likert-type scale from 1 (*never*) to 5 (*always*) related to their frequency of feelings and behaviors associated with body dysmorphic concerns. To calculate an individual's score, the total is summed, with total scores ranging from 19 to 95 and higher scores reflecting a greater degree of body dysmorphic concerns. The BICI has demonstrated good psychometric properties. A sample of undergraduate students ($N = 184$) reported on the BICI and Body dysmorphic disorder examination – short version (BDDE-SR) with the BICI demonstrating good internal consistency ($\alpha = 0.93$) and item-total correlations between 0.32 to 0.73 for the BICI and BDDE-SR. In another sample of undergraduate students ($N = 56$), the BICI and as well as the Yale-Brown Obsessive-Compulsive Scale for Body Dysmorphic Disorder (BDD-YBOCS; Phillips et al., 1997) a clinical interview for assessing body dysmorphic disorder, were administered. The BICI was significantly correlated with the BDD-YBOCS ($r = .60$, $p < .01$), demonstrating strong concurrent validity (Littleton et al., 2005).

Procedure

Once IRB approval was obtained, a convenience sample of self-identified women college students was collected. Participants were recruited through the social media website Facebook, the National Eating Disorder Association (NEDA) website, the Oklahoma Eating Disorder Association (OEDA) website, through the online participant pool (SONA) at Oklahoma State University, and students from other colleges and universities via email. Participants were asked to participate in a 30-minute online survey. By clicking "Continue" after reading the study description (Appendix G), participants indicated informed consent. Data were collected through

Qualtrics, an online survey platform. The survey consisted of the measures listed above, beginning with the screening question for BN. An initial sample of 579 participants was obtained; after removing participants without enough data to identify their diagnostic category, those who did not otherwise meet inclusion criteria, and the removal of two outliers, the final sample was 236. Distribution of the sample can be found in Table 2.

CHAPTER III

RESULTS

Missing Data

Five-hundred and seventy-nine participants initially responded to the survey. Cases were removed if the BES or DCQ questionnaires were incomplete, if the participant screened positive for bulimia nervosa, or if the participant did not screen positive for either binge eating disorder or body dysmorphic disorder. Two-hundred and forty-five cases were removed for not meeting criteria for a diagnostic category and ninety-six were removed for a positive screen for bulimia nervosa behaviors. From here, 238 cases remained. Missing data were analyzed to assess the likelihood that data were missing at random (Tabachnick & Fidell, 2006). Little's MCAR indicated that data were not missing completely at random for BES or DCQ measures; however, less than 5% of data were missing for these measures. Data were missing at random for the WC (< 5% of data missing), SC (< 5% of data missing), and BICI measures (< 5% of data missing). Little's MCAR was not significant for the BICI (chi-square = 128.47, $p > .05$), WC (chi-square = 12.67, $p > .05$), and SC (chi-square = 25.93, $p > .05$) measures. Given the low occurrence of missing data, expectation-maximization was used to replace missing data points for each scale.

Preliminary Analysis

Test of Assumptions

Diagnostics were performed on the data to assess the assumptions of the General Linear Model (GLM) and MANOVA, including the independence of observations, normality, sphericity, multivariate homogeneity of covariance matrices, and univariate homogeneity of variance. Independence of observations was assumed by study design. For the EDE-Q-Weight Concerns (WC), skewness (-.533) and kurtosis (.117) values were in an acceptable range. For the EDE-Q-Shape Concerns (SC), skewness (-.458) and kurtosis (-.286) values fell within an acceptable range. For the BICI (non-weight or shape concerns), skewness (-.114) and kurtosis (-.489) values were within normal limits. Thus, the data appeared normally distributed. The assumption of sphericity was assessed using Bartlett's test of sphericity, which indicated that dependent variables were sufficiently correlated ($p < .05$). The assumption of linearity was assessed using scatterplot matrices presented in Figure 2 and was also met. The assumption of multivariate homogeneity of covariances matrices was assessed using Box's test of equality of covariance matrices, which indicated that the assumption was met (Box's $M = 21.249$, $p > .05$). The assumption of univariate homogeneity of variance was assessed using Levene's test of equality of error variance, which indicated that this assumption was met for all three dependent variables ($p > .05$).

Outliers

To identify significant outliers, Mahalanobis Distance values were examined. Cases were considered for deletion for values above 16.27 based on the number of predictor variables/levels in the model. Based on this criteria, two cases were removed as significant outliers. This resulted in a final sample of 236 participants.

Descriptive Statistics

Scale means and standard deviations were calculated for each measure and can be found in Table 3. For the BES (Gormally et al., 1982), the scale $M = 19.96$, $SD = 8.26$, out of a possible range of 0 to 46 points. For the DCQ (Ossthuizen et al., 1998), the scale $M = 12.17$, $SD = 4.01$, out of a possible range of 0

to 21 points. For the WC subscale EDE-Q (Fairburn & Cooper, 1993), the scale $M = 3.92$, $SD = 1.24$, out of a possible range of 0 to 6. For the SC subscale (EDE-Q, Fairburn & Cooper, 1993), the scale $M = 4.23$, $SD = 1.17$, out of a possible range of 0 to 6 points. For the BICI (Littleton et al., 2005), the scale $M = 67.91$, $SD = 11.71$, out of a possible range from 0 to 95 points.

Primary Analysis

A one-way MANOVA was performed to test the hypothesized model. The independent variable was the diagnostic category, comprised of three levels: BED, BDD, and co-occurring BED and BDD. The total number of participants per group can be found in Table 1. The outcome variables included weight concerns as indicated by scores on the Weight Concern subscale; shape concerns as indicated by scores on the Shape Concern subscale; and non-weight or shape concerns as indicated by scores on the BICI. The overall model was statistically significant as indicated by Wilk's λ, $F(3,321) = 12.335$, $p < .05$, $\eta_p^2 = .138$ Between-subjects tests revealed significant differences by weight, shape, and non-weight/shape concerns between diagnostic categories ($p < .05$). To assess our first hypothesis (H1), the Games-Howell post-hoc test (for unequal variances assumed) was used to examine if shape concerns and weight concerns were reported significantly and substantially greater than for college women who screened positive for BED than those who screened positive for BDD. The Games-Howell post-hoc test was not significant ($p > .05$) and therefore our first hypothesis was not supported.

To assess our second hypothesis (H2), the Games-Howell post-hoc test was used to examine if non-weight or shape concerns were reported significantly and substantially more by college women who screened positive for BED. The Games-Howell post-hoc test was not significant ($p > .05$) and therefore our second hypothesis was not supported. To assess our third hypothesis (H3), the Games-Howell post-hoc test was used to examine if all three types of body image concerns were reported significantly and substantially more by college women who screened positive for co-occurring disorders than those who screened positive for only one diagnosis. The Games-Howell post-hoc test was significant ($p < .05$) and

thus our third hypothesis was supported. Therefore, there were no significant differences in body image concerns among college who screened positive for BED or BDD only; however, when screening positive for both BED and BDD concurrently, college women demonstrated significantly higher rates of all three body image concerns.

CHAPTER IV

DISCUSSION

The present study aimed to examine how types of body image disturbance, specifically weight, shape, and non-weight body image concerns varied between college women who screened positive for BED, BDD, or co-occurring BED and BDD. First, it was hypothesized that college women who screened positive for BED would report weight and shape concerns significantly and substantially more than college women who screened positive for BDD (H1). Second, it was hypothesized that college women who screened positive for BDD would report significantly and substantially more non-weight/shape related concerns than college women who screened positive for BED (H2). Third, it was hypothesized that college women who screened positive for comorbid BED and BDD would report all three types of body image disturbance significantly and substantially more than college women who screened positive for BED or BDD alone (H3). Hypothesis 3 was supported, however hypotheses 1 and 2 were not. The results of the present study suggest that there was not a significant difference in endorsement of weight and shape concerns, or endorsement of non-weight/shape concerns, between

college women who screened positive for binge eating disorder alone and college women who screened positive for body dysmorphic disorder alone. However, when college women screened positive for both binge eating and body dysmorphic disorders, college women endorsed all three types of body image disturbance significantly and substantially more than college women who screened positive for binge eating disorder or body dysmorphic disorder alone. These findings suggest that the likelihood of experiencing all three types of body image disturbance increases in frequency and severity when binge eating disorder and body dysmorphic disorder co-occur.

Our findings are consistent with findings by Cerea and colleagues (2018) who found patients with AN and body dysmorphic concerns (non-weight/shape concerns) reported greater body image disturbance and eating pathology than participants without body dysmorphic concerns. Similarly, Dingemans and colleagues (2012) found that patients with co-occurring eating and body dysmorphic disorders reported greater body dissatisfaction than patients with only eating pathology. There are many potential explanations for this outcome. Objectification theory suggests that the process of self-objectification can increase women's vulnerability to develop body image concerns and consequently disordered eating. Co-occurring BED and BDD likely result from increased vulnerability to both weight/shape body image concerns and non-weight related concerns. Therefore, it would make sense that college women who screened positive for BDD and BED would experience significantly and substantially more body image concerns than college women who screened positive for BED or BDD alone. Thus, our findings are consistent with previous studies in literature, that having both types of body image

concerns increase the risk for worsened body dissatisfaction or disturbance (Cerea et al., 2018; Kollei et al., 2013).

Another possible explanation for our supported hypothesis may be related to the shared body areas of dissatisfaction or disturbance in individuals with BED and BDD. As Ruffolo and colleges (2006) noted, an individual with BED or BDD may experience dissatisfaction with their stomach and thighs, which can be considered both a weight/shape-related and non-weight/shape-related body image concern. Thus, the overlap in areas of dissatisfaction may have contributed to the significantly and substantially more weight, shape, and non-weight/shape related body concerns in college women who screened positive for comorbid BED and BDD. This too, may also explain the high prevalence of college women in our sample who screened positive for both disorders as seen in Table 1.

Furthermore, physical appearance that is seen as a deviation from the "appearance ideal" such as perceived or slight physical defects as seen in BDD and a BMI deemed "unhealthy," as sometimes seen individuals with binge eating disorder, may increase a person's risk for increased body image concerns. That is, the college women who screened positive for both disorders may have been at increased risk for greater severity of body image concerns than college women who screened positive for only BED or BDD. As well, objectification theory may also explain why type of body image concerns did not significantly differ among college women with either BED or BDD. Perhaps it is not the type of body image concern that determines the significant differences in severity and frequency of body image disturbance, but rather the combined experiences of two forms of body image disturbance as opposed to having only weight/shape related or non-weight shape related concerns alone.

Additionally, the insignificant results may be related to prevalence. First, despite what might be expected given the diagnostic criteria for BED, weight/shape concerns were not reported significantly and substantially more in women who screened positive

for BED alone. This may suggest that weight concerns are either more prevalent in college women who screened positive for BDD or less prevalent in college women who screened positive for BED. Similarly, despite what might be expected given the diagnostic criteria for BDD, non-weight/shape concerns were not reported significantly and substantially more in women who screened positive for BDD. This may indicate that shape concerns are either more prevalent in college women who screened positive for BED or less prevalent in college women who screened positive for BDD than initially thought.

It is also possible that the difficulty in finding participants that screened positive for only BED or BDD is attributable to a greater overlap in symptoms in both disorders than previously appreciated. This may also explain why there were no significant differences in type of body image concerns in college women who screened positive for BED or BDD alone. From an objectification theory lens, BED and BDD are both expressions of objectification-related distress. Correspondingly, the greater the level of objectification distress, the greater frequency and severity of symptoms endorsed, and the more likely symptoms are to overlap, as seen with BDD and BED. This may also explain why body image concerns were endorsed significantly and substantially more in college women who screened positive for both disorders compared to college women who screened positive for BED or BDD alone. Our findings suggest that perhaps BED and BDD represent a continuum of objectification-related distress, rather than two distinct diagnostic categories as defined in the DSM-5. Therefore, conceptualizing co-occurring BED and BDD as the accumulation of distress responses to self-objectification, rather

than as two independent diagnoses, may prove to be more clinical useful for prevention and treatment.

Strengths

Several strengths of the present study were identified. Before this study, only one study had examined non-weight/shape concerns in binge eating as subsumed under the eating disorder not otherwise specified diagnosis (EDNOS) (Ruffalo, 2006). Additionally, only one study had examined weight concerns in individuals with body dysmorphic disorder (Kittler et al., 2007) prior to this study. This is the first study to examine all types of body image concerns in individuals who screen positive for BED alone, BDD alone, and co-occurring BED and BDD. A second strength includes the valuable insight this study provides for clinical screening. The majority of the sample included college women who screened positive for both disorders (51.7%) rather than BED (14%) or BDD (34.3%) alone. That is, the prevalence of co-occurring diagnoses was higher than initially anticipated, which may encourage routine screening of both BED and BDD symptoms.

Other strengths of the study include the high internal consistency of the measures in the present study as indicated in table 3, the use of a priori power analysis to identify a sufficient sample size, and the assumptions of both the general linear model and MANOVA were met. Thus, there is strong evidence for internal validity of this study. Further, the sample size was more than adequate based on the power analysis, the sample was recruited through multiple methods, and our sample was relatively diverse. While majority of the sample was White and heterosexual, there was some variance in ethnicity, sexual orientation, and in particular, socioeconomic and academic status.

Percentages for level of childhood income were similar among the following levels: $35,000 to $49,999 (17.4%), $50,000 to $74,999 (21.6%), and $75,000 to $99,000 (17.8%). Additionally, percentages for academic status were the same for both seniors and graduate students (23.7%). The majority of our sample identified as White (79.7%) heterosexual (75%), with childhood income over $100,000 (28%). Compared to the general population in the United States, the sociodemographic make up of our sample is quite similar; however, disparities do exist. According to the 2020 United States Census Bureau, the majority of the United States population identify as White and being in a relationship with the opposite sex, however the average household income is $68,703.

Last, our sample was a non-clinical sample, meaning findings from this study are more generalizable to college and community populations as compared to individuals diagnosed in an inpatient or outpatient mental health setting. Thus, there is strong evidence for external validity of this study as well. These findings may help to promote routine screening of binge eating and body dysmorphic behaviors to prevent future hospitalizations and inpatient treatment.

Limitations

Limitations of the present study were also identified. The first limitation of this study includes the data collection time and sample size. Diagnostic categories for the one-way MANOVA were defined by cut-off scores on the BES and DCQ, as well as the absence of bulimia nervosa behaviors. Data collection took longer than expected due to specific diagnostic criteria needed within a general sample of college women. Additionally, only 40.1% of the total data collected was used for final analyses. This was due to difficulty finding participants who fit neatly into the diagnostic categories. Not

only does this decrease the efficiency of data use but can also impact variance between groups as seen within our diagnostic categories in Table 1. Furthermore, the populations from which we drew our sample varied, including participants recruited through organization websites, social media, and the university online participant pool ($N = 242$); it is plausible that there may have been differences between these populations in objectification-related or symptomological experiences. Future research can address this problem by having a specific participant pool, such as clients at an eating disorder outpatient clinic, or college women who have already been diagnosed with BED or BDD.

Another limitation of the study is the lack of diversity within the sample. The majority of the sample was White, heterosexual, middle or upper-middle class, and, per the criteria requirement, women, suggesting limitations to the generalizability of our results. Another limitation of the study is the lack of diversity within the sample. The majority of the sample was White, straight, and per the criteria requirement, women, suggesting limitations to the generalizability of our results. While body dysmorphic disorder prevalence rates are relatively similar amongst ethnic groups (Marques et al., 2011), there is considerable variability in prevalence rates of binge eating disorder across ethnic groups (Rodgers et al., 2018). Furthermore, recent literature suggests that the LGBTQ+ community also experiences high rates of body image concerns and binge eating behaviors (Grunewald et al., 2021; Mason et al., 2015). Men too, are vulnerable to developing these disorders, including BED, the most prevalent eating disorder among men; and BDD, and often but not exclusively, a specific type of body dysmorphia referred to as muscle dysmorphia (Phillip & Castle, 2001).

We used an ex post facto design for our study as opposed to a longitudinal design because of limited data collection time and resources. However, a longitudinal study may provide insight into the etiology, peak onset, and prognosis of shared clinical body image concerns in women with BED and BDD. Given the peak onsets for BED and BDD, longitudinal data of female adolescents may be able to provide information of when co-occurrence of BED and BDD symptoms begin, their prognoses, as well as possible opportunities for prevention. The last limitation of the study includes the use of self-report measures which presents concerns about the accuracy of reporting. Typically, diagnostic clinical interviews are used to determine diagnoses in clinical research; however, due to the selected population, self-report measures were used instead.

Implications for Research

Based on our results and the literature, that body image concerns indeed overlap in BDD and eating disorders, there are many areas of expansion in future research. Building upon our findings that college women who screened positive for both BED and BDD endorsed significantly and substantially more body image concerns than college women who screened positive for only one disorder, the next appropriate step would be to examine where the overlap of body image occurs. That is, assessing overlap in specific body areas or physical characteristics (e.g., stomach, thighs) that could be considered both a weight/shape-related and non-weight/shape-related body image concern.

Another avenue for future research is to examine body image concerns in inpatient and outpatient eating disorder clinics, where BED and BDD have been diagnosed, to see if our results hold true for women in clinical settings. If findings hold true, this may encourage research in clinical intervention as a step toward reducing the

likelihood or possibly preventing women with both BDD and BED from needing a higher level of care. Furthermore, to increase the accuracy of diagnosis and correspondingly the accuracy of the results, researchers should either use diagnostic clinical interviews to assess BED and BDD, or include participants already diagnosed with BED, BDD, and co-occurring BED and BDD. These approaches are consistent with previous studies that examined co-occurring disordered eating and body dysmorphic concerns (Cerea et al., 2018; Kollei et al., 2013; Ruffolo et al., 2006).

Alternatively, it would also be helpful to examine the body image concerns from a subclinical standpoint. Subclinical disordered eating and body dysmorphia are more common than clinical diagnoses, and therefore, may be more applicable to the general population. Should our findings remain consistent in a subclinical population, this too may provide information for potential early intervention. The Body Project, for example, is a cognitive-dissonance peer-based program to help young women challenge body image messages and to prevent the development of disordered eating (Stice & Presnell, 2007). Similar methods may be applicable for college women who present with co-occurring BED and BDD.

It is also recommended that researchers examine the role of BMI in body image concerns among individuals with BED, BDD, and co-occurring BED and BDD. As previously identified, objectification theory argues that experiencing an "unhealthy BMI" or obesity is a deviation from the appearance ideal. Therefore, it would be expected that individuals with higher BMI would be a targeted group of stigma and discrimination, and correspondingly be associated with increased body image concerns due to stigma. However, there continues to be mixed results on BMI, binge eating, and body image in

the literature (Lewer et al., 2017). Because having both weight/shape and non-weight/shape concerns can increase body image severity and eating pathology, examining BMI as an additional risk factor will not only provide clarity of the relationship between BMI and body image, but may provide information about whether symptoms of body image and disordered eating become better or worse.

Last, it is recommended that researchers aim to increase the diversity in future research, which may include examining these variables within men, women of color, and LGBTQ communities. Sexual objectification is inherently intersectional as gender, race, and sexual orientation influence how body image expectations are perceived. That is, the "appearance ideal" for one community may look vastly different from another community. Thus, there are unique vulnerabilities experienced by minority communities, that impact types of body image concerns, and correspondingly, disordered eating.

Implications for Education and Training

First, given the high prevalence of co-occurring BED and BDD in our sample, it is recommended that counselors, including counseling interns and trainees, be trained to identify both weight/shape-related and non-weight/shape concerns, as well as symptoms unique to BED and BDD. While weight/shape-related and non-weight/shape-related concerns are often distinguished by diagnostic category, eating pathology, or body dysmorphia, counselors and trainees need to understand the overlap of body image concerns. What may appear as a weight/shape-related concern might be perceived as non-weight/shape-related by the client, and vice versa. For example, the client may perceive their chest as bigger or smaller due to weight gain or weight loss, or it a physical defect independent of weight or shape. Therefore, counselors should be trained to identify these

nuances of body image concerns by asking the appropriate questions to their clients.

Second, beyond diagnostic conceptualization, counselors, trainees, and supervisors should be trained to recognize the cultural factors that contribute to the development and maintenance of BED and BDD. Providers, supervisors, and trainees must be trained to assess binge eating and body dysmorphia as a series of collective objectification-related experiences and the manifestation of objectification-related distress. Additional theoretical frameworks should be implored too, including multicultural and feminist orientations, which may help to explain the idiosyncratic and collective costs of self-objectification. This also includes examining how responses to sexual objectification vary amongst intersecting identities, including but not limited to gender, age, race, SES, sexual orientation, and ability status.

Third, it is recommended that counselors, supervisors, and trainees reflect on and seek to address their biases, perception, attitudes towards body weight and shape, other physical characteristics, binge eating, and body dysmorphia. Internalized fatphobia is detrimental in general, but especially for clients presenting with BED and BDD because the behaviors are already centered on shame and vulnerability. Without proper supervision and clinical training, counselors might impose their beliefs about physical appearance and "health" onto their clients, which may perpetuate symptoms. Furthermore, an important consideration given our findings is for counselors and trainees to challenge their assumptions about whether body image concerns "should" or should not be present, and what types of body image concerns (weight/shape vs. non-weight/shape) "should" or should not be assumed based on the client's physical appearance and diagnostic criteria of BED and BDD. Therefore, it is recommended that

counselors and trainees focus their time in supervision and multicultural classes exploring biases about physical appearance, weight stigma, and consider other sociocultural pressures, including sexual objectification, that may contribute to the development of body image concerns or disordered eating.

Implications for Practice

The findings from our study provide many implications for practice. First, mental health providers should familiarize themselves with the diagnosis, treatment, and referral process for college women presenting with BED and BDD. Due to the high co-occurrence of BED and BDD in our study, practitioners should be trained to assess for binge eating concerns in clients presenting with BDD symptoms, and correspondingly, assess for dysmorphic concerns in clients presenting BED symptoms. Similarly, providers should assess for both types of body image concerns in college women presenting with BED and BDD, as they are not mutually exclusive, as demonstrated in our study and the literature, can co-occur together (Cerea et al., 2018; Kollei et al., 2013; Ruffolo et al., 2006).

This is especially important for counselors on college campuses because the peak onset of BDD and eating disorders, including BED, occur in late adolescence into young adulthood (Hudson et al., 2007; Stice et al., 2013). Notably, the treatment of BED and BDD often necessitates special or advanced training, especially if symptomology is severe. Practitioners need to recognize their limits of competence and refer out to higher care when appropriate. Should providers be unsure of their competence to provide treatment, consultation and supervisor are recommended.

Second, it is recommended that therapists be open to evaluating BED and BDD concerns from a continuum perspective, rather than just assessing the presenting concerns as simply the co-occurrence of two disorders. As noted in our interpretation BED and BDD may be the manifestation of objectification-related stress and may share some of the same underlying factors that perpetuate symptoms. Furthermore, while symptom management is a necessary part of treatment, to pursue full remission, providers need to think outside of the box of traditional evidence-based therapy and be open to addressing the underlying self-objectification. Consistent with guidelines set out by the APA multicultural guidelines (APA, 2017), psychologists should strive to better understand current and historical experiences of power, privilege, and oppression and provide culturally adaptive interventions for clients. Thus, psychologists try to better understand how current and historical systems of oppression, including sexual objectification impact clients and their presenting concerns. As a result, interventions characterized by supporting and empowering young women to challenge sexual objectification may be both therapeutic and contribute to a better society.

By the same token, practitioners should seek to identify sources of sexual objectification, including weight stigma and body shaming on college campuses. As outlined by the tripartite model of body image disturbance and disordered eating (Thompson et al., 1999), therapists should seek to identify sources of body-related messages, including from the media, peers, and parents, and their impact on the client's presentation. Conducting a thorough assessment of possible psychosocial contributors of body image concerns may help practitioners to better understand the etiology of BED and BDD and tailor a specific treatment plan to best serve the client.

Another avenue for helping college women to challenge body-related messages is the Body Project (Stice et al., 2007), an international peer-led group designed to help young women challenge the appearance ideal to prevent disordered eating. The curriculum includes assessing messages about both weight/shape-related and non-weight/shape-related body image concerns, and ways to dispute negative body image messages. It is a program that anyone, including mental health providers and college students, can be trained in. Notably, the program is not designed for individuals with diagnosed eating or body dysmorphic disorders but may serve as an opportunity for preventing the development of dysmorphic behaviors or eating pathology.

Last, it is recommended that practitioners be open to adjusting treatment methods in group and individual therapy to be more inclusive of college women present with co-occurring BED and BDD. Traditionally, eating disorder treatment programs have provided interventions focused specifically on weight and shape-related body image concerns as they are commonly observed in eating disorders. However, because of the overlap of both weight/shape-related concerns and non-weight/shape-related concerns in co-occurring BED and BDD, it is recommended that practitioners at eating disorder programs try to address both types of body image disturbance. This is especially important given that body image concerns are subjective to the client's interpretation.

Implications for Advocacy

Advocacy provides an opportunity to challenge and break down larger structures that perpetuate the sexual objectification of women and that contribute to the development of body image concerns and eating pathology. First, conscious raising is necessary to inform the public about the impact of sexual objectification on young

women with body dysmorphia and binge eating. There are several organizations that promote eating disorder and body image awareness including NEDA, the Binge Eating Disorder Association (BEDA), and International Association of Eating Disorder Professionals (IAEDP) and strive to dismantle both the appearance ideal and weight stigma and discrimination. Organizations listed above provide public health data, including diagnostic information and current prevalence rates, host annual activities such as the NEDA walk to raise awareness, promote research and clinical practice, and share information about local providers and treatment centers for disordered eating. Findings in research, including our own, should be communicated to organizations so that may be able provide accurate information, such as information on modern day self-objectification, effective resources, and keep the public informed about the nuances in research and treatment.

In addition to becoming involved with local and national organizations, advocacy is targeting institutions that benefit from the sexual objectification of women, including the beauty, diet, and media industries. Educating women that BED and BDD are just two of many manifestations of self-objectification may encourage women to first, reconsider their support for these large institutions; second, better understand the individual role in reinforcing self-objection; and third, encourage women to share their experiences of sexual objectification rather than internalize them.

Programs like the Body Project are an effective way to help women challenge the appearance ideal and the industries that benefit from body image concerns and disordered eating. Additionally, Health At Every Size (HAES) is a movement that encourages weight inclusivity, eating for wellness, addressing bias and discrimination, and improving

health behaviors. This movement and approach to care is rooted empirical research that demonstrates significant improvement in psychological functioning, physical functioning, health behaviors, and quality of life (Ulian et al., 2018). Furthermore, the HAES movement encourages providers to celebrate body diversity, liberation, and promotes services that are client-centered rather than driven by arbitrary measures of health, including weight and BMI.

Last, in order to advocate for individuals who have been impacted by sexual objectification, it is important that we educate our field of psychology. Recognizing the overlap in symptomology and reconceptualizing BED and BDD as collective manifestations of objectification-related distress, may implore psychologists to look beyond the DSM-5 to understand the underlying mechanisms that contribute to body image disturbance and disordered eating. Part of this take may include reevaluating the clinical utility of the DSM-5 for the treatment of co-occurring BED and BDD, particularly with regards to body image concerns. The diagnostic categories of the DSM-5 may limit treatment opportunities that would otherwise may have been implored if binge eating and body dysmorphia were seen as a part of larger spectrum of objectification related experiences. Psychology providers, educators, and trainees are encouraged to examine the larger picture that contributes the co-occurrence of BED and BDD, which includes questioning the diagnostic restrictions put in place by the medical model. Ultimately, it is important for psychologists to advocate on behalf of our clients and field for diagnostic methods that better explain the experiences of clients with BED and BDD.

TABLES

Table 1

Diagnostic Category Prevalence

Diagnostic Category	*N*	%
Binge Eating Disorder	33	14%
Body Dysmorphic Disorder	81	34.3%
Co-occurring Disorders	122	51.7%
Total	236	100%

Table 2

Sociodemographic Characteristics of the Sample

Variable	*N*	%
Race/Ethnicity		
Native American	19	8.1%
Black/African American	7	3.0%
Hispanic/Latinx	4	1.7%
White	188	79.7%
Asian/Pacific Islander	4	1.7%
Other Specified:		
Biracial,	1	.04%
White/South Asian	2	.08%
Mixed/Multiracial	1	.04%
Sexual Orientation		
Straight	177	75%
Bi-sexual	40	16.9%
Gay/Lesbian	3	1.3%
Pansexual	8	3.4%
Asexual	5	2.1%
Queer	2	0.8%
Academic Year		
Freshmen	30	12.7%
Sophomore	42	17.8%
Junior	51	21.6%
Senior	56	23.7%
Graduate Student	56	23.7%
Childhood Income		
Less than $20,000	9	3.8%
$20,000 to $34,999	25	10.6%
$35,000 to $49,999	41	17.4%
$50,000 to $74,999	51	21.6%
$75,000 to $99,000	42	17.8%
Over $100,000	66	28.0%

Table 3

Correlation Matrix and Descriptive Statistics

Variables	1	2	3	4	5	*M*	*SD*	*α*
1. BES	1.00					19.96	8.26	.87
2. DCQ	.243**	1.00				12.17	4.01	.77
3. WC	.486**	.385**	1.00			3.92	1.24	.74
4. SC	.538**	.454**	.824**	1.00		4.23	1.17	.85
5. BICI	.410**	.605**	.531**	.621**	1.00	67.91	11.71	.87

Note. N = 236. [1]Binge Eating Scale (BES; Gormally et al., 1982) full scale score, [2]Dysmorphic Concern Questionnaire (DCQ; Ossthuizen et al.,1998) full scale score, [3]Weight Concern (WC; Fairburn & Beglin, 1994) subscale score, [4]Shape Concern (SC; Fairburn & Beglin, 1994) subscale score, [5]Body Image Concern Inventory (BICI; Littleton et al., 2005) full scale score. * $p < .05$
** $p < .01$

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APPENDIX A

Extended Literature Review

Body dissatisfaction is so prevalent that it is often referred to as "normative discontent," a form of distress that is expected for women, especially girls and young women (Cash & Smolak, 2011; Rodin et al., 1984). National surveys suggest that women commonly reported pre-occupation and dissatisfaction with their body weight, shape, and size (Cash & Henry, 1995; Kilpela et al., 2015; Tiggeman & Lynch, 2001). For example, in a large community sample of women ($N = 9667$), 89% reported body dissatisfaction, with 84.1% desiring a smaller silhouette (Swami et al., 2015). Similarly, in another community sample of 5,868 women, 91% reported body dissatisfaction, with 87% wanting a smaller silhouette (Runfola et al., 2013). Given the large prevalence of body dissatisfaction in Western culture, it comes as no surprise that eating disorders are widespread. In the United States, eating disorders are estimated to affect 20 million women and 10 million men throughout the lifetime (Wade et al., 2011). While not all eating disorders are characterized by body dissatisfaction, individuals who have body dissatisfaction as a part of their eating pathology often report symptoms for longer, have lower remission rates and are at the greatest risk for relapse (Cella et al., 2017; Fairburn et al., 1993; Rosen, 1990).

Body image concerns and disordered eating are especially prevalent among young women, including college women. In a systematic review by Goswami and colleagues (2012) across 96 studies on body satisfaction in women college students, they found that 13.54% of students were dissatisfied with their bodies. Similarly, Beiter and colleagues (2015) found that

body image concerns were either considered a “moderate” or “extreme” source of stress for college students ($N = 374$). Findings from a study by Arigo and colleagues (2015) indicated that reported greater body dissatisfaction and upward appearance comparison (i.e. comparing oneself to someone perceived as more physically attractive) than college women who did not meet the threshold. Further and notably, the peak onset of eating pathology, specifically Anorexia Nervosa, Bulimia Nervosa, and Binge Eating Disorder, occurs most frequently in women between the ages of 18 to 21 years old (Hudson et al., 2007; Stice et al., 2013).

Body dissatisfaction has been traditionally been reported in individuals with anorexia (AN) or bulimia nervosa (BN), such that the behavioral characteristics of these disorders are motivated by dissatisfaction with weight and shape (American Psychiatric Association, 2013: Smolak & Levine, 2015). Alternatively, behavioral characteristics of binge eating disorder are often motivated by emotional distress or emotional eating (American Psychiatric Association, 2013). However, in a systematic review of the eating disorder literature of the past two decades, Lewer and colleagues (2017) found that individuals with binge eating disorder experience comparable rates of body dissatisfaction to those with AN or BN, suggesting further inquiry about the variance of body dissatisfaction between these disorders.

Body image disorders that have been associated with disordered eating include body dysmorphic disorder as well as muscle dysmorphia, a specific type of body dysmorphia (American Psychiatric Association, 2013). While body dysmorphia and eating pathology are distinct disorders, they can and do co-occur (Dingemans et al., 2012) such that body image disturbance is a shared clinical symptom of body dysmorphic disorder and some eating disorders (Cash & Deagle, 1997; Lewer et al., 2017). Indeed, there have been increasing reports of the co-occurrence of body dysmorphia and AN and BN (Cerea et al., 2018; Dingemans et al., 2012; Kollei et al., 2013). Individuals with co-occurring body dysmorphic disorder and AN or BN

report greater body image disturbance and eating pathology than individuals with either body dysmorphic disorder or AN or BN (Cerea et al., 2018; Dingemans et al., 2012). This may be due to the individuals who meet the criteria for both disorders experiencing both the overvaluation of weight and shape characteristic of eating disorders as well as non-weight related concerns, including hair, teeth, and skin, characteristic of body dysmorphia.

If the co-occurrence of AN or BN and body dysmorphia increases the risk of symptom severity, including higher levels of body image disturbance and eating pathology, then it is also possible that the same may be true for individuals with comorbid binge eating and body dysmorphic disorders. Given that the co-occurrence of binge eating and body dysmorphia may produce multiple forms of body image disturbance, those with binge eating disorder might also experience non-weight/shape-related body image disturbance in addition to weight and shape concerns. Despite similar reported rates of body image disturbance in binge eating disorder (Lewer et al., 2017), little is known about the relationship between body dysmorphia and binge eating disorder. To better understand the variance of body image disturbance in binge eating and body dysmorphia so to improve diagnosis and treatment, it is imperative to understand whether individuals with comorbid binge eating disorder and body dysmorphic disorder are at increased risk for more severe symptomology similar to those with comorbid body dysmorphic disorder and AN or BN. We first review the origin of body image and eating pathology.

Sociocultural Influences and Objectification Theory

Broadly speaking, body image disturbance amongst girls and women stems from the societal pressures placed on women to be physically attractive. Body dissatisfaction often develops in adolescence and carries into later adulthood; however, it tends to decrease in older age (Kilpela et al., 2015; Runfola et al., 2013; Tiggemann & Lynch, 2001). Messages about physical appearance become more salient as young women began to evaluate themselves based

on messages received from their environment. Consequently, these evaluations contribute to the high prevalence of body image disturbance among adolescents and young adult women, including college students (Delene & Brogowicz, 1990; Tiggeman & Lynch, 2001; Wertheim et al., 2009). Objectification Theory helps to explain the origins of societal pressures, its related messages, as well as its effect on girls and women.

According to Objectification Theory, women are viewed by men and society at large as sexualized objects; that is, viewed as worth no more than what their physical appearance has to offer for consumption (Fredrickson & Roberts, 1997). How women come to internalize beliefs about how they should look (i.e. self-objection) is informed by the "appearance ideal" or "thin ideal," society's gold standard of beauty for a particular period. In consequence, young women begin to internalize the "thin ideal" and begin seeing their worth as linked to their value as a commodity (Fredrickson & Roberts, 1997; Thompson & Stice, 2001). Girls and women learn of, and come to internalize, their time period's appearance ideal through messages received from the media, their peers, and their parents (Keery et al., 2014).

Objectification and self-objectification result in young women developing an increased vulnerability for developing mental health concerns, including anxiety, depression, sexual dysfunction, and disordered eating (Fredrickson & Roberts, 1997). As such, numerous studies have identified strong relationships between self-objectification, body shame and disturbance, and disordered eating in undergraduate women (Tiggemann, 2011). Calogero and Thompson (2009) assessed self-objectification, sexual esteem, and disordered eating among two samples of women. In the first sample ($N = 104$), researchers found self-objectification to be both a direct predictor of disordered eating, as well as an indirect predictor as mediated through sexual self-esteem. In the second sample, with the inclusion of body shame as a variable, researchers found self-objectification to be both a direct predictor of disordered eating, as well as an indirect predictor of

disordered eating with body shame as a mediator. Notably, Schaefer and Thompson (2018) point out in a systematic review of 53 cross-sectional studies assessing self-objectification and disordered eating disorders, none of the studies included binge eating as a possible outcome measure. To our knowledge, the same is true for studies that have examined the Tripartite Model of Body Image Disturbance and Disordered Eating.

Tripartite Model

In the Tripartite Model of Body Image Disturbance and Disordered Eating, messages about appearance are communicated through the media, peers, and parents (Thompson et al., 1999). These messages are then internalized and correspondingly bring about social comparison, specifically, the comparison of one's physical appearance to another's, and body surveillance; notably, a form of self-objectification, is the consistent monitoring of one's physical appearance (Thompson et al., 1999). Both body surveillance and social comparison have been commonly observed in college women, which is thought to be attributed to the increased opportunities for social comparison (Fitzsimmons-Craft et al., 2015).

Particularly, an often strong and covert message that is instilled in girls during their adolescence is the belief that physical beauty is a form of power as well as social and economic success for women (Fredrickson & Roberts, 1997). Wolf (2002) argues that the sexualization of women in the marketplace, including the beauty and pornography industries, and methods to limit women's social and economic growth disproportionally equate a woman's value (e.g., physically, socially, mentally) on their physical appearance compared to men. Therefore, female bodies that deviate from the appearance ideal, including women in larger bodies and deemed having unattractive physical features, are seen a rebellious, irresponsible, and unwanted in the workforce and society. In recent years, these messages communicated to young women have been identified as a part of diet culture, which itself exacerbates body image disturbance and disordered eating.

Diet Culture

The larger cultural movement that perpetuates the appearance ideal in recent years has been referred to as diet culture (Fabello, 2014). A central tenet of diet culture is that thin, White, young, and abled bodies are inherently better than other bodies (Harrison, 2019). Given the diversity of physical features that comprised the human appearance, it is inevitable that not everyone will achieve the appearance ideal. In fact, it could be further argued that no human can achieve the appearance ideal given that even the most attractive women in media are digitally edited before presented to the public—so much so that warning labels are required by some organizations to inform consumers that photos have been edited or altered (Krawitz, 2014). However, recent studies suggest no significant changes in body image issues for consumers who view edited images with or without labels (Fardouly & Holland, 2018; Tiggemann et al., 2017).

Diet culture is built on the foundation that one's appearance always requires improvement, insinuating that the human body is inherently flawed. Thus, despite the unattainability of achieving the appearance ideal, women often sacrifice their relationships, money, and time, in addition to their mental and physical health to nonetheless strive to obtain the appearance ideal (Stice & Presnell, 2007). Additionally, diet culture suggests that obesity results from a lack of willpower, dedication, and responsibility. Diet culture not only ignores the structural, social, genetic, and potential disordered eating determinants of obesity, but it is also fundamentally driven by, and thus invested in, disordered eating development (Harrison, 2019). Similarly, diet culture neglects the possibility of body image disturbance independent of weight or body mass index (BMI), neglecting body image disturbance, including non-weight concerns, in individuals with binge eating disorder with higher BMIs.

Inevitably, the inability to achieve the appearance ideal also creates a culture of body shaming, sizeism, and discrimination. Minoritized groups are often the targets of body shaming

and discrimination, especially gay men, Latina women, trans youth, and individuals living in larger bodies (Cash & Smolak, 2011; National Eating Disorders Association [NEDA] & Trevor Project, 2018; Tomiyama, 2014). In addition to body weight and size, body shaming includes ridicule of specific physical characteristics such as facial features, body hair, and specific body parts, as seen in Body Dysmorphic Disorder (Weingarden et al., 2017). Given that diet culture aims to promote Whiteness, thinness, and able-bodiedness, individuals with minoritized identities face even greater stigmatization and barriers to achieve the already-impossible appearance ideal (Harrison, 2019).

One form of body shaming is weight stigma, which has been found to contribute to internalized weight stigma, greater body image disturbance, and disordered eating (Meadows & Calogero, 2018). Furthermore, internalized weight stigma can lead to cyclical fad dieting, which may result in frequent, extreme, and short-lived changes in weight, disordered eating, and ultimately can become a risk factor for obesity (Tomiyama, 2014). In fact, provider bias related to obesity and weight can hinder medical and mental health providers' ability to recognize symptoms of body image disturbance and disordered eating (Pearl & Puhl, 2018; Puhl & Suh, 2015).

For example, in reviewing a vignette, a sample of mental health professionals who specialized in eating disorder treatment most commonly reported the beliefs that obesity is related to behavioral problems, and that patients in larger bodies will have poorer treatment outcomes compared with individuals within the BMI range deemed healthy. Furthermore, patient body size was related to greater levels of weight bias, such that providers with greater weight bias attributed obesity to behavior as oppose to environmental or medical causes (Puhl et al., 2014). This is of particular concern for individuals in larger bodies who experience binge eating disorder, body dysmorphic disorder, or co-occurring disorders. That is, body image disturbance (weight-related

or non) and body dysmorphic disorder may not be screened appropriately for women in larger bodies.

Body Dysmorphic Disorder

Body dysmorphic disorder (BDD) is characterized by a preoccupation or obsession with a perceived physical defect or flaw, engagement in compulsive checking behaviors or mental acts, and severe impairment in life functioning (American Psychiatric Association, 2013). BDD is estimated to affect 0.7% to 2.4% of the general population, 2 to 13% of college students, and is most common among women (Bjornsson et al., 2010). Body dysmorphia usually develops in childhood or early adolescence and continues through adulthood (Cash & Smolak, 2011).

Body image disturbance in individuals with BDD typically differs from that observed in eating disorders. In body dysmorphia, body image disturbance is often focused on specific physical features rather than overall weight and size; the disturbance is seen as less easily fixable (e.g., fixing one's teeth as compared to manipulating weight or shape); and individuals with BDD have historically been characterized as having limited insight and sometimes delusional beliefs about the severity of their perceived or defects (Bjornsson et al., 2010; Cash & Smolak, 2011). The increased body image disturbance seen in individuals with co-occurring BDD and AN or BN may be explained by the joint experience of non-weight body image disturbance unique to BDD in addition to the weight and shape related body image disturbance in AN or BN. Despite the documented increase in body image and eating pathology diagnosed with co-occurring BDD and AN or BN, it remains to be seen whether individuals with comorbid BDD and binge eating disorder are similarly at risk for increased symptomology.

Types of Body Image Disturbance

The DSM-5 operationalizes body image disturbance differently for eating disorders and body dysmorphia (DSM-5; American Psychiatric Association, 2013). Within the context of eating

disorders, body image disturbance is defined as a disturbance or the overvaluation of body weight and shape, where success is determined by one's ability to manage, manipulate, or control one's body weight or size (American Psychiatric Association, 2013). Such weight- and shape-based body image disturbance may lead to the development of extreme weight-loss behaviors, including dietary restraint, purging, excessive exercise, and other unhealthy compensatory behaviors (Fairburn, 2008).

Within the context of BDD, body image disturbance is defined as a concern or preoccupation with perceived flaws in one's physical appearance (American Psychiatric Association, 2013). Individuals with BDD tend to experience body image disturbance as a preoccupation with specific physical characteristics, such as skin, hair, and teeth (Bjornsson et al., 2010). Individuals with BDD put forth great effort to manage, manipulate, or control their perceived defect through camouflaging (e.g., covering up body parts with loose clothing), excessive grooming (e.g., combing hair, applying make-up, extensive skincare routines), mirror-checking, and in extreme cases, cosmetic surgery.

Thus, although operationalized differently, body image disturbance is a shared clinical symptom of both eating disorders (i.e. AN, BN, and Binge Eating Disorder [BED]) and BDD (Cash & Deagle, 1997; Lewer et al., 2017). Given the overlap in body image concerns, numerous studies have examined the relationship between eating disorders (specifically, Anorexia and Bulimia Nervosa) and body dysmorphia (Dingemans et al., 2012; Kollei et al., 2013; Ruffolo et al., 2006). In one clinical sample of women ($N = 200$), Ruffolo and colleagues (2006) found that 32.5% of individuals with current eating disorders also experienced BDD at some point in their lifetime. In another sample, Kollei and colleagues (2013) found that 12% of women had current co-occurring BDD and eating pathology.

Commonly reported non-weight body image disturbance among women includes dissatisfaction with skin, height, teeth, nose, eyes, hair, and height (Gupta & Johnson, 2000). Amongst individuals with BDD specifically, frequently endorsed areas of disturbance include skin, hair, and nose (Bjornsson et al., 2010). In contrast, individuals with image disturbance marked by the overvaluation of weight and shape typically report fear of gaining weight and becoming overweight or obese (Kollei et al., 2003). The dissatisfaction of weight and shape is evident where there are discrepancies between one's ideal body size and one's actual body size (Vartanian, 2012). The same is true of other discrepancies including physical characteristics independent of weight, like hair, skin, and nose (Cash & Szymanski, 1995). Consequently, these disturbances may contribute to mental and emotional preoccupation and often result in unhealthy dieting behaviors (Bjornsson et al., 2010; Cash & Smolak, 2011).

Researchers have observed both weight/shape and non-weight/shape body image disturbances amongst individuals concurrently demonstrating eating pathology and symptoms of BDD (Cerea et al., 2018; Kollei et al., 2013). Thus, individuals with eating disorders may experience both the preoccupation of specific characteristics in BDD as well as the evaluation of weight and shape in eating disorders. Similarly, individuals with BDD may experience the overvaluation of weight and shape in addition to non-weight/shape body image disturbance (Kittler et al., 2007). Indeed, researchers have found that individuals with AN, BN, and eating disorder not otherwise specified (EDNOS, including binge eating disorder) can experience non-weight/shape concerns as a part of their eating disorder symptomology (Cerea et al., 2018; Hrabrosky et al., 2009; Kollei et al., 2013; Ruffolo et al., 2006).

Across two studies, researchers found that individuals with AN reported disturbance specifically with their hair, nose, teeth, and height (Cerea et al., 2018; Kollei et al., 2013). Another study revealed that individuals with either AN or BN reported a disturbance with their

face, hair, skin, stomach, and thighs (Ruffolo et al., 2006). The understanding that individuals diagnosed with eating disorders also experience body dysmorphia is particularly important given that individuals with eating disorders who experience weight and shape as well as non-weight/shape disturbance report greater body image disturbance, psychopathology, and eating pathology (Cerea et al., 2018; Dingemanns et al., 2012; Ruffolo et al., 2006). Much less is known, however, about the concurrent experience of body dysmorphia and binge eating disorder.

Binge Eating Disorder

Binge Eating Disorder (BED) is characterized by recurrent binge episodes, a sense of lack of control, and marked distress and guilt (American Psychiatric Association, 2013). It is currently the most prevalent eating disorder in the United States, estimated to affect between .2% and 3.5% of the general population, and is most prevalent in women (Allen et al., 2013; American Psychiatric Association, 2013; Kessler et al., 2013). BED often begins in the late teenage years and the beginning of young adulthood (Stice et al., 2013). Goldschimdt and colleagues (2010) identified in a sample of women with BED or other psychiatric diagnoses that the overvaluation of weight and shape was predictive of BED as compared to other psychiatric disorders. However, no research exists on non-weight/shape concerns in individuals with BED or co-occurring BDD. Although research has documented the comorbidity of body image disturbance concerns of those with BDD and AN or BN, little is known about body image disturbance individuals with co-occurring BDD and BED. This may be due to the fact that BED was only introduced as a diagnosis in the most recent version of the Diagnostic and Statistical Manual of Mental Disorders, the DSM-5 (American Psychiatric Association, 2013). Thus, BED research was greatly limited before the publication of the DSM-5 (Lewer et al., 2017).

Additionally, in past research it has been suggested that body image disturbance may be a product of higher BMI or obesity. Accordingly, Smith and colleagues (1999) found obesity to

predictive of body image disturbance, and Hills and Williams (1998) found significant and positive relationships between BMI status and body image issues, suggesting that these outcomes may be attributable to weight stigma. It could be argued that ingrainedness of the appearance ideal led both researchers and practitioners to assume that body image disturbance amongst individuals in larger bodies was a normal and in fact desired state, as larger bodies represent a deviation from the appearance ideal (Wolf, 2013). However, some studies have demonstrated mixed results about the relationship between BMI and body image concerns, but have identified that disordered eating behavior, including binge eating, is associated with body image issues independent of BMI status (Schwartz & Brownell, 2004).

There is some research on the relationship between body image disturbance, including body dissatisfaction and overconcern with weight and shape, obesity, and BED; however, the results are mixed (Lewer et al., 2017). De Zwaan and colleagues (1994) found a weak relationship between body dissatisfaction and binge eating when controlling for obesity status. Similarly, Keuhenel and Wadden (1994) found no significant differences in body dissatisfaction between participants with obesity and binge eating and participants with obesity without binge eating. However, more recent literature suggests that some body image concerns are related to binge eating behavior independent of BMI or obesity status (Legenbauer et al., 2011; Lewer et al., 2016). Both Lewer and colleagues (2016) and Legenbauer and colleagues (2011) found that individuals with obesity and binge eating reported significantly greater scores in the cognitive-affective component of body image disturbance, including the evaluation of one's body, than individuals with obesity alone; however, they found no significant differences in the behavioral component, including body-avoidance behaviors, of body image disturbance between groups. These findings suggest that body image concerns may be related to binge eating behavior independent of BMI. Lewer and colleagues (2017) concluded that some studies suggest that body

image disturbance was related to obesity status in individuals with BED, while other studies reported that body image disturbance was related to BED, independent of obesity status.

To date, only one study has examined the relationship between body dysmorphia and BED (Ruffolo et al., 2013). They found that 5.5% of the clinical sample experienced body dysmorphia at some point within their lifetime and that 2% of the sample experienced both disorders at the same time. Notably, however, at the time of Ruffalo and colleagues' (2013) study, BED was not a formal diagnosis. Instead, it was diagnosed as Eating Disorder Not Otherwise Specified (EDNOS) from the DSM-IV-TR (American Psychiatric Association, 2004). Thus, no known study has examined the relationship between BED and BDD in the context of the DSM-5 BED diagnosis.

APPENDIX B

Demographic Questionnaire

Please indicate the following:

1. Please indicate your gender
    a. Female
    b. Trans female/Trans woman
    c. Different Identity (please state) _____

2. How do you identify your race/ethnicity
    a. Native American/First Nation
    b. Black/African American
    c. Hispanic/Latino(a)
    d. White, non Hispanic/Latino(a)
    e. Asian/Pacific Islander
    f. Different Identity (please state _____)

3. What is your age? _____

4. How would you identify your sexual orientation?
    a. Native American/First Nation
    b. Black/African American
    c. Hispanic/Latino(a)
    d. White, non Hispanic/Latino(a)
    e. Asian/Pacific Islander
    f. Different Identity (please state _____)

5. What is your academic year?
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. Graduate Student

APPENDIX C

Screening question for Bulimia Nervosa Behaviors

1. During the past 3 months, have you regularly (at least 1x week) engaged in compensatory behaviors, such as self-induced vomiting, excessive exercise, use of diuretics or laxatives in efforts to manipulate, manage, or lose weight?

APPENDIX D

Binge Eating Scale

(BES; Gormally et al., 1982)

Below are groups of numbered statements. Read all of the statements in each group and mark on this sheet the one that best describes the way you feel about the problems you have controlling your eating behavior.

#1

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

#2

a. I don't have any difficulty eating slowly in the proper manner.
b. Although I seem to "gobble down" foods, I don't end up feeling stuffed because of eating too much.
c. At times, I tend to eat quickly and then, I feel uncomfortably full afterwards.
d. I have the habit of bolting down my food, without really chewing it. When this happens I usually feel uncomfortably stuffed because I've eaten too much.

#3

a. I feel capable to control my eating urges when I want to.
b. I feel like I have failed to control my eating more than the average person.
c. I feel utterly helpless when it comes to feeling in control of my eating urges.
d. Because I feel so helpless about controlling my eating I have become very desperate about trying to get in control.

#4

a. I don't have the habit of eating when I'm bored.
b. I sometimes eat when I'm bored, but often I'm able to "get busy" and get my mind off of food.
c. I have a regular habit of eating when I'm bored, but occasionally, I can use some other activity to get my mind off eating.
d. I have a strong habit of eating when I'm bored. Nothing seems to help me break the habit.

#5

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

#6

a. I don't feel any guilt or self-hate after I overeat.
b. After I overeat, occasionally I feel guilt or self-hate.
c. Almost all the time I experience strong guilt or self-hate after I overeat.

#7

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

#8

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

#9

a. My level of caloric intake does not go up very high or down very low on a regular basis.
b. Sometimes after I overeat, I will try to reduce my caloric intake to almost nothing to compensate for the excess calories I have eating.

c. I have a regular habit of overeating during the night. It seems that my routine is not to be hungry in the morning but overeat in the evening.
d. In my adult years, I have had week-long periods where I practically starve myself. This follows periods when I overeat. It seems I live a life of "feast or famine."

#10

a. I usually am able to stop eating when I want to. I know when "enough is enough."
b. Every so often, I experience a compulsion to eat which I can't seem to control.
c. Frequently, I experience strong urges to eat which I seem unable to control, but at other times I can control my eating urges.
d. I feel incapable of controlling urges to eat. I have a fear of not being able to stop eating voluntarily.

#11

a. I don't have any problem stopping eating when I feel full.
b. I can usually stop eating when I feel full but occasionally overeat leaving me feeling uncomfortably stuffed.
c. I have a problem stopping eating once I start and usually I feel uncomfortably stuffed after I eat a meal.
d. Because I have a problem not being able to stop eating when I want, I sometimes have to induce vomiting to relieve my stuffed feeling.

#12

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

#13

a. I eat three meals a day with only an occasional between snack meal.
b. I eat 3 meals a day, but I also normally snack between meals.
c. When I am snacking heavily, I get in the habit of skipping regular meals.
d. There are regular periods when I seem to be continually eating, with no planned meals.

#14

a. I don't think much about trying to control unwanted eating urges.
b. At least some of the time, I feel my thoughts are preoccupied with trying to control my eating urges.
c. I feel that frequently I spend much time thinking about how much I eat or about trying not to eat anymore.
d. It seems to me that most my waking hours are pre-occupied by thoughts about eating or not eating. I feel like I'm constantly struggling not to eat.

#15

a. I don't think about food a great deal.

b. I have strong cravings for food but they last only for brief periods of time.
c. I have days when I can't seem to think about else but food.
d. Most of my days seem to be pre-occupied with thoughts about food. I feel like I live to eat.

#16

a. I usually know whether or not I'm physically hungry. I take the right portion of food to satisfy me.
b. Occasionally, I feel uncertain about knowing whether or not I'm physically hungry. At these times it's hard to know how much food I should take to satisfy me.
c. Even thought I might know how many calories I should eat, I don't have any idea what is a "normal" amount of food for me.

APPENDIX E

Dysmorphic Concern Questionnaire

(DCQ; Ossthuizen et al.,1998)

Instructions: These questions ask about how you see yourself. Please read the questions carefully and answer them by selecting the box you which you think is most appropriate doe your specific situation.

Have you ever…

0	1	2	3
Not at all	Same as most people	More than most people	Much more than most people

1. Been very concerned about some aspect of your physical appearance.
2. Considered yourself to be misformed or misshaped in some way (e.g., nose, hair, skin, sexual organs, overall body build, etc.).
3. Considered your body to be malfunctional in some way (e.g., excessive body odor, flatulence, sweating, etc.).
4. Consulted or felt that you needed to consult a plastic surgeon, dermatologist, or physician about these concerns.
5. Been told by others/doctor you are normal in spite of you strongly believing that something is wrong with your appearance or bodily functioning.
6. Spent a lot of time worrying about a defect in your appearance/bodily functioning.
7. Spent a lot of time covering up defects in your appearance/bodily functioning.

APPENDIX F

Weight Concern and **Shape Concern Subscales** of the Eating Disorder Examination Questionnaire

(EDE-Q; Fairburn & Beglin, 1994)

Instructions: The following questions are concerned with the past four weeks (28 days) only. Please read each question carefully. Please answer all of the questions. Please only choose one answer for each question.

Please select the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days)

On how many of the past 28 days …

0	1	2	3	4	5	6
No days	1 -5 days	6 – 12 days	13 – 15 days	16 – 22 days	23 – 27 days	Everyday

1. Have you had a definite desire to have a totally flat stomach?
2. Has thinking about weight or shape made it difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?
3. Have you had a definite fear that you might gain weight?
4. Have you felt fat?
5. Have you had the desire to lose weight?

Over the past 28 days…

0	1	2	3	4	5	6
Not at all	Not at all	Slightly	Slightly	Moderately	Moderately	Markedly

1. Has your weight influenced how you think about (judge) yourself as a person?
2. Has your shape influenced how you think about (judge) yourself as a person?
3. How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next four weeks?
4. How dissatisfied have you been with your weight?
5. How dissatisfied have you been with your shape?
6. How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?
7. How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming or wearing tight clothes)?

APPENDIX G

Body Image Concern Questionnaire

(BICI; Littleton, Axsom, & Pury, 2005)

Instructions: Please respond to each item by selecting how often you experience the described feeling or how you often you perform the described behaviors.

1	2	3	4	5
Never	Rarely	Sometimes	Often	Always

1. I am dissatisfied with some aspect of my appearance.
2. I spend a significant amount of time checking my appearance in the mirror.
3. I feel others are speaking negatively of my appearance.
4. I am reluctant to engage in social activities when my appearance does not meet my satisfaction.
5. I feel there are certain aspects of my appearance that are extremely unattractive.
6. I buy cosmetic products to try to improve my appearance.
7. I seek reassurance from others about my appearance.
8. I feel there are certain aspects of my appearance I would like to change.
9. I am ashamed of some part of my body.
10. I compare my appearance to that of fashion models or others.
11. I try to camouflage certain flaws in my appearance.
12. I examine flaws in my appearance.
13. I have bought clothing to hide a certain aspect of my appearance.
14. I feel others are more physically attractive than me.
15. I have considered consulting/consulted some sort of medical expert regarding flaws in my appearance.
16. I have been embarrassed to leave the house because of my appearance.
17. I fear that others will discover my flaws in my appearance.
18. I have missed social activities because of my appearance.
19. I have avoiding looking at my appearance in the mirror.

APPENDIX H

Informed Consent

Thank you for your interest in this study. We realize that your time is important and greatly appreciate you taking the time to complete this survey. We are conducting a study aimed at understanding how body image concerns vary among types of disordered eating in female college students. If you are interested in this study and are over 18 years of age, please read the information below, as it contains important information about this study.

Introduction

Understanding variation in body image concerns and disordered eating in female college students.

Purpose of the study

The purpose of this study to understand how body image concerns vary among types of disordered eating in female college students.

Procedures

If you continue, you will be provided an online survey and asked to answer some questions. Your answers will remain confidential. Participation in this study is voluntary; even if you begin the study, you may decide to leave the survey at any time. You also retain the option to not answer questions or portions of the survey.

Risk and Benefits

There are no anticipated risks of this study beyond possible discomfort answering questions about your experiences with body image concerns and disordered eating. If you do encounter discomfort with this survey, please remember that you may discontinue at any time, and that you retain the right to no longer participate and/or to discontinue throughout the entire study. The benefit of this study is a contribution to better understanding how body image concerns vary amongst types of disordered eating in female college students.

This study has been approved by the Oklahoma State University Institutional Review Board (IRB). IRB approval is indicative only of the fact that procedures implemented by the study adequately protect the rights and welfare of participants. While your data will remain confidential unless otherwise required by law please remember that absolute confidentiality cannot be guaranteed due to the nature of Internet and computer use. To best ensure confidentiality, please be sure to close your browser when finished. In addition, the IRB, the sponsor of the study, and University or government officials responsible for monitoring this study may inspect these records.

Questions or Concerns

If you have any questions about this study, please contact the Principal Investigator, Ashley Hadwiger, M.S., at ashley.hadwiger@okstate.edu. Members of the Oklahoma State University IRB may also be contacted if a problem cannot be discussed with the experimenters; they may be reached at irb@okstate.edu.

By clicking “continue” below, you are

(a) Indicating that you have read the information about this study;
(b) Providing consent to participate in the study; and
(c) Indicating that you are at least 18 years of age.

APPENDIX I

IRB Approval Page

Oklahoma State University Institutional Review Board

Date:	01/15/2020
Application Number:	IRB-20-5
Proposal Title:	Binge Eating Disorder and Body Dysmorphic Disorder in Female College Students
Principal Investigator:	Ashley Hadwiger
Co-Investigator(s):	
Faculty Adviser:	Mel Wilcox
Project Coordinator:	
Research Assistant(s):	
Processed as:	Exempt
Exempt Category:	

Status Recommended by Reviewer(s): Approved

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in 45CFR46.

This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 405-744-3377 or irb@okstate.edu.

Sincerely,

Oklahoma State University IRB

VITA

Ashley Nicole Hadwiger

Candidate for the Degree of

Doctor of Philosophy

Dissertation: BINGE EATING DISORDER AND BODY DYSMORPHIC DISORDER: ASSESSING DIFFERENCES IN BODY IMAGE CONCERNS

Major Field: Counseling Psychology

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Counseling Psychology at Oklahoma State University, Stillwater, Oklahoma in July, 2021.

Completed the requirements for the Master of Science in Educational Psychology at Oklahoma State University, Stillwater, Oklahoma in July, 2017.

Completed the requirements for the Bachelor of Science in Psychology at Oklahoma State University, Stillwater, Oklahoma in May, 2016.

Experience:

8/2020 – Present, Henry Ford Health System, APA-Accredited Health Psychology Internship

Professional Memberships:

Student Member, Society of Counseling Psychology, Division 17, American Psychological Association