8-1-2024

The Influence of the COVID-19 Pandemic on Binge Eating in a Demographically Diverse US Community Sample

Jessica H. Habashy

THE INFLUENCE OF THE COVID-19 PANDEMIC ON BINGE EATING IN A DEMOGRAPHICALLY DIVERSE US COMMUNITY SAMPLE

By

Jessica H. Habashy

Bachelor of Arts – Psychology
University of Nevada, Las Vegas
2017

Master of Arts – Psychology
University of Nevada, Las Vegas
2022

A dissertation submitted in partial fulfillment
of the requirements for the

Doctor of Philosophy – Clinical Psychology

Department of Psychology
College of Liberal Arts
The Graduate College

University of Nevada, Las Vegas
August 2024

UNLV | GRADUATE COLLEGE

Dissertation Approval

The Graduate College
The University of Nevada, Las Vegas

May 30, 2023

This dissertation prepared by

Jessica H. Habashy

entitled

The Influence of the COVID-19 Pandemic on Binge Eating in a Demographically Diverse US Community Sample

is approved in partial fulfillment of the requirements for the degree of

Doctor of Philosophy – Clinical Psychology
Department of Psychology

Shane Kraus, Ph.D.
Examination Committee Chair

Brenna Renn, Ph.D.
Examination Committee Member

Stephen Benning, Ph.D.
Examination Committee Member

Kara Christensen, Ph.D.
Examination Committee Member

Elizabeth Lawrence, Ph.D.
Graduate College Faculty Representative

Alyssa Crittenden, Ph.D.
Vice Provost for Graduate Education & Dean of the Graduate College

Abstract

The novel coronavirus pandemic (COVID-19) has had profound effects among many individuals with or at risk for eating disorders. The most common primary eating disorder is binge eating disorder which has uniquely reflected more similarities than differences among diverse populations compared to other eating disorder classifications. Considering the upsurge of prevalence rates of eating disorders during the pandemic, it is important to assess the rate of binge eating across the demographic strata to gain a better understanding of who is impacted and provide healing to those who are suffering. Screening for binge eating features across the United States (US) using validated measures is a critical first step for this undertaking. The current study examined exploratory and confirmatory factor analysis as well as measurement invariance of the Binge Eating Disorder Screener-7 (BEDS-7) across gender and sexual orientation, the prevalence of binge eating and co-occurring psychopathology (e.g., depression, anxiety, sexual trauma, alcohol use severity), and the moderating effects of COVID-19 pandemic stress and perceived degree of social support on binge eating and areas of psychopathology.

Participants included a large and diverse US community sample of men and women across various demographic profiles (i.e., gender, age, socioeconomic status, race/ethnicity, sexual orientation). I first conducted exploratory factory analysis (EFA) to examine the factor structure of the BEDS-7, followed by confirmatory factor analysis (CFA) to verify the factor structure and establish the configural model. Next, I explored measurement invariance with the configural model by gender and sexual orientation. CFA supported a one-factor, six-item measure reflecting binge eating features. The BEDS-7 was noninvariant across gender and sexual orientation, thus a total score measuring overall features of binge eating was used in subsequent analyses. Cisgender women and those who identified as belonging to a gender

minority reported higher binge eating features than cisgender men. Individuals belonging to a sexual minority group reported higher means of binge eating relative to heterosexual participants. The prevalence of binge eating features decreased as age increased. Those with lower than a college degree endorsed higher means of binge eating relative to those with a university degree.

COVID-19 pandemic stress was associated with binge eating features; however, COVID-19 pandemic stress did not serve as a significant moderator between psychopathology and binge eating features. Similarly, perceived social support indicated a negatively significant association with binge eating features but did not have a buffering effect between binge eating and psychopathology. Lastly, lack of perceived social support indicated a positive association between binge eating, however, did not moderate the association between binge eating and psychopathology. Taken together, screening of binge eating features in the community, such as in healthcare settings, may promote early identification of binge eating features who could then be referred for further evaluation and intervention.

Acknowledgments

The completion of my dissertation project could not have been possible without the guidance of my committee chair, Dr. Shane Kraus. I thank him for providing me with hope that there was indeed a light at the end of this proverbial tunnel. I express my gratitude to him for empowering me throughout my graduate school career and supporting me to pursue the research areas in which I am most passionate about. I would also like to thank my committee members who have encouraged me to pursue my passions and offered me invaluable comments and suggestions to help elevate my research.

I would like to thank my family and friends who have witnessed the ups and downs throughout my graduate school journey but have acted as a trampoline in my life, allowing me to bounce back even higher. I thank them for believing in me during the moments I did not believe in myself. Their support means more than I could ever fully articulate, and I hope I can continue to make them proud. I also thank God for guiding my path and allowing me to weather each storm. I will keep on trusting Him for my future endeavors.

Finally, I express my gratitude to my clinical supervisor, Dr. Lindsey Ricciardi, and all the staff members at the Eating Disorder Institute who I have had the pleasure of working with over the last two years. I thank Dr. Ricciardi for serving as an exemplary supervisor and role model to me. She has provided me with instrumental feedback and opportunities throughout my clinical training that I will continue to take with me during my internship year. I thank my patients who have largely inspired my research and were my "why" throughout the completion of this project. They have ultimately helped me push through each obstacle and "writer's block." Thank you again to the village who got me here, I am excited and eager to start this new chapter of my professional career.

Table of Contents

List of Tables

List of Figures

Chapter 1 - Introduction

Eating disorders broadly include a spectrum of thoughts, emotions, and behaviors regarding food, weight, body image, and exercise that manifest into a dysfunctional pattern of eating behaviors and body shape/weight concerns (American Psychiatric Association [APA], 2022). The primary eating disorders recognized in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition, Text Revision (DSM-5-TR) include anorexia nervosa (AN), bulimia nervosa (BN), and binge eating disorder (BED; APA, 2022). There are also many individuals in the US who suffer from clinically significant eating disorder symptoms but do not meet full threshold for a primary eating disorder, resulting in a diagnosis of other specified feeding or eating disorder (OSFED; APA, 2022).

Eating disorders are severe, complex, and life-threating psychiatric illnesses that can result in many detrimental medical, psychiatric, and psychosocial effects (Klump et al., 2009). Recovery from an eating disorder can be prolonged and mortality rates are among the highest of any psychiatric illness (Klump et al., 2009). Eating disorders do not discriminate by gender, age, sexual orientation, race/ethnicity, or socioeconomic status (Schaumberg et al., 2017). Indeed, current research has highlighted that men, middle-aged and older adults, people of minoritized racial/ethnic group, and individuals from lower socioeconomic background experience disordered eating (Mitchison et al., 2014). Determining factors (i.e., psychosocial) that contribute to risk for, and maintenance of, eating disorders and their associated symptoms is critical for the development of novel approaches to treat these conditions, and ultimately, alleviate suffering.

The impact of the novel coronavirus pandemic (COVID-19) has also had far-reaching and profound effects among individuals with or at risk for many mental and physical ailments, but especially and uniquely for eating disorders (Termorschuizen et al., 2020). For example, the

psychosocial stressors stemming from the COVID-19 pandemic and stay-at-home orders (i.e., disruption to living situations, changes in social supports, access to healthcare, changes in food behaviors) could exacerbate eating disorder related behaviors (Rodgers et al., 2020). The nature of an eating disorder often thrives in isolation and, as such, the disruption in social supports, food supply, and economic factors have impeded with treatment progress or precipitated relapse in individuals with eating disorders (Termorschuizen et al., 2020).

The pathogenesis of eating disorders is not so precise; however, scholars support the multidimensional nature of eating pathology, covering biological, environmental, psychological, and sociocultural influences (see review: Culbert et al., 2015). Extant research suggests that eating disorders have a hereditary basis (Klump et al., 2009). For example, families of individuals who are girls with AN are 11 times more likely to develop AN than families of individuals without AN (Bulik et al., 2019). The pathology of eating disorders is also strongly associated with sociocultural effects (e.g., media, family, peers) related to the preoccupation of physical appearance and beauty (Derenne & Baresin, 2006). Although several factors have been suggested to influence the development of eating disorder symptomatology, sociocultural factors dominate conceptualizations of the development of eating pathology. Namely, the Tripartite model (Thompson et al., 1999) suggests that appearance-based pressures from media outlets, family, and peers can lead to the internalization or "buying into" socially prescribed notions of beauty and attractiveness.

For example, media use, and specifically social media (e.g., Instagram, TikTok), is associated with heightened risk for eating disorder symptoms due to appearance-based ideals and diet culture-related content (Boswell & Kober, 2016). Importantly, given the pandemic requirements of social distancing, greater social media use has been utilized as a means of

communication which may have heightened risk for eating disorder symptomatology considering sociocultural messages of idealized bodies and physiques that are ubiquitously found on social media (Rodgers et al., 2020).

The Tripartite model posits that sociocultural idealization of thinness in women increases perceived pressures from the media, family, and peers to become thin; thus, increasing susceptibility to thin-ideal internalization (Thompson et al., 1999). Modified versions of the Tripartite model have been studied in men to examine drive for muscularity in addition to maintaining low body fat in which this dual emphasis on muscularity and thinness has led to boys and men engaging in maladaptive behaviors to attain this appearance-based ideal (Stratton et al., 2015). Appearance-based ideals in both men and women have become widespread not only in Western societies, but across the globe. Understanding culture in eating disorders research is in its nascent stage; however, addressing cultural influences (e.g., race/ethnicity, sexual orientation) is essential to provide enhanced treatments of eating disorders (Acle et al., 2018).

Despite the increasing prevalence of eating disorders in the US, research tending to gender identity, sexual orientation, socioeconomic, and racial/ethnic groups differences among eating disorders is less understood (Acle et al., 2018). Examining eating pathology across the demographic strata is necessary in informing proper screening and providing culturally sensitive intervention and prevention strategies. Historically, many eating disorder assessments, screening tools, and diagnostic approaches were developed and validated using samples of middle to upper class White girls/women, leading to a call for more culturally-specific assessment instruments to reflect the diverse presentations of eating disorders among various demographic groups (Goel et al., 2022; Habashy et al., 2023). One eating disorder classification which has reflected more

similarities than differences among diverse populations is binge eating disorder (Marques et al., 2011).

Binge eating disorder, according to the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, Text Revision* (APA, 2022) refers to eating a large amount of food in a short amount of time (i.e., 2 hours) while experiencing a loss of control (APA, 2022). BED was updated in the guidelines of the 11th Revision of the International Classes of Diseases (ICD-11) as an eating disorder classification rather than an "other specified" eating disorder as was previously described in the 10th Classification of Diseases (ICD-10; Reed et al., 2019). Guidelines were additionally altered such that the key component of a binge episode is a loss of control, recognizing both 'subjective' and 'objective' binges (Reed et al., 2019). This modification is crucial as it is the loss of control and *perception* of overeating that contributes to the distressing nature of a binge episode (Reed et al., 2019). While research on eating disorders is dominated by the DSM in the United States (US) and other nations, the ICD impacts epidemiological data from other regions of the world (Frank & Berner, 2020). BED is a complex disorder and scholars suggest that it may be considered as existing on a spectrum of non-compensatory binge eating (Bogusz et al., 2019; Devlin et al., 2003).

Binge eating is a core feature of two primary eating disorders (i.e., BN and BED) in the DSM-5-TR and is a feature of AN in which there is a binge/purge subtype. As such, assessing the nature of binge eating symptomatology in diverse groups may help researchers and clinicians attain a better understanding of the pathology of eating disorders in general. Prior work suggests that binge eating occurs at different rates among ethnically/racially minoritized and White individuals (Marques et al., 2011). However, the prevalence and severity of binge eating across various demographic groups throughout the lifespan in the US is currently sparse and

considering the rising rates of eating disorders since the COVID-19 pandemic, it is important to assess the rates of binge eating features across the dimensions of identity characteristics. Screening for binge eating and co-occurring psychopathology in diverse populations (i.e., community settings) across the US is a critical first step for this undertaking. Early detection or screening is essential to help identify individuals at probable risk for various psychiatric conditions and increase the likelihood of a successful recovery.

Chapter 2 – Literature Review

Screening for Binge Eating in the United States

Prevalence of Binge Eating Disorder in the United States

Of all the eating disorder classifications, BED is the most common primary eating disorder in the US (APA, 2022). According to the U.S. National Comorbidity Survey Replication (NCS-R), the lifetime prevalence of any binge eating behavior (i.e., included cases of bulimia nervosa, binge eating disorder, subthreshold binge eating disorder [binge eating episodes occurring at least twice a week for three months] and AN with binge eating) was approximately 4.5% and the 12-month prevalence was 2.1% (Hudson et al., 2007). Based on this statistic, 1 in every 25 US individuals will engage in binge eating at some point in their lives, and around 1 in 50 US individuals will engage in binge eating within a year.

The COVID-19 pandemic may have worsened binge eating disorder psychopathology and increased the prevalence of eating disorders in America (Asch et al., 2021). Some possible explanatory reasons could be that increased positive social support from others is a well-documented protective factor against the development of eating disorders (Limbert, 2010), and given social distancing mandates, this increased sense of isolation and, in turn, increased social media use to "connect" may have contributed to the heightened risk of eating disorder behaviors (Rodgers et al., 2020).

Data from a national health insurer reported significant increases in hospitalizations among eating disorders: rates for these conditions approximately doubled since the COVID-19 pandemic as well as increased stay in the hospital by 50% suggesting that eating disorder symptoms were becoming more acute (Asch et al., 2021). Notably, no significant changes in inpatient visits were observed for other psychopathology such as depression, alcohol use, or

anxiety suggesting that the pandemic may be uniquely affecting people's vulnerability to eating disorders (Asch et al., 2021).

Thus far, a myriad of epidemiological studies has been conducted on BED mainly in Western countries. Nonetheless, biases related to gender, sexuality, socioeconomic groups, and racial/ethnic groups may contribute to the underdetection, underdiagnosis, and relative invisibility of BED across the US (Casanova-Perez et al., 2022). As such, addressing the incidence, course, and prevalence of BED across various demographic sectors is critical for understanding the nature of this pernicious disorder and who it is affecting especially within the context of the COVID-19 pandemic.

Gender Identity and Sexual Orientation

In respect to the other primary eating disorder classifications (i.e., anorexia nervosa and bulimia nervosa), BED has the least significant gender differences between men and women. According to the DSM-5-TR, the lifetime prevalence of BED in men is 2% and 3.5% in women (APA, 2022). Furthermore, the NCS-R reported that approximately 1 in 20 US women (4.9%) and 1 in 25 US men (4%) have engaged in recurrent episodes of binge eating at some point in their lives. Additionally, 12-month prevalence estimates were roughly 2.5% among women and 1.7% among men (Hudson et al., 2007). Women, relative to men, exhibited a one and a half times greater lifetime prevalence of ED with no statistically significant differences between genders regarding binge eating (Hudson et al., 2007). Importantly, while men and women report similar binge eating frequency, men report less distress compared to women and, therefore, do not meet full threshold for BED (Lewinsohn et al., 2002).

According to a more recent nationally representative epidemiological study, the lifetime prevalence of BED in the US is three times greater in women than men (Udo & Grilo, 2018).

Overall, data suggests that both 12-month and lifetime prevalence estimates for BED are approximately three times higher in women compared to men (Galmiche et al., 2019). Results from these data demonstrate that BED is the most common eating disorder in US men, and the ratio of men to women with BED in the US is higher than the ratio of men to women with other eating disorder classifications (e.g., lifetime prevalence of AN in women is 0.9%, lifetime prevalence of AN in men is 3%; Frank & Berner, 2020; APA, 2013).

Gender and Sexual Minority Groups. Although individuals across all demographic strata are affected by eating disorders and, specifically, BED, some groups are more disproportionately affected. Gender minority (e.g., transgender, gender-nonconforming) and sexual minority groups (e.g., gay, lesbian, bisexual) have been suggested to display higher rates of eating pathology than those who identify as cisgender or heterosexual (Calso et al., 2017). Indeed, data from a nationally representative US sample suggests that the lifetime prevalence for BED (2.2%) was reported to be higher among sexual minority adults compared to cisgender heterosexual adults (0.81%; Kamody et al., 2020). Risk for health disparities among BED may be accounted for by prominent theoretical models including sociocultural and minority stress models (Calzo et al., 2017).

Despite research on eating disorders research within gender minority groups (i.e., transgender, gender non-conforming) is frequently underreported, a small but growing body of research suggests that gender minority groups may uniquely experience body image dissatisfaction and eating disorder psychopathology (Bankoff et al., 2019). Among transgender individuals, gender norms and sociocultural ideals surrounding body image of femininity and masculinity could influence disordered eating behaviors. This possible perceived discrepancy with one's own body could lead to body dissatisfaction which is one of the most empirically

support risk factors for the development of disordered eating (Warren et al., 2005). Moreover, gender minority stress and discrimination may contribute to disordered eating behaviors among transgender individuals (Nagata et al., 2020).

According to a US-based study of 312 adult transgender men, 11.2% endorsed objective binge episodes (Nagata et al., 2020). Transgender men may desire a masculine-appearing physique and thus could engage in muscle-enhancing behaviors (Calzo et al., 2015). Among transgender women, similar appearance-based related concerns as transgender men may arise, but additional societal pressures to use weight loss to repress secondary male characteristics have been reported in the literature among transgender women (Jones et al., 2018). Among a US sample of 172 transgender women, 12.8% reported objective binge episodes (Nagata et al., 2020). Importantly, the most frequently endorsed eating disorder symptoms within this sample related to shape and weight concerns (Nagata et al., 2020).

Furthermore, minority stress models of binge eating among sexual minorities illustrate the function of binge eating as a response to discrimination and internalized negative attitudes toward sexual minority groups (Mason & Lewis, 2016). For example, in a sample of lesbian and bisexual women, 13.4% engaged in moderate binge eating and 4.9% engaged in severe binge eating (Mason & Lewis, 2016). Additionally, a recent study looking at the prevalence of eating behaviors in US college students suggested that bisexual women and women who have sex with women are more likely to report engaging in binge eating (23.3%-30.2%) than heterosexual women (17.3%; Laska et al., 2015). Among men, those who have sex with both men and women reported high rates of clinical levels of binge eating (29.2%) compared to men who only had sex with women (10.3%; Von Schell et al., 2018).

Overall, gender and sexual minority status in the US is associated with increased risk for binge eating. However, research is sparse and is mainly descriptive in nature. Further research is necessary to examine the prevalence of binge eating symptomatology in gender and sexual minority groups as well as develop individualized screening to improve health outcomes in underserved gender and sexual minority populations in the community.

Age

The onset of binge eating behaviors and BED are often described to occur in late adolescence and young adulthood (APA, 2013). Indeed, epidemiological data in the US suggests that lifetime prevalence of BED is largely consistent from the ages of 18 to 59 years old, yet significantly declines at age 60 and older (Udo & Grilo, 2018). College students may be a particularly high-risk age group for BED. Stressors such as academic pressure and major life changes have been suggested as possible vulnerable factors for this age range (Pedrelli et al., 2015). Point prevalence estimates were found to be high in women college students (5.1%) compared to men college students (0.4%). As such, 1 in 20 US women college students compared to 1 in 200 men college students engaged in binge eating twice a week (Keel et al., 2006). Without a minimum frequency of binge eating set, the point prevalence for binge eating was 14.8% for women college students and 3.8% for men college students (Keel et al., 2006).

More recent studies have suggested binge eating and BED to occur as early as childhood in community samples, however (Marzilli et al., 2018). The point prevalence of BED ranged between one to five percent among children and adolescents and young adults between the ages of 10-24 years old (Marzilli et al., 2018). According to a recent meta-analysis on prevalence of BED in children and adolescence, BED and subclinical BED had an estimated prevalence of 1.32% and 3.0% which is comparable to the rates of children and adolescents with AN and BN

(Kjeldbjerg et al., 2021). Thus, routine systematic screening of BED in US healthcare, schools, universities, and community settings across the lifetime is pertinent as to ensure those with symptoms of BED do not slip under the radar.

Socioeconomic Status and Education Level

Despite outdated beliefs of eating disorders being considered "diseases of affluence" (Bruch, 1975), present research suggests that eating disorders, as a transdiagnostic class, are prevalent across the entire socioeconomic spectrum (Huryk et al., 2021). According to a US-based study of 2,000 adolescents and young adults, the prevalence of binge eating in various SES groups was observed with 4.9% belonging to a high-SES group and 6.3% belonging to a low-SES group (West et al., 2019). Among youth who identified as belonging to a low-SES group, food insecurity was cited as a critical risk factor for binge eating (West et al., 2019).

Individuals from lower SES positions are disproportionately affected by stressful life events including inconsistent food supply. As a result, food accessibility becomes unpredictable and physical hunger and psychological deprivation can heighten one's susceptibility to engage in binge eating due to food scarcity (Coleman-Jensen et al., 2017). Individuals who engage in binge-eating episodes typically consume highly palatable foods or processed foods which are high in sugar and fat and tend to be less expensive (Novelle & Diéguez, 2018). High concentrations of these foods can be found in underprivileged urban neighborhoods (James et al., 2014); thus, economic disparities could contribute to differential access to highly palatable foods and, at least partially, account for the influence of socioeconomic status and binge eating.

Similarly, the prevalence of level of education may be more evenly spread in BED than other eating disorder diagnoses, although findings are mixed. According to Udo & Grilo (2018), the lifetime prevalence of individuals who met criteria for BED with less than a high school

degree, a high school degree or GED, and some college education or higher was 0.79%, 0.72%, and 0.92%, respectively, with no significant differences across level of education. On the other hand, Kessler and colleagues (2013) examined the prevalence and correlates of BED in the World Health Organization (WHO) mental health surveys in the US and 13 other upper and middle-income countries. Results suggested an inverse correlation between education level and binge eating disorder in which individuals with a lower education level (i.e., less than a secondary education [1.7%] and secondary education [1.6%]) endorsed a higher lifetime onset prevalence of BED compared to individuals with a higher education level (i.e., some college [1.0%] and college graduate [1.2%]). Further research is necessary to clarify findings examining level of education and prevalence of BED.

In sum, rather than high-SES predicting illness, current research may instead describe high-SES as predicting higher treatment-seeking rates compared to individuals belonging to a low-SES group. There is a critical need to prioritize more accessible treatment interventions for binge eating disorder such as scalable dissemination of evidence-based treatment (Cooper et al., 2017) to (1) decrease stigma of who is at risk for binge eating disorder and (2) provide reparations for healthcare barriers. Similar systemic inequities of binge eating disorder treatment may also be found in racial/ethnic minority populations in the US.

Race/Ethnicity

Distinctive among the eating disorder classifications is that BED appears to be equally represented across various racial/ethnic groups in the US (Marques et al., 2011).
Indeed, within the US, evidence suggests that the demographic profile of those with BED is more diverse in terms of racial/ethnic group representation than other EDs such that rates of binge eating and shape and weight concerns in Black and Hispanic/Latino individuals are similar

to, and sometimes more elevated, than among White individuals (Alegria et al., 2007; Franko et al., 2011). Marques and colleagues (2011) examined the lifetime and 12-month prevalence of BED in the US among ethnic minority groups (Latino, Asian, Black) utilizing pooled data from the National Institute of Mental Health Collaborative Psychiatric Epidemiolocal Studies. Results from the study confirmed that prevalence rates for BED are similar across the various demographic profiles among non-Latino White, Latino, Asian, and Black individuals (Marques et al. 2011).

Some studies have explored the prevalence of BED within certain subgroups of racial/ethnic minority populations in the US. Based on data from the National Survey of American Life and the National Latino and Asian American Study, the prevalence of BED among Black, Latino, and Asian Americans was observed (Alegria et al., 2007; Nicdao et al., 2007; Taylor et al., 2007). Nicdao and colleagues (2007) examined the prevalence of binge eating among Chinese, Filipino, Vietnamese, and "Other Asians" (e.g., Korean, Japanese, Asian Indian immigrants). Overall, authors reported low rates of BED among each sub-group with no significant differences between one another. For example, among those who endorsed BED symptoms, 1.19% identified as Chinese, 1.87% identified as Filipino, 0.10% identified as Vietnamese, and 0.71% indeed as other Asian (Nicdao et al., 2007).

Taylor and colleagues (2007) observed the prevalence of BED within a large sample Black/African American and Caribbean Black adult (*N*=5,191) and adolescent individuals (*N*=1,170) using the National Survey of American Life (NSAL). Findings revealed that 1.66% of individuals in both groups were found to qualify for BED. Research suggests that perceived discrimination may be an explanatory risk factor for disordered eating behavior in racial/ethnic minority groups (Kwan et al., 2018). In a large US epidemiological study (*N*=3,516) of Black

men and women, perceived discrimination was found to be associated with increased likelihood of qualifying for a diagnosis of binge eating disorder across both men and women when controlling for demographic characteristics (i.e., age, education, marital status; Assari, 2018).

Furthermore, similar rates of binge eating in Black individuals were observed across Cuban, Puerto Rican, and Mexican immigrants with rates differing according to acculturation status (Alegria et al., 2007). Comparable observations were also described in a study by Swanson et al. (2012) in which the pervasiveness of BED within the Mexican community was examined. Prevalence rates of Mexicans residing in Mexico was 1.6% whereas the prevalence of BED among Mexican Americans was 2.2% (Swanson et al., 2012). Authors suggested that Western exposure and acculturation could be possible predictors of the development of BED (Swanson et al., 2012).

Taken together, research suggests equivalent representation across US racial/ethnic groups in BED; however, there may be specific cultural risk factors or pathways for binge eating which could contribute to the disproportionate negative impacts on binge eating among ethnic/racial minority groups. Ethnic discrimination and accultural stress are just two factors that may lower an individual's self-esteem and create a negative mood that increases susceptibility to engage in maladaptive coping responses such as binge eating (Kwan et al., 2018). Thus, it is critical for researchers and clinicians alike to consider ethnicity and race when screening, diagnosing, and treating individuals with binge eating features.

Comorbid Medical and Psychiatric Conditions

The co-occurrence of binge eating disorder and multiple psychiatric and nonpsychiatric medical conditions is unfortunately quite common. However, BED may, and does, go undiagnosed because patients seeking treatment for psychiatric or other medical complications

are not always being asked about their eating habits (Citrome, 2017). Indeed, while BED is the most common primary eating disorder classification, many individuals do not seek treatment for it specifically, but rather, attempt to address their other psychiatric and medical comorbidities first (Citrome, 2017). Hudson et al. (2007) determined that less than half of individuals with BED sought treatment for it. Although BED is associated with much impairment, prognosis is promising with appropriate and evidence-based treatment (i.e., cognitive behavioral therapy) which targets binge eating and cooccurring psychopathology (Grilo, 2017). Undetected and untreated BED, however, can render management of presenting comorbidities ineffective as the presence of BED can exacerbate pre-existing health conditions.

Medical Comorbidities

Many negative medical conditions are associated with BED. Some of the most common include diabetes, gastrointestinal concerns, hypertension, menstrual irregularities, obesity, pain (e.g., headaches, musculoskeletal), and sleep disturbances (Kessler et al., 2013). It is important to emphasize that obesity and BED are distinct conditions and less than 50% of individuals with BED are considered obese (Hudson et al., 2007). Indeed, when examining eating habits, those with BED had higher caloric intake than weight-matched control groups of individuals with obesity but no BED symptoms. Medical comorbidities can and do occur in those with a normal or overweight body mass index (BMI). Most individuals with BED fall within the normal to overweight range of BMI (Kessler et al., 2013). For example, the lifetime prevalence of individuals with BED according to a cross-national epidemiology study had a BMI as follows: 1.3% (underweight), 31.7% (normal range 18.5-24.9); 30.7% (overweight range 25-29.9); 23.1% (obese class I range 30-34.9%); 7.3% (obese class II range 35-39.9); 5.8% (obese class III range

40+; Kessler et al., 2013). Individuals with an elevated BMI may be at increased risk for metabolic syndrome (Hudson et al., 2010).

Factors of metabolic syndrome consist of hypertension (i.e., high blood pressure), high triglyceride level (i.e., type of fat in the blood; high level can increase risk for heart disease), and heightened fasting blood sugar levels (i.e., sugar or glucose found in the blood which can increase risk for diabetes; Hudson et al., 2010). In a US nationally representative study of adults, BED was associated with type 2 diabetes and elevated cholesterol levels (Udo & Grilo, 2018). Moreover, a systematic review with over 6,000 participants determined that the prevalence of BED among adults with type 2 diabetes mellitus was 1.2-8.0% (Abbott et al., 2018). When treating various medical conditions, it is important for clinicians to also screen for and inquire about patient's eating habits as to accurately assess for the probability of BED. BED is not limited to only medical comorbidities; however, many psychiatric comorbidities have also been well documented (Citrome, 2017).

Psychiatric Comorbidities

Previous research has determined that rates of psychiatric comorbidity with BED are comparable to rates of bulimia nervosa and anorexia nervosa (APA, 2013). Additionally, studies have reported higher rates of psychiatric comorbidities among those with BED than among weight-matched participants without the presence of BED (Citrome, 2017). According to data from the National Comorbidity Survey Replication which examined the prevalence and correlates of eating disorders in 2,980 participants, 79% of individuals with BED met criteria for at least one lifetime psychiatric comorbidity (Hudson et al., 2007).

Furthermore, almost half of those who met criteria for BED also met criteria for three or more psychiatric disorders (Hudson et al., 2007). The most endorsed psychiatric comorbidities

included anxiety disorders (65%), mood disorders (46%), impulse-control disorders (43%) and substance use disorders (23%; Hudson et al., 2007). In a more recent study examining psychiatric comorbidities and binge eating disorder in a sample of racially/ethnically diverse patients, 67% of patients had at least one other lifetime psychiatric disorder with mood (49%), anxiety (41%), and substance use disorders (22%) being the most common (Grilo et al., 2013). Alcohol use disorder is comorbid with binge eating disorder as according to a systematic review, the pooled lifetime prevalence of AUD and BED is 19.9% (Bogusz et al., 2020). Personality disorders are also quite commonly observed in those with BED. According to findings from a meta-analysis, 29% of individuals with BED met criteria for a personality disorder (Friborg et al., 2014). Approximately 12% of patients with BED met diagnostic criteria for avoidant personality disorder and 10% met criteria for borderline and obsessive-compulsive personality disorders (Kessler et al., 2013).

Those who have experienced traumatic events (e.g., physical, mental, and/or sexual abuse) may engage in eating disorder behaviors such as binge eating to maladaptively cope with their trauma and symptoms of posttraumatic stress disorder (PTSD; Behar et al., 2016). In fact, a prior study reported that 30% of individuals with an eating disorder were sexually abused as children (Behar et al., 2016). A large amount of data suggests that child sexual abuse, specifically, is a nonspecific risk factor for eating disorders (Felitti et al., 2019; Scheffers et al., 2017). Caslini et al. (2016) conducted a systematic review looking at the link between child sexual abuse and eating disorders and results revealed that child sexual abuse was linked to the development of bulimia nervosa and BED; however, their results were not conclusive for anorexia nervosa. It has been postulated that body shame may be the connecting link between trauma and eating disorders as body shame may lead to engaging in eating disorder behaviors to

cope with traumatic experiences by serving as a temporary escape of awareness of adverse thoughts and emotions (i.e., dissociation) that ultimately accompany traumatic events (i.e., sexual trauma).

Moreover, around 23% of those with BED have a history of attempting suicide and for over 70% of participants, symptoms of BED preceded the suicide attempt (Udo et al., 2019). Importantly, research suggests that mood and anxiety disorders may be the reason that people with co-occurring BED seek out treatment rather than for BED specifically (Kessler et al., 2013). This possible lack of attention to symptoms of BED can result in inadequate care as medications for mood and anxiety disorders can stimulate appetite and potentially exacerbate maladaptive eating habits (Hay & Claudino, 2012).

In conclusion, when seeking psychiatric and nonpsychiatric treatment, patients may not disclose their BED symptoms and clinicians, in turn, may not screen for these symptoms when managing other presenting concerns. As a result, patients with BED may remain underdiagnosed and untreated. It is therefore critical that clinicians properly screen and assess for symptoms of BED given its high co-occurrence with various medical and psychiatric illnesses. Presently, the need for healthcare services has overwhelmingly increased during the COVID-19 pandemic, reducing capacity for traditional face-to-face care options, and providing additional difficulties in access to care which may intensify preexisting health inequities. Factors that buffer against eating disorder risk and other health concerns (e.g., social support) have been negatively affected by these limitations (Rodgers et al., 2020).

Social Support and the Impact of the COVID-19 Pandemic on BED

Perceived social support is a prominent protective factor of health promotion as it can strengthen an individual's physical and emotional needs as well as provides an increase in one's

overall quality of life (de Lima Cavaliere & Costa, 2011). Although research studies on the impact of social support on eating disorders is not as substantial as other mental disorders, there is considerable evidence currently suggesting that positive social support has been shown to play a key protective role against eating disorders (i.e., helps decrease symptoms; Marcos & Cantero, 2009). On the other hand, the perception of low social support from family and/or one's friend networks can be a risk factor for the development of negative thoughts and emotions to one's own body (Limbert, 2010). These thoughts, once internalized, could lead to the belief that one *could* receive greater social acceptance by peers, family, and friends by engaging in weight loss. Researchers have posited that the COVID-19 pandemic has exacerbated eating disorder presentations through multiple pathways, including disruption in social support (Rodgers et al., 2020).

One of the main strategies to contain and decrease the spread of the COVID-19 pandemic has been through implementation of social distancing procedures (Rodgers et al., 2020). As such, reduced social contact may have potentially increased negative affect and negatively impact one's circadian rhythm as well as ability to self-regulate emotions – all of which may have increased vulnerability to engaging in disordered eating symptoms (Lombardo et al., 2020). Additionally, specific fears created by the pandemic have overwhelmingly provided higher levels of stress and emotional distress which are notable risk factors for engaging in disordered eating (Puccio et al., 2016).

The impact of COVID-19 has had profound and negative effects on many people with eating disorders, specifically BED. Indeed, COVID-19 has been suggested to increase risk for disordered eating behaviors such as binge eating, purging, restriction, and emotional eating patterns (Rodgers et al., 2020). "Emotional eating" or eating in response to emotional cues is one

function behind binge eating as food, particularly highly palatable foods with more sugar content or fat, can provide short-term relief for those who engage in binge eating (Oswald et al., 2011). Negative emotions and stress are notable antecedents for dysfunctional eating patterns like binge eating as it serves as one method to maladaptively cope through distressing events (Leehr et al., 2015).

Although BED is the most prevalent ED diagnosis, there is still a dearth of knowledge on who is most likely to be affected by BED (Giel et al., 2021). Considering the devastating impact that the pandemic has had on vulnerable subgroups (i.e., those at risk for an eating disorder) and the increase in stress, negative emotions, and isolation during COVID-19, it is critical to screen for BED to inform and promote prevention and health service strategies (Rodgers et al., 2020) and, ultimately, help individuals heal.

Screening Tools for Binge Eating

Several assessments have been used to measure binge eating, including clinical interviews, self-report measures, and in vivo eating paradigms (Frank & Berner, 2020). Interviews such as the Eating Disorders Examination (Fairburn & Cooper, 1993) and Structured Clinical Interview for DSM-5 (SCID-5; First et al., 2016) are deemed gold standard tools for the assessment of eating disorders. These interviews are, however, time-intensive to administer, require substantial training by the assessor, and are often completed under the supervision of a licensed mental health clinician. As such, brief, efficient, and straightforward measures to screen and assess for eating pathology has led to the development of various self-report measures which have been widely used in both research and clinical practice.

Burton and colleagues (2016) evaluated the psychometric properties of various self-report measures of binge eating symptoms. From their systematic search, study authors identified 29

self-report measures examining binge eating. Some of the most widely used measures that consider symptoms of binge eating include the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994), the Eating Disorder Diagnostic Scale (EDDS; Stice et al., 2000), the Eating Attitudes Test (EAT-26; Garner et al., 1982), the Bulimic Investigatory Test (BUILT-R; Thelen et al., 1991) and the Eating Pathology Symptoms Inventory (EPSI; Forbush et al., 2013; see Table 1). Despite the good psychometric properties of these measures (Burton et al., 2016), each instrument is relatively lengthy.

Given the desired result of applied research is to ensure that clinicians are delivering evidence-based practices to youth and adults, evidence-based assessment and screening for binge eating symptoms is an important criterion for evidence-based clinical practice (Jensen-Doss & Hawley, 2010). Furthermore, considering the known barriers of screening in community settings, it is important for assessments to be brief, free, or low cost, and validated for use in multiple populations (Jensen-Doss & Hawley, 2010). One measure that may achieve this objective is the Binge Eating Disorder Screener-7 (BEDS-7).

Binge Eating Disorder Screener-7 (BEDS-7)

The Binge Eating Disorder Screener-7 (BEDS-7; Herman et al., 2016) is a seven-item self-report screening measure based on the DSM-5 diagnostic criteria for BED. This measure was developed to identify individuals with probable BED for further evaluation or referral (Herman et al., 2016). The BEDS-7 was originally designed to assist general practitioners in identifying individuals with binge eating behaviors as healthcare workers have the most contact with patients and tend to see patients at higher risk for binge eating and other mental health concerns (Herman et al., 2016). To promote efficiency and reduce burdensomeness from lengthy

assessment measures, the BEDS-7 was developed to be easily incorporated as a brief screening tool for binge eating in healthcare settings.

The BEDS-7 was developed in three stages. First, the research team developed an initial item list based on the DSM-5 diagnostic criteria for BED (APA, 2013) as well as input from clinical experts. Second, authors conducted cognitive debriefing interviews to assess and revise items. Finally, authors performed quantitative evaluation to finalize the items and develop the scoring algorithm (Herman et al., 2016). Notably, the seven items achieved 100% sensitivity and 38.7% specificity in the study sample. Although the BEDS-7 was originally designed to screen in medical settings, study authors encourage broader utility in clinical settings and has been employed in community samples to screen for binge eating (Cecchetto et al., 2021).

While screening measures like the BEDS-7 have been developed to assist in detecting individuals with probable risk for BED, the prevalence of binge eating in the US population has not been well studied given its recent addition to the DSM-5 as a primary eating disorder and current data may largely underestimate the true burden of binge eating symptoms among those who are suffering. As such, our current evidence is largely insufficient and necessitates a need for routine and systematic screening of binge eating in the general population to ascertain individuals from various demographic groups with high-risk binge features.

Proposed Factor Structure of the BEDS-7

In utilizing factor analysis, researchers can examine the covariation among observed variables to understand information on the latent constructs or factors that underlie them (Byrne et al., 2005). There are two types of factor analyses: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA is primarily data-driven and is considered when the researcher has no prior knowledge that the observed variables indeed measure the intended

factors (Byrne et al., 2005). Through EFA, researchers can determine the factor structure of a measure. Notably, many researchers overlook the step of conducting an exploratory factor analysis with established scales; however, it is vital to determine: Who has this scale been established for? Could this screening assessment measure a different construct when administered to a different population? In contrast, CFA is mainly applied when researchers have knowledge of the underlying latent variable based on theory and empirical research (Byrne et al., 2005). Through CFA, researchers can examine the extent to which a constrained a priori factor structure is indeed consistent with the sample data (Byrne et al., 2005).

Considering the current dearth of knowledge on the factor structure of the BEDS-7, it is critical to examine the factor structure to establish if this measure is accurately measuring the given construct (i.e., binge eating). The factor structure of a questionnaire is additionally impacted if items endorsed on an assessment are interpreted differently by various groups (e.g., gender, ethnic/racial groups, sexual orientation). In fact, no studies to date have explored if the BEDS-7 examines the same latent construct in the same way across groups (i.e., measurement invariance; Davidov et al., 2014).

Measurement Invariance

Measurement invariance testing is a valuable tool which provides information for the "extent to which the content of each item is being perceived and interpreted in the same way across samples" (Davidov et al., 2014). Researchers run the risk of assuming factor structure equivalence of instruments across groups (Steinmetz et al., 2009). Without first establishing measurement invariance, group comparison can be inaccurate and nonreplicable because groups differences may be driven by different functioning of the measure across groups. This may lead to illogical theory and falsely informed practice (Jeong & Lee, 2019).

In addition, instruments based on Western theories could have potential bias toward middle-class, educated, and White individuals as many researchers and study participants represent this group (Burton, 2015). This bias is problematic as instruments may not be operationalized the same for diverse groups. Furthermore, consistent with many eating disorder assessment measures, the BEDS-7 was conducted in a US sample who were predominantly comprised of White women (Herman et al., 2016) reflecting the outdated and misguided assumption of eating disorders only affecting this population.

As represented in the aforementioned review, this previously held assumption is incorrect and eating disorders may no longer be considered a "disease of affluence" which only affects White young girls and/or women. A crucial and necessary step in diversifying eating pathology measures is examining how the interpretation of assessments measures, and in this case, the BEDS-7 may translate to various sociodemographic groups among the US (i.e., gender, age, race/ethnicity, sexual orientation) as no research to date has examined the measurement invariance of this assessment.

Current Study

While research in eating disorders has historically fallen short compared to other areas of mental health in terms of studies grounded in diversity, equity, and inclusion, some researchers have made considerable efforts in resolving this gap in the literature (Calzo et al., 2017; Habashy et al., 2023; McEntee et al., 2020). However, most studies that have aimed to clarify eating disorder risk in frequently underrepresented groups (i.e., racial/ethnic) included samples of college populations, and findings are often not consistent across studies (Calzo et al., 2017; McEnteee et al., 2020). Research in eating disorders among diverse populations is necessary for improving outcomes in populations that may be discounted by systems that fail to acknowledge

marginalized groups in the US. As Parham (1993) proposes, “a European-American perspective cannot be appropriately used to understand populations whose cultural traditions, values, and perceptions of reality and life experience are radically different” (p. 255).

The first step in determining probable risk for binge eating symptomatology is by screening and validating measures such as the BEDS-7 to ensure the appropriateness of assessing for binge eating behaviors across different demographic profiles (i.e., gender, age, socioeconomic status, race/ethnicity, sexual orientation) in the US. Furthermore, examination of the generalizability of etiologic models of binge eating across marginalized groups and the lifespan is also needed given less significant differences than other eating disorder diagnoses in terms of age, gender, racial/ethnic group, and sexual orientation among those who are affected by binge eating features. Additionally, the effects of COVID-19 may have exacerbated or precipitated binge eating disorder psychopathology across various demographic groups in the community and has prompted leaders in the field to provide a call to action for examining the impact of the pandemic on eating disorders in the US as well as worldwide (Touyz et al., 2020).

Considering the similarities across various sociodemographic groups suggested in the aforementioned literature review in the prevalence of binge eating symptoms, the first step in determining probable risk for binge eating symptomatology during the COVID-19 pandemic is by screening for binge eating across different demographic profiles in the US (i.e., gender, age, socioeconomic status, race/ethnicity, sexual orientation). Therefore, it is my intention that by highlighting the prevalence of binge eating in a US community-based sample (non-nationally representative), as well as including various demographic sectors (i.e., age, gender, race/ethnicity membership, sexual orientation, socioeconomic status), findings from my dissertation may be advantageous in implementing future prevention and treatment strategies for diverse populations

affected by binge eating and other co-occurring psychiatric conditions. As such, the current study has the following aims:

Aim 1: Evaluate the factor structure of the BEDS-7 with exploratory factor analysis to identify the number of factors in the BEDS-7.

Aim 2: Conduct measurement invariance analyses using the configural model of the BEDS-7 across gender, race/ethnicity, and sexual orientation in a community sample in the US.

Aim 3: Examine the prevalence of binge eating features during COVID-19 across various identity characteristics (i.e., age, gender, ethnic minority status, sexual orientation, socioeconomic status).

Aim 4: Assess the medical (i.e., BMI) and psychopathology (i.e., anxiety, depression, sexual trauma, and alcohol use) comorbidities among binge eating features.

Aim 5: Test whether pandemic stress is associated with binge eating features. If pandemic stress is associated with binge eating features, I will then test whether pandemic stress will moderate the association between features of binge eating and areas of psychopathology (i.e., anxiety and depression, alcohol use severity, and sexual trauma) after adjusting for the possible effects of sociodemographics.

Aim 6: Examine whether the protective factor of social support will moderate the association between binge eating features and areas of psychopathology (i.e., anxiety and depression, alcohol use severity, and sexual trauma) after adjusting for the possible effects of sociodemographics.

The current study tested the following hypotheses:

Aim 1, H1: I expect the BEDS-7 will yield a one-factor (six items) structure measuring overall binge eating features.

Aim 2, H2: Since no other studies have conducted measurement invariance tests on the BEDS-7, I did not have any a prior hypothesis.

Aim 3, H3: More cisgender women in a US community sample will endorse binge eating features than cisgender men considering prior work (Udo & Grilo, 2018).

Aim 3, H4: Considering current epidemiology data suggesting that the lifetime prevalence of BED is consistent from young adulthood to middle adulthood (18-59 years old; Udo & Grilo, 2018), I expect rates of binge eating features will decline as age increases.

Aim 4, H5: Based on previous research examining binge eating disorder and psychiatric comorbidities (Hudson et al., 2007), I expect high rates of comorbidities among binge eating features and other areas of psychopathology.

Aim 5, H6: High rates of pandemic stress will moderate the association between binge eating symptoms and other areas of psychopathology. Specifically, individuals with high levels of pandemic stress and high levels of psychopathology will report the highest levels of binge eating features.

Aim 6, H7: Social support will moderate the association between binge eating and other areas of psychopathology. Specifically, individuals with a high level of social support will buffer binge eating features and other areas of psychopathology. On the other hand, individuals with low levels of social support will experience higher levels of binge eating and other areas of psychopathology.

Chapter 3 – Method

Participants and Procedure

Participants in the current study included a US community sample with an approximately equivalent ratio of men and women (overall sample: *N*=2,005; sample excluding participants engaging in vomiting behaviors: *N*=1,955; 46.4% cisgender men [*n*=908], 44.9% cisgender women [*n*=878]). Individuals who identified as belonging to a gender minority group (*n*=168; 8.6%) were also included in the study (i.e., indigenous, or other cultural gender minority [*n*=7; 0.4%], non-binary [*n*=149; 7.6%; non-binary trans person *n*=82], other [*n*=12; 0.6%]). Participants were between the ages of 18-91 years old. No age restriction was enforced in the study. See Figure 1 for missing data.

Approximately 25% (*n*=493) of the sample identified as belonging to an ethnic/racial minority group (i.e., "Do you belong to any ethnic minority groups in your country?"). The current study also included a diverse representation of sexual identities (i.e., 50.9% [*n*=995] identified as heterosexual; 49.3% [*n*=960] identified as belonging to a sexual minority group (i.e., gay or lesbian or homosexual [*n*=144, 7.4%], bisexual [*n*=341, 17.4%], queer [*n*=97, 5.0%], pansexual [*n*=100, 5.1%], asexual [*n*=67, 3.4%], homoflexible [*n*=11, .6%], heteroflexible [*n*=145, 7.4%], or questioning sexual orientation [*n*=55, 2.8%]); see Figure 1 for missing data.

Data for the current study is part of an international and multi-lab study from 43 countries using a cross-sectional method of self-report surveys called the *International Sex Survey (ISS)* (Bothe et al., 2021). Participants were recruited through advertisements on social media (e.g., Facebook [restricted by IP address]) and the *Las Vegas Review-Journal*. Approximately $7,000 was spent on advertising costs for the US. Participants completed the self-report survey on a secure online platform (Qualtrics Research Suite). Study procedures were approved by each

country's Institutional Review Boards. Completion of the study survey took approximately 30-45 minutes and after every completed survey, participants were informed that study collaborators would donate 50 cents to non-profit international organizations (e.g., World Association for Sexual Health) with a maximum donation of $1,000. The *International Sex Survey* began data collection in October 2021 and completed in May 2022.

Measures

Sociodemographic Questionnaire

A general sociodemographic questionnaire was used to examine a wide range of identity characteristics including gender identity, ethnic minority status, sexual orientation, age, and highest level of education.

Brief Symptom Inventory-18

The Brief Symptom Inventory-18 (BSI-18; Derogatis, 2000) was used to assess for symptoms of depression (e.g., feeling hopeless about the future) and anxiety (e.g., nervousness or shakiness inside). This measure consisted of 18 items taken from the 53-item Brief Symptom Inventory (BSI; Derogatis, 1993) asking participants to rate their level of distress over the past seven days and is rated on a five-point scale (0=not true at all; 4=completely true). The BSI-18 measures three symptom subscales (i.e., Somatization, Depression, Anxiety) with each scale comprising of six items. Each symptom dimension score ranges from 0 to 24. The global severity index (GSI) is the sum of the three dimensions with a total score ranging between 0 to 7; higher scores are indicative of higher levels of psychological distress (Derogatis, 2000). Internal consistency estimates of the BSI-18 are acceptable (αs= 0.74 for Somatization, 0.79 for Anxiety, 0.84 for depression, and 0.89 for total GSI; Derogatis, 2000).

Depression and anxiety are significant predictors of disordered eating and are the two most comorbid diagnoses in eating disorders (Sander et al., 2021; Godart et al., 2007). As such, I calculated the mean scores of these predictors separately to determine if one would account for the variance more for binge eating. If one does not account for more of the variance, I created a composite score of depression (six items; α=.91) and anxiety (six items; α=.91) using all 12 items (α=.93).

Basic Psychological Needs Satisfaction and Frustration Scale (BPNSFS)

The Basic Psychological Needs Satisfaction and Frustration Scale (BPNSFS) is a 24-item measure that is rated on a five-point scale (1=not true at all; 5=completely true; Chen et al., 2015). The BPNSFS assesses six dimensions of psychological needs with four items under each subscale: relatedness satisfaction (e.g., I experience a warm feeling with the people I spend time with), relatedness frustration (e.g., I feel that people who are important to me are cold and distant towards me), competence satisfaction (e.g., I feel capable at what I do), competence frustration (e.g., I feel disappointed with many of my performance), autonomy satisfaction (e.g., I feel my choices express who I really am), and autonomy frustration (e.g., I feel pressured to do many things). This measure is rated on a five-point scale (1=not true at all; 5=completely true). The internal consistency of each subscale ranges from fair to good in a US sample (i.e., αs= 0.71-0.88) as well as the composite scores of each dimension (i.e., αs=0.82- 0.89; Chen et al., 2015). I tested the composite scores of relatedness satisfaction and relatedness frustration to examine the perception of social support (i.e., relatedness satisfaction; α=.89) and the perception of a lack of social support (i.e., relatedness frustration; α=.83).

Alcohol Use Disorders Identification Test (AUDIT)

The Alcohol Use Disorders Identification Test (AUDIT; Babor et al., 2001) was used to assess alcohol use-related concerns over the past 12 months (e.g., How often during the last year have you found that you were not able to stop drinking once you had started?). Various studies have suggested fair to good internal consistencies of the AUDIT (i.e., αs=.75-.94; Dawe et al., 2000; Allen, 1997). There are 10 items in this measure and participants are asked to indicate their answers on three-point (0=no; 4=yes, during the last year) and five-point scales (0=never; 4=4 or more times a week). Scores can range from 0-10, with higher scores being indicative of more hazardous drinking behavior (total score of 40 on the scale). Scores between 0-7 indicate low-risk drinkers, scores of 8-14 indicate hazardous drinkers, scores of 15-19 indicate moderate-severe alcohol use disorder, and scores of 20+ indicate possible alcohol dependence. The cut-off score for potentially hazardous drinking behavior is 8 (Babor et al., 2001). I used the AUDIT sum score (α=.81) to measure overall alcohol use severity in all study analyses.

Sexual Abuse History Questionnaire (SAHQ)

The Sexual Abuse History Questionnaire (SAHQ; Leserman et al., 1995) was used to assess whether a participant has experienced sexual abuse during childhood, adolescence, and adulthood (e.g., Has anyone every forced you to have sex when you did not want this?). This measure includes six questions and is rated on a dichotomous scale (i.e., yes or no). Three categorizations of age-related sexual abuse will be examined: childhood sexual abuse (CSA) occurring at age 13 and younger (without adolescent/adult sexual abuse [AASA]), AASA occurring at age 14 and older (without CSA), and both CSA and AASA (Slavin et al., 2020). Endorsement of any 1 of the 6 items was scored as a positive response. I used the total score to assess for past reported incidences of child and adult sexual trauma (α=.81).

Body Mass Index (BMI)

Participants were asked to report their height (i.e., feet, inches or meter, centimeters) and weight (pounds or kilograms). BMI was calculated (weight [in pounds]/height [in inches] squared) using self-reported measurements.

COVID-19

Participants were asked to answer five items about COVID-19 related effects such as infection status (e.g., I do not have COVID-19, I suspect that I may have COVID-19 but have not been tested), belonging to a risk group (e.g., age over 60 years, age over 40 years and chronic respiratory disease, age over 40 years and diabetes, age over 40 years and cancer), engagement in social distancing (i.e., yes or no), being affected by the pandemic (i.e., 1=not at all; 7= very much), and levels of COVID-19 related stress (1=no stress; 7=extreme stress). Specifically, I examined to what extent participants have been affected by the pandemic and levels of COVID-19 related stress. Given the high degree of overlap between these two items, I calculated a composite score that measures overall COVID-19 related stress (e.g., affected by pandemic, and levels of stress). This composite score was used for subsequent COVID-19 pandemic analyses.

Binge Eating Disorder Screener-7 (BEDS-7)

The Binge Eating Disorder Screener-7 (BEDS-7; Herman et al., 2016) is a seven-item self-report measure that was used to identify participants who endorse probable risk for BED within the past three months based on the DSM-5 diagnostic criteria for BED. The BEDS-7 is not a diagnostic scale, rather individuals who screen positive should be referred to a specialist for a formal diagnosis of BED (Herman et al., 2016). The first two items are rated on a dichotomous scale (i.e., 1=yes, 0=no). The remaining five questions inquire about selected features of the bingeing episodes (as per the criteria of BED in the DSM-5; APA, 2013) and are rated on a four-point scale (i.e., 0=never or rarely; 3=always).

The total score ranges from 0 to 5 and I created a composite score to measure overall binge eating features. To score the six-item composite score, I conducted the following to determine which composite score was optimal to use in subsequent analyses: (1) compute a straight sum score of the six items, (2) sum of z-score items, or (3) transform items by inflating the first two items. For example, instead of 0 or 1, it was scored as 0 or 3 given the following five items are rated between 0 to 3.

Creating a composite score of z-scored items allows each item to receive equal weightage where the mean will be set to equal zero and the standard deviation will be set to equal one (Andrade, 2021). The composite score of the z-scored items can then be used in analyses (i.e., dependent variables in group comparisons). Some limitations of z-scoring items include losing the meaningfulness of the raw scores as well as standard deviations (Andrade, 2021).

Similarly, a straight sum score will provide an equally weight sum of raw scores of the BEDS-7 scale items. An advantage of using a sum score includes controlling for Type I error rate as well as categorizing highly correlated variables into more meaningful material (Song et al., 2013). This sum score variable supports a more parsimonious model and results of analyses are easier to interpret. Statistical limitations of a straight sum score could be that information from the individual items can be missing and there may be potential challenges in interpreting the sum score's relationship with other variables (Song et al., 2013).

Thirdly, inflating the first two items to be equal to the rating scale of the other five items will allow for the scale to have the same upper and lower levels across all items (0-3). In other words, I rescaled the seven items so that they would have equal minimum and maximum values across the six items. This form of transformation can allow for comparing across variables once they are all within the same range. There are several statistical limitations for this method. One

limitation is the assumption of equal ranges between the response options (de Jonge et al., 2014). Another limitation is that this produces an assumption that the labelling/scoring of the responses is irrelevant to the analysis yet not to the respondent (de Jonge et al., 2014)

Statistical Analyses

Data Preparation

Full information maximum likelihood was used for missing data. In utilizing this method, missing values are not replaced but rather the missing data are handled within the analysis model (Lee & Shi, 2021).

Descriptive Statistics

Means, frequencies, and standard deviations of all study variables (i.e., binge eating, anxiety, depression, composite score of depression and anxiety, sexual trauma [child, adult, both], AUDIT sum score, perceived social support, perceived lack of social support, COVID-19 stress, and BMI) were conducted on SPSS 28.0 (SPSS, Inc. Chicago, IL). I also examined the individual BEDS-7 item responses across several demographic characteristics (i.e., gender identity, ethnic minority status, education level, sexual orientation).

Additionally, I examined the asymmetry (i.e., skewness) and peakedness (i.e., kurtosis) among study variables. Data is considered normal if skewness falls between -2 and +2 and kurtosis falls between -7 and +7 (Ryu, 2011). Skewed distributions were transformed prior to analyses to represent a normal distribution (i.e., moderate skewness = natural log transformation; substantial skewness=square-root transformation; severe skewness = inverse transformation; Tabachnick & Fidell, 2001).

Exploratory Factor Analysis

I used SPSS 28.0 to complete an exploratory factor analysis to determine common factors and which composite score of binge eating features to conduct in analyses (i.e., z-score items, sum score of items, inflating first two items) given recommendations by McNeish & Wolf (2020) that items encompassing a scale should be factor analyzed to ensure that the scale is best represented by a single dimension.

An EFA was also used to conduct a parallel analysis. A parallel analysis compares eigenvalues from the sample correlation matrix with eigenvalues obtained from a random correlation matrix in which no factors are expected (Lim & Jahng, 2019). Parallel analysis has received support as being one of the most accurate methods for determining the number of factors to retain (Velicer et al., 2000). Despite its accurate methods, it has long been questioned for its theoretical justification in which the eigenvalues of the reduced correlation matrix with communalities of the variables in the main diagonal have a direct relation to its number of factors, however, the same does not apply for those of the full correlation matrix with ones in the diagonal (Lim & Jahng, 2019).

Since it is suggested to use multiple approaches in factor extraction (Williams et al., 2010), the Kaiser-Guttman Rule and Cattell's (1966) Scree test were also employed. The Kaiser-Guttman rule (Kaiser, 1960) retains eigenvalues greater than one and has received widespread adoption in studies. However, one limitation is that the rule of retaining eigenvalues just above one has been suggested to be rather arbitrary (Fabrigar et al., 1999). The scree test examines the eigenvalues by a plot and major factors result in a steep "cliff", followed by a break or "scree" containing components with minor factors (Hayton et al., 2004). Though the scree test works well with highly correlated factors, it has been criticized for its ambiguity in the case in which there are either no clear breaks or more than two clear breaks in the plot (Hayton et al., 2004).

Next, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy were used to determine sampling adequacy for each variable in the model and the complete model. Kaiser's recommended threshold is above 0.6 (Kaiser, 1974). Bartlett's Test of Sphericity will be conducted to determine whether correlations between items were large enough to perform an EFA (i.e., $p<.05$). Common factor(s) were extracted utilizing a principal axis factoring method and direct oblimin rotation. Oblimin (oblique) rotation is often used when factors are assumed to be correlated and provides estimates of correlations among factors (Fabrigar et al., 1999).

Confirmatory Factor Analysis

I used R (R Core Team, 2021) to complete tests of confirmatory factor analysis (CFA) using the 'lavaan' (Rosseel, 2012) and 'semTools' (Jorgensen et al., 2018) packages. Due to chi-square being sensitive to large sample sizes and rejecting a good fitting model, other modification indices are recommended to establish goodness of fit (i.e., CFI, TLI, RMSEA, SRMR; Fan & Sivo, 2007). Additionally, in one-factor models, "few degrees of freedom can contribute to RMSEA incorrectly indicating a poor fit" (Kenny et al., 2015). As such, per the recommendations of Kenny and colleagues (2015), I determined goodness of fit with only the CFI, TLI, and SRMR indices. Good model fit is suggested by a CFI and TLI over .95 and SRMR under .05 (Hu & Bentler, 1999; Hu & Bentler, 1998). Acceptable model fit is indicated by a CFI and TLI over .90 and SRMR under .10 (Hu & Bentler, 1999; Hu & Bentler, 1998). The one-factor model was subsequently used as the configural model for the assessment of measurement invariance by gender and sexual orientation.

Measurement Invariance

I used multi-group confirmatory factor analysis to conduct measurement invariance by gender (i.e., men and women) and sexual orientation (i.e., heterosexual, sexual minority

identities) on R (R Core Team, 2021) using the maximum-likelihood estimation with robust standard errors (MLR; Satorra & Bentler, 2001). Measurement invariance is usually tested in four steps (Habashy et al., 2023).

1) *Configural Invariance*: Responses will demonstrate the same factor structure across groups.
2) *Metric Invariance*: If configural invariance is attained, I then tested whether the items in a measure have the same relationship to the underlying latent construct across groups (i.e., equivalent factor loadings; Xu & Tracey, 2017). As such, factor structure and factor loadings are equivalent across groups.
3) *Scalar Invariance*: If metric invariance is met, I then tested the equivalence of intercepts between groups. Support for scalar invariance suggests equivalent means between groups. As such, the factor structure, factor loadings, and factor intercepts are equivalent across groups.
4) *Residual Invariance*: Lastly, if scalar variance is found, I then tested the equivalence of errors. Residual invariance would suggest that the scale measures the same underlying construct between groups with an equivalent degree of accuracy (Borgogna et al., 2021).

Due to a disadvantage of the chi-square test being an overestimation of the discrepancy in goodness-of-fit in large samples (Davidov et al., 2014), I used various alternative global fit indices (i.e., CFI, TLI, RMSEA, and SRMR) to assess the relative/incremental goodness-of-fit of my models based on the robust maximum likelihood estimator (MLR). To assess for differences between successive measurement invariance models, I specifically examined the change in CFI (i.e., ΔCFI), RMSEA (i.e., ΔRMSEA), and SRMR (i.e., ΔSRMR) statistics. Consistent with recommendations from Chen (2007), a decline in CFI larger than 0.01, increases in RMSEA

larger than 0.015, and increases in SRMR larger than 0.030 indicated a significant worsening of fit. If the model failed to achieve metric, scalar, or strict invariance, I then examined the modification indices to establish which loadings, intercepts, or residuals led to the lack of invariance (van de Schoot et al., 2013).

Spearman's Rho Correlations

I conducted Spearman's Rho correlations on SPSS 28.0 (SPSS, Inc. Chicago, IL) to calculate initial associations between dichotomized variables (i.e., sexual trauma [child, adult, both]) and continuous variables (i.e., binge eating features, AUDIT sum score, anxiety, depression, depression and anxiety composite score, BMI, COVID-19 stress composite score, perceived social support/relatedness satisfaction, and perceived lack of social support/relatedness frustration).

Chi-Square of Independence

I conducted Pearson chi-square tests of independence on SPSS 28.0 (SPSS, Inc. Chicago, IL) to examine the effects of sociodemographic characteristics (i.e., age, gender, ethnic minority status, sexual orientation, and socioeconomic status) on the prevalence of binge eating features.

Analysis of Covariance (ANCOVA)

I conducted five separate one-way ANCOVAs on SPSS 28.0 (SPSS, Inc. Chicago, IL) to assess group differences on overall binge eating symptoms across sociodemographic characteristics (i.e., age, gender, race/ethnicity, sexual orientation, and education level) adjusting for BMI. Sociodemographic characteristics found to be significantly related to binge eating features will be treated as covariates. Holm-Bonferroni's post hoc was applied for Type I error correction in multiple comparisons.

Moderated Hierarchical Regressions

Moderated hierarchical regression models were conducted to test the interactions of COVID-19 pandemic stress/perceived social support/perceived lack of social support x areas of psychopathology on binge eating using SPSS 28.0. Prior to interpretation of model fit, assumptions of normality and homoscedasticity of residuals for the model were visually assessed using a scatterplot on SPSS 28.0. Independent variables were examined prior to analyses for collinearity. Predictor variables were centered around their grand mean to ease interpretation of main effects in models containing interaction terms (Aiken & West, 1991). Tests for moderation should include a term for the direct effect of the predictor, a term for the direct effect of the moderator, and the interaction of the predictor and moderator (Baron & Kenny, 1986).

To test the predictive effects on the dependent variable binge eating, four steps were conducted. In step one, all sociodemographic variables (i.e., age, gender identity, sexual orientation, highest level of education) and covariate (i.e., BMI) were entered into the model. In step two, the independent variables (psychopathology [i.e., anxiety and depression composite/sexual trauma/alcohol use] were conducted in separate analyses. In step three, the moderator variables (COVID-19 stress composite/perceived social support/lack of perceived social support) were entered in separate analyses. In step four, interaction terms (COVID-19 stress composite x psychopathology [i.e., anxiety and depression composite/sexual trauma/alcohol use]); perceived social support x psychopathology [i.e., anxiety and depression composite/sexual trauma/alcohol use]; perceived lack of social support x psychopathology [i.e., anxiety and depression composite/sexual trauma/alcohol use severity] were added to the model. A total of nine interactions were conducted.

Power Analysis

Power estimations were made using G-Power (version 3.1; Faul et al., 2009). Prior studies indicate that effect sizes for associations between sociodemographic characteristics (i.e., gender, race/ethnicity, sexual orientation) and binge eating are small-to-medium in magnitude (Grilo et al., 2015; Striegel et al., 2009). With a sample size of 2,005 and 12 predictive effects (i.e., age, gender identity, ethnic minority status, sexual orientation, highest level of education, BMI, composite score of depression and anxiety, sexual trauma, AUDIT sum score, COVID-19 stress composite, social support, lack of social support) the current study has at least 95% power of small-to-medium effect size. Although a sizable portion of the US population abstains from alcohol each year (e.g., 33.7%; Boersma et al., 2018), my current sample size is still adequately large enough for examining differences with alcohol use severity per the AUDIT.

For regression analyses, Stevens (1996, p.72) recommends about 15 participants per predictor which the proposed study meets criteria for all predictors. Additionally, Tabachnick and Fidell (2007) suggest using a formula for calculating sample size requirements: $N>50 + 8m$ (m=number of independent variables). Considering there will be two independent variables per hierarchical regression analyses, the current sample size is sufficient and meets recommendations.

Chapter 4 – Results

Descriptive Statistics

Means, standard deviations, skewness, and kurtosis of all study variables were examined prior to statistical analyses. All study variables were in the normal range for skewness ($\pm$2) and kurtosis ($\pm$7) except for the AUDIT sum score being slightly positively skewed (2.16) and was therefore log transformed prior to analyses. The frequencies for alcohol use severity over the past 12 months are as follows: 0-7 (*n*=1,499; 76.68%), 8-14 (*n*=215, 11%), 15-19 (*n*=40, 2.05%), 20+ (*n*=19, 0.97%). Considering lack of variability in reported alcohol use severity, I used the AUDIT sum score in all subsequent analyses.

There was minimal missing data on variables included in analyses: AUDIT sum score (*n*=182, 9.3%), anxiety and depression composite score (*n*=147; 7.5%), binge eating total score (*n*=195; 10%), BMI (*n*=238; 12.2%), relatedness frustration/perceived lack of social support (*n*=135, 6.9%), relatedness satisfaction/perceived social support (*n*=136, 7%), sexual abuse total score (*n*=7, 0.4%), COVID-19 stress (*n*=218, 11.2%). All variables were standardized prior to analyses to ease interpretation and to ensure that independent variables were centered for regression analyses.

Item Analysis

An item analysis was conducted on each of the BEDS-7 items (see Table 3). Two items were particularly noteworthy (i.e., item 3 [skewness=2.04; kurtosis=3.08] and item 7 [skewness= 8.11; kurtosis=73.08]) as they were rarely endorsed by participants. Inter-item correlations were also conducted on the seven items with correlations ranging from .24 to .91 (*M*=0.70), suggesting items, overall, fit well together. Item 7 (i.e., “how often did you make yourself vomit

as a means to control your weight or shape") had consistently low correlations with the other items suggesting poor fit.

Moreover, chi-squares of independence were also conducted to assess the prevalence of binge eating features among each sociodemographic group (i.e., gender, sexual orientation, age, level of education, ethnic minority status). Binary variables (yes/no) were created to assess any occurrence and no occurrence of binge eating features. As displayed in Tables 4-6, significant effects of gender on binge eating features appeared in which women reported higher endorsement than men across all items except for item 7. Those belonging to a gender minority group also endorsed higher binge eating features than men across all items except for item 7. Additionally, significant effects of sexual orientation emerged on binge eating features in which those belonging to a sexual minority group reported higher endorsement of binge eating than those who identified as heterosexual across all items apart from item 7.

Across age, significant effects were found across all items except for item 7 in which participants between the ages of 18-39 endorsed higher occurrence of binge eating features than those between the ages of 40-59 and ≥60 years old. Lastly, no significant effects were observed among level of education and ethnic minority status across all item responses. Considering low item endorsement and low inter-item correlations for item 7, it was taken into consideration when identifying item(s) to drop for factor analyses.

Exploratory Factor Analysis (EFA)

Computer-generated random seed on R was utilized to randomly split sample in half (*n*=977) and all items were entered into the EFA. Iterative principal axis factoring via the "fa" function in the psych package and oblique (Direct Oblimin) rotation was conducted in R. To determine which composite score to use in subsequent analyses, I conducted an EFA on the three

options described above (i.e., z-score items, total score of items, inflate first two items to correspond with rating scale on remaining five items). After running all options, only the composite score with z-scored items yielded results without errors and exhibited a high degree of internal consistency (α=0.96). As such, I proceeded using the z-scored binge eating composite score.

To evaluate the appropriateness of the data, the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity were calculated. The KMO was .91 and Bartlett's test was significant ($\chi^2(21)$ =13,514.36, p<0.001), suggesting that data was suitable for factor analysis. Results from parallel analysis, scree plot, and Kaiser-Guttman rule indicated a one factor structure, so I tested the one-factor solution labeled *binge eating features*. Table 7 displays results from the EFA. Items were retained if the factor loading was ≥.40. All items met this criterion apart from item seven (.31). The variance with all items in the model was 74.80%. Given low factor loading, poor inter-item correlations, and high skewness/kurtosis for item seven, it was dropped from the model. After removing item seven and the 50 participants which endorsed purging behaviors from the factor (as shown in Tables 4-6), the percentage of variance increased to 85.38%.

Confirmatory Factor Analysis (CFA)

A CFA was conducted on the other half of the randomly split data set (n=975). Due to chi-square being sensitive to large sample sizes and rejecting a good fitting model, other modification indices are recommended to establish goodness of fit (i.e., CFI, TLI, RMSEA, SRMR; Fan & Sivo, 2007). Result yielded that the one-factor, six-item model displayed acceptable fit in the sample ($\chi^2(9)$=311.58, p<.001; CFI=.957, TLI=.928, RMSEA=.186, SRMR=.021; see Figure 2 for standardized factor loadings).

Furthermore, fit statistics were conducted by gender and sexual orientation considering both identity characteristics included >200 participants in each group. As presented in Table 8, each subgroup displayed acceptable fit indices with the exception of the RMSEA results being outside the recommended range of an acceptable fitting model suggesting some degree of misfit between the observed data and measurement model (>.08). Despite some degree of misfit between the observed data and measurement model, the one-factor, six-item model achieved adequate fit in the CFA sample and subgroups according to the other fit indices and was retained as the configural model to test measurement invariance among gender and sexual orientation.

Measurement Invariance

Multigroup confirmatory factor analysis (MGCFA)

Multigroup confirmatory factor analyses (MGCFA) were conducted using the modified one-factor, six-item model across gender and sexual orientation. The configural model allowed factor loadings and intercepts to vary between gender and sexual orientation. All fit indices except for RMSEA suggested adequate fit statistics (Table 9). When loadings were constrained to be equivalent between gender and sexual orientation (i.e., metric model), the models did not appear to fit worse than the configural model as depicted by the small changes in CFI and SRMR statistics.

Next, scalar invariance implicates equality of item threshold meaning that no item responses are scientifically higher or lower in one group when compared to the other groups (Borgogna et al., 2021). Scalar invariance for both gender and sexual orientation models showed acceptable model fits except for RMSEA (i.e., ΔCFI and ΔSRMR never exceeded critical values of 0.015 and 0.030, respectively). Lastly, strict invariance reflects that the residual variances of each item are similar across groups. The fit indices except for RMSEA remained excellent for

the strict measurement invariances models for both gender and race/ethnicity (i.e., CFI, TLI, SRMR) as well as small differences in CFI and SRMR. Despite fit indices being adequate for most fit indices, the poor RMSEA statistics of the one-factor, six item BEDS-7 in each level indicated overall badness of fit. Given measurement non-invariance found for the model, a composite score assessing binge eating features was utilized in subsequent analyses (McNeish & Wolf, 2020).

Spearman's Rho Correlations

Spearman's rho correlations were conducted on the binge eating features composite score, COVID-19 stress, BMI, psychopathology (i.e., sexual trauma [child, adult, total score], depression, anxiety, depression and anxiety composite, AUDIT sum score) and perceived social support/lack of perceived social support (see Table 11). Binge eating features were significantly associated with all study variables. Due to the total/composite score of depression and anxiety and sexual trauma revealed slightly higher correlations with binge eating features, the total scores for these variables were used in the subsequent regression analyses.

Analysis of Covariance (ANCOVA)

Five separate one-way ANCOVAs were used to assess group differences on sociodemographic characteristics (i.e., age, ethnic minority status, gender, level of education, and sexual orientation) on binge eating features adjusting for BMI (see Table 11). Results revealed a significant difference in gender $F(2,1710)=33.79$, $p<.001$, $\eta_p^2=0.04$. Pairwise comparisons revealed a significant difference between cisgender men and cisgender women in which cisgender women reported higher means (M=0.16, SD=5.68) than cisgender men (M=-1.21, SD=4.25) with small effect size (d=.27). There was also a significant difference found among cisgender men and participants identifying as belonging to a gender minority in which those

belonging to a gender minority group endorsed higher means (M=1.00, SD=6.18) relative to cisgender men (M=-1.21, SD=4.25) with a small to medium effect size (d=.42). Significant effects were also observed across age $F(2, 1711)=34.99$, $p<.001$, $\eta_p^2=0.04$. Pairwise comparison revealed that those between the ages of 18-39 endorsed higher means (M=0.02, SD=5.57) compared to those between the ages of 40-59 (M=-1.11, SD=4.24) and $\geq$60 years old (M=-2.04, SD=3.11) with small and small to medium effect sizes (d=.23 and d=.46, respectively).

Significant differences emerged among sexual orientation $F(2, 1712)=34.99$, $p<.001$, $\eta_p^2=0.02$ in which those who identified as belonging to a sexual minority endorsed higher means (M=0.26, SD=5.65) compared to those who identified as heterosexual (M=-1.03, SD=4.59) with a small effect size (d=.25). There was a significant difference across level of education $F(1, 1712)=5.88$, $p<.05$, $\eta_p^2=0.003$) in which those with less than a college degree endorsed a higher mean (M=-0.02, SD=5.53) compared to those with a college or university degree (M=-0.50, SD=5.10). Lastly, there was no significant difference observed across those who belong to an ethnic minority compared to those who do not belong to an ethnic minority group, $F(1, 1709)=2.06$, p=.77.

Moderated Hierarchical Linear Regressions

Nine separate moderated hierarchical linear regressions were conducted to assess the interactions between areas of psychopathology (i.e., anxiety and depression composite, alcohol use severity, sexual trauma history) and COVID-19 stress/perceived social support/perceived lack of social support on SPSS 28.0. Areas of psychopathology were conducted in separate models to ensure that the effects of one predictor (i.e., area of psychopathology) did not account for more of the variance than the other. Preliminary analyses were also conducted to confirm no violation of the assumptions of homoscedasticity, linearity, and normality were also met. All

nine models included only the significant bivariate sociodemographic variables and BMI as covariates in step one (see Table 11).

First, I tested the interaction between the anxiety and depression composite score and COVID-19 stress on binge eating features (see model one, Table 12). All sociodemographic characteristics and the covariate BMI significantly predicted binge eating features except for level of education $F(5,1686)=52.87$; $p<.001$ and explained 14% of the variance. The second step built upon the first including the predictor anxiety and depression composite which explained an additional 6% of the variance ($R^2=20\%$) and was statistically significant $F(1,1685)=68.26$; $p<.001$. All sociodemographics and BMI were significant except for sexual orientation, which became nonsignificant, and level of education. Similar results were observed in the remaining steps for the covariates. In step three, the moderator COVID-19 stress was entered and significant effects were reported on binge eating features $F(7,1684)=60.16$; $p<.001$. Finally, in step four, main effects were observed for anxiety and depression and COVID-19 stress on binge eating features $F(8,1683)=52.81$; $p<.001$ $p=.26$ and did not explain any additional variance ($\Delta R^2=0.000$). The interaction between anxiety and depression composite and COVID-19 stress on binge eating features was nonsignificant ($\beta=.03$, $p=.26$)

Next, I proceeded to test the interactions between anxiety and depression composite and lack of social support/relatedness frustration on binge eating features (see Model 2, Table 13). All covariates were significant in step one except for level of education $F(5,1700)=52.49$; $p<.001$ and explained 13% of the variance. In steps two-four, all covariates were significant except for level of education and sexual orientation. When anxiety and depression composite score was entered to step two, it explained an additional 6% of variance and was statistically significant $F(6,1666)=68.34$; $p<.001$. Only main effects were observed for anxiety and depression

composite across steps two-four (β=.24, p<.001), but no statistically significant effects were found among the moderator relatedness frustration (β=.05, p=.06) in step three or the interaction between anxiety and depression composite and relatedness satisfaction in step four (β=.02, p=.32). Results for the interactions between anxiety and depression composite and social support/relatedness satisfaction on binge eating features are displayed in Table 14.

Similar results were found among model two looking at lack of support/relatedness frustration in which all covariate variables were significant except for level of education in step one for model three education $F(5,1699)=52.40$; p<.001 and explained 13% of the variance. In steps two, three, and four, all control variables were significant except for level of education and sexual orientation. In step two, the addition of anxiety and depression composite explained an additional 6% and was statically significant $F(6,1698)=68.24$; p<.001. In step three, the moderator relatedness satisfaction/perceived social support was nonsignificant (β=-0.004, p=.88) and did not explain any additional variance (ΔR^2=0.000). The interaction between anxiety and depression and relatedness satisfaction in Model 4 was also nonsignificant (β=-0.004, p=.86).

Next, I evaluated the interactive effects of alcohol use severity and COVID-19 stress on binge eating features (see Model 4, Table 15). All sociodemographic characteristics were significant across all steps except for level of education. When alcohol use severity was added in step two, significant effects were observed $F(6,1684)=45.71$; p<.001 and explained an additional 0.04% variance. In step three, the moderating effect of COVID-19 stress on binge eating features was significant $F(7,1683)= 42.14$; p<.001, but the interaction between alcohol use severity and COVID-19 stress on binge eating features in step four was nonsignificant and explained 15% of the variance (β=0.02, p=.33).

Model 5 displayed in Table 16 examined the interaction between alcohol use severity and perceived lack of social support/relatedness frustration on binge eating features. Consistent with Model 4, all sociodemographic characteristics were significant across all four steps except for level of education. Additionally, main effects were statistically significant in step four ($F(8,1696)=40.03$; $p<.001$) among alcohol use severity ($\beta=0.07$, $p<.05$) and perceived lack of social support/relatedness frustration on binge eating features ($\beta=0.07$, $p<.001$). However, the interactive effects between them were not statistically significant ($\beta=-0.01$, $p=.82$), explaining 15% of the variance.

The interaction between alcohol use severity and perceived social support/relatedness satisfaction on binge eating features is shown in Model 6 reported on Table 17. Except for level of education, all sociodemographic characteristics were significant across each step. Only main effects were significant for alcohol use severity on binge eating features ($\beta=0.07$, $p<.05$) and perceived social support/relatedness satisfaction ($\beta=-0.08$, $p<.05$) on binge eating features in step four $F(8,169)=37.06$; $p<.001$ explaining 15% of the variance. The interaction between these variables was not significant ($\beta=-0.03$, $p=.38$).

Next, I tested the interaction between sexual trauma and COVID-19 stress on binge eating features (see Model 7, Table 18). Sociodemographic characteristics were significant on binge eating features across each step except for level of education. In step four, sexual trauma and COVID-19 stress were significant on binge eating features $F(8,1678)=38.36$; $p<.001$ explaining 16% of the variance. However, the interaction between sexual trauma and COVID-19 stress on binge eating features was not observed to be statistically significant ($\beta=-0.04$, $p=.10$).

Then, I explored the interaction between sexual trauma and perceived lack of social support/relatedness frustration on binge eating features (see Model 8, Table 19). In this model,

sociodemographic characteristics were significant except for level of education in predicting binge eating features across step one $F(5,1694)= 52.35$; $p<.001$; $R^2=13\%$ and step two $F(6,1693)= 46.64$; $p<.001$; $R^2=14\%$. All covariates were significant on binge except for level of education and sexual orientation in step three $F(7,1692)= 46.55$; $p<.001$; $R^2=16\%$ and step four $F(8,1691)= 41.22$; $p<.001$; $\Delta R^2=0.002$. Although sexual trauma and perceived lack of social support/relatedness frustration exhibited main effects on binge eating feature, no interaction between these variables was found despite it trending towards significance (β =-0.04, p=.06).

Lastly, I analyzed the interaction between sexual trauma and perceived social support/relatedness satisfaction on binge eating features (see Model 9, Table 20). All covariates were significant across steps except for level of education. In step four, main effects were statistically significant among sexual trauma and perceived social support/relatedness satisfaction on binge eating features $F(8,1691)=37.46$; $p<.001$; $R^2=15\%$. The interaction between sexual trauma and perceived social support/relatedness satisfaction on binge eating features was not significant (β=0.01, p=.70).

Chapter 5 – Discussion

The current dissertation project examined binge eating features during the COVID-19 pandemic in a large and socio-demographically diverse US community sample. First, I conducted an EFA on half of the sample followed by a CFA on the other randomly split dataset to establish the best fitting model of the BEDS-7. Second, I tested for measurement invariance on the configural model across gender and sexual orientation. Third, I calculated the prevalence of binge eating features across various identity characteristics (i.e., age, gender, ethnic minority status, sexual orientation, level of education) of my sample. Fourth, I assessed for mean differences across gender, ethnic minority status, age, level of education, and sexual orientation on binge eating features adjusting for BMI. Lastly, I examined the interactions between areas of psychopathology (i.e., anxiety and depression composite, alcohol use severity, sexual trauma) and COVID-19 stress/perceived social support/perceived lack of social support. Overall, my dissertation results are the first to examine the measurement and assessment in various demographic sectors using the BEDS-7 during the COVID-19 pandemic. My dissertation findings contribute to the literature examining the differential effects of COVID-19 on binge eating features in a diverse sample of a community sample across the lifespan. In the following sections, I will review and summarize the findings for my study aims, discuss implications for the modified one-factor, six-item BEDS-7, and provide recommendations for future research directions.

Aim 1: Factor Structure of the BEDS-7

An EFA was utilized for two primary functions: (1) to determine the factor structure of the BEDS-7 to ensure that it was appropriate to test on a community sample and (2) to establish which composite score (i.e., z-scored items, straight sum score, inflated first two items) for the

BEDS-7 was most optimal in successive analyses. Only the composite score with z-scored items yielded results without errors and was employed to assess for overall binge eating features. Through a series of analyses, results revealed that a modified one-factor six-item model fit the data the best, confirming my hypothesis that the best fitting model would yield a one-factor structure. Item seven (purging behaviors - vomiting), endorsed low factor loading and poor correlations with other items. This makes theoretical sense considering this item was created as a rule out for bulimic behaviors. As such, item seven was removed from analyses and the remaining six items adequately assessed for binge eating symptomatology as consistent with the DSM-5 criteria for BED (APA, 2013).

Despite the individual items fitting well together conceptually and statistically based on high factor loadings ($\geq$.87), it indicated poor RMSEA results when conducting a CFA on the six-factor solution despite adequate fit indices with the CFI, TLI, and SRMR. Possible suggestions for this discrepancy may be due to low degrees of freedom in which for models with small degrees of freedom, the RMSEA appeared substantially elevated for correctly specified models even with moderate and large samples (e.g., N=1,000; Kenny et al., 2015). As per Kenny and colleagues (2015) recommendations to not discount models with high RMSEA values, I made the decision to accept the model based on other adequate fit indices (i.e., CFI, TLI, SRMR).

Aim 2: Measurement Invariance of the BEDS-7

Next, I performed multigroup confirmatory factor analysis (MGCFA) on the modified one-factor, six-item model across gender and sexual orientation. Findings revealed adequate fit with all indices except for RMSEA across each level of invariance in both groups. The one-factor, six-item BEDS-7 model demonstrated measurement non-invariance in this sample. Notably, given the different response scales on this measure (i.e., first two items were rated on a

dichotomous scale, remaining five items were rated on a four-point scale), each item needed to be z-scored/standardized to have equal range and variance. In sum, even with standardization across items, this measure may not be conducive to factor analytic approaches or latent variable modeling given different response scales and theoretical constraint in removing individual items to help better goodness of fit because all six items were based on DSM-5 criteria for BED (APA, 2013). Instead, this measure might be better suited for the purposes of screening for binge eating features as initially proposed by the scale developers.

Aim 3: Prevalence and Mean Differences of Binge Eating Features Across Sociodemographic Characteristics

Using the whole sample, I examined the prevalence and mean differences of each sociodemographic group (i.e., gender, sexual orientation, age, level of education, ethnic minority status) on binge eating features. As consistent with my third hypothesis, cisgender women endorsed higher prevalence of binge eating features than cisgender men across almost all items except item seven which had low endorsement by participants in general. Prior work suggests that those who identified as gender nonconforming endorsed higher means relative to cisgender men which partially supports evidence from research suggesting that people who identify as gender nonconforming have higher rates of disordered eating compared to those who are gender conforming/cisgender (Gordon et al., 2021).

Additionally, significant effects of sexual orientation emerged on binge eating features in which those belonging to a sexual minority reported higher endorsement of binge eating features than those who identified as heterosexual across all items apart from item 7. Higher binge eating features in those identifying as a sexual minority compared to heterosexual participants supports recent research indicating higher lifetime prevalence of eating disorders diagnoses among sexual

minority populations than heterosexual adults in the US (Nagata et al., 2020). The highest endorsement of items among sexual minority identities compared to those identifying as heterosexual included items 1 (i.e., episodes of overeating), 3 (i.e., loss of control over eating), 4 (i.e., continue to eat even though you were not hungry), and 6 (i.e., feeling disgusted or guilty after) suggesting higher objective binge eating episodes which is in line with prior research (Von Schell et al., 2018). Possible considerations for these disproportionate rates may be due to higher levels of stigma that are reported in individuals from sexual minority groups. This coupled with perceived shame and concealment of one's sexual identity can increase risk of disordered eating behaviors (e.g., binge eating) through social anxiety and body shame (Mason et al., 2016).

Across the life span, endorsement of binge eating features decreased as age increased which confirmed my fifth hypothesis that binge eating features would be more elevated between the ages of adulthood to middle adulthood and decrease slowly in later adulthood (Ward et al., 2019). Though there is much data to support that the median age of onset for binge eating occurs in early adulthood (i.e., 21 years old; Hudson et al., 2007), findings from the present study highlight that the prevalence of binge eating does not *only* affect younger adults. Specifically, results suggested that persons of all ages can be afflicted and treatment for binge eating throughout the lifespan is warranted to avoid further marginalization of older adults with disordered eating and contribute to additional health inequities.

Significant effects were also observed among level of education (i.e., high school or less versus college/university) when conducting an ANCOVA adjusting for BMI in which those with lower education attainment (i.e., less than college degree) endorsed higher binge eating features. This is consistent with previous research conducted in a community sample in which lower levels of socioeconomic status (SES) and lower levels of education attainment (i.e., high school

degree or less) experienced higher symptoms of BED compared to those who had higher levels of education. In fact, those with a high school degree or less were 1.79 times more likely to experience objective binge eating symptoms posttreatment than those with higher levels of education (Thompson-Brenner et al., 2013). One of the most common reasons for not seeking treatment for eating-related concerns is often attributed to cost (Bohrer et al., 2017).

Although SES was not directly evaluated in this study because it utilized a standardized sociodemographics questionnaire used across all 43 countries, in general, it is usually measured alongside level of education given their high overlap (Conger & Donnellan, 2007). Additionally, lower education attainment has been consistently cited to be associated with lower SES (APA, 2017) and can serve as a barrier for seeking treatment given those who are not covered by health insurance may be unable to afford out-of-pocket interventions (Bohrer et al., 2017). Additionally, those with diagnoses of AN and BN were found to be more likely than those with BED to seek treatment in a nationally representative sample of adolescents (Forrest et al., 2017). As such, there is a great need for equitable access to more affordable treatment targeting binge eating symptomatology for those from lower socioeconomic backgrounds living in the US.

Aim 4: Medical and Psychiatric Comorbidities on Binge Eating

Psychiatric comorbidities are common among binge eating features (Eisenberg et al., 2011), and findings from the current study further support the associations among binge eating features and all medical (BMI) and psychiatric comorbidities (i.e., depression, anxiety, sexual trauma, and alcohol use severity). Of all psychiatric comorbidities, the composite score of depression and anxiety appeared to have the strongest association which confirms prior findings suggesting that these are the most common predictors of eating disorder symptoms (Jacobi et al., 2004). Theoretical models that have acquired the most empirical support suggest that anxiety,

depression, and eating pathology could encompass a common etiology (De Young, 2012). One transdiagnostic risk factor that shares a common theory amongst all these disorders is emotion dysregulation (Sander et al., 2021). For example, elevated levels of anxiety and depression can lead to emotion dysregulation strategies such as binge eating which could result in heightened eating disorder psychopathology and vice versa (De Young, 2012).

The connection between sexual trauma and binge eating in this study had the next largest association which confirms previous research of sexual trauma and eating disorder psychopathology often co-occurring and frequently precedes eating disorder symptoms (Madowitz et al., 2015). Sexual trauma is considered a nonspecific or distal risk factor for the development of eating disorders. Survivors of sexual trauma may experience increased risk in the development of disordered eating symptoms and can be conceptualized in terms of a diathesis stress model (Madowitz et al., 2015). An individual might experience a diathesis (e.g., neurobiology and genetics) coupled with difficult life events (i.e., chronic or acute) that makes one vulnerable to engage in binge eating symptoms. One etiological pathway for engaging in binge eating may be a survivor's body dissatisfaction, body shame, and fear of potential further sexual trauma by becoming "unattractive" or "becoming bigger to become more intimidating" to protect oneself from future trauma (Berge et al., 2012).

Hazardous alcohol use consumption had the weakest positive association among binge eating features of all psychiatric comorbidities in the current study. Though part of the reason may be due to having a predominantly younger sample (~40% of sample are between the ages of 18-25 years old), this may also suggest important differences between binge eating and the addiction model (Fairburn, 2013). Research has suggested that those with binge eating disorder report an overvaluation of shape and weight (i.e., judging self-worth exclusively in terms of

weight and shape) at similar rates to those with bulimia nervosa (Fairburn, 2013; Wilson, 2010). This overvaluation of shape and weight plays a critical role in the maintenance of binge eating symptoms whereas those with alcohol use disorder do not show this psychopathology in the maintenance of the behavior. In other words, those with alcohol use disorder are not susceptible to abuse as a result of their desire to avoid it (Fairburn, 2013). Additionally, the rate of alcohol abuse in people who engage in binge eating behaviors may be higher than in the general population in epidemiological research (Fairburn, 2013); however, the rate is similar to that of individuals with other mental disorders (e.g., anxiety and depression) and so the association between binge eating and alcohol use disorder is not quite specific (Wilson, 2010).

Aim 5: Pandemic Stress Moderating the Association between Binge Eating and Psychopathology

COVID-19 stress and areas of psychopathology (i.e., depression and anxiety, sexual trauma, and alcohol use severity) were positively associated with binge eating features which partially supported my hypothesis. Findings build off recent research indicating many individuals experienced an increase in binge eating during the COVID-19 pandemic (Phillipou et al., 2020). A possible reason for this outcome is likely due to the relationship between higher psychological distress and higher risk for eating disturbances (Isomaa et al., 2010). Despite COVID-19 stress and areas of psychopathology (i.e., depression and anxiety, sexual trauma, and alcohol use severity) being positively linked with binge eating features, results herein did not suggest a moderating effect between these variables. As such, the effect of psychopathology on binge eating features did not appear to depend on the level of COVID-19 stress, rather the individual effects of psychopathology and COVID-19 stress.

Aim 6: Social Support Moderating the Association between Binge Eating and Psychopathology

Regression analyses partially supported my hypothesis in that perceived social support (i.e., relatedness satisfaction) was inversely related to binge eating features while perceived lack of social support (i.e., relatedness frustration) was positively associated with binge eating features. This confirms findings from a meta-analytic review that perceived social support may play a protective role in predicting binge eating behaviors (Stice, 2002), while lack of perceived social support may contribute to the opposite effect, as it is suggested to be closely linked to the concept of perceived loneliness which is also predictive of binge eating features (i.e., disconnection from other people; Mason et al., 2016). Although there were main effects found for all areas of psychopathology (i.e., depression and anxiety, sexual trauma, and alcohol use severity) and perceived social support/lack of perceived social support on binge eating features, there did not appear to be any interactions among them. In sum, higher levels of perceived social support did not appear to mitigate the effect of areas of psychopathology and binge eating features and higher levels of lack of perceived social support did not appear to increase risk between areas or psychopathology and binge eating features.

Limitations and Future Directions

Although there were notable strengths in the current study (e.g., equivalent ratio of cisgender men to cisgender women participants; approximately equivalent ratio of heterosexual participants to participants identifying as belonging to a sexual minority group), several limitations must be acknowledged in the present work. First, data were cross-sectional and thus are limited by their correlational nature. Examining the effects of COVID-19 longitudinally on binge eating (i.e., from the beginning of lockdown [March 2019] to May 2022 when data

collection completed) could have been beneficial in exploring the temporal precedence of these effects. In addition, comparing the prevalence rates of binge eating during COVID-19 lockdown versus before COVID-19 may have conceptual potential in trending toward significant interactive effects considering the substantial upsurgence observed in eating disorders during the outbreak of the COVID-19 pandemic (Rodgers et al., 2020).

Second, results from the modified one-factor, six-item BEDS-7 held mostly adequate fit indices, factor loadings, and strong item consistency; however, this measure did not achieve measurement invariance in the current sample. Future studies may benefit from replicating results within a clinical sample to determine if measurement invariance of the modified one-factor, six-item BEDS-7 could hold. If results lead to similar conclusions, it is plausible that this measure may not be suited for factor analysis and measurement invariance testing considering different scaling across items and removal of any additional items in the scale to potentially improve fit could consequently impact construct validity and its ability to accurately assess for DSM-5-TR binge eating symptoms (APA, 2022). Additionally, although this measure evaluated binge eating duration (i.e., during the last three months), it did not examine binge eating frequency which was a considerable limitation in most accurately assessing for binge eating disorder symptomatology. Future studies would benefit from utilizing measures that assess for both binge eating frequency and duration (e.g., EDE-Q; Fairburn & Beglin, 1994).

Third, though the self-report measure used to assess perceived social support and perceived lack of social support has been well-validated, the measure itself does not exclusively assess for level of social support. This measure also focuses more on general relatedness satisfaction and relatedness frustration but does not specify the types of relationships (e.g., family, friends, romance). For example, although there being general awareness of perceived

social support from others lessening symptoms of eating disorder psychopathology, the types of social relationships among eating disorder diagnoses may differ. Indeed, in a prior study examining social support among patients with AN and BN, results suggested that overall levels of social support were similar among AN and BN; however, those with AN were less likely to have a romantic partner than those with BN (Tiller et al., 1997). Additionally, those with BN were reportedly less significantly satisfied with the social support received from parents relative to those with AN (Tiller et al., 1997). How social support (including types) moderates binge eating remains largely unknown. As such, future research may benefit from including other measures (e.g., Multidimensional Scale of Perceived Social Support [MSPSS], Zimet et al., 1998) which examines the degree to which an individual experiences social support from family, friends, and significant others looking at binge eating.

Fourth, considering my dissertation project was part of a 43-country international study on sexual health and functioning (Bothe et al., 2021), many countries do not have as significant ethnic/racial diversity as found in the US, so I was only able to test ethnic minority status (yes/no) when examining the effects of race/ethnicity on binge eating features. This is a significant limitation for my study since belonging to an ethnic minority was categorized as a homogenous group and could potentially obscure group differences for the current sample as noted in recent work (Habashy et al., 2023). Future studies should consider exploring the role of COVID-19 stress on binge eating across diverse ethnic/racial groups to determine whether members belonging to certain racial/ethnic groups endorse differences across symptoms of binge eating.

Fifth, belonging to a gender/sexual minority group were both categorized into single groups instead of examining the experiences of binge eating symptoms among each individual

identity (e.g., gay, lesbian, bisexual, gender queer, transgender, asexual, pansexual). Assessing these effects across participants from distinct groups is important to better understand the uniqueness of identities among these populations. Also, the current study did not examine other dimensions of sexual orientation such as behavior and attraction. This would be vital to assess as health risks associated with one dimension of sexual orientation (i.e., identity) may differ from those associated with another (e.g., sexual behavior; Herek & Garnets, 2007). Indeed, research suggests all three dimensions of sexual orientation should be assessed whenever possible as although someone may self-identify as a certain sexual orientation, they may experience sexual attraction or behaviors that are not aligned with that identity (Scheer et al., 2003). Consequently, the current study may have potentially excluded a proportion of participants who have conflicting sexual identity, behaviors, and attractions from binge eating symptoms screening who could benefit from further evaluation and treatment.

Lastly, findings reported are from a community US sample who are primarily young and educated (see Table 2 for demographics). Results may not generalize to other populations such as cross-cultural samples and clinical samples of individuals diagnosed with an eating disorder by a licensed clinician. Future research may benefit from extending findings by examining these effects in various populations such as in other countries to ascertain the global effects of the COVID-19 pandemic on binge eating symptoms. Moreover, although the sample size was not restricted to age, participants who identified as older adults were a particularly small sample compared to other age groups. Future research is needed to examine a larger sample of older adults to replicate results of binge eating symptoms and co-occurring psychiatric disorders across the lifespan. Moreover, establishing the true prevalence of binge eating symptoms and other co-occurring disorders through the recruitment of a nationally representative sample is needed to

expand upon current findings, especially since further work is needed to spotlight any current health disparities for gender, sexual, racial/ethnic, and economic marginalized groups.

Practice Implications

Taken together, the prevalence of eating disorders in the US has been under studied and current rates may be underestimating the true burden of the disease, particularly after the effects of the COVID-19 pandemic. Findings from this study illuminate the need to routinely screen for binge eating symptoms in the community such as in primary care settings or other healthcare settings to combat barriers experienced by individuals who do not apply to the demographic stereotype of who experiences and suffers from an eating disorder (i.e., young White women; Habashy et al., 2023). Systematic screening of binge eating symptoms across age, gender identity, sexual orientation, and socioeconomic status/level of education in the community using the modified six-item BEDS-7 is recommended and may result in identifying individuals with elevated binge eating symptoms, who if identified during a medical or mental health appointment, could then be referred for further evaluation to determine the appropriateness of diagnosis and referral to treatment providers.

Appendix A – Sociodemographic Questionnaire

1. What sex were you assigned at birth (on your original birth certificate)?
   a. Male
   b. Female

2. What gender or gender identity do you identify with?
   a. Masculine/Man
   b. Feminine/Woman
   c. Indigenous or other cultural gender minority identity (e.g., two-spirit)
   d. Non-binary, gender fluid, or genderqueer
   e. Other (If you wish, tell us how you personally describe your gender):_____

3. Some people are trans (including transgender, transsexual, people having undergone a transition/gender-affirming process, etc.). Are you a trans person?
   a. No, I am not a trans person
   b. Yes, I am a trans man
   c. Yes, I am a trans woman
   d. Yes, I am a non-binary trans person
   e. I am questioning my gender identity
   f. I don't know what it means

4. People describe their sexual orientation in different ways. Which expression best describes your current sexual orientation? If no expression describes you, check "None of the above" and write the answer that describes you personally.
   a. Heterosexual/Straight
   b. Gay or lesbian or homosexual
   c. Heteroflexible
   d. Homoflexible
   e. Bisexual
   f. Queer
   g. Pansexual
   h. Asexual
   i. I do not know yet or I am currently questioning my sexual orientation
   j. None of the above, specify:_____
   k. I don't want to answer

5. Countries often differ in their tolerance concerning gender and sexual minorities. Please indicate your level of agreement with the following statements.

	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)
The country where I currently live is tolerant toward *gender minorities*.	O	O	O	O
The country where I currently live is tolerant toward *sexual minorities*.	O	O	O	O
I have fully accepted my *gender identity*.	O	O	O	O
I have fully accepted my *sexual orientation*.	O	O	O	O

6. How old are you? (years)
   Please write numbers only. _____

7. What is your highest level of education?

   a. Primary (e.g., elementary school)
   b. Secondary (e.g., high school)
   c. Tertiary (e.g., college or university)

8. Are you currently studying?
   a. Yes, in primary education (e.g., elementary school)
   b. Yes, in secondary education (e.g., high school)
   c. Yes, in tertiary education (e.g., college or university)
   d. No

9. Are you currently working?
   a. Yes, full time
   b. Yes, part-time
   c. Yes, I do odd jobs
   d. No

10. What is your current place of residence?
    a. Metropolis (population is over 1 million people)
    b. City (population is between 100,000-999,999 people)
    c. Town (population is between 1,000-99,999 people)
    d. Village (population is below 1,000 people)

11. Do you belong to any ethnic minority groups in your country (current place of residence)?
    a. No
    b. Yes, please specify: _____

12. In your opinion, how good are your life circumstances compared to others?
    a. My life circumstances are among the worst
    b. My life circumstances are much worse than average
    c. My life circumstances are worse than average
    d. My life circumstances are average
    e. My life circumstances are better than average
    f. My life circumstances are much better than average
    g. My life circumstances are among the best

Appendix B – Brief Symptom Inventory

During the past 7 days, how much were you distressed by:

1. Nervousness or shakiness inside.

   Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

2. Suddenly scared for no reason.

   Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

3. Feeling fearful.

   Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

4. Feeling tense or keyed up.

   Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

5. Spells of terror or panic.

   Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

6. Feeling so restless you couldn't sit still.

   Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

7. Thoughts of ending your life.

   Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

8. Feeling lonely.

   Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

9. Feeling blue.

   Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

10. Feeling no interest in things.

    Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

11. Feeling hopeless about the future.

Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

12. Feelings of worthlessness.

Not at all (0) A little bit (1) Moderately (2) Quite a bit (3) Extremely (4)

Appendix C – Basic Psychological Needs Satisfaction and Frustration Scale

Instructions: Below, we are going to ask about your actual experiences of certain feelings in your life. Please read each of the following items carefully. You can choose from 1 to 5 to indicate the degree to which the statement is true for you at this point in your life.

1. I feel a sense of choice and freedom in the things I undertake.
   Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

2. Most of the things I do feel like "I have to".
   Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

3. I feel that the people I care about also care about me.
   Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

4. I feel excluded from the group I want to belong to.
   Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

5. I feel confident that I can do things well.
   Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

6. I have serious doubts about whether I can do things well.
   Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

7. I feel that my decisions reflect what I really want.
   Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

8. I feel forced to do many things I wouldn't choose to do.
   Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

9. I feel connected with people who care for me, and for whom I care.
   Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

10. I feel that people who are important to me are cold and distant towards me.
    Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

11. I feel capable at what I do.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

12. I feel disappointed with many of my performances.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

13. I feel my choices express who I really am.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

14. I feel pressured to do too many things.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

15. I feel close and connected with other people who are important to me.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

16. I have the impression that people I spend time with dislike me.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

17. I feel competent to achieve my goals.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

18. I feel insecure about my abilities.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

19. I feel I have been doing what really interests me.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

20. My daily activities feel like a chain of obligations.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

21. I experience a warm feeling with the people I spend time with.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

22. I feel the relationships I have are just superficial.

Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

23. I feel I can successfully complete difficult tasks.
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

24. I feel like a failure because of the mistakes I make
Not true at all (1) 2 (2) 3 (3) 4 (4) Completely true (5)

Appendix D – Alcohol Use Disorders Identification Test

Instructions: The following questions are about your alcohol consumption. Please indicate which option best describes your answer to each question concerning the past 12 months.

1. How often do you have a drink containing alcohol?
   a. Never (0)
   b. Monthly or less (1)
   c. 2-4 times a month (2)
   d. 2-3 times a week (3)
   e. 4 or more times a week (4)

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   a. 1 or 2 (0)
   b. 3 or 4 (1)
   c. 5 or 6 month (2)
   d. 7 to 9 (3)
   e. 10 or more (4)

3. How often do you have six or more drinks on one occasion?
   a. Never (0)
   b. Less than monthly (1)
   c. Monthly (2)
   d. Weekly (3)
   e. Daily or almost daily (4)

4. How often during the last year have you found that you were not able to stop drinking once you had started?
   a. Never (0)
   b. Less than monthly (1)
   c. Monthly (2)
   d. Weekly (3)
   e. Daily or almost daily (4)

5. How often during the last year have you failed to do what was normally expected of you because of drinking?
   a. Never (0)
   b. Less than monthly (1)
   c. Monthly (2)
   d. Weekly (3)

e. Daily or almost daily (4)

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
   a. Never (0)
   b. Less than monthly (1)
   c. Monthly (2)
   d. Weekly (3)
   e. Daily or almost daily (4)

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
   a. Never (0)
   b. Less than monthly (1)
   c. Monthly (2)
   d. Weekly (3)
   e. Daily or almost daily (4)

8. How often during the last year have you been unable to remember what happened the night before because of your drinking?
   a. Never (0)
   b. Less than monthly (1)
   c. Monthly (2)
   d. Weekly (3)
   e. Daily or almost daily (4)

9. Have you or someone else been injured because of your drinking?
   a. No (0)
   b. Yes, but not in the last year (1)
   c. Yes, during the last year (2)

Appendix E – Sexual Abuse History Questionnaire

Instructions: We now know that many people have unwanted "sexual" or violent experiences as children or adults. Some of these are with playmates or friends and some with relatives or acquaintances. These experiences may be so upsetting that they may not be discussed with anyone. Sometimes they are forgotten for long periods of time, and sometimes they are frequently brought to mind. We would like you to help us understand these experiences that people may have. Please try to remember whether any of the following occurred to you.

1. Has anyone ever exposed the sex organs of their body to you when you did not want it?
    a) As a child (13 and younger)
        a. Yes
        b. No
    b) As an adult (14 and over)
        a. Yes
        b. No
2. Has anyone ever exposed the sex organs of their body to you when you did not want it?
    a) As a child (13 and younger)
        a. Yes
        b. No
    b) As an adult (14 and over)
        a. Yes
        b. No
3. Has anyone ever touched the sex organs of your body when you did not want this?
    a) As a child (13 and younger)
        a. Yes
        b. No
    b) As an adult (14 and over)
        a. Yes
        b. No
4. Has anyone ever made you touch the sex organs of their body when you did not want this?
    a) As a child (13 and younger)
        a. Yes
        b. No
    b) As an adult (14 and over)
        a. Yes
        b. No
5. Has anyone ever forced you to have sex when you did not want this?

a) As a child (13 and younger)
    a. Yes
    b. No
b) As an adult (14 and over)
    a. Yes
    b. No

6. Have you had any other unwanted sexual experiences not mentioned above? If yes, please specify:
    a) As a child (13 and younger)
        a. Yes
        b. No
    b) As an adult (14 and over)
        a. Yes
        b. No

Appendix F – COVID-19

1. Which of the following best describes your status for COVID-19 infection?
   a. I do not have COVID-19.
   b. I suspect that I may have COVID-19 but have not been tested.
   c. I am awaiting test results for COVID-19.
   d. I currently have COVID-19, as confirmed with testing.
   e. I previously had COVID-19 but have since recovered.
   f. I assume that I previously had COVID-19 but have not been tested. I have since recovered.
   g. Other: _____

2. Do you belong to any of the following risk groups?
   a. Age over 60 years
   b. Age over 40 years and chronic respiratory disease (e.g., asthma, COPD)
   c. Age over 40 years and chronic cardiovascular disease (e.g. infarct)
   d. Age over 40 years and glycaemia/diabetes
   e. Age over 40 years and cancer
   f. For other reasons: _____
   g. I do not belong to any of the risk groups

3. Have you engaged in social distancing (e.g., deliberately minimizing the contact you have with people and/or outside your home increasing the physical space between yourself and others)?
   a. Yes
   b. No

4. To what extent are you affected by the COVID-19 pandemic?

   Not at all (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) Very much (7)

5. How would you rate the amount of stress in your life related to COVID-19?

   No stress (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) Extreme stress (7)

Appendix G – Binge Eating Disorder Screener-7

The following questions ask about your eating patterns and behaviors within the <u>past 3 months</u>.

1. During the last 3 months, did you have any episodes of excessive overeating (i.e., eating significantly more than what most people would eat in a similar period of time)?
   a. Yes
   b. No

2. Do you feel distressed about your episodes of excessive overeating?
   c. Yes
   d. No

3. During your episodes of excessive overeating, how often did you feel like you had no control over your eating (e.g., not being able to stop eating, feel compelled to eat, or going back and forth for more food)?

   Never or rarely (0) Sometimes (1) Often (2) Always (3)

4. During your episodes of excessive overeating, how often did you continue eating even though you were not hungry?

   Never or rarely (0) Sometimes (1) Often (2) Always (3)

5. During your episodes of excessive overeating, how often were you embarrassed by how much you ate?

   Never or rarely (0) Sometimes (1) Often (2) Always (3)

6. During your episodes of excessive overeating, how often did you feel disgusted with yourself or guilty afterward?

   Never or rarely (0) Sometimes (1) Often (2) Always (3)

7. During your episodes of excessive overeating, how often did you make yourself vomit as a means to control your weight or shape?

   Never or rarely (0) Sometimes (1) Often (2) Always (3)

Appendix H - Tables

Table 1. Self-Report Screening Measures for Binge Eating

Authors (year)	Measure	Item Number	Subscales and Measure Utility	Cut-off Score
Herman et al. (2016)	Binge Eating Disorder Screener-7 (BEDS-7)	7 items	Assesses binge eating disorder based on DSM-5 criteria.	No cut-off score provided.
Thelen et al. (1991)	Bulimic Investigatory Test (BUILT-R)	36 items	Assesses binge eating and bulimia nervosa.	>98
Garner et al. (1982)	Eating Attitudes Test-26 (EAT-26)	26 items	Measures eating disorder attitudes and behaviors in three subscales: dieting, (2) bulimia/food preoccupation, (3) oral control.	>20
Fairburn et al. (1994)	Eating Disorder Examination Questionnaire (EDE-Q)	36 items	Measures eating disorder behaviors and attitudes in four subscales: (1) dietary restraint, (2) shape concerns, (3) weight concerns, (4) eating concerns. Also assesses for binge eating, laxative use, compensatory vomiting, and excessive exercise.	>4 on subscales, endorsing one or more objective binge eating episodes and one or more behavior episodes (e.g., vomiting, laxatives, diuretics, exercise).
Stice et al. (2000)	Eating Disorder Diagnostic Scale (EDDS)	22 items	Screens for AN, BN, and BED as well as assesses for eating disorder behaviors (e.g., fasting, vomiting, laxative use)	Different scoring instructions based on ED diagnosis.
Forbush et al. (2013)	Eating Pathology Symptoms Inventory (EPSI)	45 items	Assesses eating disorder dimensions in eight subscales: (1) body dissatisfaction, (2) binge eating, (3) cognitive restraint, (4) purging, (5) restricting, (6) exercise, (7) negative attitudes towards obesity, (8) muscle building.	No cut-off score provided.

Table 2. Demographic Statistics of Sample

Characteristics (*N*=2005)	Frequency	Percentage	Mean (SD)
Age			33.83 (15.03)
18-25	799	39.9%	
26-33	405	20.2%	
34-41	265	13.2%	
42-49	198	9.9%	
50-57	142	7.1%	
58-65	95	4.7%	
66+	100	5.0%	
Gender			
Male	919	45.8%	
Female	911	45.4%	
Gender Minority (e.g., non-binary)	174	8.6%	
Sexual Orientation			
Heterosexual	1015	50.6%	
Sexual Minority (e.g., gay, lesbian)	990	49.4%	
Ethnic Minority Status			
No	1509	75.3%	
Yes	493	24.6%	
Education			
Primary (e.g., elementary school)	5	.2%	
Secondary (e.g., high school)	411	20.5%	
Tertiary (e.g., college or university)	1589	79.3%	
Body Mass Index (BMI)			27.90 (6.93)
Underweight (<18.5)	64	3.2%	
Normal Weight (18.5-24.9)	664	33.1%	
Overweight (25-29.9)	462	23.0%	
Obese (>30)	575	28.7%	
Missing	240	12.0%	

Note. SD=standard deviation.

Table 3. Descriptive Statistics for the Binge Eating Disorder Screener-7

	Descriptives			*Inter-item Correlations*						
Items	**Mean (SD)**	**Skewness**	**Kurtosis**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. Episodes of excessive overeating	.29 (.45)	.94	-1.13	-	.81	.76	.84	.77	.81	.24
2. Feeling distressed about episodes of excessive overeating	.20 (.40)	1.47	.17		-	.81	.81	.83	.85	.25
3. No control over eating	**.38 (.79)**	**2.04**	**3.08**			-	.85	.82	.84	.30
4. Continue eating even though you were not hungry	.46 (.85)	1.69	1.60				-	.82	.83	.30
5. Embarrassed by how much you ate	.45 (.93)	1.88	2.09					-	.91	.30
6. Feeling disgusted or guilty	.51 (1.00)	1.71	1.33						-	.30
7. Make yourself vomit to control weight or shape	**.04 (.28)**	**8.11**	**73.08**							**-**

Note. Skewness (-2.0 to +2.0) and kurtosis (-7.0 + 7.0). SD=standard deviation. Items that are bolded exceeded skewness and/or kurtosis range.

Table 4. Chi-Square Results for BEDS-7 Items on Gender and Sexual Orientation

	Binge Eating Frequencies					
	Sociodemographic Characteristics					
	Gender Identity				χ^2 Tests	
Items	Men	Women	Gender Minority	Total	χ^2	Cramer's V
Item 1	190_a, 629_b	269_a, 557_b	63_a, 101_b	522_a, 1287_b	25.61**	.12
Item 2	111_a, 697_b	205_a, 610_b	48_a, 115_b	364_a, 1422_b	41.67**	.15
Item 3	130_a, 689_b	220_a, 604_b	58_a, 106_b	408_a, 1399_b	47.36**	.11
Item 4	164_a, 655_b	249_a, 575_b	59a, 105_b	472_a, 1335_b	52.98**	.12
Item 5	134_a, 685_b	226_a, 598_b	49_a, 115_b	409_a, 1398_b	52.66**	.12
Item 6	145_a, 674_b	236_a, 588_b	55_a, 109_b	436_a, 1371_b	59.61**	.13
Item 7	11_a, 808_b	33_a, 791_b	6_a, 158_b	50_a, 1757_b	17.36	.07
	Sexual Orientation				χ^2 Tests	
Items	Heterosexual		Sexual Minority	Total	χ^2	Cramer's V
Item 1	213_a, 694_b		309_a, 594_b	522_a, 1288_b	24.41**	.12
Item 2	141_a, 753_b		223_a, 670_b	364_a, 1423_b	23.31**	.11
Item 3	154_a, 752_b		254_a, 648_b	408_a, 1400_b	36.14**	.14
Item 4	185_a, 721_b		287_a, 615_b	472_a, 1336_b	32.61**	.13
Item 5	162_a, 744_b		166_a, 655_b	409_a, 1399_b	25.19**	.12
Item 6	171_a, 735_b		265_a, 637_b	436_a, 1372_b	28.65**	.13
Item 7	29_a, 886_b		30_a, 872_b	50_a, 1758_b	4.26	.05

Note. $^{**}p<.001$, $^{*}p<.05$; $_a$=yes/any occurrence, $_b$=no occurrence; χ^2=chi-square

Table 5. Chi-Square Results for BEDS-7 Items on Age and Education Level

	Binge Eating Frequencies					
	Sociodemographic Characteristics					
	Age				χ^2 Tests	
Items	Adult (18-39)	Middle Age (40-59)	Older Adult (60+)	Total	χ^2	Cramer's V
Item 1	402_a, 871_b	99_a, 287_b	21_a, 130_b	522_a, 1288_b	22.97**	.11
Item 2	289_a, 969_b	65_a, 318_b	10_a, 136_b	364_a, 1423_b	24.44**	.12
Item 3	327_a, 945_b	66_a, 320_b	15_a, 135_b	408_a, 1400_b	34.66**	.10
Item 4	365_a, 907_b	90_a, 296_b	17a, 133_b	472_a, 1336_b	33.40**	.10
Item 5	328_a, 944_b	66_a, 320_b	15_a, 135_b	409_a, 1399_b	58.17**	.13
Item 6	348_a, 924_b	75_a, 311_b	13_a, 137_b	436_a, 1372_b	63.10**	.19
Item 7	43_a, 1229_b	7_a, 379_b	0_a, 150_b	50_a, 1758_b	8.71	.07
	Education Level				χ^2 Tests	
Items	Less than College		College or Higher	Total	χ^2	Cramer's V
Item 1	123_a, 257_b		399_a, 1031_b	522_a, 1288_b	2.92	.04
Item 2	81_a, 293_b		283_a, 1130_b	364_a, 1423_b	0.48	.02
Item 3	96_a, 284_b		312_a, 1116_b	408_a, 1400_b	2.24	.04
Item 4	108_a, 272_b		364_a, 1064_b	662_a, 1336_b	3.35	.04
Item 5	98_a, 282_b		311_a, 1117_b	409_a, 1399_b	9.78	.07
Item 6	101_a, 279_b		335_a, 1093_b	436_a, 1372_b	6.78	.06
Item 7	15_a, 365_b		35_a, 1393_b	50_a, 1758_b	3.89	.05

Note. $^{**}p<.001$, $^{*}p<.05$; $_a$=yes/any occurrence, $_b$=no occurrence; χ^2=chi-square

Table 6. Chi-Square Results for BEDS-7 Items on Ethnic Minority Status

	Binge Eating Frequencies				
	Sociodemographic Characteristics				
	Ethnic Minority Status			χ^2 Tests	
Items	Yes	No	Total	χ^2	Cramer's V
Item 1	132_a, 322_b	389_a, 964_b	521_a, 1286_b	0.02	.003
Item 2	90_a, 355_b	273_a, 1066_b	363_a, 1421_b	0.01	.002
Item 3	100_a, 354_b	307_a, 1044_b	407_a, 1398_b	1.85	.03
Item 4	125_a, 329_b	346_a, 1005_b	471_a, 1334_b	5.07	.05
Item 5	105_a, 349_b	303_a, 1048_b	408_a, 1397_b	0.62	.02
Item 6	117_a, 337_b	318_a, 1033_b	435_a, 1370_b	6.78	.06
Item 7	11_a, 443_b	39_a, 1312_b	50_a, 1755_b	1.04	.02

Note. $^{**}p<.001$, $^{*}p<.05$; $_a$=yes/any occurrence, $_b$=no occurrence; χ^2=chi-square

Table 7. Exploratory Factor Analysis (EFA) Results for the BEDS-7

	EFA Results		
Items	**Factor Loadings**	**% of variance with all items**	**% of variance with 6 items**
1. Episodes of excessive overeating	.87	74.80	85.38
2. Feeling distressed about episodes of excessive overeating	.90	12.75	4.51
3. No control over eating	.89	3.84	3.70
4. Continue eating even though you were not hungry	.92	3.14	2.96
5. Embarrassed by how much you ate	.90	2.52	2.00
6. Feeling disgusted or guilty	.94	1.71	1.45
7. Make yourself vomit to control weight or shape	**.31**	**1.24**	**-**

Note. BEDS-7 = Binge Eating Disorder Screener-7. Item in bold was removed from analyses given low factor loading (>.40). Analysis yielded one factor with direct (oblimin) rotation. Results with all items explained approximately 75% of variance. Results with six items explained approximately 85% of variance.

Table 8. Summary of CFA of the One-Factor, Six-Item BEDS-7 by Gender and Sexual Orientation

Model	Characteristic	χ^2 (df)	CFI	TLI	RMSEA [90% CI]	SRMR
1-factor, 6-items	Men	169.98 (9)	0.95	0.92	0.184 [0.119, 0.254]	0.028
	Women	167.82 (9)	0.95	0.92	0.197 [0.148, 0.249]	0.022
	Heterosexual	119.43 (9)	0.98	0.96	0.139 [0.071, 0.209]	0.018
	Sexual Minority	214.57 (9)	0.94	0.91	0.212 [0.166, 0.261]	0.025

Note. CFA = Confirmatory Factor Analysis; BEDS-7= Binge Eating Disorder Screener-7; χ^2 =chi-square; df=degrees of freedom; CFI=Comparative Fit Index (cutoff ≥.90); TLI=Tucker Lewis Index (cutoff ≥.90); RMSEA=Root Mean Square Error of Approximation (cutoff <.08); CI=confidence interval; SRMR=Standardized Root Mean Square Residual (cutoff<.08; Hu and Bentler, 1999). Chi-square was significant in each subgroup.

Table 9. MGCFA of the One-Factor, Six-Item BEDS-7 by Gender and Sexual Orientation

Model	χ^2 (df)	CFI	TLI	RMSEA [90% CI]	SRMR	ΔCFI	ΔRMSEA	ΔSRMR	Difftest χ^2 (df)
Gender									
Configural	613.34 (18) *	0.952	0.919	0.194 [0.166, 0.224]	0.022				
Metric	650.96 (23) *	0.950	0.934	0.176 [0.151, 0.199]	0.042	0.002	0.018	0.020	12.26 (5) *
Scalar	658.34 (28) *	0.949	0.946	0.159 [0.139, 0.180]	0.042	0.001	0.017	0.000	7.52 (5)
Strict	721.10 (29) *	0.946	0.944	0.161 [0.138, 0.184]	0.047	0.003	-0.002	-0.005	2.19 (1)
Sexual Orientation									
Configural	557.36 (18) *	0.961	0.936	0.175 [0.148, 0.204]	0.020				
Metric	588.20 (23) *	0.960	0.948	0.158 [0.134, 0.182]	0.036	0.001	0.017	0.016	11.13 (5) *
Scalar	599.63 (28) *	0.959	0.957	0.144 [0.124, 0.165]	0.037	0.001	0.006	0.001	11.15 (5) *
Strict	752.95 (29) *	0.949	0.947	0.159 [0.137, 0.182]	0.044	0.010	-0.015	-0.007	5.92 (1) *

Note. Binge Eating Disorder Screener-7; X^2 =chi-square; df=degrees of freedom; MGCFA = Multigroup Confirmatory Analysis; CFI = comparative fit index; TLI=Tucker–Lewis index; RMSEA=root mean square error of approximation; CI = confidence interval; SRMR=Standardized Root Mean Square Residual. The chi-square ($\chi^{2)}$ Difftest (difference test) was conducted on R using the 'lavaan' model and measEq.syntax for multiple-group CFA in which a sequence of chi-squared differenced tests were conducted. *p<.001

Table 10. Descriptive Statistics for Study Variables

	Binge Eating	COVID-19 Stress	CSA	ASA	TSA	BMI	Depression	Anxiety	Depression & Anxiety	Alcohol Use	RS	RF
Binge Eating	-	0.13**	0.13**	0.15**	0.16**	0.27**	0.28**	0.26**	0.39**	0.06**	-0.13**	0.18**
COVID-19 Stress		-	0.05*	0.15**	0.14**	0.02	0.22**	0.27**	0.26**	0.05	0.02	0.09**
CSA			-	0.37**	0.72**	0.08**	0.13**	0.17**	0.16**	0.04	-0.06	0.10**
ASA					0.88**	-0.03	0.16**	0.25**	0.22**	0.17**	-0.01	0.08**
TSA					-	0.02	0.17**	0.25**	0.23**	0.15**	-0.03	0.09**
BMI						-	-0.04	-0.09**	-0.07**	0.05	0.03	-0.02
Depression							-	0.66**	0.92**	0.03	-0.45**	0.57**
Anxiety								-	0.90**	0.01	-0.26**	0.41**
Depression & Anxiety									-	0.02	-0.40**	0.54**
Alcohol Use										-	0.06*	-0.06*
RS											-	-0.69**
RF												-
Descriptive Data												
Mean	0.00	8.30	0.84	1.46	2.33	27.90	6.97	6.33	13.30	0.55	15.98	8.53
(SD)	(5.52)	(3.20)	(1.50)	(1.82)	(2.83)	(6.93)	(6.27)	(5.82)	(10.97)	(0.38)	(3.62)	(3.86)

Note. CSA=child sexual abuse; ASA=adult sexual abuse; TSA= total sexual abuse; BMI=Body Mass Index; RS=relatedness satisfaction; RF=relatedness frustration; SD=standard deviation. **r_s<0.001., *r_s<0.05

Table 11. ANCOVA Results for Sociodemographic Characteristics on Binge Eating

	Binge Eating					
Sociodemographic Characteristics	Mean	SD	*df*	*F*	*p*	Partial Eta Squared (η_p^2)
Gender			2	33.79	<.001	0.038
Male	-1.21	4.25				
Female	0.16	5.68				
Gender Minority	1.00	5.18				
Age			2	34.99	<.001	0.039
Adult (18-39)	0.02	5.57				
Middle aged adult (40-59)	-1.11	4.24				
Older adult (60+)	-2.04	3.11				
Sexual Orientation			1	29.18	<.001	0.02
Heterosexual/Straight	-1.03	4.59				
Sexual Minority	0.26	5.65				
Belonging to an Ethnic Minority						
Yes	-0.33	5.20	1	2.06	.77	0.00
No	-0.43	5.17				
Level of Education						
Less than College	-0.02	5.53	1	5.88	<.05	0.003
College or University	-0.50	5.10				

Note: ANCOVA=analysis of covariance; SD=standard deviation; *df*=degrees of freedom; BMI included as a covariate in the models.

Table 12. Hierarchical Regressions for Anxiety/Depression, COVID-19 Stress, and Binge Eating

		Binge Eating			
	Variables	**Step 1** **β**	**Step 2** **β**	**Step 3** **β**	**Step 4** **β**
Model 1	***Step 1: Covariates***				
	Age	-0.14**	-0.09**	-0.09**	-0.09**
	Education Level	-0.03	0.01	0.01	0.01
	Sexual Orientation	0.06*	0.02	0.02	0.02
	Gender	0.11*	0.07*	0.07*	0.07*
	BMI	0.32**	0.32**	0.32**	0.32**
	Step 2: Predictor				
	Anxiety and Depression Composite		0.27**	0.26**	0.26**
	Step 3: Moderator				
	COVID-19 Stress			0.05*	0.05*
	Step 4: Interaction Effect				
	Anxiety and Depression Composite x COVID-19 Stress				0.03
	R^2	0.14	0.20	0.20	0.20
	ΔR^2	-	0.06	0.002	0.001
	F	52.87**	69.26**	60.16**	52.81**
	ΔF	-	130.84*	4.69*	1.28

Note. Standardized beta coefficients are displayed. *p<.05; **p<.001

Table 13. Hierarchical Regressions for Anxiety/Depression, Relatedness Frustration, and Binge Eating

		Binge Eating			
	Variables	**Step 1** β	**Step 2** β	**Step 3** β	**Step 4** β
Model 2	***Step 1: Covariates***				
	Age	-0.14**	-0.09**	-0.09**	-0.09**
	Education Level	-0.03	0.01	0.01	0.01
	Sexual Orientation	0.06*	0.02	0.02	0.02
	Gender	0.11*	0.07*	0.07*	0.07*
	BMI	0.32**	0.32**	0.32**	0.32**
	Step 2: Main Effect				
	Anxiety and Depression		0.27**	0.25**	0.24**
	Step 3: Moderator				
	Relatedness Frustration			0.05	0.04
	Step 4: Interaction Effect				
	Anxiety and Depression x Relatedness Frustration				0.02
	R^2	0.13	0.19	0.20	0.20
	ΔR^2	-	0.06	0.002	0.000
	F	52.49**	68.34**	59.20**	51.93
	ΔF	-	127.99**	3.69	1.01

Note. Standardized beta coefficients are displayed. *p<.05; **p<.001

Table 14. Hierarchical Regressions for Anxiety/Depression, Relatedness Satisfaction, and Binge Eating

		Binge Eating			
	Variables	**Step 1** β	**Step 2** β	**Step 3** β	**Step 4** β
Model 3	***Step 1: Covariates***				
	Age	-0.14**	-0.08**	-0.08**	-0.08**
	Education Level	-0.03	0.01	0.01	0.01
	Sexual Orientation	0.06*	0.02	0.02	0.02
	Gender	0.10**	0.07*	0.07*	0.07*
	BMI	0.32**	0.32**	0.32**	0.32**
	Step 2: Main Effect				
	Anxiety and Depression		0.27**	0.27**	0.27**
	Step 3: Moderator				
	Relatedness Satisfaction			-0.004	-0.003
	Step 4: Interaction Effect				
	Anxiety and Depression x Relatedness Satisfaction				-0.004
	R^2	0.13	0.19	0.19	0.19
	ΔR^2	-	0.06	0.000	0.000
	F	52.40**	68.24**	58.46**	51.13**
	ΔF	-	127.91**	0.02	0.03

Note. Standardized beta coefficients are displayed. *p<.05; **p<.001,

Table 15. Hierarchical Regressions for Alcohol Use, COVID-19 Stress, and Binge Eating

		Binge Eating			
	Variables	**Step 1** β	**Step 2** β	**Step 3** β	**Step 4** β
Model 4	***Step 1: Covariates***				
	Age	-0.14**	-0.14**	-0.14**	-0.14**
	Education Level	-0.03	-0.03	-0.04	-0.04
	Sexual Orientation	0.06*	0.06*	0.05*	0.05*
	Gender	0.11**	0.11**	0.10**	0.10**
	BMI	0.32**	0.32**	0.32**	0.32**
	Step 2: Main Effect				
	Alcohol Use		0.07*	0.06*	0.06*
	Step 3: Moderator				
	COVID-19 Stress			0.10**	0.10**
	Step 4: Interaction Effect				
	Alcohol Use x COVID-19 Stress				0.02
	R^2	0.14	0.14	0.15	0.15
	ΔR^2	-	0.004	0.009	0.000
	F	52.91**	45.71**	42.14**	36.99**
	ΔF	-	8.55*	17.95**	0.96

Note. Standardized beta coefficients are displayed. *p<.05; **p<.001

Table 16. Hierarchical Regressions for Alcohol Use, Relatedness Frustration, and Binge Eating

		Binge Eating			
	Variables	**Step 1** β	**Step 2** β	**Step 3** β	**Step 4** β
Model 5	***Step 1: Covariates***				
	Age	-0.14**	-0.14**	-0.12**	-0.12**
	Education Level	-0.03	-0.03	-0.02	-0.02
	Sexual Orientation	0.06*	0.06*	0.05*	0.05*
	Gender	0.11**	0.11**	0.10**	0.10**
	BMI	0.32**	0.32**	0.32**	0.31**
	Step 2: Main Effect				
	Alcohol Use		0.07*	0.07*	0.07*
	Step 3: Moderator				
	Relatedness Frustration			0.15**	0.16**
	Step 4: Interaction Effect				
	Alcohol Use x Relatedness Frustration				-0.009
	R^2	0.13	0.14	0.16	0.16
	ΔR^2	-	0.004	0.021	0.000
	F	52.53**	45.36**	45.77**	40.03**
	ΔF	-	8.39*	41.67**	0.05

Note. Standardized beta coefficients are displayed. *p<.05; **p<.001

Table 17. Hierarchical Regressions for Alcohol Use, Relatedness Satisfaction, and Binge Eating

		Binge Eating			
	Variables	**Step 1** β	**Step 2** β	**Step 3** β	**Step 4** β
Model 6	***Step 1: Covariates***				
	Age	-0.14**	-0.14**	-0.13**	-0.13**
	Education Level	-0.03	-0.03	-0.02	-0.02
	Sexual Orientation	0.06*	0.06*	0.06*	0.06*
	Gender	0.11**	0.11**	0.11**	0.11**
	BMI	0.32**	0.32**	0.32**	0.32**
	Step 2: Main Effect				
	Alcohol Use		0.07*	0.07*	0.07*
	Step 3: Moderator				
	Relatedness Satisfaction			-0.10**	-0.08**
	Step 4: Interaction Effect				
	Alcohol Use x Relatedness Satisfaction				-0.03
	R^2	0.13	0.14	0.15	0.15
	ΔR^2	-	0.004	0.010	0.000
	F	52.44**	45.29**	42.25**	37.06**
	ΔF	-	8.39*	20.85**	0.76

Note. Standardized beta coefficients are displayed. *p<.05; **p<.001

Table 18. Hierarchical Regressions for Sexual Trauma, COVID-19 Stress, and Binge Eating

		Binge Eating			
	Variables	**Step 1** β	**Step 2** β	**Step 3** β	**Step 4** β
Model 7	***Step 1: Covariates***				
	Age	-0.14**	-0.14**	-0.14**	-0.14**
	Education Level	-0.02	-0.03	-0.04	-0.04
	Sexual Orientation	0.06*	0.05*	0.04	0.04
	Gender	0.11**	0.08*	0.07*	0.07*
	BMI	0.32**	0.31*	0.31**	0.31**
	Step 2: Main Effect				
	Sexual Trauma		0.10**	0.10**	0.10**
	Step 3: Moderator				
	COVID-19 Stress			0.10**	0.10**
	Step 4: Interaction Effect				
	Sexual Trauma x COVID-19 Stress				-0.04
	R^2	0.14	0.15	0.15	0.16
	ΔR^2	-	0.009	0.009	0.001
	F	52.69**	47.36**	43.41**	38.36**
	ΔF	-	18.04**	16.98**	2.73

Note. Standardized beta coefficients are displayed. *p<.05; **p<.001

Table 19. Hierarchical Regressions for Sexual Trauma, Relatedness Frustration, and Binge Eating

		Binge Eating			
	Variables	**Step 1** β	**Step 2** β	**Step 3** β	**Step 4** β
Model 8	***Step 1: Covariates***				
	Age	-0.14**	-0.14**	-0.12**	-0.12**
	Education Level	-0.02	-0.03	-0.02	-0.02
	Sexual Orientation	0.06*	0.05*	0.04	0.04
	Gender	0.11**	0.08*	0.07*	0.07*
	BMI	0.32**	0.31*	0.30**	0.30**
	Step 2: Main Effect				
	Sexual Trauma		0.10**	0.09**	0.09**
	Step 3: Moderator				
	Relatedness Frustration			0.14**	0.15**
	Step 4: Interaction Effect				
	Sexual Trauma x Relatedness Frustration				-0.04
	R^2	0.13	0.14	0.16	0.16
	ΔR^2	-	0.01	0.02	0.002
	F	52.35**	46.64**	46.55**	41.22**
	ΔF	-	15.78**	39.62**	3.48

Note. Standardized beta coefficients are displayed. *p<.05; **p<.001

Table 20. Hierarchical Regressions for Sexual Trauma, Relatedness Satisfaction, and Binge Eating

		Binge Eating			
	Variables	**Step 1** β	**Step 2** β	**Step 3** β	**Step 4** β
Model 9	***Step 1: Covariates***				
	Age	-0.14**	-0.14**	-0.13**	-0.13**
	Education Level	-0.03	-0.03	-0.02	-0.02
	Sexual Orientation	0.06*	0.05*	0.05*	0.05*
	Gender	0.11**	0.08*	0.08*	0.08*
	BMI	0.32**	0.31*	0.32**	0.32**
	Step 2: Main Effect				
	Sexual Trauma		0.10**	0.09**	0.09*
	Step 3: Moderator				
	Relatedness Satisfaction			-0.10**	-0.10**
	Step 4: Interaction Effect				
	Sexual Trauma x Relatedness Satisfaction				0.009
	R^2	0.13	0.14	0.15	0.15
	ΔR^2	-	0.01	0.01	0.000
	F	52.22**	46.56**	42.81**	37.46**
	ΔF	-	15.95**	17.58**	0.15

Note. Standardized beta coefficients are displayed. *p<.05; **p<.001

Appendix I - Figures

Figure 1. Flow Chart for Missing Data

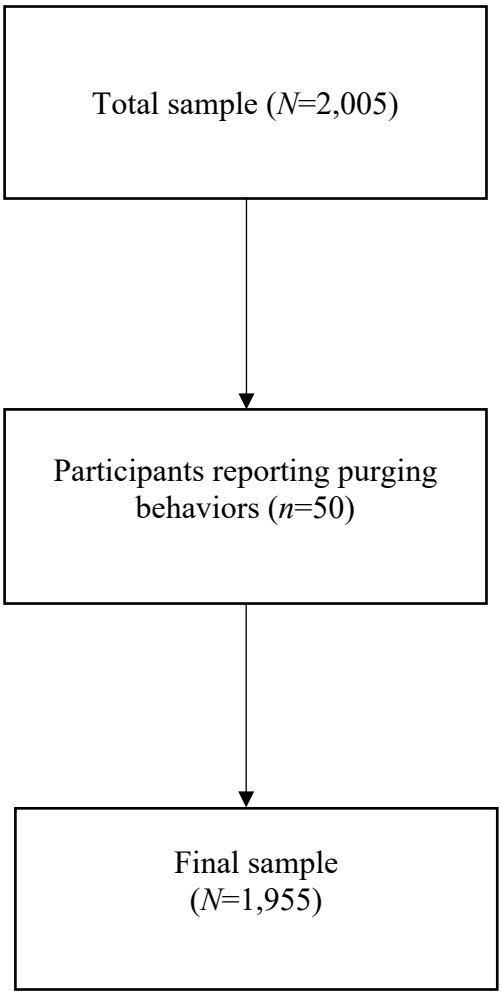
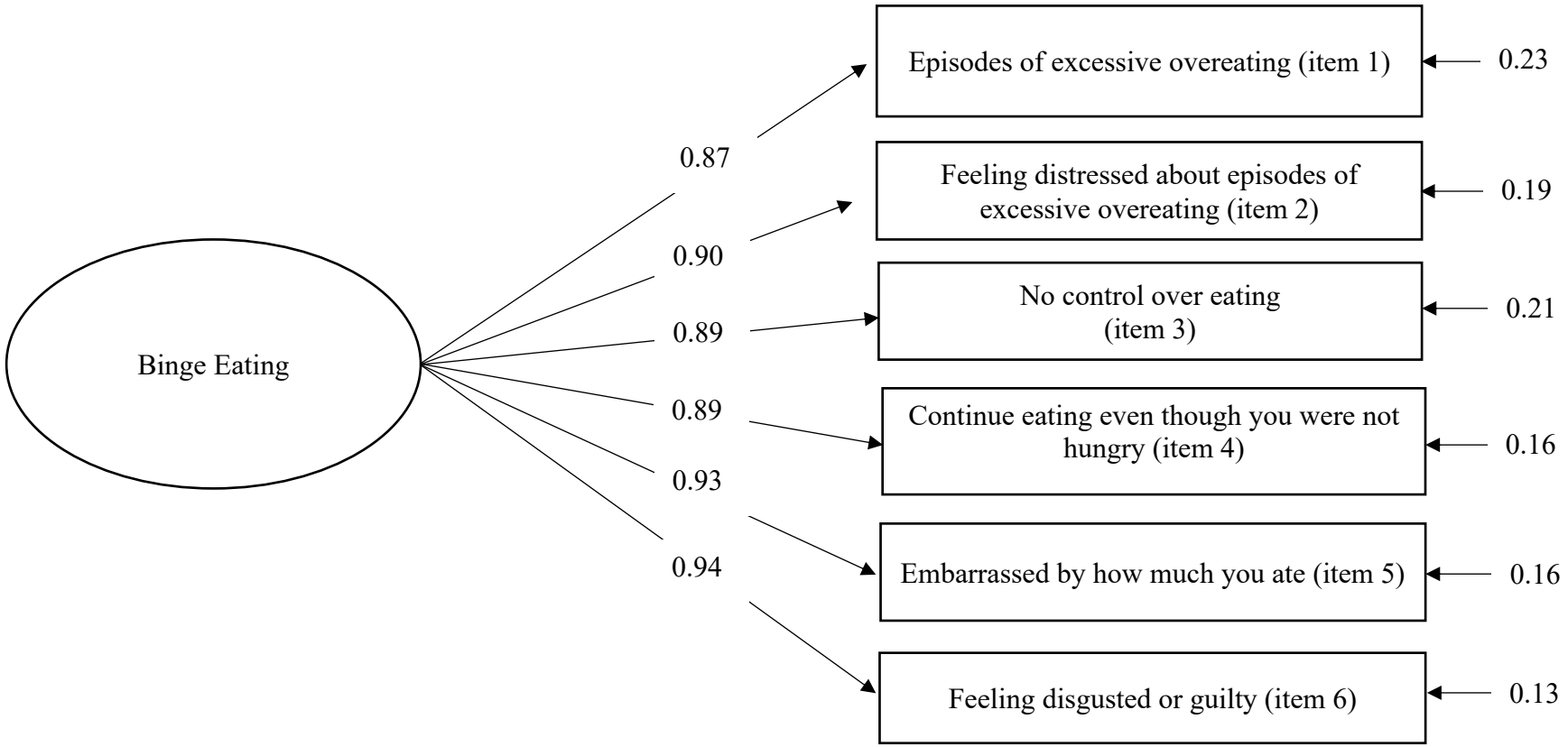


Figure 2. Confirmatory factor analysis (CFA) of the Modified One-Factor, Six-Item BEDS-7



$\chi^2(9) = 311.58$, $p < .001$; CFI = .957, TLI=.928, RMSEA= .186 [.149, .225], SRMR= .021

References

Abbott, S., Dindol, N., Tahrani, A. A., & Piya, M. K. (2018). Binge eating disorder and night eating syndrome in adults with type 2 diabetes: a systematic review. *Journal of eating disorders*, *6*, 36. https://doi.org/10.1186/s40337-018-0223-1

Acle, A., Cook, B. J., Siegfried, N., & Beasley, T. (2021). Cultural considerations in the treatment of eating disorders among racial/ethnic minorities: A systematic review. *Journal of Cross-Cultural Psychology, 52*(5), 468-488

Aiken, L.S. and West, S.G. (1991), Multiple Regression: Testing and Interpreting Interactions, SAGE, London

Alegria, M., Woo, M., Cao, Z., Torres, M., Meng, X. L., & Striegel-Moore, R. (2007). Prevalence and correlates of eating disorders in Latinos in the United States. *The International journal of eating disorders*, *40 Suppl*(Suppl), S15–S21. https://doi.org/10.1002/eat.20406

Allen, J. P., Litten, R. Z., Fertig, J. B., & Babor, T. (1997). A review of research on the Alcohol Use Disorders Identification Test (AUDIT). *Alcoholism, clinical and experimental research*, *21*(4), 613–619.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Andrade C. (2021). Z Scores, Standard Scores, and Composite Test Scores Explained. *Indian journal of psychological medicine, 43*(6), 555–557. https://doi.org/10.1177/02537176211046525

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787

American Psychological Association. (2017). *Education and socioeconomic status factsheet*. Education and Socioeconomic Status. Retrieved from https://www.apa.org/pi/ses/resources/publications/education#:~:text=SES%20and%20academic%20achievement,compared%20with%20higher%20SES%20communities.

Asch, D. A., Buresh, J., Allison, K. C., Islam, N., Sheils, N. E., Doshi, J. A., & Werner, R. M. (2021). Trends in US Patients Receiving Care for Eating Disorders and Other Common Behavioral Health Conditions Before and During the COVID-19 Pandemic. *JAMA network open, 4*(11), e2134913. https://doi.org/10.1001/jamanetworkopen.2021.34913

Assari S. (2018). Perceived Discrimination and Binge Eating Disorder; Gender Difference in African Americans. *Journal of Clinical Medicine, 7*(5), 89. https://doi.org/10.3390/jcm7050089

Babor, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. G. (2001). *AUDIT: The alcohol use disorders identification test – Guidelines for Use in primary care* (second). World Health Organization.

Bankoff, S. M., Richards, L. K., Bartlett, B., Wolf, E. J., & Mitchell, K. S. (2016). Examining weight and eating behavior by sexual orientation in a sample of male veterans. *Comprehensive psychiatry, 68,* 134–139. https://doi.org/10.1016/j.comppsych.2016.03.007

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182

Behar, R., Arancibia, M., Sepúlveda, E., Muga, A. (2016). Child sexual abuse as risk factor in eating disorders. In: Morton N., editor. *Eating Disorders.* Nova Science Publishers; Hauppauge, NY, USA, pp. 149–172.

Berge, J. M., Loth, K., Hanson, C., Croll, L. J., & Neumark, S. D. (2012). Family life cycle transitions and the onset of eating disorders: A retrospective grounded theory approach. *Journal of Clinical Nursing, 21*(9–10), 1355–1363. https://doi-org.ezproxy.library.unlv.edu/10.1111/j.1365-2702.2011.03762.x

Boersma, P., Villarroel, M. A., & Vahratian, A. (2020). *Heavy Drinking Among U.S. Adults, 2018.* National Center for Health Statistics. Retrieved from https://www.cdc.gov/nchs/products/databriefs/db374.htm

Bogusz, K., Kopera, M., Jakubczyk, A., Trucco, E. M., Kucharska, K., Walenda, A., & Wojnar, M. (2021). Prevalence of alcohol use disorder among individuals who binge eat: A systematic review and meta-analysis. *Addiction, 116*(1), 18–31. https://doi.org/10.1111/add.15155

Bohrer, B. K., Carroll, I. A., Forbush, K. T., & Chen, P. (2017). Treatment seeking for eating disorders: Results from a nationally representative study. *International Journal of Eating Disorders, 50*(12), 1341–1349. https://doi-org/10.1002/eat.22785

Boswell, R. G., & Kober, H. (2016). Food cue reactivity and craving predict eating and weight gain: A meta-analytic review. *Obesity Reviews, 17*(2), 159–177. https://doi.org/10.1111/obr.12354

Bruch, H. (1975). Obesity and anorexia nervosa: Psychosocial aspects. *Australian and New Zealand Journal of Psychiatry, 9*(3), 159–161. https://doi.org/10.3109/00048677509159842

Bulik, C. M., Blake, L., & Austin, J. (2019). Genetics of Eating Disorders: What the Clinician Needs to Know. *The Psychiatric clinics of North America*, *42*(1), 59–73. https://doi.org/10.1016/j.psc.2018.10.007

Burton, S. (2015). The monstrous "white theory boy": Symbolic capital, pedagogy and the politics of knowledge. *Sociological Research Online, 20*(3), 1-11. doi:10.5153/sro.3746

Burton, A. L., Abbott, M. J., Modini, M., & Touyz, S. (2016). Psychometric evaluation of self-report measures of binge-eating symptoms and related psychopathology: A systematic review of the literature. *The International Journal of Eating Disorders, 49*(2), 123–140. https://doi.org/10.1002/eat.22453

Byrne B. M. (2005). Factor analytic models: viewing the structure of an assessment instrument from three perspectives. *Journal of Personality Assessment, 85*(1), 17–32. https://doi.org/10.1207/s15327752jpa8501_02

Calzo, J. P., Masyn, K. E., Corliss, H. L., Scherer, E. A., Field, A. E., & Austin, S. B. (2015). Patterns of body image concerns and disordered weight- and shape-related behaviors in heterosexual and sexual minority adolescent males. *Developmental psychology*, *51*(9), 1216–1225. https://doi.org/10.1037/dev0000027

Casanova-Perez, R., Apodaca, C., Bascom, E., Mohanraj, D., Lane, C., Vidyarthi, D., Beneteau, E., Sabin, J., Pratt, W., Weibel, N., & Hartzler, A. L. (2022). Broken down by bias: Healthcare biases experienced by BIPOC and LGBTQ+ patients. *AMIA ... Annual Symposium proceedings. AMIA Symposium*, *2021*, 275–284.

Caslini, M., Bartoli, F., Crocamo, C., Dakanalis, A., Clerici, M., & Carrà, G. (2016). Disentangling the Association Between Child Abuse and Eating Disorders: A Systematic

Review and Meta-Analysis. *Psychosomatic medicine*, *78*(1), 79–90. https://doi.org/10.1097/PSY.0000000000000233

Cecchetto, C., Aiello, M., Gentili, C., Ionta, S., & Osimo, S. A. (2021). Increased emotional eating during COVID-19 associated with lockdown, psychological and social distress. *Appetite*, *160*, 105122. https://doi.org/10.1016/j.appet.2021.105122

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling, 14*(3), 464–504. https://doi.org/10.1080/10705510701301834

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., . . . Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion, 39*(2), 216–236. https://doi.org/10.1007/s11031-014-9450-1.

Citrome L. (2017). Binge-Eating Disorder and Comorbid Conditions: Differential Diagnosis and Implications for Treatment. *The Journal of Clinical Psychiatry*, *78 Suppl 1*, 9–13. https://doi.org/10.4088/JCP.sh16003su1c.02

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences (2nd ed.).* Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Coleman-Jensen, A., Rabbitt, M.P., Gregory, C.A., Singh, A. (2017). Household Food Security in the United States in 2016 (Economic Research Report No. 237). USDA Economic Research Service, Washington, D.C.

Cooper, Z., Bailey-Straebler, S., Morgan, K. E., O'Connor, M. E., Caddy, C., Hamadi, L., & Fairburn, C. G. (2017). Using the Internet to Train Therapists: Randomized Comparison

of Two Scalable Methods. *Journal of medical Internet research*, *19*(10), e355. https://doi.org/10.2196/jmir.8336

Conger, R. D., and Donnellan, M. B. (2007). An interactionist perspective on the socioeconomic context of human development. *Annu. Rev. Psychol. 58,* 175–199. https://doi.org/10.1146/annurev.psych.58.110405.085551

Cossrow, N., Pawaskar, M., Witt, E. A., Ming, E. E., Victor, T. W., Herman, B. K., Wadden, T. A., & Erder, M. H. (2016). Estimating the Prevalence of Binge Eating Disorder in a Community Sample From the United States: Comparing DSM-IV-TR and DSM-5 Criteria. *The Journal of clinical psychiatry*, *77*(8), e968–e974. https://doi.org/10.4088/JCP.15m10059

Culbert, K. M., Racine, S. E., & Klump, K. L. (2015). Research Review: What we have learned about the causes of eating disorders – a synthesis of sociocultural, psychological, and biological research. *Journal of child psychology and psychiatry, and allied disciplines, 56*(11), 1141–1164. https://doi.org/10.1111/jcpp.12441

Davidov, E., Meuleman, B., Cieciuch, J. Schmidt, P. & Billiet, J. (2014). Measurement Equivalence in Cross-National Research. *Annual Review of Sociology, 40*(1), 55–75. https://doi.org/10.1146/annurev-soc-071913-043137.

Dawe, S., Seinen, A., & Kavanagh, D. (2000). An examination of the utility of the AUDIT in people with schizophrenia. *Journal of studies on alcohol*, *61*(5), 744–750. https://doi.org/10.15288/jsa.2000.61.744

de Jong, P., Wardenaar, K. J., Lim, C. C. W., Aguilar-Gaxiola, S., Alonso, J., Andrea, L. H., Bunting, B., Chatterji, S., Ciutan, M., Gureje, O., Karam, E. G., Lee, S., Medina-Mora, M. E., Moskalewicz, J., Navarro-Mateu, F., Pennell, B., Piazza, M., Posada-Villa, J.,

Torres, Y., . . . Scott, K. (2018). The cross-nature structure of mental disorders: Results from the World Health Surveys. *Psychological Medicine, 48*(12), 2073–2084.

de Jonge, T., Veenhoven, R., & Arends, L. (2014). Homogenizing Responses to Different Survey Questions on the Same Topic: Proposal of a Scale Homogenization Method Using a Reference Distribution. *Social indicators research, 117*(1), 275–300. https://doi.org/10.1007/s11205-013-0335-6

de Lima Cavaliere, I. A., Costa, S. G. (2011). Social isolation, sociability and social care networks. *Physis, 21*(2), 491–516.

De Young, K.P. (2016). Comorbidities: Anxiety Disorders. In: Wade, T. (eds) *Encyclopedia of Feeding and Eating Disorders.* Springer, Singapore. https://doi.org/10.1007/978-981-287-087-2_23-2

Derogatis, L. R. (2000). *The Brief Symptom Inventory–18 (BSI-18): Administration, Scoring and Procedures Manual*. Minneapolis, MN: National Computer Systems.

Devlin, M. J., Goldfein, J. A., & Dobrow, I. (2003). What is this thing called BED? Current status of binge eating disorder nosology. *The International journal of eating disorders*, *34 Suppl*, S2–S18. https://doi.org/10.1002/eat.10201

Dube, P., Kroenke, K., Bair, M. J., Theobald, D., & Williams, L. S. (2010). The P4 screener: Evaluation of a brief measure for assessing potential suicide risk in 2 randomized effectiveness trials of primary care and oncology patients. *Primary Care Companion to the Journal of Clinical Psychiatry, 12*(6). https://doi.org/10.4088/PCC.10m00978blu.

Eating disorders as a public health emergency. Inter-American Development Bank. (2006). Retrieved from https://www.iadb.org/en/news/webstories/2006-08-28/eating-disorders-as-a-public-health-emergency,3249.html#.Uk3EnlPVGa0

Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: interview or self-report questionnaire?. *The International journal of eating disorders*, *16*(4), 363–370.

Fairburn, C., & Cooper, Z. (1993). The eating disorder examination (12th edition). In C. Fairburn, & G. Wilson (Eds.), *Binge eating: Nature, assessment, and treatment.* New York: Guilford Press.

Fan, X., & Sivo, S. A. (2007). Sensitivity of fit indices to model misspecification and model types. *Multivariate Behavioral Research, 42*(3), 509–529. https://doi.org/10.1080/00273170701382864

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: tests for correlation and regression analyses. *Behavior research methods, 41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (2019). Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine, 56*(6), 774–786. https://doi.org/10.1016/j.amepre.2019.04.001

First, M. B., Williams, J. B. W., Karg, R. S., & Spitzer, R. L. (2016). *User's guide for the SCID-5-CV Structured Clinical Interview for DSM-5® disorders: Clinical version.* American Psychiatric Publishing, Inc.

Forbush, K. T., Wildes, J. E., Pollack, L. O., Dunbar, D., Luo, J., Patterson, K., Petruzzi, L., Pollpeter, M., Miller, H., Stone, A., Bright, A., & Watson, D. (2013). Development and validation of the Eating Pathology Symptoms Inventory (EPSI). *Psychological Assessment*, *25*(3), 859–878. https://doi.org/10.1037/a0032639

Forrest, L. N., Smith, A. R., & Swanson, S. A. (2017). Characteristics of treatment seeking among US adolescents with eating disorders. *International Journal of Eating Disorders, 50*, 826–833. https://doi.org/10. 1002/eat.22702

Frank, G. K. W., & Berner, L. A. (2020). *Binge eating: A transdiagnostic psychopathology*. Cham: Springer.

Franko, D. L., Thompson-Brenner, H., Thompson, D. R., Boisseau, C. L., Davis, A., Forbush, M. A., Roehrig, J. P., Bryson, S., Bulik, C. M., Cros, S. J., Devin, M. J., Gorin, A. A., Grilo, C. M., Kristeller, J., Mitchell, J. E., Peterson, C., Safer, D., Striegel-Moore, R. H., Wilfley, D. E., & Wilson, G. T. (2011). Examining ethnic differences in binge eating disorder: the role of socioeconomic status and body mass index, presented at the International Conference for Eating Disorders, Miami, Flordia.

Friborg, O., Martinussen, M., Kaiser, S., Øvergård, K. T., Martinsen, E. W., Schmierer, P., & Rosenvinge, J. H. (2014). Personality disorders in eating disorder not otherwise specified and binge eating disorder: a meta-analysis of comorbidity studies. *The Journal of nervous and mental disease*, *202*(2), 119–125. https://doi.org/10.1097/NMD.0000000000000080

Galmiche, M., Déchelotte, P., Lambert, G., & Tavolacci, M. P. (2019). Prevalence of eating disorders over the 2000-2018 period: a systematic literature review. *The American journal of clinical nutrition*, *109*(5), 1402–1413. https://doi.org/10.1093/ajcn/nqy342

Garner, D. M., Olmsted, M. P., Bohr, Y., & Garfinkel, P. E. (1982). The eating attitudes test: psychometric features and clinical correlates. *Psychological medicine*, *12*(4), 871–878. https://doi.org/10.1017/s0033291700049163

Giel, K. E., Schurr, M., Zipfel, S., Junne, F., & Schag, K. (2021). Eating behaviour and symptom trajectories in patients with a history of binge eating disorder during COVID-19

pandemic. *European eating disorders review: the journal of the Eating Disorders Association*, *29*(4), 657–662. https://doi.org/10.1002/erv.2837

Godart, N. T., Flament, M. F., Perdereau, F., & Jeammet, P. (2002). Comorbidity between eating disorders and anxiety disorders: a review. *The International journal of eating disorders*, *32*(3), 253–270. https://doi.org/10.1002/eat.10096

Goel, N. J., Burnette, C. B., Weinstock, M., & Mazzeo, S. E. (2022). Eating Disorder Examination-Questionnaire: Evaluating factor structures and establishing measurement invariance with Asian/Hawaiian/Pacific Islander, Black, and White American college men. *The International journal of eating disorders*, *55*(4), 481–493. https://doi.org/10.1002/eat.23696

Gordon, A. R., Austin, S. B., Schultz, J., Guss, C. E., Calzo, J. P., & Wang, M. L. (2021). Gender Expression, Peer Victimization, and Disordered Weight-Control Behaviors Among U.S. High School Students. *The Journal of adolescent health: official publication of the Society for Adolescent Medicine*, *68*(6), 1148–1154. https://doi.org/10.1016/j.jadohealth.2020.08.032

Grilo C. M. (2017). Psychological and Behavioral Treatments for Binge-Eating Disorder. The *Journal of clinical psychiatry, 78 Suppl 1*, 20–24. https://doi.org/10.4088/JCP.sh16003su1c.04

Grilo, C. M., Ivezaj, V., & White, M. A. (2015). Evaluation of the DSM-5 severity indicator for binge eating disorder in a community sample. *Behaviour Research and Therapy, 66*, 72–76. https://doi.org/10.1016/j.brat.2015.01.004

Grilo, C. M., White, M. A., Barnes, R. D., & Masheb, R. M. (2013). Psychiatric disorder co-morbidity and correlates in an ethnically diverse sample of obese patients with binge

eating disorder in primary care settings. Comprehensive Psychiatry, 54(3), 209–216. https://doi.org/10.1016/j.comppsych.2012.07.012

Habashy, J., Benning, S.D., Renn, B.N., Borgogna, N.C., Lawrence, E.M., & Kraus, S.W. (2023). Psychometric properties of the eating disorder examination questionnaire: factor analysis and measurement invariance by race/ethnicity and gender. *Eating Behaviors*, 48:101696. http://dx.doi.org/10.1016/j.eatbeh.2022.101696

Hay, P. J., & Claudino, A. M. (2012). Clinical psychopharmacology of eating disorders: a research update. *The International Journal of Neuropsychopharmacology*, *15*(2), 209–222. https://doi.org/10.1017/S1461145711000460

Hayes, A.F. (2018), *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, 2 edn, Guilford publications, London.

Herek, G. M., & Garnets, L. D. (2007). Sexual orientation and mental health. *Annual review of clinical psychology*, *3*, 353–375. https://doi.org/10.1146/annurev.clinpsy.3.022806.091510

Herman, B. K., Deal, L. S., DiBenedetti, D. B., Nelson, L., Fehnel, S. E., & Brown, T. M. (2016). Development of the 7-Item Binge-Eating Disorder Screener (BEDS-7). *The primary care companion for CNS disorders*, *18*(2), 10.4088/PCC.15m01896. https://doi.org/10.4088/PCC.15m01896

Hudson, J. I., Hiripi, E., Pope, H. G., Jr, & Kessler, R. C. (2007). The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biological psychiatry*, *61*(3), 348–358. https://doi.org/10.1016/j.biopsych.2006.03.040

Hudson, J. I., Lalonde, J. K., Coit, C. E., Tsuang, M. T., McElroy, S. L., Crow, S. J., Bulik, C. M., Hudson, M. S., Yanovski, J. A., Rosenthal, N. R., & Pope, H. G., Jr (2010).

Longitudinal study of the diagnosis of components of the metabolic syndrome in individuals with binge-eating disorder. *The American journal of clinical nutrition, 91*(6), 1568–1573. https://doi.org/10.3945/ajcn.2010.29203

Huryk, K. M., Drury, C. R., & Loeb, K. L. (2021). Diseases of affluence? A systematic review of the literature on socioeconomic diversity in eating disorders. *Eating behaviors*, *43*, 101548. https://doi.org/10.1016/j.eatbeh.2021.101548

Isomaa, R., Isomaa, A. L., Marttunen, M., Kaltiala-Heino, R., & Björkqvist, K. (2010). Psychological distress and risk for eating disorders in subgroups of dieters. *European eating disorders review: the journal of the Eating Disorders Association*, *18*(4), 296–303. https://doi.org/10.1002/erv.1004

Jacobi, C., Hayward, C., de Zwaan, M., Kraemer, H. C., & Agras, W. S. (2004). Coming to terms with risk factors for eating disorders: application of risk terminology and suggestions for a general taxonomy. *Psychological bulletin, 130*(1), 19.

James, P., Arcaya, M. C., Parker, D. M., Tucker-Seeley, R. D., & Subramanian, S. V. (2014). Do minority and poor neighborhoods have higher access to fast-food restaurants in the United States?. *Health & place*, *29*, 10–17. https://doi.org/10.1016/j.healthplace.2014.04.011

Jensen-Doss, A., & Hawley, K. M. (2010). Understanding barriers to evidence-based assessment: clinician attitudes toward standardized assessment tools. *Journal of clinical child and adolescent psychology: the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53*, *39*(6), 885–896. https://doi.org/10.1080/15374416.2010.517169

Jeong, S., & Lee, Y. (2019). Consequences of not conducting measurement invariance tests in cross-cultural studies: A review of current research practices and recommendations. *Advances in Developing Human Resources, 21*(4), 466–483. https://doi.org/10.1177/1523422319870726

Jones, B. A., Haycraft, E., Bouman, W. P., Brewin, N., Claes, L., & Arcelus, J. (2018). Risk Factors for Eating Disorder Psychopathology within the Treatment Seeking Transgender Population: The Role of Cross-Sex Hormone Treatment. *European eating disorders review: the journal of the Eating Disorders Association*, *26*(2), 120–128. https://doi.org/10.1002/erv.2576

Kamody, R. C., Grilo, C. M., & Udo, T. (2020). Disparities in DSM-5 defined eating disorders by sexual orientation among US adults. *International Journal of Eating Disorders, 53*(2), 278–287. https://doi-org.ezproxy.library.unlv.edu/10.1002/eat.23193

Keel, P. K., Heatherton, T. F., Dorer, D. J., Joiner, T. E., & Zalta, A. K. (2006). Point prevalence of bulimia nervosa in 1982, 1992, and 2002. *Psychological Medicine, 36*(1), 119–127. https://doi.org/10.1017/S0033291705006148

Kenny, D. A., Kaniskan, B., & McCoach, D. B. (2015). The performance of RMSEA in models with small degrees of freedom. *Sociological Methods & Research, 44*(3), 486-507. https://doi.org/10.1177/0049124114543236

Kessler, R. C., Berglund, P. A., Chiu, W. T., Deitz, A. C., Hudson, J. I., Shahly, V., Aguilar-Gaxiola, S., Alonso, J., Angermeyer, M. C., Benjet, C., Bruffaerts, R., de Girolamo, G., de Graaf, R., Maria Haro, J., Kovess-Masfety, V., O'Neill, S., Posada-Villa, J., Sasu, C., Scott, K., Viana, M. C., … Xavier, M. (2013). The prevalence and correlates of binge eating disorder in the World Health Organization World Mental Health

Surveys. *Biological psychiatry*, *73*(9), 904–914. https://doi.org/10.1016/j.biopsych.2012.11.020

Klump, K. L., Bulik, C. M., Kaye, W. H., Treasure, J., & Tyson, E. (2009). Academy for eating disorders position paper: Eating disorders are serious mental illnesses. *International Journal of Eating Disorders, 42*, 97–103.

Kwan, M. Y., Gordon, K. H., & Minnich, A. M. (2018). An examination of the relationships between acculturative stress, perceived discrimination, and eating disorder symptoms among ethnic minority college students. *Eating Behaviors*, *28*, 25–31. https://doi.org/10.1016/j.eatbeh.2017.12.003

Laska, M. N., VanKim, N. A., Erickson, D. J., Lust, K., Eisenberg, M. E., & Rosser, B. R. (2015). Disparities in weight and weight behaviors by sexual orientation in college students. *American Journal of Public Health, 105*(1), 111–121. https://doi.org/10.2105/AJPH.2014.302094

Lee, T., & Shi, D. (2021). A comparison of full information maximum likelihood and multiple imputation in structural equation modeling with missing data. *Psychological methods*, *26*(4), 466–485. https://doi.org/10.1037/met0000381

Leehr, E. J., Krohmer, K., Schag, K., Dresler, T., Zipfel, S., & Giel, K. E. (2015). Emotion regulation model in binge eating disorder and obesity--a systematic review. *Neuroscience and biobehavioral reviews*, *49*, 125–134. https://doi.org/10.1016/j.neubiorev.2014.12.008

Leserman, J., Drossman, D. A., & Li, Z. (1995). The reliability and validity of a sexual and physical abuse history questionnaire in female patients with gastrointestinal disorders. *Behavioral Medicine, 21*(3), 141–150. https://doi.org/10.1080/08964289.1995.9933752

Lewinsohn, P. M., Seeley, J. R., Moerk, K. C. & Striegel-Moore, R. H. (2002). Gender differences in eating disorder symptoms in young adults. *International Journal of Eating Disorders, 32*, 426–440. https://doi.org/10.1002/eat.10103

Limbert C. (2010). Perceptions of social support and eating disorder characteristics. *Health care for women international*, *31*(2), 170–178. https://doi.org/10.1080/07399330902893846

Lombardo, C., Ballesio, A., Gasparrini, G., & Cerolini, S. (2020). Effects of acute and chronic sleep deprivation on eating behaviour. *Clinical Psychologist, 24*, 64–72. https://doi.org/10.1111/cp.12189

Madowitz, J., Matheson, B. E., & Liang, J. (2015). The relationship between eating disorders and sexual trauma. *Eating and Weight Disorders, 20*(3), 281–293. https://doi-org.ezproxy.library.unlv.edu/10.1007/s40519-015-0195-y

Marcos, Y., & Cantero, M. C. (2009). Assessment of social support dimensions in patients with eating disorders. *Spanish Journal of Psychology, 12*, 226–235. https://doi.org/ 10.1017/S1138741600001633

Marques, L., Alegria, M., Becker, A. E., Chen, C.-N., Fang, A., Chosak, A., & Diniz, J. B. (2011). Comparative prevalence, correlates of impairment, and service utilization for eating disorders across US ethnic groups: Implications for reducing ethnic disparities in health care access for eating disorders. *The International Journal of Eating Disorders, 44*(5), 412–420. https://doi.org/10.1002/eat.20787

Marzilli, E., Cerniglia, L., & Cimino, S. (2018). A narrative review of binge eating disorder in adolescence: prevalence, impact, and psychological treatment strategies. *Adolescent health, medicine and therapeutics*, *9*, 17–30. https://doi.org/10.2147/AHMT.S148050

Mason, T. B., Heron, K. E., Braitman, A. L., & Lewis, R. J. (2016). A daily diary study of perceived social isolation, dietary restraint, and negative affect in binge eating. *Appetite*, *97*, 94–100. https://doi.org/10.1016/j.appet.2015.11.027

Mason, T. B., Lewis, R. J. (2016). Minority stress, body shame, and binge eating among lesbian women: social anxiety as a linking mechanism. *Psychology of Women Quarterly, 40*(3), 428–440. https://doi.org/10.1177/0361684316635529

McNeish, D., & Wolf, M. G. (2020). Thinking twice about sum scores. *Behavior Research Methods, 52,* 2287–2305.

Mitchison, D., Hay, P., Slewa-Younan, S., & Mond, J. (2014). The changing demographic profile of eating disorder behaviors in the community. *BMC public health*, *14*, 943. https://doi.org/10.1186/1471-2458-14-943

Nagata, J. M., Murray, S. B., Compte, E. J., Pak, E. H., Schauer, R., Flentje, A., Capriotti, M. R., Lubensky, M. E., Lunn, M. R., & Obedin-Maliver, J. (2020). Community norms for the Eating Disorder Examination Questionnaire (EDE-Q) among transgender men and women. *Eating behaviors*, *37*, 101381. https://doi.org/10.1016/j.eatbeh.2020.101381

Nicdao, E. G., Hong, S., & Takeuchi, D. T. (2007). Prevalence and correlates of eating disorders among Asian Americans: results from the National Latino and Asian American Study. *The International Journal of Eating Disorders*, *40 Suppl*, S22–S26. https://doi.org/10.1002/eat.20450

Novelle, M. G., & Diéguez, C. (2018). Food Addiction and Binge Eating: Lessons Learned from Animal Models. *Nutrients*, *10*(1), 71. https://doi.org/10.3390/nu10010071

Oswald, K. D., Murdaugh, D. L., King, V. L., & Boggiano, M. M. (2011). Motivation for palatable food despite consequences in an animal model of binge eating. *The*

International journal of eating disorders, *44*(3), 203–211. https://doi.org/10.1002/eat.20808

Parham, T. A. (1993). White researchers conducting multicultural counseling research: Can their efforts be “mo betta”? *Counseling Psychologist, 21*(2), 250–256.

Pedrelli, P., Nyer, M., Yeung, A., Zulauf, C., & Wilens, T. (2015). College Students: Mental Health Problems and Treatment Considerations. *Academic psychiatry: the journal of the American Association of Directors of Psychiatric Residency Training and the Association for Academic Psychiatry*, *39*(5), 503–511. https://doi.org/10.1007/s40596-014-0205-9

Phillipou, A., Meyer, D., Neill, E., Tan, E. J., Toh, W. L., Van Rheenen, T. E., & Rossell, S. L. (2020). Eating and exercise behaviors in eating disorders and the general population during the COVID-19 pandemic in Australia: Initial results from the COLLATE project. *The International journal of eating disorders*, *53*(7), 1158–1165. https://doi.org/10.1002/eat.23317

Pike, K. M., Dunne, P. E. (2015). The rise of eating disorders in Asia: a review. *Journal of Eating Disorders, 3*(1), 1-14. https://doi.org/10.1186/s40337-015-0070-2

Puccio, F., Fuller-Tyszkiewicz, M., Ong, D., & Krug, I. (2016). A systematic review and meta-analysis on the longitudinal relationship between eating pathology and depression. *The International journal of eating disorders*, *49*(5), 439–454. https://doi.org/10.1002/eat.22506

Reise, S. P., Waller, N. G., & Comrey, A. L. (2000). Factor analysis and scale revision. *Psychological assessment*, *12*(3), 287–297. https://doi.org/10.1037//1040-3590.12.3.287

Rodgers, R. F., Lombardo, C., Cerolini, S., Franko, D. L., Omori, M., Fuller, T. M., Linardon, J., Courtet, P., & Guillaume, S. (2020). The impact of the COVID-19 pandemic on eating disorder risk and symptoms. *International Journal of Eating Disorders, 53*(7), 1166–1170. https://doi.org/10.1002/eat.23318

Ryu, E. (2011). Effects of skewness and kurtosis on normal-theory based maximum likelihood test statistic in multilevel structural equation modeling. *Behavioral Research Methods, 43,* 1066-1074. https://doi.org/10.3758/s13428-011-0115-7

Sander, J., Moessner, M., & Bauer, S. (2021). Depression, Anxiety and Eating Disorder-Related Impairment: Moderators in Female Adolescents and Young Adults. *International journal of environmental research and public health*, *18*(5), 2779. https://doi.org/10.3390/ijerph18052779

Schaumberg, K., Welch, E., Breithaupt, L., Hübel, C., Baker, J. H., Munn-Chernoff, M. A., Yilmaz, Z., Ehrlich, S., Mustelin, L., Ghaderi, A., Hardaway, A. J., Bulik-Sullivan, E. C., Hedman, A. M., Jangmo, A., Nilsson, I., Wiklund, C., Yao, S., Seidel, M., & Bulik, C. M. (2017). The Science Behind the Academy for Eating Disorders' Nine Truths About Eating Disorders. *European eating disorders review: the journal of the Eating Disorders Association, 25*(6), 432–450. https://doi.org/10.1002/erv.2553

Scheer, S., Parks, C. A., McFarland, W., Page-Shafer, K., Delgado, V., Ruiz, J. D., Molitor, F., & Klausner, J. D. (2003). Self-reported sexual identity, sexual behaviors and health risks. *Journal of lesbian studies*, *7*(1), 69–83. https://doi.org/10.1300/J155v07n01_05

Scheffers, M., Hoek, M., Bosscher, R. J., van Duijn, M., Schoevers, R. A., & van Busschbach, J. T. (2017). Negative body experience in women with early childhood trauma: associations

with trauma severity and dissociation. *European Journal of Psychotraumatology*, *8*(1), 1322892. https://doi.org/10.1080/20008198.2017.1322892

Slavin, M. N., Blycker, G. R., Potenza, M. N., Bőthe, B., Demetrovics, Z., & Kraus, S. W. (2020). Gender-related differences in associations between sexual abuse and hypersexuality. *The Journal of Sexual Medicine, 17*(10), 2029-2038.

Song, M. K., Lin, F. C., Ward, S. E., & Fine, J. P. (2013). Composite variables: when and how. *Nursing research*, *62*(1), 45–49. https://doi.org/10.1097/NNR.0b013e3182741948

Stevens, J. (1996). Applied multivariate statistics for the social sciences (3rd ed). Mahwah, NJ: Lawrence Erlbaum.

Stice. E. (2002). Risk and maintenance factors for eating pathology: a meta-analytic review. *Psychological Bulletin, 128*, 825–848. https://doi.org/10.1037/0033-2909.128.5.825

Stice, E., Telch, C. F., & Rizvi, S. L. (2000). Development and validation of the Eating Disorder Diagnostic Scale: a brief self-report measure of anorexia, bulimia, and binge-eating disorder. *Psychological assessment*, *12*(2), 123–131. https://doi.org/10.1037//1040-3590.12.2.123

Stratton, R., Donovan, C., Bramwell, S., & Loxton, N. J. (2015). Don't stop till you get enough: Factors driving men towards muscularity. *Body Image, 15,* 72–80. https://doi.org/10.1016/j.bodyim.2015.07.002

Striegel-Moore, R. H., Dohm, F. A., Solomon, E. E., Fairburn, C. G., Pike, K. M., & Wilfley, D. E. (2000). Subthreshold binge eating disorder. *The International journal of eating disorders*, *27*(3), 270–278. https://doi.org/10.1002/(sici)1098-108x(200004)27:3<270::aid-eat3>3.0.co;2-1

Striegel-Moore, R. H., Rosselli, F., Perrin, N., DeBar, L., Wilson, G. T., May, A., & Kraemer, H. C. (2009). Gender difference in the prevalence of eating disorder symptoms. *International Journal of Eating Disorders, 42*(5), 471–474. https://doi-org.ezproxy.library.unlv.edu/10.1002/eat.v42:510.1002/eat.20625

Swanson, S. A., Saito, N., Borges, G., Benjet, C., Aguilar-Gaxiola, S., Medina-Mora, M. E., & Breslau, J. (2012). Change in binge eating and binge eating disorder associated with migration from Mexico to the U.S. *Journal of psychiatric research*, *46*(1), 31–37. https://doi.org/10.1016/j.jpsychires.2011.10.008

Tabachnick, B.G. & Fidell, L.S. (2007). Using multivariate statistics (5th ed). Boston: Pearson Education

Taylor, J. Y., Caldwell, C. H., Baser, R. E., Faison, N., & Jackson, J. S. (2007). Prevalence of eating disorders among Blacks in the National Survey of American Life. *The International Journal of Eating Disorders*, *40 Suppl*(Suppl), S10–S14. https://doi.org/10.1002/eat.20451

Termorshuizen, J. D., Watson, H. J., Thornton, L. M., Borg, S., Flatt, R. E., MacDermod, C. M., Harper, L. E., van Furth, E. F., Peat, C. M., & Bulik, C. M. (2020). Early impact of COVID-19 on individuals with self-reported eating disorders: A survey of ~1,000 individuals in the United States and the Netherlands. *The International Journal of Eating Disorders, 53*(11), 1780–1790. https://doi.org/10.1002/eat.23353

Thelen, M. H., Farmer, J., Wonderlich, S., & Smith, M. (1991). A revision of the Bulimia Test: The BULIT—R. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 3*(1), 119–124. https://doi.org/10.1037/1040-3590.3.1.119

Thompson-Brenner, H., Franko, D. L., Thompson, D. R., Grilo, C. M., Boisseau, C. L., Roehrig, J. P., Richards, L. K., Bryson, S. W., Bulik, C. M., Crow, S. J., Devlin, M. J., Gorin, A. A., Kristeller, J. L., Masheb, R., Mitchell, J. E., Peterson, C. B., Safer, D. L., Striegel, R. H., Wilfley, D. E., & Wilson, G. T. (2013). Race/ethnicity, education, and treatment parameters as moderators and predictors of outcome in binge eating disorder. *Journal of consulting and clinical psychology*, *81*(4), 710–721. https://doi.org/10.1037/a0032946

Thompson, J. K., Heinberg, L. J., Altabe, M. N., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment and treatment of body image disturbance.* Washington DC: American Psychological Association. doi:10.1037/10312-000

Tiller, J. M., Sloane, G., Schmidt, U., & Troop, N. (1997). Social support in patients with anorexia nervosa and bulimia nervosa. *International Journal of Eating Disorders, 21*, 31-38. https://doi.org/10.1002/(SICI)1098-108X(199701)21:1<31::AID-EAT4>3.0.CO;2-4

Touyz, S., Lacey, H., & Hay, P. (2020). Eating disorders in the time of COVID-19. *Journal of Eating Disorders, 8*, 19. https://doi.org/10.1186/s40337-020-00295-3

Udo, T., Bitley, S., & Grilo, C. M. (2019). Suicide attempts in US adults with lifetime DSM-5 eating disorders. *BMC medicine*, *17*(1), 120. https://doi.org/10.1186/s12916-019-1352-3

Udo, T., & Grilo, C. M. (2018). Prevalence and Correlates of DSM-5-Defined Eating Disorders in a Nationally Representative Sample of U.S. Adults. *Biological psychiatry*, *84*(5), 345–354. https://doi.org/10.1016/j.biopsych.2018.03.014

Von Schell, A., Ohrt, T. K., Bruening, A. B. & Perez, M. (2018). Rates of disordered eating behaviors across sexual minority undergraduate men and women. *Psychology of Sexual Orientation and Gender Diversity, 5*(3), 352–359. https://doi.org/10.1037/sgd0000278

Ward, Z. J., Rodriguez, P., Wright, D. R., Austin, S. B., & Long, M. W. (2019). Estimation of Eating Disorders Prevalence by Age and Associations With Mortality in a Simulated Nationally Representative US Cohort. *JAMA network open*, *2*(10), e1912925. https://doi.org/10.1001/jamanetworkopen.2019.12925

West, C. E., Goldschmidt, A. B., Mason, S. M., & Neumark, S. D. (2019). Differences in risk factors for binge eating by socioeconomic status in a community-based sample of adolescents: Findings from Project EAT. *International Journal of Eating Disorders, 52*(6), 659–668. https://doi.org/10.1002/eat.23079

Wilson, G. T. (2010). Eating disorders, obesity and addiction. *European Eating Disorders Review, 18*(5), 341–351. https://doi.org/10.1002/erv.1048

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of personality assessment, 52*(1), 30-41.

Curriculum Vitae

Jessica Habashy
jessicahabashy@gmail.com

Education

2019 - 2024	University of Nevada, Las Vegas Doctor of Philosophy in Clinical Psychology (in progress) Dissertation: *The Influence of the COVID-19 Pandemic on Binge Eating In a Demographically Diverse US Community Sample* Primary Advisor: Shane Kraus, Ph.D. Committee: Stephen Benning, Ph.D., Kara Christensen, Ph.D. Elizabeth Lawrence, Ph.D., & Brenna Renn, Ph.D.
2019 - 2022	University of Nevada, Las Vegas Master of Arts in Clinical Psychology Thesis: *Psychometric Properties of the Eating Disorder Examination Questionnaire: Factor Analysis and Measurement Invariance by the Intersection of Race and Gender* Primary Advisor: Shane Kraus, Ph.D. Committee: Stephen Benning, Ph.D., Elizabeth Lawrence, Ph.D., & Brenna Renn, Ph.D.
2014 - 2017	University of Nevada, Las Vegas Major: Psychology Honors College – Research and Creative Honors Summa Cum Laude Honors Thesis Title: *The Interplay between Perfectionism and Sociocultural Idealization of Thinness on Disordered Eating Symptoms* Primary Advisor: Kristen Culbert, Ph.D. Committee: Stephen Benning, Ph.D. & Daniel Bubb, Ph.D.

Clinical Experience

Summer 2021 – Present	**Doctoral Psychology Practicum Trainee** Eating Disorder Institute (EDI) of Las Vegas Clinical Supervisor: Lindsey Ricciardi, Ph.D., CEDS Practicum trainee at the Eating Disorder Institute of Las Vegas under the supervision of Dr. Ricciardi. Specialized training in evidence-based treatments for eating disorders including: cognitive behavioral therapy (CBT), enhanced cognitive behavioral therapy (CBT-E), Maudsley Method/family-based treatment (FBT), acceptance and commitment therapy (ACT), and dialectical behavior

therapy (DBT). Co-facilitated two DBT groups and provided phone coaching. Also co-facilitated a multifamily/teen group as well as conducted individual psychotherapy for teens and adults with eating disorders (ages 13+). Caseload of weekly individual patients with eating disorders and related concerns (5-6 patient caseload from August 2021- December 2021, 10-14 patient caseload from January 2022-Present). Weekly individual and group supervision along with case consultation with the interdisciplinary team. Supervisor-in-training to another practicum trainee at the EDI (August 2022-Present).

Fall 2020 – Summer 2021 **Doctoral Psychology Practicum Trainee**
Partnership for Research, Assessment, Counseling, Therapy, and Innovative Clinical Education (PRACTICE), UNLV
Clinical Supervisors: Brenna Renn, Ph.D.; Stacy Graves, Ph.D.; Stephen Benning, Ph.D.; Amy Black, Ph.D.

Practicum trainee at the PRACTICE, a community mental health clinic, under the supervision of Drs. Benning, Black, Graves, and Renn. Trained in evidence-based treatments including: cognitive behavioral therapy (CBT), cognitive processing therapy (CPT), acceptance and commitment therapy (ACT), and dialectical behavior therapy (DBT). Co-facilitated a weekly DBT group, conducted individual psychotherapy, and performed psychological assessments for adults. Weekly individual/group supervision, case rounds, and case consultation with the multidisciplinary team. Also, served as a supervisor-in-training to another doctoral psychology practicum student from May 2022 to August 2022.

Honors and Awards

2022 **GPSA Spring 2022 Student Scholarship**
Awarded travel scholarship by the Graduate & Professional Student Association (GPSA).

2021 **GPSA Fall 2021 Student Scholarship**
Awarded travel scholarship by the Graduate & Professional Student Association (GPSA).

2021 **AGPA Connect 2021 Student Scholarship**
Awarded tuition by the Group Foundation for Advancing Mental Health to attend the American Group Psychotherapy Association (AGPA) Connect 2021 conference.

2017 **Second Place Paper Presentation**
Awarded for outstanding paper presentation entitled: *An investigation of the intersection between perfectionism and sociocultural idealization of thinness on disordered eating symptoms* at the University of Nevada Las Vegas, Psi Chi PSYCHTalks.

2017 **Office of the Executive Vice President and Provost Sponsored Award**
Awarded by the University of Nevada Las Vegas, College of Liberal Arts for the undergraduate research summer funding scholarship in the amount of $1,000.

2017 **First Place Poster Presentation**
Awarded for best overall poster presentation entitled: *The interactive effects of perfectionism and sociocultural idealization of thinness on disordered eating symptoms* at the Western Regional Honors Council (WRHC) Conference.

2014 - 2017 **Dean's Honor List**
Awarded by the University of Nevada Las Vegas, College of Liberal Arts.

Research Experience

Fall 2021 – Present **Graduate Research Assistant**
Behavioral Addictions Lab, UNLV
Research Supervisor: Shane Kraus, Ph.D.
Gather data for various research projects. Revise and maintain IRB submissions. Analyze data for future research projects. Disseminate findings at various national and international research conferences.

Fall 2019 – Spring 2021 **Graduate Research Assistant**
Science-to-Service: Growing Representative Outcomes and Understanding Psychotherapy (S2S GROUP) Lab, UNLV
Research Supervisor: Noelle Lefforge, Ph.D., MHA, CGP, ABPP
Gathered data for various research projects. Revised and maintained IRB submissions. Analyzed data for future research projects. Prepared reports of research findings.

Spring 2016 – Fall 2018 **Research Assistant**
Sex-Differentiated & Translational Research in Eating, Anxiety, & Mood (STREAM) Lab, UNLV
Research Supervisor: Kristen Culbert, Ph.D.
Recruitment coordinator for a follow-up study entitled: *A Closer Examination of Perfectionism and Culture on Eating Patterns in Women*. Maintain lab documents (i.e., informed consent forms, questionnaires) to ensure lab

organization and efficiency and managerial lab tasks (e.g., oversee delivery of supplies). Conducted male and female assessments by administering self-report questionnaires and physiological measures (i.e., finger length scans, height and weight, sweet taste test, hormone collection). Scored data for the weekly standardized sweet taste tests.

Summer 2015 – Spring 2016 **Research Assistant**
Human Sexuality Lab, UNLV
Research Supervisor: Marta Meana, Ph.D.
Assisted with overseeing eye-tracking device (i.e., calibrating computer screen to ensure reliability) to examine participant's attention to stimuli for human sexuality study in young adult women. Conducted literature searches and administered course credit to participants for participation in the study.

Publications

Manuscripts

Habashy, J., Benning, S.D., Renn, B.N., Borgogna, N.C., Lawrence, E.M., & Kraus, S.W. (2023). Psychometric properties of the eating disorder examination questionnaire: factor analysis and measurement invariance by race/ethnicity and gender. *Eating Behaviors*, 48:101696. http://dx.doi.org/10.1016/j.eatbeh.2022.101696

Sahlan, R.N., Akoury, L.M., **Habashy, J.,** Culbert, K.M., & Warren, C.S. (2022). Sociocultural correlates of eating pathology in college women from US and Iran. *Frontiers in Psychology*, 13:966810. http://dx.doi.org/10.3389/fpsyg.2022.966810

Habashy, J., & Culbert, K.M. (2019). The role of distinct facets of perfectionism and sociocultural idealization of disordered eating symptoms. *Journal of Social and Clinical Psychology, 38*, 343-365. https://doi.org/10.1521/jscp.2019.38.4.343

Conference Presentations

Paper Presentations

Habashy, J., Benning, S.D., Renn, B.N., Borgogna, N.C., Lawrence, E.M., & Kraus, S.W. (June 2023). Psychometric Properties of the Eating Disorder Examination Questionnaire: Factor Analysis and Measurement Invariance by Race/Ethnicity and Gender. Paper presented at the International Conference on Eating Disorders (ICED), Washington, D.C.

Habashy, J., & Kraus, S.W. (April 2023). The Influence of the COVID-19 Pandemic on Binge Eating In a Demographically Diverse US Community Sample. Paper presented at the UNLV Psychology Department Research Fair 2023, Las Vegas, NV.

Habashy, J., Way, B.M., Etuk, R., Jennings, T.L., Griffin, K.R., & Kraus, S.W. (June 2022). Double Trouble? Examining the Overlap between Problematic Pornography Use and Disordered Eating Symptoms in College Women. Symposium presented at the International Conference on Behavioral Addictions (ICBA), Nottingham, UK.

Way, B.M., Jennings, T.L., Griffin, K., **Habashy, J.,** & Kraus, S.W. (June 2022). Left Out: Examining Compulsive Sexual Behavior and Problematic Pornography Use in Women College Students. Symposium presented at the International Conference on Behavioral Addictions (ICBA), Nottingham, UK.

Griffin, K.R., Way, B.M., Jennings, T.L., **Habashy, J.,** Etuk, R., & Kraus, S.W. (June 2022). Strange bedfellows: Religion, problematic Pornography Use, and Purity Culture Symposium presented at the International Conference on Behavioral Addictions (ICBA), Nottingham, UK.

Jennings, T.L., Gleason, N., Lyng, T., Finotelli, I., Way, B.M., Griffin, K.R., Kraus, S.W., **Habashy, J.,** Etuk, R., Miner, M., & Coleman, E. (June 2022). Compulsive Sexual Behavior, Religiosity, and Spirituality: A Systematic Review. Symposium presented at the International Conference on Behavioral Addictions (ICBA), Nottingham, UK.

Habashy, J., & Lefforge, N.L. (August 2020). Routine Outcome Monitoring & Reducing Premature Termination. Symposium presented at the American Psychological Association (APA) Virtual Conference, Washington, DC.

Habashy, J., & Culbert, K.M. (November 2017). An examination of the intersection between distinct facets of perfectionism and sociocultural idealization of thinness on disordered eating symptoms. Paper presented at the Office of Undergraduate Research (OUR) Fall Research Showcase, Las Vegas, NV.

Habashy, J., & Culbert, K.M. (November 2017). An investigation of the intersection between perfectionism and sociocultural idealization of thinness on disordered eating symptoms. Paper presented at the Psi Chi PSYCHTalks, Las Vegas, NV.

Poster Presentations

Bidopia, T., **Habashy, J.,** Karvay, Y., Yerman, J., Burke, N. & Kraus, S.W. (June 2023). Intersectional Discrimination and Disordered Eating Behaviors and Attitudes in Young Adults. Poster presented at the International Conference on Eating Disorders (ICED), Washington, D.C.

Habashy, J., Etuk, R., & Kraus, S.W. (March 2022). The Association between Problematic Pornography Use and Disordered Eating Symptoms in Men and Women. Poster presented at the Graduate and Professional Student Association Spring Forum (GPSA) Las Vegas, NV.

Habashy, J., Etuk, R., Stevens, K., & Kraus, S.W. (October 2021). An Examination of the

Association between Problematic Pornography Use and Disordered Eating Symptoms in Men and Women. Poster presented at the Society for the Advancement of Sexual Health (SASH) Conference, Seattle, WA.

Etuk, R., **Habashy, J.,** Stevens, K., Culbert, K.M., & Kraus, S.W. (September 2021). Body Dissatisfaction Mediates the Relationship between Problematic Pornography Use and Disordered Eating Behavior in Men and Women. Poster presented at the Eating Disorders Research Society (EDRS) Conference, Boston, MA.

Habashy, J., Sahlan, R.N., Akoury, L.M., Culbert, K.M., & Warren, C.S. (April 2020). Sociocultural predictors of disordered eating in college women from US and Iran: a cross-cultural comparison. Poster presented at the Western Psychological Association (WPA) Conference, San Francisco, CA.

Akoury, L.M., Sahlan, R.N., **Habashy, J.,** Culbert, K.M., & Warren, C.S. (November 2019). Sociocultural predictors of disordered eating in college women from US and Iran: a cross-cultural comparison. Poster presented at the 2019 Association for Behavioral and Cognitive Therapies (ABCT) Obesity and Eating Disorders Special Interest Group (OED SIG) meeting in Atlanta, Georgia.

Habashy, J., & Culbert, K.M. (March 2019). An examination of negative attitudes towards obesity and thin-ideal internalization as underlying factors that influence ethnic differences in body dissatisfaction. Poster presented at the International Conference on Eating Disorders (ICED), New York, NY.

Corral, A., **Habashy, J.,** Shope, M.M., & Culbert, K.M. (April 2018). Examining interrelationships between collectivism, caregiver eating messages, and binge eating symptoms in Hispanic/Latina women. Poster presented at the Western Psychological Association (WPA) Conference, Portland, OR.

Habashy, J., & Culbert, K.M. (April 2018). An investigation of the intersection between perfectionism and sociocultural idealization of thinness on disordered eating symptoms. Poster presented at the International Conference on Eating Disorders (ICED), Chicago, IL.

Habashy, J., & Culbert, K.M. (December 2017). The interplay between perfectionism and sociocultural idealization of thinness on disordered eating symptoms. Poster presented at the University of Nevada, Las Vegas Honors College Research Forum, Las Vegas, NV.

Habashy, J., & Culbert, K.M. (April 2017). The interactive effects of perfectionism and sociocultural idealization of thinness on disordered eating symptoms. Poster presented at the Western Psychological Association (WPA) Conference, Sacramento, CA.

Habashy, J., & Culbert, K.M. (April 2017). The interactive effects of perfectionism and sociocultural idealization of thinness on disordered eating symptoms. Poster presented at the Office of Undergraduate Research (OUR) Forum, Las Vegas, NV.

Habashy, J., & Culbert, K.M. (April 2017). The interactive effects of perfectionism and sociocultural idealization of thinness on disordered eating symptoms. Poster presented at Western Regional Honors Council (WRHC) Conference, Ashland, OR.

Professional Affiliations and Services

Spring 2021	**American Group Psychotherapy Association (AGPA)**
Fall 2019	**Nevada Psychological Association (NPA)**
Spring 2017	**American Psychological Association (APA)**
Spring 2017	**Phi Kappa Phi**
Fall 2016	**Western Psychological Association (WPA)**
Spring 2016	**Psi Chi**

Employment Experience

Spring 2022 – Present	**Graduate Assistant** Eating disorder clinician at the Eating Disorder Institute (EDI). Responsible for conducting assessments as well as individual and group psychotherapy for teens and adults with feeding and eating disorders. Also, a supervisor-in-training to another practicum trainee.
Fall 2019 – Fall 2021	**Graduate Research Assistant** Gather data for various research projects. Revise and maintain IRB submissions. Analyze data for future research projects. Prepare reports of research findings.
Spring 2018 – Fall 2018	**Prevent Child Abuse Nevada (PCANV) Outreach Coordinator** Coordinate statewide Pinwheel for Prevention Awareness events, coordinate statewide advisory council, attend community outreach events, represent PCANV at community meetings, and create agency materials/flyers.
Summer 2015 – Present	**Summer Camp Counselor** Plan, execute, and supervise camp activities, including arts and crafts, and sports. Mentor and tutor youth on math, reading, and speech.

Professional Training

Spring 2016	**Biological Safety Training** Completed online safety trainings on blood borne pathogens, chemical hygiene, personal protective equipment, and biosafety as part of the requirements for STREAM Lab.

Community Service _____

Summer 2022 – Present	**Secretary/Treasurer for Diversity and Inclusion Student Committee (DISC)** Responsible for taking meeting notes and managing the committee budget.
Fall 2021 – Spring 2022	**Scheduling Liaison for Diversity and Inclusion Student Committee (DISC)** Responsible for scheduling events and making room reservations for monthly meetings.
Fall 2019 – Present	**Outreach Undergraduate Mentoring Program (OUMP)** Mentor to undergraduate students from diverse backgrounds who are interested in pursuing a graduate degree in psychology or a related field.
Fall 2015 – Present	**Volunteer at Las Vegas Rescue Mission** Serve meals to recovery residents and the homeless and sort and count donations from a variety of drives (i.e., water bottle drive, canned food drive)
Spring 2015 – Present	**Sunday School Teacher** Plan and teach weekly lessons through a variety of methods (e.g., lectures, interactive activities) to high school students.

Languages_____

English, Native Proficiency

Coptic, Fluent

Arabic, Conversational