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Eating Disorder Symptoms in Transgender Adults: The Impact of Gender Dysphoria and Minority Stress on Eating Disorder Symptomatology

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PSYCHOLOGY – MEDICAL/CLINICAL

ABSTRACT

Background: Transgender individuals experience more mental health challenges than their cisgender counterparts, and a growing area of research suggests that transgender individuals are at increased risk of eating disorder symptoms. The Gender Minority Stress and Resilience model may help explain this health disparity in eating disorder symptoms. The model theorizes that this disproportionate mental health burden, such as eating disorder symptoms, may arise from the stresses of belonging to a minoritized group. Another factor that may account for eating disorder disparities is gender dysphoria, a distressing and clinically significant state many transgender individuals experience when their physical appearance is incongruent with their gender identity. However, no studies have tested whether minority stress and gender dysphoria relate to eating disorder symptomatology. *Methods:* A cross-sectional survey of Southern U.S. transgender adults ($N = 60$) examined these associations via multiple linear regression models and means testing. *Results:* The eating disorder symptom composite was significantly associated with gender dysphoria. Endorsing cognitive distortions consistent with having an eating disorder was associated with increased gender dysphoria, being transmasculine (as opposed to nonbinary), and being white. Endorsing compensatory behaviors was positively associated with gender dysphoria and negatively associated with distal stress. Individuals with a

lower yearly income endorsed higher scores on caloric restriction than their higher-earning counterparts.

Conclusion: Findings highlight the high prevalence of eating disorder symptoms within the transgender community in the Deep South and the need for eating disorder screening and treatment when working with this population clinically.

Keywords: gender dysphoria, eating disorders, gender minority stress

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Introduction

Transgender individuals (those whose gender is not consistent with the sex they were assigned at birth) experience many health disparities, including mental and physical health challenges (Hendricks & Testa, 2012; Kozee et al., 2012). As a minoritized group, transgender people experience a unique set of stressors that contribute to these disparities, including gender dysphoria, discrimination, and the internalization of cisnormative society's norms and prejudices (Hendricks & Testa, 2012; Lindley & Galupo, 2020). This unique set of stressors, often referred to as minority stress, can result in poor physical and mental health, including the development of eating disorder symptoms (Ålgars et al., 2012; Nagata et al., 2020; Parker & Harriger, 2020; Testa et al., 2017).

Gender Dysphoria and Gender Congruence

Gender congruence refers to "the degree to which transgender individuals feel genuine, authentic, and comfortable within their external appearance/presence and accept their genuine identity rather than the socially prescribed identity" (Kozee et al., 2012). This construct represents the extent to which transgender people accept themselves, their transgender identity, and their appearance. Gender congruence is associated with higher levels of life satisfaction and lower levels of adverse mental health outcomes (e.g., anxiety, depression) and body dissatisfaction (Kozee et al., 2012).

Gender dysphoria, sometimes referred to as gender incongruence, is a distressing state in which an individual experiences an inconsistency between their physical

appearance or social perception and their gender identity (Galupo et al., 2020; Hendricks & Testa, 2012; Kuyper & Wijsen, 2013; Lindley & Galupo, 2020; van de Grift et al., 2016). Gender dysphoria can result from any aspect of physical appearance or social perception (such as having a gendered name or being referred to with incorrect pronouns) but often is centered around primary and secondary sex characteristics (genitals, body hair, body fat distribution, or voice) (Galupo et al., 2020; van de Grift et al., 2016).

Some individuals mitigate dysphoria by taking social (e.g., change of name or pronouns with friends), legal (e.g., change of name or sex on government ID documents), or medical (e.g., hormone therapy or surgical intervention) transition steps, though not all transgender people desire to take these steps (Grant et al., 2011; Tatum et al., 2020; Testa et al., 2017). Previous research indicates that social transition in transgender men, but not transgender women, is associated with higher body satisfaction (van de Grift et al., 2016). These results have been explained by higher reported levels of overall congruence by transgender men in this sample. Additionally, social and medical transition have attenuated social-related gender dysphoria in transfeminine and transmasculine individuals; however, non-binary people were significantly less likely to report this (Galupo et al., 2020). Overall, previous research has demonstrated that gender-affirming medical interventions are successful in alleviating gender dysphoria and improving quality of life in transgender individuals (Murad et al., 2010; Testa et al., 2017; van Leerdam et al., 2021). Moreover, these medical interventions have been demonstrated to increase body satisfaction and, in turn, decrease eating disorder symptoms (Testa et al., 2017).

Unfortunately, not all transgender individuals who would like to pursue transition are able to due to lack of access, affordability, or safety concerns (Grant et al., 2011; Nolan et al., 2019). Past research has demonstrated that older individuals, those with a higher income, and those who are White are more likely to utilize gender-affirming medical transition services than their opposite-trait counterparts, particularly those who are Black or Latinx (Nolan et al., 2019; Testa et al., 2017). Higher levels of education have also been associated with higher utilization of medical interventions (Testa et al., 2017). Negative body image/body dissatisfaction is not only associated with gender incongruence/dysphoria but also may lead to "compensatory conditions" to mitigate these feelings, including eating disorders (Diemer et al., 2015; Kozee et al., 2012; van de Grift et al., 2016). Therefore, individuals who want to pursue transition but cannot access the necessary resources may experience an elevated risk for eating disorder symptomatology (Testa et al., 2017).

Eating Disorder Symptomatology in Transgender Individuals

Previous research has demonstrated that transgender individuals may be at increased risk of exhibiting eating disorder symptomatology (Ålgars et al., 2012; Nagata et al., 2020; Parker & Harriger, 2020; Testa et al., 2017). For example, in one national study of college-aged individuals, 15.8% of transgender people had an eating disorder diagnosis within the past year, compared to 1.5% of individuals in the overall sample (Diemer et al., 2015). Additional research indicates that although transgender individuals presented with fewer eating disorder symptoms than individuals with diagnosed eating disorders, they presented with higher eating disorder symptoms than controls (Witcomb et al., 2015).

Transgender individuals may engage in disordered eating and associated behaviors to manage gender dysphoria (Brownstone et al., 2021). Body image and gender are inextricably intertwined for some individuals, and they may engage in disordered eating to feel more affirmed in their body shape or size. For example, transgender individuals may engage in disordered eating to either conform to gendered norms in body type or suppress gendered features (Diemer et al., 2018; Testa et al., 2017). To this end, the source of body dissatisfaction is likely to play a role in the development of eating disorder symptoms (Witcomb et al., 2015). For example, primary discomfort resulting from body hair's presence (or absence) may be less likely to contribute to the development of eating disorder symptoms than dissatisfaction with how one's body fat is distributed (e.g., wanting wider or more narrow hips).

Another explanation for transgender individuals' engagement in disordered eating patterns may be as a method of emotional regulation and an exercise of control (Cusack, Iampieri, et al., 2022; Sassaroli et al., 2008). Low perceptions of control have been associated with disordered eating cognitions in studies involving cisgender individuals (Sassaroli et al., 2008). Transgender individuals specifically have reported engaging in these patterns as a result of being unable to access gender-affirming transition-related care, in order to stunt growth or avoid pubertal changes (Cusack, Iampieri, et al., 2022).

Passing and Transnormativity

A person's desire to "pass" may also drive eating disorder symptoms. The notion of a transgender person's ability to "pass" for their gender refers to a state in which other individuals cannot tell they are transgender by looking at them or interacting with them (Owen-Smith et al., 2018). Passing typically applies to binary transgender individuals but

can also apply to non-binary individuals. For some individuals, feelings of passing have been demonstrated to increase self-esteem and levels of body satisfaction, which, in turn, have been associated with decreased eating disorder symptomatology (Baranowksi et al., 2003; Owen-Smith et al., 2018). One's ability to pass may also decrease felt discrimination and stigma (Diemer et al., 2018; Testa et al., 2017). Individuals who experience high levels of enacted stigma (e.g., distal stressors) are more likely to have been diagnosed with an eating disorder or have experienced an eating disorder in the past year (Testa et al., 2017), even when the influence of social support is controlled for (Diemer et al., 2018).

Among the transgender community, transnormativity prescribes a normative and hegemonic set of guidelines to which transgender people's gender-related experiences and transition-related goals are compared and assessed for legitimacy (Johnson, 2016). The binary medical model, which is heavily reliant on the concept of all transgender people being "born in the wrong body" (and, therefore, wanting to transition to having the passing, socially accepted body of another sex), is at the center of this framework (Johnson, 2016). These transnormative standards govern how cisgender people interact with and evaluate transgender individuals and how transgender individuals interact within their communities.

Prevalence by Gender

The interaction between gender identity and assigned sex at birth appears to be related to eating disorder symptoms in transgender individuals. Being assigned female at birth (AFAB) is positively associated with eating disorder symptomatology, regardless of a person's gender identity (Witcomb et al., 2015). Transgender men and cisgender

women also report significantly more body dissatisfaction than individuals assigned male at birth (AMAB), with transgender men demonstrating near-identical body satisfaction scores to matched cisgender men with eating disorder diagnoses (Witcomb et al., 2015).

Several explanations have been proposed to explain this pattern. As mentioned previously, transmasculine individuals and transgender men may engage in disordered eating behaviors to suppress gendered features, such as wide hips and breasts, or induce amenorrhea (Ålgars et al., 2012; Brownstone et al., 2021; Testa et al., 2017). Similarly, transfeminine individuals or transgender women may engage in these behaviors to fit the social ideal of thinness and femininity (Ålgars et al., 2012). Dietary restraint, binge eating episodes, and excessive exercise are the most common eating disorder symptoms reported by transgender individuals (Nagata et al., 2020). It is also possible that being socialized as female for a portion of life increases the risk of developing an eating disorder (Witcomb et al., 2015). Moreover, a biologically protective component for AMAB individuals may also play a role in these interactions (Witcomb et al., 2015).

Differences in eating disorder symptoms also exist between individuals with binary and non-binary transgender identities; however, findings are mixed in this area. Non-binary individuals are more than three times more likely to report a clinically diagnosed eating disorder than binary transgender individuals (Diemer et al., 2018). While the AFAB individuals displayed a higher prevalence of eating disorder symptomatology in this study than AMAB individuals, the difference did not reach the level of significance. Diemer and colleagues (2018) posit that the difference in symptomatology in this study was driven by binary versus non-binary identity as opposed to sex assigned at birth. Interestingly, this finding contradicts previous research in this

area, which indicates that non-binary people report more body satisfaction than their binary-identified transgender counterparts (Jones, Pierre Bouman, et al., 2019).

Prior research supports the theory that non-binary people may experience more stigma and discrimination regularly (especially those who do not pass for a binary gender); as such, eating disorder risk and symptomatology may be increased in this population (Diemer et al., 2018). More non-conforming individuals may be at higher risk of experiencing minority stressors (e.g., gender non-affirmation and internalized stigma), thus increasing the risk of eating disorder symptoms (Testa et al., 2017). One additional possibility to explain this finding is that the relationship between body dissatisfaction and eating disorders is moderated by a currently unknown variable, possibly one related to the interaction between gender identity and sex assigned at birth (Diemer et al., 2018). Given that previous theories and findings in this domain are mixed, it is essential to explore differences in types of eating disorder symptoms and severity in binary and non-binary transgender people.

Other Sociodemographic Differences in Eating Disorder Symptoms

Historically and culturally, the SWAG - skinny, White, affluent, girl - stereotype has permeated society's conceptualization of what types of individuals may develop eating disorders and therefore who is at risk, afflicted, or requires treatment (Sonneville & Lipson, 2018). This stereotype may marginalize other identities in eating disorder research and inhibit individuals from recognizing they need to seek care. Unfortunately, most research examining sociodemographic differences in eating disorder symptoms has been conducted with presumably majority cisgender samples. Therefore, it is crucial to expand the research on sociodemographic differences (e.g., sex assigned at birth,

race/ethnicity, income, age) in eating disorder symptoms beyond cisgender individuals to the transgender community. Many of the following studies were conducted with presumably majority cisgender participants.

Studies that have examined sex assigned at birth (without differentiating gender identity) have shown that individuals assigned female at birth have a greater likelihood of eating disorder symptoms or diagnosis (Sonneville & Lipson, 2018). The odds of having eating disorder symptoms or pathology remain when adjusting for age, race/ethnicity, education, and income (Udo & Grilo, 2018). These trends parallel research on the transgender community, indicating that individuals assigned female at birth are at greater risk of developing eating disorder symptoms than their assigned male counterparts (Witcomb et al., 2015). However, additional research is needed to replicate this.

Regarding race/ethnicity, past research (that has not differentiated between cisgender and transgender participants) indicated that individuals of color were significantly less likely to receive an eating disorder diagnosis (Sonneville & Lipson, 2018). However, it is unclear if this is due to true lower likelihood of having an eating disorder or to biases in diagnostic decision-making. Further, the lifetime prevalence of anorexia nervosa in non-Hispanic Black and Hispanic individuals is lower than for White individuals. However, there were no differences between White and non-White participants in the adjusted odds for the development of bulimia (Udo & Grilo, 2018). The adjusted odds of lifetime binge eating disorder were also significantly lower in non-Hispanic Black participants than their White counterparts (Udo & Grilo, 2018).

Previous findings are mixed when considering socioeconomic status and age roles in eating disorder symptomatology and pathology. While one national study from

Australia (which conducted analyses based on binary participant sex) indicated no differences in current eating disorder symptoms based on socioeconomic status (Mulders-Jones et al., 2017), competing research shows significant differences. Additionally, from 1998-2008, one of the fastest-growing demographic sectors of individuals with eating disorder symptoms, and those with the most symptom burden, was those of low socioeconomic status (Mitchison et al., 2014). More specifically, in a sample of transgender individuals, those with lower socioeconomic status reported more eating disorder symptoms than their counterparts with higher socioeconomic status (Testa et al., 2017).

The effect of age on eating disorder symptoms is also inconsistent in the literature. Eating disorder symptom onset generally occurs between ages 16 and 20, with the onset varying slightly depending on the specific disorder (Stice et al., 2013). Some previous research indicates that younger individuals, especially transgender individuals, report more eating disorder symptoms than their older counterparts (Testa et al., 2017). However, multiple studies have demonstrated an increase in eating disorder symptoms within 40-49 years of age compared to other adult age groups and increased prevalence in purging over the age of 45 (Mitchell et al., 2021; Mitchison et al., 2014). These inconsistencies in the literature highlight the importance of controlling for age and socioeconomic status and further exploring the demographic trends in eating disorder symptoms in samples of transgender people.

Gender Minority Stress and Resilience

The Gender Minority Stress and Resilience Model posits that the disproportionately higher prevalence of mental health disorders among the transgender

population is partly due to the increased discriminatory and stigmatizing experiences they regularly encounter (Hendricks & Testa, 2012). Stressors are divided into two categories: distal stressors, which refer to external events that occur as a result of a person interacting with their environment, and proximal stressors, which refer to both internalized transnegative attitudes and the anticipation of distal stressors. Gender dysphoria should also be considered a proximal stressor within this model; despite it being an internal process, levels of gender dysphoria are positively correlated with other proximal stressors, such as internalized transphobia or anticipatory stress (Lindley & Galupo, 2020).

An individual's experiences of minority stressors lie on a continuum from external to internal; external stressful events precipitate expectations of the stressor occurring again (e.g., increased vigilance), while negative societal attitudes are internalized by the individual (Meyer, 2003). Individuals may experience external stressors that are consistent with the identities others perceive them to have rather than their true identity (e.g., individuals who are perceived as transgender women may experience discrimination or misgendering on this basis, even if they hold a different gender) (Meyer, 2003). An additional proximal stressor is identity concealment, which refers to the decisions one makes about disclosing their sexual or gender identity (Hendricks & Testa, 2012; Meyer, 2003). Ample previous research has established the relationship between experiences of discrimination and violence by transgender people and adverse health outcomes (Goldblum et al., 2012; Hendricks & Testa, 2012; Testa et al., 2012). Additionally, individuals with high reported levels of gender dysphoria have also been found to have high levels of anticipated stigma (Lindley & Galupo, 2020). Over

time, expectations of external stressors lead to the internalization of transnegative attitudes, resulting in poor mental health outcomes for the individual (Hendricks & Testa, 2012; Lindley & Galupo, 2020; Meyer, 2003).

Resilience (one's ability to respond to and recover from stressful life events) is another important consideration in the model (Hendricks & Testa, 2012). Resilience factors include pride in one's gender and racial identity, recognizing and negotiating gender and racial oppression, navigating relationships with family, accessing healthcare and financial resources, connecting with transgender activists, and cultivating spirituality and hope for the future. These factors are thought to be protective against the impact and influence of external and internal stressors on health outcomes, such as eating disorder symptoms (Hendricks & Testa, 2012).

Minority Stress and the U.S. Deep South

Increasing research focus on the experiences of transgender people in the Deep South is imperative. Each year since 2018 has been a new, record-shattering year for the number of proposed anti-transgender bills in the United States; in 2022, over 230 anti-transgender bills were introduced in the United States, many of which were disproportionately introduced in the Southern U.S. (Lavietes & Ramos, 2022). The proposed (and passed) legislation varies from state to state, but generally seeks to restrict transgender individuals from accessing public accommodations (e.g., restrooms, locker rooms), gender-affirming healthcare, and preventing transgender children from participating in school sports. These pieces of anti-transgender legislation demonstrate the pervasiveness of systemic oppression and marginalization of transgender people.

Moreover, anti-transgender legislation and transphobic sentiments in the media are not only intrinsically linked to anti-transgender violence, but also systemic and interpersonal racism and policing (Natividad, 2021). This constellation of factors informs how transgender people, especially transgender people of color, in the Deep South move through life, interact with their environment, and experience feelings of (un)safety. Further, this environmental context relates to distal and proximal stress, and may create downstream effects of mental health symptoms.

Present Study

Transgender people experience heightened risks for eating disorder symptoms. Evidence and theory suggest that gender dysphoria and minority stress may contribute to this risk. However, to date, no studies have tested this research question. Additionally, evidence is equivocal regarding sociodemographic differences (i.e., gender identity, race/ethnicity, age, income) in eating disorder symptoms within the transgender community. The current study contributes to the existing literature by filling these gaps. Findings will inform effective eating disorder prevention and intervention programming for the transgender community.

First, the author hypothesized that individuals who experience less gender dysphoria and less distal minority stress will exhibit fewer eating disorder symptoms. Second, the author explored sociodemographic differences in eating disorder symptoms. Following the initially planned analyses, an ad hoc, exploratory analysis was added to each aim to determine whether the predictors of interest were associated with specific eating disorder symptom clusters.

Methods

The study drew from a pre-existing dataset: *Risk and Resilience Factors Related to Health of Transgender and Gender Non-Conforming Individuals*. Only the baseline data was for this thesis. The dataset consisted of 60 transgender people recruited for a 30-day daily diary study at two sites: the University of Alabama at Birmingham and the University of Tennessee Knoxville. Individuals were recruited through local gender-affirming providers, university campus advertisements, social media-based pages, and respondent-driven sampling. Participants completed baseline measures and 30 daily diary surveys regarding minority stress, substance use, and suicidality.

Participants

Participants ($N = 60$) for the proposed study were recruited via community and campus advertising in the greater Birmingham and Knoxville areas. Inclusion criteria were that individuals self-identified as either transgender and/or gender non-conforming and were 18 years old or older. Study participants were compensated via Walmart gift card commensurate with the degree of participation, between $5 and $20.

Description of Measures

The present study's measures of interest are detailed below, administered at baseline. Complete copies of the measures are available in Appendix A.

Transgender Congruence Scale (TCS). The TCS measures “the degree to which transgender individuals feel genuine, authentic, and comfortable with their gender

identity and external appearance" (Kozee et al., 2012). The TCS is a 15-question, 5-point Likert-style scale, with higher scores reflecting more congruence. Gender incongruence is a central contributing factor to the DSM-5's Gender Dysphoria diagnosis, and this scale does not focus on binary gender constructs, which has been a noted issue in the literature (Galupo & Pulice-Farrow, 2020; Jackman et al., 2018). As such, this measure is the most appropriate to measure experienced gender dysphoria in this sample. To achieve the goal of this scale representing dysphoria rather than congruence, all items will be reverse-scored (such that higher scores represent more gender dysphoria). The TCS has been demonstrated to have strong construct validity, positively relating to life satisfaction and negatively relating to body dissatisfaction, anxiety, and depression (Cronbach's $\alpha = .93$; Kozee et al., 2012). The present study replicates a previous approach (Jones, Bouman, et al., 2019) and utilizes only the appearance subscale, which had good internal consistency within the present sample ($\alpha = .83$).

Eating Disorder Diagnostic Scale (EDDS). The DSM Eating Disorder Diagnostic Scale requires clients to recall how often they experienced particular thoughts about food, weight, and eating within the preceding three months (Stice et al., 2000). The scale also assesses the number of times per week participants engage in behaviors to prevent weight gain. A polythetic criterion set is used to diagnose this condition in a clinical context. For the current analyses, the author tabulated an Eating Disorder Symptom Score by summing items to create a score indicating the degree to which various eating disorder symptomatology was present. Further, the author explored the individual components of the EDDS that refer to specific disordered eating behaviors (cognitive component, restriction, binge eating, and compensatory behaviors); these

component subscales are typically used in a clinical setting for specific diagnoses of anorexia, bulimia, or binge eating disorder. Per the scale's scoring guidelines, individuals either meet criteria for a full-threshold eating disorder diagnosis or subthreshold symptoms. Subthreshold symptoms capture the DSM-IV diagnosis of Eating Disorder NOS, as well as cases where symptoms are present, but are not significant enough to be considered full-threshold (e.g., an individual stating that they have a slight versus moderate fear of becoming fat). The overall EDDS had good internal consistency within the present sample (Cronbach's $\alpha = .82$). Adequate internal consistency was present for both the cognitive (Cronbach's $\alpha = .78$) and binge eating subscales (Cronbach's $\alpha = .78$). Unfortunately, the compensatory behaviors subscale did not present as a unified construct (Cronbach's $\alpha = -.14$), which may be due to individuals having one compensatory behavior instead of utilizing several (e.g., restricting instead of over-exercising).

Gender Minority Stress and Resilience Scale (GMSRS) (Testa et al., 2015). Participants reported minority stress experiences at baseline, indicating if they have experienced specific minority stressors within the following periods: during the last year, more than one year ago, or never. This scale contains nine subscales, each assessing a different construct within the gender minority stress and resilience model. Gender-related discrimination, rejection, victimization, and non-affirmation of gender identity subscales measure distal stress factors. The internalized transphobia, negative expectations for the future, and nondisclosure of identity subscales measure proximal stress factors. Resilience within the model is measured by the community connectedness and pride subscales. Previous research has summed the total GMSRS and found excellent internal consistency for this aggregate score ($\alpha = 0.90$; Cusack et al., 2021). Proximal stressors

have been combined into a single scale in past research and have been supported as a latent construct via confirmatory factor analysis (Lindley & Galupo, 2020); however, no such method has been confirmed to construct a distal stress construct. Due to the small sample size in the present study, the distal stressors subscales were summed to capture this variable. The distal stress composite score had good internal consistency within the sample (Cronbach's $\alpha = 0.88$).

Demographic Information. Participants' demographic information was collected at baseline, including their income level, race/ethnicity, gender, and age.

Data Analysis

Data were analyzed using SPSS and STATA. Prior to analyzing data, multiple imputation was performed (using RStudio) to address missing data. Specifically, Random Forest imputation was used, as the data were Missing at Random. This method has been indicated in the literature as appropriate and reliable for psychological research (Golino & Gomes, 2016). Following this procedure, descriptive statistics and correlations for pertinent sociodemographic and study variables were run (presented in Table 1). Most participants were White (85%) and earned under $10,000 annually (57%). The three gender categories were evenly represented in the sample, and participants were, on average, 29.4 years old ($SD = 12.4$).

Site effects were also examined for the key variables of EDDS, distal stress composite scores, and gender dysphoria. While EDDS and gender dysphoria did not vary by site, the amount of distal stress participants experienced did, $t(1,56.1) = -2.07$, $p = .043$; individuals recruited from Tennessee experienced more distal stress ($M = 41.56$) than those from Alabama ($M = 33.56$). Given that distal stress was not the outcome

variable in the present study's models, controlling for these site effects was not necessary.

Regression procedures were utilized to assess the association of gender dysphoria and distal minority stress with eating disorder symptoms. The composite eating disorder symptom score was entered as the criterion variable, and gender dysphoria and minority stress were entered as the predictor variables. These analyses controlled for age, income, and race, as the literature highlights differences in eating disorder symptoms across these variables (although the nature of differences has been inconsistent) (Mitchison et al., 2014; Mulders-Jones et al., 2017; Sonneville & Lipson, 2018; Stice et al., 2013; Testa et al., 2017; Udo & Grilo, 2018; Witcomb et al., 2015).

Power Analysis

Statistical power was calculated using an *a priori F*-test for multiple linear regression. The G*Power *F*-test for multiple linear regression using small effect sizes indicated that 52 participants would be necessary to achieve .8 power, indicating that the study design is sufficiently powered to detect an effect.

Table 1

Descriptive Statistics and Correlations Among Variables of Interest (N = 60)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. EDDS	-												
2. Cog. Dis.	.807***	-	-	-	-	-	-	-	-	-	-	-	-
3. Binge Eating	.906***	.552***	-	-	-	-	-	-	-	-	-	-	-
4. Restriction	.503***	.308*	.278*	-	-	-	-	-	-	-	-	-	-
5. Comp. Behs	.446***	.225	.411***	.229	-	-	-	-	-	-	-	-	-
6. Dysphoria	.287*	.318*	.180	.128	.267*	-	-	-	-	-	-	-	-
7. Distal Stress	.102	.136	.068	.011	-.084	.410***	-	-	-	-	-	-	-
8. Age	-.064	-.032	-.007	-.164	-.108	-.179	-.128	-	-	-	-	-	-
9. Race	-.117	.150	-.123	.093	-.017	.061	.063	.069	-	-	-	-	-
10. Income	-.028	.195	-.064	-.269*	-.169	.082	-.173	.013	.009	-	-	-	-
11. Transfeminine	-.084	.040	-.112	-.153	-.041	.060	.182	.243*	-.027	.039	-	-	-
12. Non-Binary	-.204	-.305*	-.062	-.218	-.101	-.027	-.046	-.206	-.198	.024	-.408***	-	-
13. Transmasculine	.239	.274*	.149	.185	.160	.065	-.079	.036	.245	-.067	-.445***	-.558***	-
Mean	13.5	7.0	5.3	1.1	0.3	17.6	36.3	29.4	-	-	-	-	-

* $p < .05$ ** $p < .01$ *** $p < .001$

Note. Binge = Cog. Dis. = cognitive distortions symptom cluster, Restriction= Caloric Restriction symptom cluster, Comp. Behs = Compensatory Behaviors symptom cluster, Dysphoria = Gender Dysphoria, Income: individuals making over $10,000 a year coded as 1, Race: individuals of color coded as 1

Results

Almost 40% of the sample (38.9%, $n = 21$) exhibited clinical or subclinical levels of eating disorder symptomatology. Of those participants who exhibited eating disorder symptoms, 61.9% met the criteria for a full-threshold (FT) eating disorder diagnosis, and 38.1% met the criteria for a subthreshold (ST) diagnosis. The most common symptom profile was that of Bulimia Nervosa (FT 13%, ST 5.6%), followed by Anorexia Nervosa (FT 5.6%, ST 5.6%) and Binge Eating Disorder (FT 5.6%, ST 3.7%). Within the sample, 28.3% of participants reported clinically significant levels of cognitive distortions. Over the last three months, 15% of participants indicated they had participated in compensatory behaviors, 40% reported at least one episode of binge eating per week on average, and 26.6% reported skipping at least two meals in a row to prevent weight gain.

EDDS, Gender Dysphoria, and Distal Stress

When holding age, race, and income constant, the omnibus F test of the associations of distal stress and gender dysphoria with EDDS was not significant, $R^2 = .10$, $F(5,52.11) = 1.249$, $p = .30$. Two ad hoc sensitivity analyses were performed. The first of these analyses sought to determine whether the inclusion of gender in the regression model would affect the results. While the model fit did improve somewhat, the results did not change ($R^2 = .15$, $F(6,52.762) = 1.506$, $p = .20$). The second such analysis did not control for demographic variables; while the model's omnibus F test trended

towards significance, it ultimately remained insignificant (R^2 = .08, F(2,55.1) = 2.564, p = .09). Despite the nonsignificant omnibus F test results, gender dysphoria was positively associated with eating disorder symptoms in each of the three tested models ($b_{Model\ 1}$ = .39, $b_{Model\ 2}$ = .37, $b_{Model\ 3}$ = .37, respectively). None of the other tested predictors were uniquely associated with the eating disorder symptom composite score.

Exploratory Subscale Analyses

Following these analyses, a series of exploratory, ad hoc regressions were conducted to examine the effects of gender dysphoria, distal minority stress, age, race, income, and gender on eating disorder symptom clusters: cognitive distortions, binge eating behaviors, compensatory behaviors, and caloric restriction. Holding cognitive distortions consistent with an eating disorder mindset (e.g., overvaluing shape and weight) was associated with increased gender dysphoria, being transmasculine (as opposed to non-binary), and being White (R^2 = .30, F(7,50.109) = 3.23, p = .007). The full regression model can be viewed in Table 2.

The compensatory behavior subscale was not within the acceptable reliability range, as Cronbach's alpha was negative. However, the regression model examining the associations between the variables of interest and compensatory behavior (e.g., purging, excessive exercise) trended towards significance. The omnibus test was ultimately not significant, R^2 = .20, F(7,50.12) = 1.829, p = .10. Within this model, gender dysphoria was positively associated with compensatory behaviors (b = .03, p = .007) and distal stress was negatively associated with compensatory behaviors (b = -.01, p = .04). Income trended towards significance as well (b = -.35, p = .06).

The omnibus *F* test examining the association between caloric restriction and the variables of interest was not significant, $R^2 = .17$, $F(7,44.05) = 1.114$, $p = .37$. However, income was uniquely associated with caloric restriction within the model ($b = -1.52$, $p = .04$). Binge eating was not associated with any of the variables of interest, $R^2 = .09$, $F(7,50.11) = .75$, $p = .64$.

Table 2

Regression Model Predicting Cognitive Distortions

Variable	***b***	***SE***	***F***	**df**	***p***
Intercept	5.104	2.336	2.185	50.104	0.034
Gender Dysphoria	0.135	0.062	2.161	50.104	0.035
Distal Stress	0.027	0.041	0.643	50.104	0.523
Transfeminine	-1.888	1.398	-1.350	50.104	0.183
Transmasculine	-4.066	1.261	-3.224	50.104	0.002
Person of Color	-3.341	1.518	-2.200	50.104	0.032
Greater than 10,000 a Year	1.890	1.095	1.726	50.104	0.090
Age	0.001	0.046	0.013	50.104	0.990

Est. R^2: 0.303, 95% CI [0.119, 0.498]

Note. Transmasculine and transfeminine individuals are compared to non-binary individuals in this model.

Eating Disorder Symptoms Across Demographic Categories

Means testing was used to explore whether eating disorder symptoms differed across income level, race/ethnicity, and gender identity. Given the small sample size and cell sizes, differences in symptoms were explored via *t*-test for race/ethnicity (White individuals and individuals of color) and yearly income level (above or below $10,000 a year). No differences were present in the overall symptom composite score between

either of these groups (for race/ethnicity, $t(1,58)=.90$, $p = .37$; for income, $t(1,58) = .21$, $p = .83$).

When broken down by symptom subscale, caloric restriction significantly differed based upon yearly income, $t(1,51.1) = -2.07$, $p = .04$. Individuals who made under $10,000 a year endorsed higher scores on the caloric restriction item ($M = 1.83$, $SD = 3.42$) than those who made over $10,000 a year ($M = 0.29$, $SD = 0.62$). There were no differences on yearly income regarding participants' cognitive distortions ($t(1,56.1) = 1.52$, $p = .13$), compensatory behaviors ($t(1,56.1) = -1.3$, $p = .20$), or binge eating behaviors ($t(1,56.1) = -0.49$, $p = .63$). There were no differences between White individuals and individuals of color regarding cognitive distortions ($t(56.1) = -1.16$, $p = .25$), compensatory behaviors ($t(1,56.1) = -0.13$, $p = .90$), binge eating behaviors ($t(1,56.1) = -0.95$, $p = .35$), or caloric restriction ($t(1,55) = -0.62$, $p = .54$).

Gender differences were examined via ANOVA to account for the diverse range of participant genders (transmasculine, non-binary, transfeminine). No gender differences were evident in the eating disorder symptoms composite score ($R^2 = .04$, $F(1,248.44) = 1.84$, $p = .18$) or the EDDS component subscales ($p \geq .25$ for all subscale ANOVAs). Finally, the association between age and eating disorder symptom scores was explored via correlation. There was no significant correlation between age and eating disorder composite ($r(58) = -.06$, $p = .63$) nor any component subscales ($p \geq .35$ for all subscale correlations with age).

Discussion

The present study explores associations among minority stress, gender dysphoria, and eating disorder symptomatology in two mid-sized to large cities in the Deep South. It also explores differences in eating disorder symptoms across age, income, race/ethnicity, and gender. To date, few studies have evaluated these factors within the context of the gender minority stress and resilience theory (Hendricks & Testa, 2012), especially among transgender individuals residing in the Deep South. This theory holds promise for contextualizing increased risk for eating disorder symptoms among transgender people. Identifying these potentially unique factors related to eating disorder symptoms will inform effective prevention and intervention programming for the transgender community.

As expected, clinical and subclinical levels of eating disorder symptoms were present in a large proportion (38.9%) of the sample. These results indicate a similar prevalence of eating disorder symptoms as in previous samples of transgender individuals (22-35%; Romano & Lipson, 2021; Testa et al., 2017). While most prior research utilizes large-scale, trans-national samples, the present study's sample was recruited locally in two mid-sized to large cities within the Deep South (in Alabama and Tennessee, respectively). To the author's knowledge, this is the first study to date to examine eating disorder symptomatology among transgender people in the South. The author's

hypotheses regarding correlates of eating disorder symptoms in transgender adults were partially supported.

Eating Disorder Symptom Correlates: Composite Symptoms

The author's hypothesis that eating disorder symptoms would be significantly associated with gender dysphoria and distal stress was partially supported, with significant correlations between the total EDDS score and gender dysphoria. However, there was no significant relationship between EDDS and distal stress. This partially aligns with prior literature; increased eating disorder symptoms have been significantly associated with decreased body satisfaction among transgender adults (Testa et al., 2017). Overall, there is limited study of the moderating effects of gender or assigned sex to understand nuances around distal stressors and effects on eating disorder symptoms. Individuals experiencing gender dysphoria may be more likely to engage in disordered eating as a method of managing that dysphoria, whereas experiences of distal stress do not prompt this same response.

The EDDS composite score did not differ across income, race, or age. These findings are not supported by previous literature, which has found variations in eating disorder symptoms based on income, age, and race (Mitchison et al., 2014; Mulders-Jones et al., 2017; Sonneville & Lipson, 2018; Stice et al., 2013; Testa et al., 2017; Udo & Grilo, 2018; Witcomb et al., 2015). The present study's small sample size may account for this disparity; small cell sizes resulted in more heterogeneous comparison groups in final analyses (e.g., including all individuals of color into one heterogeneous group, as opposed to being able to stratify out different racial and ethnic groups for more nuance). This heterogeneity and small cell sizes may have masked or obscured results, which may

be revealed with replication in a larger sample. Additionally, eating disorder symptoms tend to shift in symptom type as an individual ages (Fairburn, 2008). This diagnostic shift typically moves from caloric restriction early in life to binge eating as a person ages (Fairburn, 2008); examining a symptom composite may not be the best approach to understanding how symptomatology is associated with age.

Eating Disorder Symptom Clusters

The EDDS' diagnostic tabulation and scoring contains overlap between various symptom clusters. Therefore, disaggregating symptoms to examine non-mutually exclusive symptom clusters is key to understanding eating disorders' impacts on the present sample.

Symptom Prevalence

Of the sample, 26.6% of participants reported skipping at least two meals in a row to counteract the effects of eating or prevent weight gain, and 15% indicated they had participated in compensatory behaviors (e.g. excessive exercise, purging, and/or use of laxatives). These numbers are higher than prior reports of the prevalence of occurrences of restricting symptoms in transgender adults (previous reports at 6.7% of transgender men and 9.9% of transgender women), and are nearly three times higher than prior reports of the prevalence of compensatory symptoms (2.3% of transgender men and 3.5% of transgender women; Nagata et al., 2020). Although the present study did not explore reasons for these behaviors, prior research suggests that some transgender individuals may restrict eating or net caloric intake as a way of remaining disconnected from their bodies, as a function of gender dysphoria and wishes to better align their desired gender expression with their current body (Ålgars et al., 2012; Cusack, Iampieri, et al., 2022).

Additionally, 40% of participants reported at least one episode of binge eating per week on average in the last three months, characterized by eating an unusually large amount of food and experiencing a loss of control. This is nearly double the prevalence of existing reports, which have indicated 24% of individuals reported any occurrence of binge eating (Nagata et al., 2020). These dramatic differences may be partially attributed to the present study's focus on the South, where transgender individuals may experience limited access to gender-affirming resources and healthcare, and therefore experience higher levels of gender dysphoria, than in a transnational sample.

Within the present sample, 28.3% of individuals endorsed clinically significant levels of cognitive distortions associated with body weight/shape and eating (moderate fear of gaining weight and weight moderately influencing self-appraisal). To the author's knowledge, there are no prior reports of the prevalence of cognitive distortion symptoms in transgender samples to which these findings can be compared. An additional 41.7% endorsed subclinical cognitive distortions (slight fear of gaining weight and slight influence on self-appraisal). Thus, cognitive distortions at clinical and subclinical levels were endorsed by 70% of the present sample. Cognitive distortions are a common underlying factor for most eating disorder diagnostic criteria and are an important target of eating disorder treatment (Fairburn, 2008). The high prevalence of eating disorder symptom clusters within the sample is alarming and highlights the importance of examining this population's needs further.

Table 3

Correlates of Eating Disorder Symptoms

Variable	**Significant Model Fit**	**Gender Dysphoria**	**Distal Stress**	**Gender**	**Age**	**Race**	**Income**
EDDS Composite	No	Yes	No	No	No	No	No
Cognitive Distortions	Yes	Yes	No	Yes	No	Yes	No
Binge Eating	No	No	No	No	No	No	No
Compensatory Behs.	No	Yes	Yes	No	No	No	No
Caloric Restriction	No	No	No	No	No	No	Yes

Note: Compensatory Behs. = Compensatory Behaviors

Correlates of Cognitive Distortions

Endorsing cognitive distortions consistent with an eating disorder (e.g., overvaluing shape and weight, also referred to herein as the "eating disorder mindset") was associated with increased gender dysphoria, being White, and being transmasculine (as opposed to non-binary) in the present study. Body image and gender are deeply intertwined for some transgender individuals. Gender dysphoria in transmasculine individuals (especially dysphoria surrounding the hips, stomach, or chest) may lead an individual to hyperfocus on their body shape or weight as a gendered experience and, therefore, experience the eating disorder mindset and its associated cognitive distortions. Previous qualitative research supports this reasoning as well. When discussing gender dysphoria, one participant noted that "any perceived femininity in [their] body/face shape" would often lead to "more hardcore dieting that day, sometimes not eating anything" (Pulice-Farrow et al., 2020).

Transnormativity and its associated standards may also play a role in this cognitive distress. In sum, transnormativity prescribes that transgender individuals ought to want to "pass" as binary, cisgender individuals, which may explain cognitive distress and the overvaluing of their body shape and weight. Individuals often internalize

transnormative beliefs as a set of prescriptive social norms by which to live, a lens through which to view the legitimacy of their gender-based experiences, and a means by which to be part of an in-group of other transgender people who may accept them through their acceptance of these norms (Johnson, 2016). Comparison of oneself to other transgender people based on these norms may lead to cognitive distress, especially if one's goal is not to undergo a series of gender-affirming medical interventions or to pass as a binary transgender person. The inability to access desired gender-affirming medical interventions may also cause similar cognitive distress, as transnormative and medically centered beliefs indicate that medical transition legitimizes one's transgender experience.

In the present sample, transmasculine individuals endorsed significantly higher levels of cognitive distortions than non-binary individuals, but not transfeminine individuals. Past literature about non-binary individuals, body image, and eating disorder symptomatology has been equivocal; while some studies have indicated that non-binary individuals have more body satisfaction and fewer eating disorder symptoms, they also are more likely to experience stigma around gender nonconformity, thereby increasing the risk of eating disorder symptoms (Diemer et al., 2018; Jones, Pierre Bouman, et al., 2019). Two possible mechanisms exist to explain these findings. First, transnormative beliefs may not have as strong an impact on non-binary individuals as binary transgender individuals. While it still may be present, the transnormative pressure to conform to the "born in the wrong body" narrative or pursue medical interventions may not be as strong for non-binary individuals, which is consistent with the findings of previous findings, both qualitative (e.g., Fiani & Han, 2019) and quantitative (e.g., Nieder et al., 2020).

It is also possible that non-binary individuals may experience gender dysphoria differently than their binary counterparts. Previous research (e.g., Galupo & Pulice-Farrow, 2020) has indicated that non-binary people do not feel established gender dysphoria measurement scales accurately capture their experiences with gender dysphoria. In this study, non-binary individuals rated scales as less descriptive of their experiences with gender dysphoria than their binary transgender counterparts, and individuals assigned male at birth rated the scales as more descriptive of their experiences as those assigned female at birth (Galupo & Pulice-Farrow, 2020). Thus, it is plausible that the experiences of non-binary people are qualitatively different from binary transgender individuals, and this difference is protective in some way concerning eating disorder-related cognitive distortions.

While endorsing cognitive distortions consistent with an eating disorder was also associated with being White, the sample was overwhelmingly (85%) White. While the scale has been validated on a variety of cisgender samples (mostly of individuals assigned female at birth), it may not capture distortions that are more relevant to individuals who are not White. The preliminary nature of this data, combined with the small sample size, indicates that significant caution should be used when interpreting race effects within the current sample.

Correlates of Compensatory Behaviors

Compensatory behaviors were positively correlated with gender dysphoria. While the omnibus test examining the associations between compensatory behaviors and variables of interest did not yield a significant result, the regression model indicated that gender dysphoria was positively associated with compensatory behaviors. These findings

are consistent with previous literature, which indicates that eating disorder symptoms may develop in response to gender dysphoria as a compensatory condition (Diemer et al., 2015; Kozee et al., 2012; van de Grift et al., 2016).

Interestingly, and contrary to the author's expectation, distal stress was negatively associated with compensatory behaviors within the model. This finding was not corroborated by bivariate correlations, indicating that various factors (perhaps even an unknown variable that covaries with age, race, income, or gender dysphoria) may influence the relationship between distal stress and compensatory behaviors. One possible explanation for this unexpected negative association between distal stress and compensatory behavior is that individuals may have a separate regulation mechanism for experiences of discrimination, violence, and non-affirmation. Alternatively, there may be moderating variables, such as emotional regulation, that were not captured in this study. Emotional regulation may also moderate the relationship between distal stress experiences and engaging in compensatory behaviors, such that individuals who are high in emotional regulation are better able to select non-eating emotional regulation strategies to cope with distal stress, while those low in emotional regulation are more likely to choose eating- or food-based strategies to regulate emotions from distal stress experiences.

It is also possible that gender minority resilience factors play a role in the directionality of the relationship. Resilience (e.g., social and community support) is theorized to serve as a buffer to developing adverse physical and mental health outcomes in transgender individuals (Hendricks & Testa, 2012). As this study did not measure resilience factors, it is highly possible that higher levels of resilience reversed the

relationship between distal stress and engagement in compensatory behaviors in the sample. This explanation is supported by the literature, which has demonstrated negative corollary relationships between distal stressors and resilience factors (Breslow et al., 2015).

Correlates of Caloric Restriction

While the model predicting caloric restriction did not produce a significant omnibus test, caloric restriction was associated with lower yearly income. This finding is consistent with previous literature (e.g., Testa et al., 2017). While this may be a mechanism associated with food insecurity, it may also be a function of the continuing stressor of living in poverty (in the present sample, the majority of participants made under $10,000 a year).

Correlates of Binge Eating

Binge eating was not associated with any of the variables of interest. This is inconsistent with previous literature regarding cisgender populations, which indicates that binge eating is associated with older age (Fairburn, 2008). However, this disparity in results may have been a byproduct of the current study's small sample size and associated low statistical power.

Research Implications and Future Directions

The present study highlights the importance of several factors that may better inform future research in this area. First, this study highlights the high prevalence of eating disorder symptoms within the transgender community and reinforces the need for further research in this area. Second, the importance of examining individual symptom clusters alongside an overall symptom composite score was revealed in the present study.

The overall EDDS composite obscured results uncovered once a more sensitive analysis of differences was conducted in the regression models and *t*-tests. These findings highlight the need for more fine-grain studies of presenting pathology within the transgender community. Moreover, additional studies in the Deep South are required to explore the full sociocultural impact of the environment on transgender individuals' health; qualitative work would be particularly helpful to further understand the impact.

Further research is required to better understand how various symptom clusters operate within transgender individuals. Past literature (Testa et al., 2017) and the present study have revealed that having a lower income is associated with eating disorder symptoms. However, the mechanism by which this association operates is not yet known. Further research should seek to tease apart this relationship and attempt to understand the mechanisms at play, potentially controlling for basic needs insecurities among participants. The findings in the present study regarding binge eating were not consistent with previous literature (Fairburn, 2008), showing no association between age and binge eating symptoms. This disparity in results may have been a byproduct of the current study's small sample size and associated low statistical power. Further research in this area is imperative, given the paucity of research in transgender populations and the prevalence of symptom development during the life course.

The present study highlighted additional sociodemographic differences within transgender individuals who may or may not develop eating disorder symptoms, including the association between endorsing cognitive distortions and being white. However, the present sample was also overwhelmingly (85%) White. Research with a more representative sample should be conducted to determine the true nature of race's

relationship to eating-related cognitive distortions within the transgender population. Further, a larger sample size would permit studies to explore moderating or mediating relationships between variables of interest. Additional variables associated with the development of eating disorder symptomatology should also be included in these future models, such as assigned sex at birth or different types of minority stressors.

An individual's assigned sex at birth is known to affect the rates at which a person may or may not develop an eating disorder (Witcomb et al., 2015). Unfortunately, data were not collected about participants' assigned sex at birth in the present study. Therefore, the difference between non-binary and transmasculine individuals' cognitions in this study may have been affected by assigned sex at birth as a third, possibly confounding variable. Future research should ensure this data is collected to better account for known risk factors for developing an eating disorder.

The present study contributed to the greater literature regarding the role of gender in eating disorder symptom development; transmasculine individuals endorsed significantly higher levels of cognitive distortions than non-binary individuals, but not transfeminine individuals. Past research has also indicated that different genders may experience gender dysphoria (and alleviation from it) differently (Galupo & Pulice-Farrow, 2020). It is, therefore, plausible that the experiences of non-binary people in relation to shape and weight are qualitatively different from binary transgender individuals, and this difference is protective in some way concerning eating disorder-related cognitive distortions. Further exploration of this phenomenon, particularly via qualitative work, is necessary to determine how these may be different, as well as the potential protective mechanisms at play.

For some individuals, gender dysphoria is alleviated via gender-affirming medical interventions (Testa et al., 2017). An individual's transition timeline and progress, particularly the number of desired transition steps they have taken, is an important factor to explore in relation to gender dysphoria experiences and eating disorder symptoms. Past qualitative research (Cusack, Levenson, et al., 2022) has indicated that some transgender individuals' eating pathology and transition are linked, wherein taking transition steps decreased disordered eating. Therefore, future quantitative research should examine the impact of desired transition steps on eating disorder symptom outcomes.

While gender-affirming medical interventions have been demonstrated to decrease gender dysphoria and eating disorder symptomatology (Testa et al., 2017), this does not mean that they are the only solution to disordered eating in this population. The transnormative assumptions that all transgender people experience gender in the same way, would like to take certain steps towards medico-legal transition, or were "born in the wrong body" are incredibly harmful to transgender individuals in research. The conscious non-affirmation of transnormativity in research disrupts its impact and delegitimizes the framework as the only one to which transgender individuals' experiences should be compared.

Clinical Implications

The alarmingly high prevalence of eating disorder symptoms within the sample highlights a need for screening and, when necessary, intervention in treatment settings. One of the clinically difficult aspects of treating eating disorders involves a diagnostic and symptomatic shift over time (Fairburn, 2008). Generally, the onset of Anorexia Nervosa is in the teenage years, frequently developing to include binge eating behaviors

(thus, evolving into the binge-eating/purging subtype). In approximately half of the cases, symptoms shift to the criteria of Bulimia Nervosa as the individual ages, and others migrate to an Otherwise Specified eating disorder (Fairburn, 2008). The leading psychotherapeutic treatment for eating disorders, CBT-E, cites itself as being transdiagnostic for this reason; if one can intervene upon the "eating disorder mindset" that perpetuates the disorder (regardless of which specific diagnostic profile an individual fills at that time), diagnostic and symptomatic shift may be prevented, and coping skills may be applicable if/when the symptomatic shift does take place (Fairburn, 2008). Research is needed to examine the best ways to integrate discussions of gender dysphoria into CBT-E treatment.

The present study's exploration of unique factors related to eating disorder symptoms in transgender individuals provides new insight into designing effective eating disorder prevention and intervention programming. Given the high rates of pathology in this population, proactive screening for eating disorder symptomatology should be worked into standard clinical screening batteries for this population. It is also essential for clinicians to be mindful of the association between gender dysphoria and the "eating disorder mindset" when working with clients and patients, particularly transmasculine individuals. Recent literature indicates that for transgender clients who have undergone eating disorder treatment, processing gender dysphoria and unpacking gender role socialization expectations (e.g., if an individual is assigned female at birth, exploring how they were socialized to feel about their body and body image) were both beneficial aspects of their treatment (Cusack, Levenson, et al., 2022). On the contrary, heterocisnormativity and infusing stereotypes about transgender individuals with eating

disorders into treatment (e.g., eating disorders are developed because a person is transgender or are only developed by individuals assigned female at birth) were both reported to be unhelpful by clients who had undergone treatment (Cusack, Levenson, et al., 2022). Given the limited study of the etiology of eating disorder symptoms among transgender individuals, it is vital for clinicians to avoid introducing reductionist etiological stereotypes into treatment (e.g., that gender dysphoria is the sole cause of a client's eating disorder symptoms) without careful exploration and consideration.

Gender dysphoria was associated with eating disorder symptoms within the current sample, and past research has demonstrated that gender-affirming care improves quality of life and decreases eating disorder symptoms (Murad et al., 2010; Testa et al., 2017). Clinicians should work to facilitate gender-affirming care to decrease gender dysphoria and related eating disorder symptoms. Clinicians working with transgender individuals must remember that they often serve as gatekeepers to accessing gender-affirming care. Privileging the narrative of one transgender person's experience over another, or determining that one is more legitimate than another, is extremely harmful and only perpetuates the transnormative binary medical model within healthcare. As is best described by Johnson (2016), "By placing trans experience within a medical model situated within contemporary health care, gender-affirming intervention becomes contingent on adherence to standardized symptoms rather than personal identification of gender" (p. 469). Providing space for open and honest dialogue with clients/patients about their transition-related desires will improve client-clinician rapport and, thus, improve therapy outcomes.

Limitations

The present study has several key limitations to note. Primarily, this study was conducted with a small sample size from two Southern states, and the sample was primarily White. In addition, moderate quantities of missing data (44.8% cases with any missing data, 17.7% missing data points), combined with the small sample size, required multiple imputation procedures before data analysis. Thus, factors do not allow for the generalization of results beyond these sample parameters. Furthermore, the inability to examine assigned sex at birth's relationship to study variables limited the author's ability to include interactions between assigned sex at birth and gender in the final statistical models.

One fundamental limitation of the study was psychometric. Binge eating was not associated with gender dysphoria, distal stress, age, race, gender, or income. The modified EDDS administered to participants in the present study contains seventeen individual items, with different numbers of items allocated to each diagnostic/symptom cluster. The largest proportion of these questions relates to binge eating (59%), whereas smaller proportions are allocated to cognitions and compensatory behaviors (17% each). Only one question on the scale pertains to caloric restriction. Summing the scale values created a skewed composite, in which certain symptom types were weighed more than others and had more impact on the scale. This limitation and potentially skewed composite led to ad hoc analyses involving the individual subscales, which permitted more nuance in the final results.

One additional psychometric limitation was the invalidity of the compensatory behaviors subscale, as it exhibited a negative Cronbach's α. This is likely due to the fact

that individuals did not endorse the utilization of all behaviors in the subscale and endorsed only one to two compensatory behaviors of use. Therefore, the model predicting compensatory behaviors should be interpreted with caution. Future research should consider creating a singular variable representative of any endorsement of compensatory behavior, as opposed to a scale, as it seems individuals endorse a singular method of choice (rather than multiple methods).

Conclusion

Transgender individuals experience more health challenges than their cisgender counterparts, and a growing area of research suggests that transgender individuals are at an increased risk of experiencing eating disorder symptoms. The current study revealed a high rate of eating disorder symptoms within a sample of transgender adults within the Deep South, as well as associations between eating disorder symptoms and gender dysphoria, distal stress, gender, race, and income. Identifying unique factors associated with the development of disordered eating within this population not only adds to the dearth of literature regarding these topics, but also has critical research and clinical implications for transgender adults living within the Deep South.

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APPENDIX

COMPLETE MEASURES FOR VARIABLES OF INTEREST

Complete Measures for Variables of Interest

Demographic Questionnaire

1. Subject ID assigned (A number 1-100):

2. Do you currently have health insurance coverage (e.g., private health insurance, Medicare, Medicaid, state-sponsored or other government-sponsored health plan, or military plan)? YES/NO

3. Please select or enter or select the gender(s) you identify with:
Man
Woman
Transgender
Transexual/transsexual
FTM (female-to-male)
MTF (male-to-female)
Someone on the FTM spectrum
Someone on the MTF spectrum
Genderqueer
Genderfluid
Gender diverse
Two-spirit
Transman
Transwoman
Man of trans experience
Woman of trans experience
Androgyne
Gender blender Bi-gender
Polygender/ pangender
Cross-dresser
Transvestite
Intersex Intersexual
Drag king
Other: _____

4. Please indicate your sex assigned at birth: Female, Male, Intersex

4a. Please indicate your age:

5. Employment status:
    1. Full-time
    2. Part-time
    3. Unemployed/Nonstudent
    4. Part/Full-Time Student

6. Education Years = (e.g., High School Diploma = 12)

7. Please indicate your race: (open-ended)

8. Please indicate your ethnicity: (open-ended)

9. Do you have a Hispanic/Latino background? YES/NO

10. Are you a U.S. citizen? YES/NO

11. Please indicate your religious background/affiliation:
None
Buddhist
Catholic Christian
non-Catholic Christian
Hindu
Jewish
Muslim
Other (please list):_____

12. Family Income Level:
Less than $10,000
$10,000 - $25,000
$25,000 - $50,000
$50,000 - $100,000
$100,000 - $150,000
$150,000 - $200,000
Greater than $200,000

13. What best describes your current relationship status?
Not in a relationship, single, non-partnered, not dating
Not in a relationship, single, non-partnered, but dating
In a committed, monogamous partnership
In a committed, open partnership
In a polyamorous partnership

13a. If currently involved in an intimate relationship, how long have you been together?

Total number of months together _____

14. Are you married? YES/NO

15. Have you experienced marriage dissolution (e.g., been through separation or divorce)? YES/NO

16. What best describes your sexual orientation:
Asexual
Bisexual
Demisexual
Gay
Heterosexual
Lesbian
Pansexual
Queer
Questioning
Other:

17. Using the Scale below, please answer the following questions:
You would describe your level of sexual activity as: ____
You would describe your level of sexual attraction as: ___
0 Exclusively heterosexual
1 Predominantly heterosexual, only incidentally same-sex and/or gender
2 Predominantly heterosexual, but more than incidentally same sex and/or gender
3 Equally heterosexual and same-sex and/or gender
4 Predominantly same-sex and/or gender, but more than incidentally heterosexual
5 Predominantly same-sex and/or gender, only incidentally heterosexual
6 Exclusively same-sex and/or gender
X Non-sexual

18. In the past two months, have you been living in stable housing that you own, rent, or stay in as part of a household? YES/NO

19. Are you worried or concerned that in the next two months you may NOT have stable housing that you own, rent, or stay in as part of a household? YES/NO

20. Who do you live with, a majority of the time?
Alone
With friends/roommates
With spouse/significant other
With spouse/significant other and children
With children
With other family members
Other

Transgender Congruence Scale (TCS) (Kozee et al., 2012)
For the purposes of this scale, gender identity is defined as the gender(s) that you experience yourself as; it is not necessarily related to your biological sex at birth. For the following items, please indicate the response that best describes your experience over the past two weeks.

1 = Strongly Disagree 2 = Somewhat Disagree 3 = Neither Agree nor Disagree 4 = Somewhat Agree 5 = Strongly Agree

1. My outward appearance represents my gender identity.
2. I experience a sense of unity between my gender identity and my body.
3. My physical appearance adequately expresses my gender identity.
4. I am generally comfortable with how others perceive my gender identity when they look at me.
5. My physical body represents my gender identity.
6. The way my body currently looks does not represent my gender identity.
7. I am happy with the way my appearance expresses my gender identity.
8. I do not feel that my appearance reflects my gender identity.
9. I feel that my mind and body are consistent with one another.
10. I am not proud of my gender identity.
11. I am happy that I have the gender identity that I do.
12. I have accepted my gender identity.

Eating Disorder Diagnostic Scale (EDDS) (0= Not at all to 6 = Extremely unless specified)

Over the past 3 months...

1. Have you felt fat?
2. Have you had a definite fear that you might gain weight or become fat?
3. Has your weight influenced how you think about (judge) yourself as a person?
4. Has your shape influenced how you think about (judge) yourself as a person?
5. During the past 6 months have there been times when you felt you have eaten what other people would regard as a large amount of food (e.g., a quart of ice cream) given the circumstances? YES NO
6. During the times when you ate an unusually large amount of food, did you experience a loss of control (feel you couldn't stop eating or control what or how much you were eating)? YES NO
7. How many DAYS per week on average over the past 6 MONTHS have you eaten an unusually large amount of food and experienced a loss of control? 0 1 2 3 4 5 6 7
8. How many TIMES per week on average over the past 3 MONTHS have you eaten an unusually large amount of food and experienced a loss of control? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
9. During these episodes of overeating and loss of control did you…
    1. Eat much more rapidly than normal? YES NO
    2. Eat until you felt uncomfortably full? YES NO
    3. Eat large amounts of food when you didn't feel physically hungry? YES NO
    4. Eat alone because you were embarrassed by how much you were eating?
    5. Feel disgusted with yourself, depressed, or very guilty after overeating? YES NO
    6. Feel very upset about your uncontrollable overeating or resulting weight gain? YES NO
10. How many times per week on average over the past 3 months have you made yourself vomit to prevent weight gain or counteract the effect~ of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
11. How many times per week on average over the past 3 months have you used laxatives or diuretics to prevent weight gain or counteract the effects of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
12. How many times per week on average over the past 3 months have you fasted (skipped at least 2 meals in a row) to prevent weight gain or counteract the effects of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
13. How many times per week on average over the past 3 months have you engaged in excessive exercise specifically to counteract the effects of overeating episodes? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Gender Minority Stress and Resilience Scale (GMSRS)

Gender-related discrimination

Response options: Never; Yes, before age 18; Yes, after age 18; Yes, in the past year

1. I have had difficulty getting medical or mental health treatment (transition-related or other) because of my gender identity or expression.
2. Because of my gender identity or expression, I have had difficulty finding a bathroom to use when I am out in public.
3. I have experienced difficulty getting identity documents that match my gender identity.
4. I have had difficulty finding housing or staying in housing because of my gender identity or expression.
5. I have had difficulty finding employment or keeping employment, or have been denied promotion because of my gender identity or expression.

Gender-related rejection

Response options: Never; Yes, before age 18; Yes, after age 18; Yes, in the past year

1. I have had difficulty finding a partner or have had a relationship end because of my gender identity or expression.
2. I have been rejected or made to feel unwelcome by a religious community because of my gender identity or expression.
3. I have been rejected by or made to feel unwelcome in my ethnic/racial community because of my gender identity or expression.
4. I have been rejected or distanced from friends because of my gender identity or expression.
5. I have been rejected at school or work because of my gender identity or expression.
6. I have been rejected or distanced from family because of my gender identity or expression.

Gender-related victimization

Response options: Never; Yes, before age 18; Yes, after age 18; Yes, in the past year

1. I have been verbally harassed or teased because of my gender identity or expression. (For example, being called “it”)
2. I have been threatened with being outed or blackmailed because of my gender identity or expression.
3. I have had my personal property damaged because of my gender identity or expression.
4. I have been threatened with physical harm because of my gender identity or expression.
5. I have been pushed, shoved, hit, or had something thrown at me because of my gender identity or expression.
6. I have had sexual contact with someone against my will because of my gender identity or expression.

Non-affirmation of gender identity

Response options: 5-point scale from strongly disagree to strongly agree

1. I have to repeatedly explain my gender identity to people or correct the pronouns people use. 2. I have difficulty being perceived as my gender.
3. I have to work hard for people to see my gender accurately.
4. I have to be "hypermasculine" or "hyperfeminine" in order for people to accept my gender.
5. People don't respect my gender identity because of my appearance or body.
6. People don't understand me because they don't see my gender as I do.

Internalized transphobia

Response options: 5-point scale from strongly disagree to strongly agree

1. I resent my gender identity or expression.
2. My gender identity or expression makes me feel like a freak.
3. When I think of my gender identity or expression, I feel depressed.
4. When I think about my gender identity or expression, I feel unhappy.
5. Because my gender identity or expression, I feel like an outcast.
6. I often ask myself: Why can't my gender identity or expression just be normal?
7. I feel that my gender identity or expression is embarrassing.
8. I envy people who do not have a gender identity or expression like mine.

Pride

Response options: 5-point scale from strongly disagree to strongly agree

1. My gender identity or expression makes me feel special and unique.
2. It is okay for me to have people know that my gender identity is different from my sex assigned at birth.
3. I have no problem talking about my gender identity and gender history to almost anyone.
4. It is a gift that my gender identity is different from my sex assigned at birth.
5. I am like other people but I am also special because my gender identity is different from my sex assigned at birth.
6. I am proud to be a person whose gender identity is different from my sex assigned at birth.
7. I am comfortable revealing to others that my gender identity is different from my sex assigned at birth.
8. I'd rather have people know everything and accept me with my gender identity and gender history.

Do you currently live in your affirmed gender all or almost all of the time? (Your affirmed gender is the one you see as accurate for yourself.)
Response options: Yes, I live in my affirmed gender most or all of the time; No, I don't live in my affirmed gender most or all of the time

*If yes: use "history" in items below. If no: use "identity" in items below.

Negative Expectations for the Future
Response options: 5-point scale from strongly disagree to strongly agree
1. If I express my gender IDENTITY/HISTORY, others wouldn't accept me.
2. If I express my gender IDENTITY/HISTORY, employers would not hire me.
3. If I express my gender IDENTITY/HISTORY, people would think I am mentally ill or "crazy."
4. If I express my gender IDENTITY/HISTORY, people would think I am disgusting or sinful.
5. If I express my gender IDENTITY/HISTORY, most people would think less of me.
6. If I express my gender IDENTITY/HISTORY, most people would look down on me.
7. If I express my gender IDENTITY/HISTORY, I could be a victim of crime or violence.
8. If I express my gender IDENTITY/HISTORY, I could be arrested or harassed by police.
9. If I express my gender IDENTITY/HISTORY, I could be denied good medical care.