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## Predictors of eating-related psychopathology in transgender and gender nonbinary individuals

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### Abstract

**Objective:** Research examining the prevalence and severity of eating-related psychopathology in transgender and gender nonbinary individuals is limited. This study examined how identity development and minority stress relate to the presence of disordered eating behaviors and cognitions in transgender and gender nonbinary individuals, and improvement at one-year follow-up.

**Methods:** Data come from a multi-site, longitudinal study of transgender and gender nonbinary individuals (n=287) and includes assessment of transgender congruence, receipt of gender-affirming care, minority stress, and disordered eating symptoms. Hierarchical multivariable logistic regression was used to test for associations between identity development, minority stress, and eating-related psychopathology.

**Results:** Eighty-three participants (28.9%) met criteria for current eating-related psychopathology. Loss of control eating was the most commonly endorsed behavior, followed by laxative, diuretic, or other medication use, and compulsive exercise. Higher transgender congruence was associated with lower odds of disordered eating symptoms (OR = 0.72, 95% CI 0.55 – 0.94), whereas increased internalized transphobia was associated with greater odds of disordered eating symptoms (OR = 1.41, 95% CI = 1.04 – 1.91). Participants with eating-related psychopathology had greater odds of having received gender-affirming psychotherapy in the year prior to assessment (OR = 2.33, 95% CI = 1.32 – 4.14).

**Conclusions:** Results suggest that gender identity development and internalized transphobia are associated with eating-related psychopathology in transgender and gender nonbinary individuals.

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Mental health providers should consider assessing all transgender and gender nonbinary individuals for eating-related psychopathology and unique risk factors associated with disordered eating, including low transgender congruence and internalized transphobia.

## Keywords

transgender; nonbinary; eating disorders; minority stress

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## 1. Introduction

Research examining eating-related psychopathology among transgender people is limited; studies to date suggest that transgender and gender nonbinary individuals experience lower body satisfaction<sup>1–3</sup> and higher rates of disordered eating behaviors and cognitions<sup>4–8</sup> relative to cisgender individuals. Existing data come largely from studies focused on transgender youth<sup>2,5,6</sup> or do not include individuals who have received gender-affirming medical interventions.<sup>3</sup> The prevalence and severity of eating-related psychopathology in transgender and gender nonbinary adults, and across stages of gender identity development, remains poorly characterized.

There are several potentially important factors emerging from the literature on eating-related psychopathology and transgender individuals. First is whether an individual has undergone gender-affirming interventions, such as hormone therapy and/or surgery. Those who receive such interventions tend to report fewer eating disorder symptoms and less body dissatisfaction than those who have not.<sup>9,10</sup> Second, minority stress, defined as the additional stress experienced by marginalized groups due to stigma and discrimination, is associated with increased body image concerns and disordered eating behaviors in transgender youth<sup>5</sup> and adults,<sup>11,12</sup> and disproportionately high rates of mental health issues overall.<sup>13–17</sup> Together, these findings suggest that transgender congruence (i.e., congruence between gender identity and expression) and minority stress may relate to the presence and severity of eating-related psychopathology. Notably, the majority of studies examining eating-related psychopathology in the transgender population focus on binary transgender individuals (i.e., individuals who identify as women who were assigned male at birth, and vice versa). However, gender nonbinary individuals (i.e., individuals who identify as neither discretely woman or man) have been found to report higher levels of minority stress and increased psychological distress, including disordered eating, relative to binary transgender individuals.<sup>17,18</sup>

The aim of this study was to examine risk factors for eating-related psychopathology among transgender and gender nonbinary individuals. We first describe the prevalence of eating disorder-related symptoms in the sample, including how identification as transgender (i.e., transgender man or woman) or gender nonbinary impacts the presence or absence of symptoms. Building from existing research, we hypothesized that, (1) transgender congruence would be inversely related to eating-related psychopathology, (2) history of gender-affirming medical interventions would be associated with less disordered eating symptoms, and (3) minority stress would be predictive of eating-related psychopathology.

Using longitudinal data, we explored how identity development and minority stress factors relate to changes in eating-related psychopathology over time.

## 2. Methods

### 2.1 Participants

This study is a secondary analysis of data from two consecutive years of Project AFFIRM, a multi-site, longitudinal cohort study of a community sample of transgender and gender nonbinary individuals ages 16 and older (R01-HD079603). Eating-related data was not collected during the first year of the parent study, thus we consider Year 2 as “baseline” and Year 3 as “one-year follow-up.” Study participants were fluent in English or Spanish and recruited in New York, San Francisco, and Atlanta using five venue categories (public spaces/commercial establishments; community events and groups; social media; transgender-specific healthcare clinics (excluding mental health clinics); and word of mouth. Enrollment was stratified by age, gender identity, and site. Exclusion criteria included cognitive impairment, inability/unwillingness to provide follow-up contact information, and plans to leave the study region within three years. Data were collected using structured interviews conducted by trained interviewers in each city. Informed consent for participation in the parent study was obtained for all participants over age 18 and informed assent was obtained for individuals under 18 years. The requirement for parental consent was waived due to potential risk related to disclosure of gender identity.

### 2.2 Measures

**2.2.1 Demographics**—Age and race/ethnicity were assessed using 2010 U.S. Census measures (2010). Sex assigned at birth was assessed by asking, “What sex were you assigned at birth (on your original birth certificate)?” Participants identified their current gender identity by selecting from one of the following options: “Woman”, “Man”, “Transgender woman/Male-to-Female (MTF)”, “Transgender man/Female-to-Male (FTM)”, “Non-binary”, “Genderqueer”, or “Another”. For multivariable analyses, gender identity was condensed into three groups: transgender woman (TGF), transgender man (TGM), and gender nonbinary. For descriptive purposes, individuals identifying as gender nonbinary were dichotomized according to sex assigned at birth: Nonbinary- Assigned Female at Birth (NB-AFAB) and Nonbinary – Assigned Male at Birth (NB-AMAB). BMI was calculated using participant self-report of current weight and height.

**2.2.2. Eating-related psychopathology**—To assess disordered thinking about weight and dietary restraint, participants were asked questions derived from weight concern and restraint subscales of the Eating Disorder Examination<sup>19</sup>, including “In the past year, has your weight (number on the scale) influenced how you think about (judge) yourself as a person?” and “In the past year, have you deliberately tried to limit the amount of food you eat to influence your weight or shape (whether or not you have succeeded)?” Participants were also asked, “Do you believe yourself to be fat when others say you are too thin?” This item was derived from the SCOFF<sup>20</sup>, a screening tool designed to evaluate for core features of eating disorders.<sup>20–23</sup> Participants were asked whether they had a lifetime history of disordered eating behaviors, including loss of control (LOC) eating, self-induced vomiting,

use of laxatives, diuretics or other medications to control shape or weight, or compulsive exercise. Those reporting a positive history were asked about behavior frequency during the prior 28 days.

**2.2.3 Identity development**—Transgender congruence was assessed using the *Transgender Congruence Scale* (TCS).<sup>24</sup> This 12-item self-report measure consists of the Appearance Congruence subscale (9 items), reflecting the degree to which individuals feel their external appearance represents their gender identity, and the Gender Identity Acceptance subscale (3 items), measuring the extent to which transgender individuals have accepted the gender identity they perceive themselves to be. Internal consistency was shown to be excellent for the total TCS (Cronbach's  $\alpha = 0.92$ ), excellent for the Appearance Congruence subscale (Cronbach's  $\alpha = 0.94$ ), and acceptable for the Gender Identity Acceptance subscale (Cronbach's  $\alpha = 0.77$ ) in a community sample of transgender individuals.<sup>24</sup> Participants were also asked to indicate whether or not they had received (1) prior gender-affirming surgical interventions, or (2) gender-affirming hormones or (3) gender-affirming psychotherapy during the past year.

**2.2.4. Minority stress**—Enacted stigma (ES) was assessed using a 10-item version of the *Everyday Discrimination Scale*,<sup>25</sup> which measures the prevalence, frequency, and perceived underlying motivation of chronic, routine, and relatively subtle experiences of discriminatory treatment in social situations. An affirmative response to an experience of discrimination for which gender identity or expression was perceived as the underlying motive was counted towards the ES score (ranging from 0–10). Internal consistency of the Everyday Discrimination Scale in the parent study was 0.81 (Cronbach's  $\alpha$ ). Felt stigma (FS), which reflects expectations of being stereotyped or discriminated against, was measured using a 10-item adaptation of the *Stigma Consciousness Questionnaire*,<sup>26</sup> which asks participants to indicate agreement with statements such as “Most non-transgender individuals have a problem viewing transgender individuals as equals” using a 7-point Likert scale. Higher scores indicate increased levels of FS. This measure demonstrated good internal consistency (Cronbach's  $\alpha = 0.77$ ). The *Transgender Identity Survey* (TIS)<sup>27</sup> is a 26-item questionnaire of internalized transphobia, defined as the degree of discomfort with one's transgender identity as a result of internalizing society's normative gender expectations. The TIS global score has demonstrated excellent internal consistency in transgender samples (Cronbach's  $\alpha = 0.90$ ).<sup>27</sup>

**2.2.5. Other measures**—Anxiety was assessed using the Brief Symptom Inventory (BSI)-18.<sup>28</sup> Participants indicate whether they experienced specific symptoms during the past 7 days on a 5-point Likert scale ranging from 0 – 4. Internal consistency of the anxiety subscale was 0.89 (Cronbach's alpha) in a community sample of transgender individuals.<sup>29</sup>

**2.2.6 Statistical Analysis**—Means and standard deviations were calculated for demographics and baseline measures of eating-related psychopathology. Independent samples t-tests and chi-square analyses were used to test for differences between individuals with and without eating-related psychopathology, and between TGF, TGM, and gender nonbinary participants. To minimize the risk of over-pathologizing occasional

aberrant eating behavior, eating-related psychopathology was defined as at least one disordered eating behavior (LOC eating, purging, laxative, diuretic or other medications to control shape or weight, or compulsive exercise) during the prior month *and* the endorsement of weight concern. Hierarchical multivariable logistic regression was used to test for associations between transgender congruence, receipt of gender-affirming medical and psychotherapeutic care, internalized transphobia, ES, and FS with eating-related psychopathology. The first level (Model A) of the stepwise logistic regression included age, current gender identity (TGF, TGM, gender nonbinary), and anxiety. Anxiety was included because prior research has shown that differences in eating disorder psychopathology between individuals taking and not taking gender-affirming hormones were not found when anxiety was controlled for.<sup>9</sup> Model B added measures of identity development, including transgender congruence, lifetime history of gender-affirming surgery, and receipt of gender-affirming hormones or psychotherapy during the past year. Model C included measures of minority stress. VIF and tolerance statistics were used to test for multicollinearity. Independent samples t-tests and chi-squares were used to compare demographic and clinical characteristics of participants with and without improved eating-related psychopathology at follow-up. Data were analyzed using SPSS Version 26 (IBM Corp., 2019).

### 3. Results

#### 3.1. Baseline demographics

See Table 1 for demographics and non-eating related clinical characteristics. One participant was excluded from baseline assessments due to incomplete data, resulting in a sample of 287. 40.4% (n=116) identified as TGF, 32.4% (n=93) as TGM, and 27.3% (n=78) as gender nonbinary. Among nonbinary participants, 69.2% (n=54) were NB-AFAB and 30.8% (n=24) were NB-AMAB.

Relative to TGF and TGM participants, gender nonbinary individuals reported greater anxiety ( $F(2,286) = 7.2, p = 0.001$ ) and lower transgender congruence ( $F(2,286) = 27.0, p < 0.001$ ), including lower scores on the TCS Appearance Congruence subscale ( $F(1,286) = 27.4, p < 0.001$ ). TGF and TGM participants did not differ on these measures. Fewer gender nonbinary participants reported taking gender-affirming hormones (TGF: n=102 (87.9%); TGM: n=88 (94.6%); nonbinary: n=32 (41%);  $\chi^2(2) = 69.4, p < 0.001$ ) or receiving gender-affirming surgery (TGF: n=87 (75%); TGM: n=62 (66.7%); nonbinary: n=32 (41%);  $\chi^2(2) = 23.9, p < 0.001$ ) than either TGF or TGM, but the groups did not differ in receipt of gender-affirming psychotherapy during the prior year ( $\chi^2(2) = 2.9, p = 0.24$ ) and there were no differences between TGF and TGM participants in receipt of medical interventions. Gender nonbinary individuals reported more FS ( $F(1,286) = 7.6, p = 0.001$ ) but less internalized transphobia ( $F(2,286) = 6.9, p = 0.001$ ) than both TGF and TGM participants. TGM participants reported significantly less ES relative to both TGF and gender nonbinary participants (TGM: Mean  $1.47 \pm 2.1$ ; TGF: Mean  $2.27 \pm 2.47$ ; gender nonbinary: Mean:  $2.49 \pm 2.14$ ;  $F(2,286) = 5.0, p = 0.007$ ).

### 3.2 Prevalence of disordered eating behaviors and cognitions

Approximately half of participants reported a lifetime history of 1 disordered eating behavior ( $n=153$ , 53.3%; *See Figure 1*). LOC eating was the most prevalent lifetime and current behavior reported, with 34.1% ( $n=98$ ) of individuals endorsing 1 episode during the prior month and 14.9% ( $n=43$ ) reporting 4 episodes. Eleven participants (3.8%) reported use of laxatives, diuretics, or other medications to control shape or weight during the prior month, and 2.8% ( $n=8$ ) reported use on at 4 occasions. Ten individuals (3.5%) endorsed self-induced vomiting in the past month and 1.7% ( $n=5$ ) had induced vomiting 4 times. Finally, 21 participants (7.3%) reported compulsively exercising during the prior month and 3.5% ( $n=10$ ) endorsed 4 episodes. Over half of participants (56.4%,  $n=162$ ) endorsed overvaluation of weight on self-concept in the past year, and 18.8% ( $n=54$ ) endorsed belief that they were fat even though others said they were too thin. Shape and weight concerns were linked to eating behavior for 60.6% ( $n=174$ ) of participants, who reported attempts to restrict their intake in an effort to change their shape or weight during the prior year.

More gender nonbinary participants reported a lifetime history of self-induced vomiting ( $X^2(2) = 8.7$ ,  $p = 0.013$ ) than TGF or TGM individuals. The groups did not otherwise differ in the presence or frequency of disordered eating symptoms.

### 3.3 Comparison of participants with and without eating disorder-related symptoms at baseline

Eighty-three participants (28.9%) met criteria for current eating-related symptoms (*see Table 2*). Of this subgroup, 73.5% ( $n=61$ ) were between 25 – 59 years old. Relative to participants without current symptoms, participants with eating-related psychopathology reported a higher prevalence of gender-affirming psychotherapy in the past year ( $X^2(1) = 8.0$ ,  $p = 0.005$ ), a higher BMI ( $t(1,283) = -4.2$ ,  $p < 0.001$ ), lower TCS appearance congruence ( $t(1,285) = 3.3$ ,  $p = 0.001$ ), and increased minority stress (*see Table 2*).

### 3.4 Predictors of eating-related psychopathology

Table 3 summarizes results of the hierarchical multivariable logistic regression examining predictors of eating-related psychopathology. In Model A, anxiety was associated with higher odds of eating-related psychopathology (OR = 1.03, 95% CI = 1.03 – 1.05). In Model B, higher transgender congruence was associated with lower odds of eating-related psychopathology (OR = 0.72, 95% CI 0.55 – 0.94), such that individuals who reported more congruence between their gender identity and external appearance were less likely to report eating-related symptoms. Neither prior gender-affirming surgery nor hormone therapy during the past year were associated with current eating-related psychopathology. However, individuals who had received gender-affirming psychotherapy during the preceding year were more likely to report eating-related symptoms (OR = 2.10, 95% CI = 1.20 – 3.68). In Model C, past-year gender-affirming psychotherapy (OR = 2.33, 95% CI = 1.32 – 4.14) and increased internalized transphobia (OR = 1.41, 95% CI = 1.04 – 1.91) were associated with greater odds of eating-related psychopathology.

### 3.5 Eating-related psychopathology at one-year follow-up

Twenty participants were lost to follow-up, leaving a sample of 267 participants with data at both time points. The participants lost to follow-up did not differ from those with follow-up data, with the exception of sex assigned at birth ( $X^2(1) = 5.76, p = 0.02$ ). Of participants with data at follow-up, 74 (27.7%) reported eating-related psychopathology at baseline and 35 individuals (47.3%) continued to report eating-related symptoms. Bivariate comparison of clinical characteristics, including age, BMI, sex assigned at birth, race/ethnicity, receipt of past-year gender-affirming medical or psychotherapeutic care, and factors related to identity development and minority stress, did not significantly differ between individuals with and without persistent symptoms at follow-up.

## 4. Discussion

A lifetime history of disordered eating symptoms was endorsed by over half of our sample, confirming the importance of continued study of eating-related psychopathology in this population. Consistent with our hypotheses, identity development and minority stress were associated with eating-related psychopathology. Individuals with lower transgender congruence and greater internalized transphobia were more likely to report eating disorder symptoms. We did not find an association between prior gender-affirming medical interventions and eating-related symptoms. However, receipt of gender-affirming psychotherapy was associated with the presence of current eating-related psychopathology.

### 4.1 Prevalence of eating disorder-related cognitions and behaviors

Consistent with prior research<sup>2,5</sup>, our sample reported increased shape and weight concerns and prevalence of disordered behaviors compared to established cisgender norms.<sup>30,31</sup> LOC eating was the most commonly reported behavior, with approximately one third of participants reporting 1 episode during the past month, and 14.9% reporting 4 episodes. Compulsive exercise was the second most commonly endorsed behavior (with 3.5% of individuals reporting 4 episodes). This pattern is consistent with previous findings. Nagata et al.<sup>7</sup> documented rates of objective binge episodes of 11 and 13% in transgender men and women, respectively, and found that 8% of participants endorsed compulsively exercising at least 20 days during the past month. Slight variability in prevalence of behaviors between studies may reflect differences in cohort demographics: whereas Nagata and colleagues' cohort was predominantly white, our sample reflected greater ethnographic diversity. Existing research highlights the presence of eating-related psychopathology across racial and/or ethnic groups.<sup>32–24</sup> Our results provide further evidence of the need for universal screening for eating-related psychopathology.

### 4.2 Identity development and eating-related psychopathology

Consistent with our hypothesis, we found that less congruence between one's external appearance and current gender identity was associated with higher odds of disordered eating symptoms. Yet, receipt of prior gender-affirming medical interventions was not associated with current eating-related psychopathology. This finding is surprising given that prior studies have found that gender-affirming medical interventions are associated with improvements in body satisfaction<sup>35–37</sup> and eating disorder psychopathology.<sup>9,38,39</sup>

However, the majority of participants in the current study had previously received gender-affirming medical care at the time of assessment, thus potentially precluding the ability to detect a group difference.

Conversely, receipt of gender-affirming psychotherapy during the past year was associated with current eating-related psychopathology. We do not believe this finding reflects a causal relationship between psychotherapy and subsequent eating-related symptomatology, but rather suggests that these individuals may be struggling more and thus pursuing treatment. This underscores the importance of healthcare providers, and mental healthcare providers in particular, routinely assessing eating disorder-related symptoms. That nearly 75% of individuals who reported current eating-related psychopathology in the present study were between the ages of 25–59 further highlights that individuals presenting for mental healthcare should be screened for an eating disorder regardless of age. Indeed, it is possible that this finding reflects a healthcare system working well, in that individuals in need of treatment received it. However, it is unclear whether individuals' eating disordered symptoms were addressed within the scope of the psychotherapy received.

### 4.3 Minority stress and eating-related psychopathology.

The positive association between minority stress and increased eating-related psychopathology is consistent with prior literature examining eating disorder-related symptoms in transgender individuals,<sup>12,17</sup> and the broader literature examining mental health outcomes in transgender people.<sup>14–16,40,41</sup> Our results suggest that internalized transphobia is a particular risk factor for the presence of eating disorder-related symptoms. Gender-affirming psychotherapy may help to reduce feelings of shame or alienation, which may in turn reduce disordered eating behaviors and cognitions. It may also provide a more direct pathway for screening and attending to eating disorder symptoms.

Prior research suggests that a nonbinary or genderqueer identity is associated with higher rates of minority stress and worse mental health outcomes.<sup>17,42</sup> The results from the present study are less straightforward: while gender nonbinary participants endorsed more FS than the TGF and TGM groups, they reported lower internalized transphobia than both transgender groups, and differed from TGM but not TGF participants in the experience of ES. Further, the only eating-related difference was a higher lifetime prevalence of self-induced vomiting in the gender nonbinary group. Existing research examining the prevalence of self-reported eating disorders in gender nonconforming adults found that the odds of a prior diagnosis of anorexia nervosa or bulimia nervosa were significantly higher in gender nonbinary individuals assigned female at birth compared to transgender males, and marginally higher compared to transgender females.<sup>17</sup> Further studies with a larger sample size are needed to clarify differences among nonbinary (assigned female versus assigned male at birth), TGM, and TGF with regard to eating disorder symptoms.

### 4.4 Clinical Implications

That nearly 60% of participants with eating-related psychopathology received gender-affirming psychotherapy during the prior year strongly supports the importance of universal screening for eating-related psychopathology in all transgender and gender nonbinary



individuals. Knowledge of and comfort with eating disorders assessment is often limited for non-eating disorder specialists,<sup>43</sup> but research has shown that improving eating disorders education can enhance providers' confidence with screening and providing clinical care.<sup>44</sup> This training may be especially useful for those already providing services to transgender and gender nonbinary individuals. Additional efforts in the dissemination of specialized eating disorders treatments for healthcare providers serving the transgender community is also warranted.

Gender-affirming psychotherapy offers an opportunity to target risk factors for eating-related psychopathology, such as internalized transphobia and low transgender congruence, by reducing feelings of shame or alienation, which may in turn reduce disordered eating behaviors and cognitions. LOC eating, the most commonly endorsed symptom in this study, is the hallmark of binge-eating disorder, which tends to respond nonspecifically and in tandem with improvement in general psychopathology, to a variety of psychotherapeutic approaches.<sup>45</sup> It's likely that gender-affirming psychotherapy, even if not specifically addressing disordered eating, may yield similar benefits. From a research perspective, these results highlight the need for culturally-adapted psychotherapeutic interventions which address the unique risk factors for eating-related psychopathology in transgender and gender nonbinary individuals.

#### 4.4 Limitations

While a strength of this study is that it is a large, multi-site, longitudinal project, it was not specifically designed to examine predictors of change in eating-related psychopathology. Some information was not collected at baseline and there were modifications in items assessing eating-related symptoms from one year to the next, limiting longitudinal comparisons. Given the nature of this longitudinal project, we were limited in the number of items that could be included to assess eating-related psychopathology, and our assessment of weight concern and restraint might have been improved by use of these full respective subscales of the EDE-Q. Additionally, this was not a probability sample, which could limit generalizability.

## 5. Conclusions

This longitudinal study of transgender and gender nonbinary adults investigated how identity development and minority stress relate to the presence of eating-related psychopathology. LOC eating was the most commonly endorsed disordered eating behavior, followed by laxative, diuretic, or other medication use, and compulsive exercise. Results indicate that transgender congruence and internalized transphobia were predictive of disordered eating symptoms. Individuals with eating-related psychopathology were more likely to have received gender-affirming psychotherapy, highlighting the importance of providers routinely evaluating eating disorder symptoms. Longitudinal research is needed to investigate how identity development and minority stress influence trajectories of illness in transgender and gender nonbinary individuals with eating disorder-related symptomatology.

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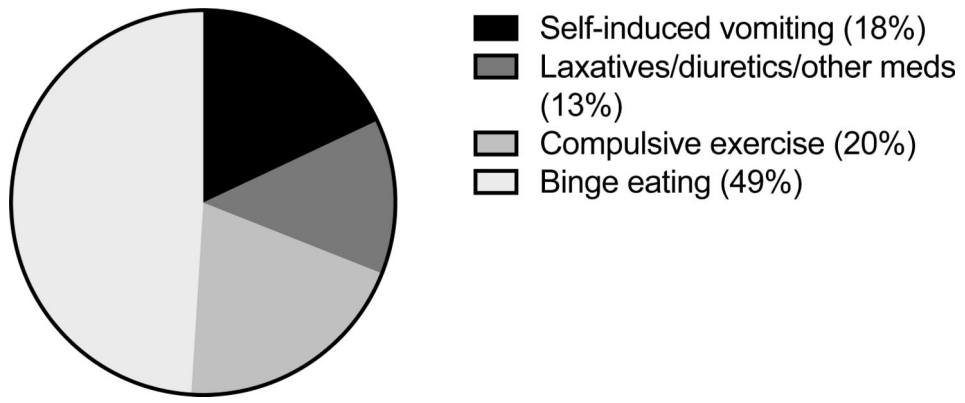
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**Highlights:**

- Nearly one third of participants reported current eating-related psychopathology.
- Greater congruence between current gender identity and external appearance was associated with lower odds of disordered eating behaviors and cognitions.
- Increased internalized transphobia was associated with increased odds of eating-related symptoms.



**Figure 1.** Lifetime history of disordered eating behaviors (% Total Sample, n=287).

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**Table 1.**

## Demographics and Clinical Characteristics (n=287)

	Mean $\pm$ SD or n (%)	Range
Age (years)	35.6 $\pm$ 13.3	17–81
BMI (kg/m <sup>2</sup> )	28.0 $\pm$ 7.1	15.8 – 60.35
Sex assigned at birth		
Female	146 (50.9)	
Male	141 (49.1)	
Race/ethnicity		
White/non-Hispanic	138 (48.1)	
Hispanic/Latino	54 (18.8)	
African American	45 (15.7)	
Other	47 (16.4)	
Current Gender Identity		
Woman	39 (13.6)	
Man	19 (6.6)	
Transgender woman/Male-to-female (MTF)	77 (26.8)	
Transgender man/Female-to-male (FTM)	74 (25.8)	
Non-binary	41 (14.3)	
Genderqueer	34 (11.8)	
Another	3 (1.0)	
Transgender Congruence Scale (total)	5.0 $\pm$ 1.2	1.58 – 7.00
TCS Appearance Congruence subscale	4.5 $\pm$ 0.87	1.67 – 6.67
TCS Gender Identity Acceptance subscale	4.7 $\pm$ 0.55	2.00 – 6.67
Past year gender-affirming hormone treatment	226 (78.7)	
Past year puberty blocking hormones	11 (3.8)	
Lifetime gender-affirming surgery	181 (63.1)	
Past year gender-affirming psychotherapy	132 (46)	
Transgender Identity Survey	3.4 $\pm$ 0.99	1.42 – 6.38
Enacted Stigma	2.07 $\pm$ 2.3	0.0 – 10.0
Felt Stigma	4.9 $\pm$ 1.00	1.9 – 6.9

Note: Race/ethnicity data is missing for 3 participants. BMI data is missing for 2 participants.

**Table 2.**

Bivariate comparison of baseline characteristics for transgender individuals with and without eating-related psychopathology

	No ED Symptoms (n=204) Mean/SD or n (%)	ED Symptoms (n=83) Mean/SD or n (%)	t(df) or X <sup>2</sup> (df)	p
Study Site			1.5 (2)	0.47
Atlanta	65 (31.9)	32 (38.6)		
New York	67 (32.8)	27 (32.5)		
San Francisco	72 (35.3)	24 (28.9)		
Age (years)	36.0 ± 13.7	34.8 ± 12.5	0.68 (285)	0.50
BMI (kg/m <sup>2</sup> )	26.8 ± 6.6	30.6 ± 7.8	-4.2 (283)	<0.001
Sex assigned at birth			1.85 (1)	0.17
Female	109 (53.4)	37 (44.6)		
Male	95 (46.6)	46 (55.4)		
Current Gender Identity			3.1 (2)	0.21
Transgender woman (TGF)	83 (40.6)	33 (39.8)		
Transgender man (TGM)	71 (34.8)	22 (26.5)		
Gender Nonbinary	50 (24.5)	28 (33.7)		
Race/ethnicity			0.9 (3)	0.82
White/non-Hispanic	101 (49.5)	37 (44.6)		
Hispanic/Latino	38 (18.6)	16 (19.3)		
African American	32 (15.7)	13 (15.7)		
Other	31 (15.2)	16 (19.3)		
Transgender Congruence Scale (TCS)	5.2 ± 1.2	4.6 ± 1.2	3.6 (285)	<0.001
TCS Appearance Congruence subscale	4.6 ± 0.8	4.2 ± 0.9	3.3 (285)	0.001
TCS Gender Identity Acceptance subscale	4.7 ± 0.5	4.7 ± 0.6	0.7 (285)	0.48
Lifetime gender-affirming surgery	128 (62.7)	53 (63.8)	0.03 (1)	0.86
Past year gender-affirming hormones	164 (80.4)	62 (74.7)	11 (1)	0.28
Past year gender-affirming psychotherapy	83 (40.7)	49 (59.0)	8.0 (1)	0.005
Transgender Identity Survey (TIS)	3.3 ± 0.9	3.6 ± 1.1	-2.5 (285)	0.01
Enacted Stigma	1.9 ± 2.1	2.5 ± 2.7	-2.0 (285)	0.05
Felt Stigma	4.8 ± 1.0	5.1 ± 1.0	-2.1 (285)	0.04
BSI Anxiety	56.2 ± 11.3	60.7 ± 11.2	-2.7 (285)	0.007

*Note.* Race/ethnicity data is missing for 2 participants in the No ED Symptoms group and 1 participant in the ED Symptoms group. BMI data is missing for 1 participant in the No-ED Symptoms category and 1 participant in the ED Symptoms category.



**Table 3.** Hierarchical multivariable logistic regression analyses among transgender individuals to identify factors associated with eating-related psychopathology (n=287).

	Model A (R <sup>2</sup> = 0.04)		Model B (R <sup>2</sup> = 0.12)		Model C (R <sup>2</sup> = 0.14)	
	OR	95% CI	OR	95% CI	OR	95% CI
Age	1.00	0.98 – 1.02	1.00	0.98 – 1.02	1.00	0.98 – 1.02
Anxiety	<b>1.03</b> *	<b>1.03 – 1.05</b> *	1.02	0.99 – 1.05	1.01	0.98 – 1.04
Gender Identity (ref: Transgender woman)						
Transgender man	0.77	0.41 – 1.45	0.81	0.42 – 1.57	0.84	0.43 – 1.67
Gender Nonbinary	1.19	0.63 – 2.27	1.03	0.48 – 2.22	1.33	0.59 – 3.03
Transgender Congruence Scale (total)			<b>0.72</b> *	<b>0.55 – 0.94</b>	0.79	0.59 – 1.05
Prior gender-affirming surgical intervention			1.84	0.95 – 3.58	1.76	0.90 – 3.46
Past year hormone treatment			0.70	0.32 – 1.53	0.63	0.28 – 1.40
Past year gender-affirming psychotherapy			<b>2.10</b> **	<b>1.20 – 3.68</b> **	<b>2.33</b> **	<b>1.32 – 4.14</b> **
Transgender Identity Scale (total)					<b>1.41</b> *	<b>1.04 – 1.91</b> *
Enacted Stigma					1.03	0.89 – 1.18
Felt Stigma					1.08	0.76 – 1.54

\*  $p < 0.05$

\*\*  $p < 0.01$