

Disordered Eating Behaviors Among Transgender Youth: Probability Profiles from Risk and Protective Factors

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ABSTRACT

Purpose: Research has documented high rates of disordered eating for lesbian, gay, and bisexual youth, but prevalence and patterns of disordered eating among transgender youth remain unexplored. This is despite unique challenges faced by this group, including gender-related body image and the use of hormones. We explore the relationship between disordered eating and risk and protective factors for transgender youth.

Methods: An online survey of 923 transgender youth (aged 14–25) across Canada was conducted, primarily using measures from existing youth health surveys. Analyses were stratified by gender identity and included logistic regressions with probability profiles to illustrate combinations of risk and protective factors for eating disordered behaviors.

Results: Enacted stigma (the higher rates of harassment and discrimination sexual minority youth experience) was linked to

higher odds of reported past year binge eating and fasting or vomiting to lose weight, while protective factors, including family connectedness, school connectedness, caring friends, and social support, were linked to lower odds of past year disordered eating. Youth with the highest levels of enacted stigma and no protective factors had high probabilities of past year eating disordered behaviors.

Discussion: Our study found high prevalence of disorders. Risk for these behaviors was linked to stigma and violence exposure, but offset by social supports. Health professionals should assess transgender youth for disordered eating behaviors and supportive resources. © 2016 Wiley Periodicals, Inc.

Keywords: binge eating; eating disorders; transgender; adolescent

(*Int J Eat Disord* 2017; 50:515–522)

Introduction

Studies of lesbian, gay, bisexual, and transgender (LGBT) youth have found heightened rates of disordered eating,^{1–4} but most research has considered only LGB youth, and studies that exist have small numbers of transgender youth (i.e., youth whose sex assigned at birth is discordant with their felt gender).⁵ Little is known about the specific disordered eating experiences of transgender youth, which may be different to cisgender youth (i.e., youth who report a sex assigned at birth that is concordant with felt gender). For example, transgender people may use disordered eating behaviors to attain more masculine or feminine statures^{6,7} and some transgender youth who do not to take

hormones may develop disordered eating behaviors to align their bodies with their gender.⁸

Empirical research on disordered eating in transgender populations is sparse. Historically, most scholarship that has examined disordered eating among transgender youth have been limited to case studies. One found the drive for thinness was linked to the desire for a feminine physique for a transgender woman (a woman who was assigned male at birth), however the drive for stunted growth of breasts and increased muscularity was salient for a transgender man (a man who was assigned female at birth).⁹ There are a handful of other similar case studies that have noted the complexities related to gender dysphoria and disordered eating for transgender adults.^{10–12}

More contemporary self-report studies have interviewed and surveyed larger samples of transgender individuals. One recent study compared 475 transgender college students to cisgender heterosexual and LGB college students and found transgender students were more than twice as likely to use diet pills in the past month than their counterparts.¹³ In a matched control study,

Accepted 22 August 2016

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Published online 12 November 2016 in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/eat.22627

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researchers found that transgender men had comparable body dissatisfaction to cisgender men that engaged in disordered eating.¹⁴ Another study of 131 transgender individuals found that they tended to score higher on eating disorder questionnaires than cisgender people but lower than a sample of women with eating disorders.¹⁵

While there has been some progress in examining the prevalence of disordered eating among transgender adults, limited scholarship has focused on adolescents, or on risk and protective factors that may be linked to these experiences. Sexual and gender minority youth face systematic stigma (related to homophobia, biphobia, heterosexism, transphobia, and cissexism) from early ages related to their sexual orientation and gender identity.¹⁶ Scholars have shown that a variety of risk and protective factors contribute to the health of LGB adolescents, and this work is beginning with transgender adolescents as well.

LGBT youth often face victimization due to their stigmatized sexual identities.^{1,17} The most well documented risk factors for health disparities among LGBT youth are harassment, victimization, and violence. Often, these negative experiences are due to stigma specific to sexual orientation or gender identity; we refer to these experiences as enacted stigma, which is a mechanism through which these victimization experiences affect the health of LGBT youth.¹⁸ Sexual and gender minorities may manage this stigma through a variety of symptoms and behaviors, such as depression, suicidality, self-esteem,¹ and most relevant to this study, weight control or restrictive eating practices.

Research that explores protective factors (such as interpersonal relationships) that protect against negative health outcomes for transgender youth is scarce. Most research among heterosexual¹⁹ and sexual minority²⁰ youth finds that rates in disordered eating appear to be mitigated by support from parents, friends, and people at school. These protective factors have also been found to be important for a range of other health outcomes including depression, substance use and abuse, and suicidality.^{21–25}

An examination of risk and protective factors for disordered eating for transgender youth is needed. The unique issues related to gender identity, as distinct from sexual orientation, warrant separate studies for this population. We designed an exploratory study to examine how varying combinations of risk and protective factors contribute to the probability of transgender youth engaging in disordered eating behaviors. We examined four possible

forms of social support (family, friend, school, and general social support) that have been identified as protective factors for youth.^{24–27}

Method

Sample

The 2014 Canadian Trans Youth Health Survey was an online survey open to transgender youth living in Canada, aged 14–25, from October 2013 to May 2014. The survey was available in English and French. A total of 923 participants were recruited through our networks of investigators, networks of trans youth advisory council members, emails distributed through our contacts in community organizations and health professionals who work with transgender youth, as well as Facebook advertising.

The survey demographics were similar to the population of Canada. Most participants (86%) were born in Canada and only spoke English at home (76%). Most participants identified their ethnicity as White only (74%) and nearly 1 in 10 identified as Aboriginal (First Nations, Inuit or Métis). The average age of the sample was 20 (SD = 3.03), and 35% of the sample was under 18 years of age. More information about the survey can be found elsewhere.²⁸

Measures

All items were adapted from two population-based repeated wave surveys: the British Columbia Adolescent Health Survey (for items given to 14–18 year olds) and Canadian Community Health Survey (for items given to 19–25 year olds).

Transgender Identity. Because there is no one item that has been validated for asking about transgender identity among this age group, the survey asked a number of different questions related to transgender identity. One such item asked: “When a person’s sex and gender do not match, they might think of themselves as transgender. Sex is what a person is born. Gender is how a person feels. Which one response best describes you?” Response options were, “I am not transgender,” “I am transgender and identify as a boy or man,” “I am transgender and identify as a girl or woman,” and “I am transgender and identify in some other way.” We used this item to categorize participants as transgender girls/women, transgender boys/men, and non-binary. Twenty-four participants who did not give either of these response categories were manually included into one of these categories based on another gender identity questions that gave them more response options.

Enacted Stigma. An Enacted Stigma Index was created by summing the number of reported experiences of a wide

TABLE 1. Enacted Stigma Index items separate for 14–18 and 19–25 year old transgender youth

14–18 Year Olds	19–25 Year Olds
1. Number of reasons for experiencing discrimination (past year)	1. Number of reasons for experiencing discrimination in the (past 5 years)
2. Harassment for: (past year)	2. Received threatening messages*
a. race or culture	3. Received hateful comments*
b. sexual orientation	4. Someone sent out threatening emails using their identity*
c. body size/shape/appearance	5. Other cyberbullying*
d. gender identity	6. Physical abuse by someone close as a child/teenager*
3. Felt unsafe with internet contact*	7. Physical attack to self or family member (past year)
4. Been bullied on the internet*	8. Contact/use of violence services (past 5 years)
5. Bullying (past year):	9. Forced/attempted unwanted sexual activity (past year)
a. been bullied/taunted/ridiculed	10. Forced unwanted sexual activity by current partner (5 years)
b. been bullied at school	11. Physically hurt or forced sex by a date*
6. Not attended school due to feeling unsafe (past 30 days)	12. Physical forced sexual intercourse*
7. Physically threatened/injured (past year)	13. Unwanted sexual touch (past year)
8. Threatened with weapon (past year)	
9. Physically hurt by someone in family (past year)	
10. Sexual abuse*	
11. Sexual touch by older or stronger family member*	
12. Unwanted sexual touch outside family*	
13. Physically hurt or forced sex by a date*	
14. Physically forced into sexual intercourse*	
15. Sexual harassment (past year):	
a. unwanted sexual comments	
b. unwanted sexual touch	
16. Engaged in sexual activity for money, food, shelter, drugs/alcohol*	

Note: * indicates that this item asked about lifetime experiences opposed to past year experiences. All items listed above were included in the Enacted Stigma Index for each age group, separately.

range of enacted stigma occurrences, including harassment, bullying, discrimination, and violence. Some items asked participants to respond with frequency of these experiences; these items were dichotomized to yes/no responses. There were different items given to 14–18 year olds and 19–25 year olds. Most of the items asked only whether the experience had occurred, not whether the experience was specific to being transgender (see **Table 1** for items; all listed items were asked of participants).

Protective Factors

School Connectedness (14–18 Year Olds). Five items were used to assess school connectedness.²⁹ The scale measured feelings of belonging, engagement, and connection to one's school ($\alpha = 0.87$, $n = 210$ in this study); for example, *I feel I am part of my school*. Response options ranged from 1 (*strongly disagree*) to 4 (*strongly agree*). This scale has been tested for reliability and measurement stability across 18 ethnic groups³⁰ as well as among sexual minority adolescents.³¹

Family Connectedness (14–18 Year Olds). Seven items were used to assess family connectedness ($\alpha = .92$, $n = 260$ in this study); for example, *how much do you feel that your family cares about your feelings?*³² Response options ranged from 1 (*not at all*) to 5 (*very much*).

Perception of Friends Caring (14–18 Year Olds). A single item taken from the 1992 Minnesota Student Survey, later adapted by the National Longitudinal Study on Adolescent Health to Young Adulthood was asked of

participants, *how much do you feel that your friends care about you?* Response options ranged from 1 (*not at all*) to 5 (*very much*).

Social Support (19–25 Year Olds). We used a modified version of the Medical Outcomes Study Social Support Survey³³ to assess social support among 19–25 year old participants. This measure of social support was not assessed for younger youth. We used 12-items ($\alpha = .94$, $n = 476$ in this study) to measure the availability of tangible, affectionate, positive interaction, and emotional-information social support. These items were selected because they were also used on the Canadian Community Health Survey. Responses ranged from 1 (*none of the time*) to 5 (*all of the time*). Gjesfjeld and colleagues³⁴ assessed the psychometric properties of the 12-item version and found good fit as either a single factor or higher-order factor model.

Binge Eating. One yes/no item asked both 14–18 and 19–25 year old youth: *During the past 12 months, have you eaten so much food in a short period of time that you felt out of control (binge eating)?*

Lose Weight by Fasting, Diet Pills, Laxatives, and Vomiting. Both 14–18 and 18–25 year old youth were asked: *During the past 12 months, have you done any of the following to lose weight or control your weight?* Respondents could indicate whether or not they had fasted or skipped meals, used diet pills or speed, vomited or thrown up on purpose after eating, or used laxatives to lose weight.

TABLE 2. Prevalence of disordered eating, disaggregated by gender identity, for 14–18 and 19–25 year old transgender youth

Disordered Eating Variables	Boys/Men <i>n</i> (% of total)	Girls/Women <i>n</i> (% of total)	Non-Binary <i>n</i> (% of total)	Statistical Tests
14–18 year old transgender youth				
Binge eating	45 (37.2)	12 (42.9)	49 (44.5)	$F(2, 256) = 0.67$
Lose weight by fasting	53 (43.1)	13 (40.6)	59 (52.7)	$F(2, 260) = 1.09$
Lose weight by pills or speed	8 (6.5)	1 (3.6)	9 (8.0)	$F(2, 260) = 0.37$
Lose weight by laxatives	3 (2.4)	1 (3.6)	8 (7.1)	$F(2, 260) = 0.70$
Lose weight by vomiting	13 (10.6)*	5 (17.9)	28 (25.0)*	$F(2, 260) = 4.33^{**}$
19–25 year old transgender youth				
Binge eating	64 (34.8)	28 (30.1)	73 (39.7)	$F(2, 458) = 1.30$
Lose weight by fasting	64 (34.4)	42 (45.2)*	51 (27.6)*	$F(2, 461) = 4.35^{**}$
Lose weight by pills or speed	7 (2.8)	3 (3.2)	10 (5.4)	$F(2, 461) = 0.47$
Lose weight by laxatives	4 (2.2)	4 (4.3)	5 (2.7)	$F(2, 461) = 0.54$
Lose weight by vomiting	13 (7.0)	5 (5.4)	8 (4.3)	$F(2, 461) = 0.63$

Note: All variables asked about behaviors in the past year; * indicates two groups significantly differ from each other.

Procedure

The study received ethics approval from the University of British Columbia Behavioral Research Ethics Board and several other university research ethics boards across Canada. Data analyses were conducted using SPSS version 22. Given protective factors were only moderately correlated with each other (Pearson's coefficients ranged between .43 and .53) and tolerance and VIF reports for protective factors were acceptable (tolerance ranged from .69 to .70; VIF ranged from 1.4 to 1.6), multicollinearity was not an issue.³⁵ We therefore proceeded with logistic regression models to test associations between risk and protective factors and reported disordered eating. These analyses were conducted separately for 14–18 year olds and 19–25 year olds due to each of these age groups having different risk and protective factors measured.

We used the probability profiling method^{36–39} to illustrate the results of these models. Using this method, protective factors were transformed to a 0–1 scale to make a common metric to assess which of these had the stronger effects. Bivariate logistic regression models were then conducted for each of the disordered eating outcomes with each of the risk and protective factor variables singularly. The risk factor for the analyses was the Enacted Stigma scale. Protective factors that predicted disordered eating at odds ratios of lower than 0.5 in these bivariate models were then included in multivariate logistic regression models. We chose the 0.5 effect size cutoff because they were indicators of strong effect sizes appropriate for this modeling. Using the results of these models, probabilities of reporting disordered eating among those with various combinations of low and high levels (the 10th and 90th percentile respectively) of the risk and protective factors. The formula used to calculate the probabilities for each disordered eating outcome based on

combinations of risk factor (enacted stigma) and protective factors:

$$\text{Probability} = 1 / (1 + e^{-\beta X}), \text{ where } \beta X = \beta \text{constant} + \beta \text{age} \\ * \text{MAGE} + \beta \text{risk} * \text{risk}(10^{\text{th}}/90^{\text{th}} \text{percentile}) + \beta \text{protective1} \\ * \text{protective1}(10^{\text{th}}/90^{\text{th}} \text{percentile}) + \beta \text{protective2} \\ * \text{protective2}(10^{\text{th}}/90^{\text{th}} \text{percentile})$$

β represents the beta coefficient from the logistic regression model and M represents the mean, and $10^{\text{th}}/90^{\text{th}}$ percentile represents the high and low levels of the protective factor. The probabilities were calculated with this formula in Microsoft Excel by using the results from the multivariate logistic regression.

Results

Only 3% of participants reported 4 or 5 of the total disordered eating behaviors examined, and 46% reported no disordered eating behavior. About one-quarter (26%) of the sample reported one disordered eating behavior.

In **Table 2**, disordered eating prevalence is displayed separately by gender identity. One-way ANOVA tests indicated that 14–18 year old trans boys/men reported significantly fewer incidences of vomiting to lose weight compared to non-binary participants (Cohen's $d = 0.37$), and fewer 19–25 year old trans non-binary youth reported fasting to lose weight compared to girl/women participants (Cohen's $d = 0.36$). Overall, 42% of 14–18 year old transgender youth reported binge eating at least once in the past 12 months; these youth also reported engaging in certain behaviors to lose weight in the past 12 months: 48% reported fasting, 7% used diet pills, 5% used laxatives, and 18% vomited to lose weight. Among 19–25 year old youth, 29% reported past year binge eating, 27% reported

TABLE 3. Prevalence of disordered eating bivariate and multivariate logistic regression models among transgender younger youth (14–18 year olds)

	Bivariate Model Odds Ratio (95% CIs)	Multivariate Model Odds Ratio (95% CIs)
Past year binge eating <i>n</i> (Yes) = 111, <i>n</i> (No) = 153		
Enacted stigma index	1.08 (1.03–1.13)**	1.06 (1.01–1.12)*
Family connectedness scale	0.14 (0.05–0.56)**	0.29 (0.07–1.19)
School connectedness scale	0.22 (0.07–0.68)**	0.53 (0.14–2.02)
Perception of friends caring	0.52 (0.39–1.19)	Not included ^a
Age	–	1.02 (0.79–1.33)
Past year lose weight by fasting <i>n</i> (Yes) = 129, <i>n</i> (No) = 139		
Enacted stigma index	1.01 (1.00–1.03)	1.10 (1.05–1.16)**
Family connectedness scale	0.72 (0.65–1.03)	Not included ^a
School connectedness scale	0.09 (0.03–0.29)**	0.33 (0.08–1.41)
Perception of friends caring	0.13 (0.05–0.34)**	0.20 (0.06–0.64)**
Age	–	1.02 (0.77–1.35)
Past year lose weight by pills or speed <i>n</i> (Yes) = 19, <i>n</i> (No) = 249		
Enacted stigma index	1.08 (0.99–1.16)	1.09 (0.99–1.20)
School connectedness scale	0.49 (0.39–0.62)*	Not included ^a
Family connectedness scale	0.01 (0.00–0.22)**	0.11 (0.00–3.32)
Perception of friends caring	0.06 (0.01–0.33)**	0.06 (0.01–0.72)*
Age	–	1.19 (0.66–2.15)
Past year lose weight by laxatives <i>n</i> (Yes) = 13, <i>n</i> (No) = 255		
Enacted stigma index	1.04 (0.95–1.14)	1.02 (0.92–1.13)
Family connectedness scale	0.01 (0.00–0.40)*	0.20 (0.00–1.04)
School connectedness scale	0.07 (0.01–1.04)	0.85 (0.04–17.83)
Perception of friends caring	0.65 (0.34–1.31)	Not included ^a
Age	–	0.78 (0.60–1.00)
Past year lose weight by vomiting <i>n</i> (Yes) = 47, <i>n</i> (No) = 221		
Enacted stigma index	1.07 (1.01–1.13)*	1.05 (0.99–1.12)
Family connectedness scale	0.02 (0.00–0.10)**	0.05 (0.01–0.40)**
School connectedness scale	0.07 (0.02–0.33)**	0.44 (0.07–2.89)
Perception of friends caring	0.83 (0.55–1.72)	Not included ^a
Age	–	0.64 (0.45–0.83)

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. CIs, Confidence Intervals.

^aNot included due to having an odds ratio of greater than 0.5 in the univariate model. Odds ratios reflect analyses of predictors on 0–1 scale.

fasting to lose weight, 4% used diet pills, 3% used laxatives, and 5% vomited to lose weight in the past year (see **Table 2** for breakdown by gender identities).

Results of bivariate and multivariate models of disordered eating behaviors for 14–18 year olds given in **Table 3** show that enacted stigma experiences were positively associated with binge eating, fasting, and vomiting to lose weight and, conversely, protective factors were negatively related to these behaviors. Odds ratios for the protective factors compared those who scored at the highest possible score for the scale to those at the lowest possible score. For example, youth who scored the highest on the perception of friends caring item were five times less likely (odds ratio 0.20) to fast to lose weight in the multivariate model.

Table 4 displays the bivariate and multivariate models of disordered eating behaviors for 19–25 year olds. The Enacted Stigma Index was a statistically significant predictor for all of the analyses except for those with losing weight using laxatives. The Social Support Scale was statistically significant for analyses using the vomiting to lose weight outcome variable.

The disordered eating behavior probability profiles for 14–18 and 19–25 year old transgender youth are presented in **Table 5**. Each percentage represents the estimated probability that a transgender youth would experience a disordered eating behavior at different levels of reported stigma experience and social support/family or school connectedness. Youth who reported both high levels of enacted stigma and low levels of protective factors had the greatest probabilities of engaging in disordered eating behaviors. Youth 14–18 years of age who reported high levels of two protective factors (combinations of two) had lower probabilities of disordered eating behaviors than youth with one or no protective factors. Among 19–25 year olds, those with higher levels of enacted stigma and lower levels of social support had the greatest probabilities of engaging in disordered eating behaviors.

Discussion

Few studies had explored rates of disordered eating behaviors among transgender youth, and until now, nearly no research had explored risk and protective factors related to these behaviors. Our research with a large sample of transgender youth found that nearly half of 14–18 year old transgender youth and more than a third of 19–25 year old transgender youth engaged in binge eating or fasting, using pills, laxatives, or vomiting to lose weight. Binge eating and fasting to lose weight were the most commonly reported behaviors with both of these reported by around 35–45% of the sample, and vomiting to lose weight seemed particularly prevalent among 14–18 year olds, with almost one in five of this group reporting vomiting. These reports are higher than those reported in a British Columbian provincially-representative survey of nearly 30,000 14–18 year old youth (the BCAHS survey), in which 27% of youth reported binge eating (compared to 42% of transgender adolescents in our sample), and 5% of youth vomited to lose weight (compared to 18% of our sample).⁴⁰

Experiencing enacted stigma was linked to higher levels of all the disordered eating behaviors

TABLE 4. Prevalence of disordered eating bivariate and multivariate logistic regression models among transgender older youth (19–25 year olds)

	Bivariate Model Odds Ratio (95% CIs)	Multivariate Model Odds Ratio (95% CIs)
Past year binge eating <i>n</i> (Yes) = 173, <i>n</i> (No) = 308		
Enacted stigma index	1.13 (1.04–1.22)**	1.12 (1.03–1.21)**
Social support scale	0.52 (0.23–1.16)	0.50 (0.21–1.20)
Age	–	0.90 (0.80–1.01)
Past year lose weight by fasting <i>n</i> (Yes) = 160, <i>n</i> (No) = 324		
Enacted stigma index	1.09 (1.01–1.18)*	1.09 (1.00–1.17)*
Social support scale	0.49 (0.22–1.10)	0.49 (0.20–1.19)
Age	–	0.89 (0.79–0.99)*
Past year lose weight by pills or speed <i>n</i> (Yes) = 21, <i>n</i> (No) = 463		
Enacted stigma index	1.25 (0.08–1.45)**	1.24 (1.07–1.44)**
Social support scale	0.31 (0.05–2.01)	0.37 (0.05–2.61)
Age	–	0.92 (0.70–1.20)
Past year lose weight by laxatives <i>n</i> (Yes) = 15, <i>n</i> (No) = 469		
Enacted stigma index	1.11 (0.90–1.36)	1.09 (0.88–1.35)
Social support scale	0.26 (0.03–2.47)	0.18 (0.01–2.30)
Age	–	0.97 (0.69–1.35)
Past year lose weight by vomiting <i>n</i> (Yes) = 28, <i>n</i> (No) = 456		
Enacted stigma index	1.21 (1.05–1.39)**	1.20 (1.03–1.38)*
Social support scale	0.18 (0.03–0.97)*	0.29 (0.05–1.73)
Age	–	0.81 (0.63–1.05)

Note. * $p < .05$, ** $p < .01$. Odds ratios reflect analyses of predictors on 0–1 scale. CIs, Confidence Intervals.

we examined. Our probability profiling illustrated, however, that social supports, such as perceived support from family, school connectedness, and friend caring mitigated the influence of enacted stigma on disordered eating. For example, younger transgender youth reporting high levels of enacted stigma and no protective factors had a 71% probability of reporting binge eating, compared to 40% of youth with high levels of enacted stigma and two protective factors (family and school connectedness).

Although the risk and protective factors were not always statistically significant independent predictors at the $p < .05$ level in our logistic regression models (especially models with lower sample sizes and models predicting less frequent outcomes), our probability profiling results illustrate that in all of our models these factors had meaningful effects in the expected directions on the probability of reporting eating disordered behaviors. For 14–18 year olds, family connectedness in particular corresponded with the lowest probabilities of disordered eating. This finding is in accordance with other studies that have shown that for sexual minorities, supportive families—particularly parents—are

protective for youth above and beyond friend and community supports.²⁴

Our findings suggest that clinicians, health researchers, and policy makers should recognize disordered eating behaviors as a significant health concern for transgender youth. Transgender youth need equitable access to health care and for healthcare providers to assist them to foster supportive relationships with family and friends. To do this, clinicians can be aware of the specific challenges transgender youth face in regards to how their gender identity is received by their families, schools, and peers. Our sample of youth reported disordered eating at much higher rates than reported in studies that have sampled LGB youth^{2,41} and heterosexual populations.⁴² The unique challenges that transgender youth face—increased likelihood of facing mental health problems due the prevalence of stigma associated with being transgender as well as potentially altering eating behaviors in attempting to make their body align with their felt gender—may contribute to the development of disordered eating behaviors of transgender youth.

Enacted stigma is related to a host of negative mental health outcomes for sexual minority adolescents,²² and our findings show that this relationship also holds for disordered eating among transgender youth. Clinicians, counselors, and mental health professionals should consider how the complexities of pressures to make one's body conform to society's gendered expectations, when compounded with experiencing stigma (which is often reported at high levels by transgender youth), may contribute to disordered eating. Since social support appears to play a role of in mitigating the association between enacted stigma on disordered eating, health professionals should also foster and encourage support from family, school personnel and teachers, and friends.

Despite the strengths of our study: a large national dataset of transgender youth, and our focus on an understudied group, transgender youth, this study also has a number of limitations to consider. First, this study relied on non-probability sampling, which is not representative of the wider population of transgender youth. However, given the small proportion of transgender youth in the population, generally estimated at about 1% or lower,⁴³ population-based sampling would need to be extremely large to capture an adequate sample of transgender youth for studies such as this. Second, we were unable to assess the complexities of disordered eating diagnoses, given

TABLE 5. Probabilities of disordered eating behaviors by low/high enacted stigma and presence of protective factors for 14–18 and 19–25 year old transgender youth

Behavior (past year)	14–18 Year Old Transgender Youth										19–25 Year Old Transgender Youth			
	High Enacted Stigma (%)					Low Enacted Stigma (%)					High Enacted Stigma (%)		Low Enacted Stigma (%)	
	0 PF	FC Only	SC Only	PFC Only	2 PF	0 PF	FC Only	SC Only	PFC Only	2 PF	Low Social Support	High Social Support	Low Social Support	High Social Support
Binge eating	71.2	52.8	59.6	–	40.1	47.2	28.8	34.8	–	19.4	88.2	54.0	82.2	42.2
Lose weight by...														
Fasting	85.0	–	67.5	64.9	40.4	53.3	–	29.5	27.1	12.0	82.3	54.5	74.1	42.5
Pills	23.9	5.3	–	5.1	1.0	13.3	2.7	–	2.6	1.0	73.0	7.2	58.0	3.8
Vomiting	43.1	8.6	–	29.2	4.9	24.4	3.9	–	15.0	2.1	73.0	7.2	5.8	1.5
Laxatives	14.0	1.1	12.6	–	1.0	10.8	1.0	9.6	–	1.0	78.3	16.1	60.7	7.6

Note: 0 PF, No protective factors; FC Only, family connectedness only; SC Only, School connectedness only; PFC Only, perception of friends caring only; 2 PF, two protective factors present. A dash represents that the protective factor was not significant in the corresponding model.

the limited measures of disordered eating screening behaviors in this survey. Third, we used probability profiling to illustrate the differences between high and low levels of risk/protective factors (10th and 90th percentile); of course most of our sample fell between these percentiles and our analyses did not explore the entire range of support and stigma experiences among transgender youth. Finally, we emphasize that these analyses are exploratory; because we believe we are the first study to explore risk and protective factors for disordered eating among transgender youth, we decided to undertake analyses separately for a broad range of disordered eating behavior symptoms. Because this resulted in multiple comparisons related to our logistic regressions of disordered eating behaviors, we have focused on effect size (as opposed to *p*-values for null hypothesis testing) in this paper. Future research should consider overlapping behavioral symptoms and possibly explore a single underlying disordered eating factor.

In summary, we have advanced knowledge about exposure to enacted stigma and protective factors that appear to buffer that exposure for disordered eating behaviors by extending the focus to the experiences of transgender youth. Though we documented high rates of disordered eating behaviors among transgender youth, our findings also show that families, friends, and schools can mitigate the negative role of enacted stigma in the development of these behaviors.

Funding for this research was provided by grant #MOP 119472 from the Canadian Institutes of Health Research (Saewyc, PI), and by fellowship awards from the Canadian Institutes of Health Research and the Michael Smith Foundation for Health Research (Veale, postdoctoral fellow). We would like to acknowledge our study co-investigators and research team from across the country,

and give special thanks to the Trans Youth Advisory Councils, and to the survey participants. The authors declare no conflicts of interest.

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