Perceived Gender Presentation Among Transgender and Gender Diverse Youth: Approaches to Analysis and Associations with Bullying Victimization and Emotional Distress

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Abstract

Purpose: As measures of birth-assigned sex, gender identity, and perceived gender presentation are increasingly included in large-scale research studies, data analysis approaches incorporating such measures are needed. Large samples capable of demonstrating variation within the transgender and gender diverse (TGD) community can inform intervention efforts to improve health equity. A population-based sample of TGD youth was used to examine associations between perceived gender presentation, bullying victimization, and emotional distress using two data analysis approaches.

Methods: This secondary data analysis of the Minnesota Student Survey included 2168 9th and 11th graders who identified as "transgender, genderqueer, genderfluid, or unsure about their gender identity." Youth reported their biological sex, how others perceived their gender presentation, experiences of four forms of bullying victimization, and four measures of emotional distress. Logistic regression and multifactor analysis of variance (ANOVA) were used to compare and contrast two analysis approaches.

Results: Logistic regressions indicated that TGD youth perceived as more gender incongruent had higher odds of bullying victimization and emotional distress relative to those perceived as very congruent with their biological sex. Multifactor ANOVAs demonstrated more variable patterns and allowed for comparisons of each perceived presentation group with all other groups, reflecting nuances that exist within TGD youth.

Conclusion: Researchers should adopt data analysis strategies that allow for comparisons of all perceived gender presentation categories rather than assigning a reference group. Those working with TGD youth should be particularly attuned to youth perceived as gender incongruent as they may be more likely to experience bullying victimization and emotional distress.

Keywords: adolescence, bullying, gender identity, mental health, perceived gender presentation

Introduction

Transgender and gender diverse (TGD) youth experience disproportionate rates of victimization, mental and physical health problems, and health risk behaviors compared with their cisgender peers.[1–5] In an effort to better understand this population, identify protective factors, and uncover opportunities for prevention, multiple organizations have called for the inclusion of measures of gender in large-scale surveys and data collection efforts.[6–8] Importantly, when multiple measures of gender are available, they are often included in small and/or convenience samples that cannot be used to examine variation within the adolescent TGD population. Understanding how TGD youth vary on key measures of health and health risk behaviors will inform treatment and prevention programs aimed at supporting TGD youth. This study capitalizes on multiple measures of gender (i.e., biological sex, gender identity, and perceived gender presentation) included in a large population-based study of high school students to examine associations between perceived gender presentation and bullying victimization and emotional distress and to compare results from two

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different approaches to combining and analyzing multiple aspects of gender.

The minority stress model

The minority stress model posits that environmental circumstances systematically produce high levels of stress that go beyond daily life stressors for marginalized groups, resulting in minority-specific stress processes, the long-term effects of which lead to health disparities.[9,10] For TGD youth, experiences of discrimination, victimization, and stigma can serve as barriers to care that then increase the likelihood of poorer health outcomes.[9] Research consistently finds that TGD youth report higher levels of victimization, discrimination, depression, and suicidal ideation and attempts than their cisgender peers.[2,5,11] One retrospective study suggests that the association between gender nonconformity in adolescence and young adult depression and decreased life satisfaction is fully mediated by experiences of victimization in school.[12] These findings lend support for the minority stress model and adolescence as a critical time for health and well-being.

Perceived gender presentation, or the way others view a person along a continuum from masculine to feminine, can play a role in experiences of stigma. Youth who dress and act in ways that are incongruent with societal expectations of their birth-assigned sex (e.g., assigned female, but perceived by others as masculine) are at heightened risk of mistreatment by peers and emotional distress compared with their gender-conforming peers,[13,14] a finding that is stronger for TGD youth than for cisgender youth.[4,12] In addition, TGD youth experience increased rates of prejudice-based harassment or bullying based on gender and/or gender expression,[2] which is as harmful or more harmful than bullying not based on bias.[15] TGD youth may be perceived as not conforming to societal gender expectations and peer group norms, which may increase the likelihood of peer harassment.

A more nuanced understanding of the role of perceived gender presentation among TGD youth has been absent from the literature, in large part due to the lack of sufficiently powered samples and measures to conduct these analyses. This is unfortunate because perceived gender presentation likely influences how peers and adults treat a person,[16] and research demonstrates that TGD youth who are perceived to transgress societal gender expectations report poorer mental and physical health,[17] in part, as a result of this stigma. Filling these gaps can inform the ways in which minority stressors influence the health of TGD individuals.

Multiple measures of gender

The Williams Institute[18] recommends assessing two aspects of gender in all surveys: birth-assigned sex and current gender identity. An additional question measuring perceived gender presentation may be used specifically for adolescent samples where gender identity may be emerging for some youth.[18] When multiple measures of gender are included in population-based surveys, an unanswered question is how best to approach data analysis. Nuances must be addressed, such as how to select a reference group for computing odds ratios while not prioritizing the gender binary or assuming linear relationships across the gender presentation continuum. Analyzing these measures in meaningful ways that accurately reflect the identities of TGD people is important for obtaining valid results. Artificially creating identity groups and/or dichotomizing variables may mask the underlying heterogeneity. For example, dichotomizing or combining response options concerning perceived gender presentation among TGD youth may not reflect their lived experiences accurately; some transgender youth may wish to be perceived as equally masculine and feminine, while others desire to be perceived as mostly masculine or mostly feminine.

The current study

This study uses a large population-based sample of adolescents to understand how biological sex and perceived gender presentation are related to emotional distress and bullying victimization among TGD youth. Additional survey items assessing gender identity as well as perceived gender presentation allow for comparisons of variations within TGD youth. We also examine the advantages, challenges, and conclusions related to two approaches to data analysis, logistic regression and multifactor analysis of variance (ANOVA) using these measures.

Methods

Data source

Data were from the 2016 Minnesota Student Survey, a statewide survey of 5th, 8th, 9th, and 11th graders, administered triennially. All public and charter school districts were invited to participate; 85% of districts contributed surveys. In keeping with state law, passive parental consent was used during survey administration, which is controlled locally by each school. Because gender identity was only asked of 9th and 11th graders, that subsample was used for the current analyses ($N = 81,885$). This represented 71% of 9th graders and 61% of 11th graders enrolled in Minnesota Public Schools. The University of Minnesota's Institutional Review Board determined that this anonymous, secondary data analysis was exempt from review.

Measures

Students reported on three measures of gender. First, students indicated their biological sex ["What is your biological sex?" (male/female)]. We acknowledge that the term "biological sex" is not preferred in the TGD community[19]; however, we are limited by the wording of the question in the original survey. Second, students reported their gender identity ["Do you consider yourself transgender, genderqueer, genderfluid, or unsure about your gender identity?" (yes/no)]. Those who marked yes comprised the TGD group. This constituted a modified version of the recommended two-step approach.[18,20,21] Third, students indicated their perceived gender presentation with one item: "A person's appearance, style, dress, or the way they walk or talk may affect how people describe them. How do you think other people at school would describe you?" The five response options were very/mostly feminine, somewhat feminine, equally feminine and masculine, somewhat masculine, and very/mostly masculine. This question was a combination of two items used previously and was validated with young adults.[22]

Four measures of emotional distress were included. Depressive symptoms were assessed with the Patient Health Questionnaire-2.[23] Two items measured frequency of depressed

mood and anhedonia during the past 2 weeks on a four-point scale from "not at all" (0) to "nearly every day" (3). Responses were summed, and students with scores >2 were considered at risk for major depression, in keeping with recommendations by scale creators.[23] Past 12-month self-harm ("purposely hurt or injure yourself without wanting to die," response options: 0 times–20 or more times) was dichotomized into ever or never. Suicidal ideation ("seriously considered attempting suicide") and suicide attempts ("actually attempted suicide") were coded as those who responded with "yes, during the last year" compared with those who did not.

Four measures of bullying victimization were also included[24]; all assessed past 30-day victimization with five response options ranging from never to daily. Responses were dichotomized into never versus ever being victimized for each type based on previous work indicating that even infrequent bullying victimization can be harmful.[25] Relational bullying victimization consisted of two items focused on rumor spreading and exclusion. Physical bullying victimization included two items: "pushed, shoved, slapped, hit, or kicked you when they weren't kidding around" and "threatened to beat you up." Single items measured prejudice-based harassment: gender-based harassment [bullied because of "your gender (being male, female, transgender, etc.)"] and gender expression-based harassment [bullied because of "your gender expression (your style, dress, or the way you walk or talk)"].

Students reported on the following sociodemographic covariates: grade (9th/11th), participation in the free/reduced-price lunch program (yes/no), and their race/ethnicity. Two items assessing race (check all) and Latino ethnicity (yes/no) were combined into six mutually exclusive categories: non-Hispanic American Indian, Black, Asian/Pacific Islander, multiple races, White, and Hispanic. Finally, the school metro location was coded as within the seven county metropolitan areas of Minneapolis/St. Paul or elsewhere in Minnesota.

Analysis plan

Sample statistics for the overall sample and cisgender youth are presented in Table 1 for context. For analyses stratified by biological sex, the analytic sample for the current article is 80,794, which excludes students who did not answer the biological sex or gender identity questions. All multivariable analyses were restricted to TGD-identified students. Chi-square tests of association documented differences in the prevalence of four emotional distress and four bullying victimization variables by perceived gender presentation among TGD youth. All analyses were stratified by biological sex because the meaning and interpretation of the perceived gender presentation variable differ by sex (e.g., "very masculine" has different implications for those indicating their sex as male rather than female).

Two analytical approaches were taken to investigate variation among TGD youth by perceived gender presentation on the eight dependent variables. First, we conducted logistic regressions, with the reference group set to very/mostly masculine for TGD youth indicating their sex as male and to very/mostly feminine for TGD youth indicating their sex as female. The second approach controlled for the same variables, but used multifactor ANOVA, which is acceptable

TABLE 1. SAMPLE DESCRIPTION (N=81,885)

	Overall (N=81,885),[a] N (%)	Cisgender, male sex (n=40,014), n (%)	Cisgender, female sex (n=38,639), n (%)	TGD, male sex (n=684), n (%)	TGD, female sex (n=1457), n (%)
Grade					
9th	45,309 (55.3)	22,088 (55.2)	21,221 (54.9)	365 (53.4)	891 (61.2)
11th	36,576 (44.7)	17,926 (44.8)	17,418 (45.1)	319 (46.6)	566 (38.8)
Free/reduced-price lunch[b]	22,208 (27.4)	10,349 (26.1)	10,549 (27.5)	291 (43.0)	533 (36.8)
Metro location	43,660 (53.3)	21,198 (53.0)	20,673 (53.5)	362 (52.9)	812 (55.7)
Race/ethnicity[c]					
NH American Indian	860 (1.1)	476 (1.2)	326 (0.8)	17 (2.5)	27 (1.9)
NH Asian/Pacific Islander	5118 (6.3)	2385 (6.0)	2403 (6.2)	79 (11.7)	109 (7.6)
NH Black	4818 (5.9)	2304 (5.8)	2235 (5.8)	71 (10.6)	65 (4.5)
NH multiple races	5620 (6.9)	2659 (6.7)	2650 (6.9)	67 (10.0)	181 (12.5)
Hispanic	7202 (8.9)	3469 (8.7)	3337 (8.7)	92 (13.7)	160 (11.1)
NH White	57,596 (70.9)	28,427 (71.6)	27,469 (71.5)	346 (51.5)	902 (62.5)
Perceived gender presentation[d]					
Very/mostly feminine	19,760 (24.9)	414 (1.1)	18,971 (50.1)	104 (15.7)	177 (12.3)
Somewhat feminine	13,404 (16.9)	996 (2.6)	11,861 (31.3)	100 (15.1)	327 (22.8)
Equally feminine/masculine	11,835 (14.9)	4803 (12.4)	6082 (16.0)	194 (29.3)	591 (41.2)
Somewhat masculine	13,636 (17.2)	12,359 (32.0)	805 (2.1)	132 (20.0)	243 (16.9)
Very/mostly masculine	20,618 (26.0)	20,050 (51.9)	178 (0.5)	131 (19.8)	96 (6.7)

[a]Overall N varies from gender identity/sex column ns due to missing data on biological sex (n=239, 0.3%) and gender identity (n=956, 1.2%).

[b]Analytic sample=81,126 for overall sample due to n=759 (0.9%) missing on free/reduced-price lunch and 80,186 for descriptives stratified by sex due to missing data on free/reduced-price lunch and biological sex.

[c]Analytic sample=81,214 for overall sample due to n=671 (0.8%) missing on race/ethnicity and 80,256 for descriptives stratified by sex due to missing data on race/ethnicity and biological sex.

[d]Analytic sample=79,253 for overall sample due to n=2632 (3.2%) missing on perceived gender presentation and 78,614 for descriptives stratified by sex due to missing data on perceived gender presentation and biological sex.

NH, non-Hispanic; TGD, transgender and gender diverse.

for dichotomous-dependent variables when sample sizes are large. When multifactor ANOVA is used with dichotomous-dependent variables (coded as 0/1), the adjusted predicted means can be interpreted as predicted prevalence estimates for each group, which can be compared with each other group rather than a single category selected a priori.[26] Post hoc comparisons between perceived gender presentation groups were conducted using Bonferroni-adjusted tests to identify significant differences between presentation groups. All analyses controlled for race/ethnicity, free/reduced-price lunch, grade, and metro location. Pairwise deletion was used for descriptive statistics, and listwise deletion was used for multivariable analyses. All analyses were conducted in SPSS version 22.0 (IBM Corporation, Armonk, NY), and the significance level was set to $\alpha = 0.05$.

Results

The sample overall was representative of adolescents in Minnesota (Table 1), with an approximately even split by biological sex (50.5% male, 49.5% female), just over a quarter receiving free/reduced-price lunch, just over half attending schools in the Twin Cities metro area, and 71% identifying as non-Hispanic White. In sum, 2168 (2.7%) youth identified as TGD and 78,761 (97.3%) did not. Prevalence of bullying and emotional distress variables for TGD youth with each perceived gender presentation are presented in Table 2. All forms of bullying victimization and emotional distress were more common for each perceived gender presentation group of TGD youth than for cisgender youth, regardless of perceived presentation. However, the prevalence of bullying victimization varied widely by perceived presentation. For example, 68.8% of TGD youth indicating their sex as female who were perceived as very/mostly masculine reported gender-based harassment compared with 22.0% of TGD youth indicating their sex as female who were perceived as very/mostly feminine (cisgender females 6.8%).

Logistic regression analyses

To examine associations between perceived gender presentation and bullying victimization and emotional distress among TGD youth, we conducted biological sex-stratified logistic regression analyses, controlling for covariates (Table 3). For youth indicating their sex as male, those who were perceived as very/mostly feminine had significantly higher odds of bullying victimization and emotional distress indicators than those who were perceived as very/mostly masculine. For the remaining perceived gender presentation groups, less consistent associations with bullying victimization and emotional distress emerged. For example, no other perceived presentation group had higher odds of physical bullying victimization than very/mostly masculine; however, for relational bullying victimization, depression, and suicidal ideation, all perceived presentation groups had higher odds than the very/mostly masculine group.

For youth indicating their sex as female, consistent patterns of results did not emerge. Only for gender expression-based harassment did all groups have higher odds relative to the very/mostly feminine group. For physical bullying victimization and gender-based harassment, very/mostly and somewhat feminine groups did not differ. For the remaining variables, findings were less consistent, as shown in Table 3.

TABLE 2. PREVALENCE OF BULLYING VICTIMIZATION AND EMOTIONAL DISTRESS BY GENDER IDENTITY/PERCEIVED GENDER PRESENTATION

	Relational bullying victimization, past 30 days	Physical bullying victimization, past 30 days	Gender-based harassment, past 30 days	Gender expression-based harassment, past 30 days	Depressive symptoms, past 2 weeks	Self-harm, past year	Suicidal ideation, past year	Suicide attempt, past year
Male sex, %								
Cisgender	22.7	14.6	2.7	12.0	32.7	8.4	7.1	1.9
TGD								
Very/mostly feminine	51.7	43.8	45.6	57.8	42.5	46.8	32.9	22.8
Somewhat feminine	50.0	32.3	36.2	47.9	57.5	54.7	45.3	20.0
Equally feminine/masculine	42.0	28.7	22.7	38.0	43.2	40.9	29.4	10.7
Somewhat masculine	42.2	25.4	15.0	27.1	41.5	29.9	29.3	11.2
Very/mostly masculine	30.1	22.0	13.1	22.1	24.6	23.9	15.8	7.1
Female sex, %								
Cisgender	41.4	10.7	6.8	18.2	46.2	20.3	14.9	4.4
TGD								
Very/mostly feminine	55.3	14.7	22.0	33.5	56.3	53.6	42.9	15.6
Somewhat feminine	54.8	15.5	29.7	44.1	62.1	64.1	50.3	16.0
Equally feminine/masculine	58.9	26.1	41.4	54.3	67.0	63.4	50.7	16.8
Somewhat masculine	52.3	25.1	49.4	59.5	70.4	63.6	60.2	21.1
Very/mostly masculine	64.1	40.2	68.8	68.1	65.5	63.5	57.0	32.6

TABLE 3. ODDS RATIOS (95% CONFIDENCE INTERVALS) OF BULLYING VICTIMIZATION AND EMOTIONAL DISTRESS AMONG TRANSGENDER AND GENDER DIVERSE YOUTH

	Relational bullying victimization, past 30 days	Physical bullying victimization, past 30 days	Gender-based harassment, past 30 days	Gender expression-based harassment, past 30 days	Depressive symptoms, past 2 weeks	Self-harm, past year	Suicidal ideation, past year	Suicide attempt, past year
Male sex								
Very/mostly feminine	**2.64 (1.46–4.79)**	**2.84 (1.53–5.29)**	**6.30 (3.10–12.81)**	**5.33 (2.83–10.02)**	**2.24 (1.19–4.23)**	**2.73 (1.44–5.18)**	**3.16 (1.55–6.46)**	**4.22 (1.70–10.47)**
Somewhat feminine	**2.48 (1.39–4.41)**	1.69 (0.91–3.14)	**3.78 (1.88–7.58)**	**3.24 (1.76–5.95)**	**3.67 (1.99–6.77)**	**3.74 (2.01–6.94)**	**4.05 (2.06–7.97)**	**3.16 (1.28–7.84)**
Equally feminine/masculine	**1.87 (1.13–3.07)**	1.40 (0.81–2.40)	**2.06 (1.07–3.94)**	**2.25 (1.32–3.86)**	**2.17 (1.28–3.69)**	**2.09 (1.23–3.58)**	**2.22 (1.21–4.09)**	1.49 (0.62–3.58)
Somewhat masculine	**1.83 (1.06–3.15)**	1.16 (0.64–2.11)	1.26 (0.60–2.64)	1.35 (0.74–2.47)	**2.07 (1.16–3.68)**	1.34 (0.73–2.45)	**2.01 (1.04–3.91)**	1.66 (0.65–4.24)
Very/mostly masculine	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Female sex								
Very/mostly feminine	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Somewhat feminine	0.92 (0.63–1.35)	1.11 (0.65–1.91)	1.52 (0.97–2.39)	**1.56 (1.04–2.33)**	1.24 (0.86–1.89)	**1.55 (1.04–2.31)**	1.34 (0.91–2.00)	1.10 (0.63–1.88)
Equally feminine/masculine	1.05 (0.73–1.50)	**2.06 (1.27–3.35)**	**2.53 (1.67–3.82)**	**2.23 (1.54–3.23)**	**1.53 (1.06–2.21)**	1.42 (0.98–2.06)	1.31 (0.91–1.90)	1.10 (0.66–1.81)
Somewhat masculine	0.83 (0.55–1.24)	**2.12 (1.24–3.63)**	**3.51 (2.23–5.54)**	**2.87 (1.88–4.39)**	**1.81 (1.18–2.78)**	1.46 (0.95–2.23)	**1.98 (1.30–3.02)**	1.53 (0.88–2.67)
Very/mostly masculine	1.37 (0.80–2.35)	**4.77 (2.55–8.91)**	**8.34 (4.62–15.06)**	**4.53 (2.58–7.94)**	1.56 (0.89–2.73)	1.50 (0.86–2.64)	**1.77 (1.02–3.06)**	**2.63 (1.38–5.02)**

Bullying victimization dichotomized as ever versus never in the past 30 days. All models controlled for grade (9th or 11th), race/ethnicity, free/reduced-price lunch participation, and school metro location. Bold indicates $p < 0.05$.

TABLE 4. ADJUSTED PREDICTED PREVALENCE OF BULLYING VICTIMIZATION AND EMOTIONAL DISTRESS BY PERCEIVED GENDER PRESENTATION AMONG TRANSGENDER AND GENDER DIVERSE YOUTH FROM MULTIFACTOR ANALYSIS OF VARIANCE

	Relational bullying victimization, past 30 days	Physical bullying victimization, past 30 days	Gender-based harassment, past 30 days	Gender expression-based harassment, past 30 days	Depressive symptoms, past 2 weeks	Self-harm, past year	Suicidal ideation, past year	Suicide attempt, past year
Male sex								
Perceived gender presentation	$F_{4,595} = 3.48^*$	$F_{4,599} = 3.42^*$	$F_{4,591} = 11.0^*$	$F_{4,592} = 9.81^*$	$F_{4,549} = 4.70^*$	$F_{4,545} = 6.13^*$	$F_{4,547} = 5.01^*$	$F_{4,545} = 3.99^*$
Very/mostly feminine	50.0[a]	47.5[a]	45.6[a]	59.0[a]	39.1[a,b]	44.2[a]	32.2[a]	25.1[a]
Somewhat feminine	48.5[a]	35.7[a,b]	34.6[a,b]	47.4[a,b]	51.5[a]	52.1[a,b]	38.9[a,b]	20.8[a,b]
Equally feminine/masculine	41.6[a,b]	31.8[a,b,c]	22.3[b,c]	38.8[b,c]	38.6[a]	37.9[a,b,c]	25.3[a,b,c]	11.4[b,c]
Somewhat masculine	41.1[a,b]	28.2[b,c]	14.9[c]	27.9[c,d]	37.4[a,b]	27.9[a,c,d]	23.5[a,b,c,d]	12.5[a,b,c,d]
Very/mostly masculine	27.6[b]	25.5[b,c]	12.1[c]	22.4[d]	21.6[b]	22.1[c,d]	11.7[d]	8.2[b,c,d]
Female sex								
Perceived gender presentation	$F_{4,1385} = 1.19$	$F_{4,1385} = 9.83^*$	$F_{4,1380} = 20.30^*$	$F_{4,1380} = 11.36^*$	$F_{4,1335} = 2.27$	$F_{4,1309} = 1.27$	$F_{4,1308} = 3.08^*$	$F_{4,1315} = 3.76^*$
Very/mostly feminine	52.8[a]	14.6[a]	16.1[a]	30.4[a]	53.8[a]	51.1[a]	42.3[a]	17.4[a]
Somewhat feminine	50.9[a]	15.7[a,b]	23.9[a]	40.6[a,b]	59.6[a]	61.3[a]	49.5[a,b]	18.5[a,b]
Equally feminine/masculine	54.0[a]	25.2[c]	35.2[b]	49.3[b,c]	63.7[a]	59.4[a]	48.9[a,b,c]	18.5[a,b,c]
Somewhat masculine	48.3[a]	25.5[a,b,c]	43.2[b]	55.4[c,d]	67.3[a]	60.0[a]	58.9[b,c,d]	23.5[a,b,c,d]
Very/mostly masculine	60.0[a]	42.3[d]	63.3[d]	65.4[d]	64.1[a]	60.7[a]	56.2[a,b,c,d]	34.1[d]

Entries that share a superscript (e.g., a,b,c,d) do not differ at $p < 0.05$. All models controlled for grade (9th or 11th), race/ethnicity, free/reduced-price lunch participation, and school metro location. Bonferroni adjustment for multiple comparisons was applied.
*F value for the main effect of perceived gender presentation was significantly associated with the dependent variable, $p < 0.05$.

Multifactor ANOVAs

In an alternative approach, we conducted multifactor ANOVAs, again stratified by biological sex and controlling for covariates (Table 4). Each perceived presentation group was compared with all of the others, so no single referent was used. For youth indicating their sex as male, perceived gender presentation was significantly associated with all eight dependent variables, and again, several patterns emerged. Only for relational bullying victimization was the primary significant difference related to a group or groups reporting higher risk than the very/mostly masculine group. A different pattern emerged for suicide attempts, where 25.1% of those perceived as very/mostly feminine reported suicide attempts, which was significantly higher than for those perceived as equally feminine and masculine (11.4%) and very/mostly masculine (8.2%). Those perceived as somewhat feminine (20.8%) or somewhat masculine (12.5%) did not differ significantly on reports of suicide attempts from all other groups.

For youth indicating their sex as female, perceived gender presentation was not significantly related to relational bullying victimization, depression, or self-harm. Various patterns emerged for the remaining five variables of interest. For example, many comparisons were significant for gender-based harassment, indicating a near stair–step pattern of increasing prevalence as perceived presentation moved from very/mostly feminine (16.1%) to very/mostly masculine (63.3%).

Discussion

This article examined the role of perceived gender presentation in bullying victimization and emotional distress among TGD youth. We analyzed the data using two different approaches, logistic regression and multifactor ANOVA, to investigate the most effective way to use measures of biological sex, gender identity, and perceived gender presentation. While the results of each method indicated that perceived gender presentation was generally related to bullying victimization and emotional distress among TGD youth, interpretation of the results differed by sex and the analysis method. Analyses indicated significant variation in dependent variables among the TGD sample, with odds ratios quite large in some cases (e.g., TGD youth perceived as the most gender incongruent having six to eight times the odds of gender-based harassment as those perceived as most gender congruent).

In all analyses for those reporting their sex as male (except depression in the ANOVA approach), youth perceived as very/mostly feminine reported statistically significantly higher rates of bullying victimization and emotional distress than those perceived as very/mostly masculine, consistent with previous literature.[4,12] A similar pattern emerged for youth reporting their sex as female who were perceived as very/mostly masculine with respect to physical, gender-, and gender expression-based victimization and suicide attempts in both approaches (as well as suicidal ideation in logistic regressions). Comparisons of other presentation groups were significant with multifactor ANOVA; for example, nearly twice as many youth reporting their sex as male who were perceived as somewhat feminine engaged in self-harm compared with those perceived as somewhat masculine, consistent with literature indicating that greater perceived gender incongruence is a risk factor.[12–14] We believe that statistical approaches that

do not require specification of a reference group should be used for these types of analyses. Multifactor ANOVA, one such approach, allows for more nuanced comparisons without reinforcing cisnormative ideas about gender and presentation (i.e., promoting the idea that birth-assigned sex, gender identity, and gender presentation are congruent and binary).

Several interesting findings emerged with respect to emotional distress and perceived gender presentation. Among youth who reported their sex as female, few differences were statistically significant, and depression and self-harm were unrelated to perceived gender presentation. For youth who reported their sex as male, however, rates of all four emotional distress indicators generally increased as perceived gender incongruence increased (i.e., toward very/mostly feminine). Together, these findings highlight the importance of perceived gender presentation to emotional distress, particularly among those indicating their sex as male, consistent with past work on this topic in cisgender samples.[27] Providers working with TGD youth should be particularly attuned to the interaction between perceived gender incongruence and bullying victimization, as well as addressing ways of increasing social support for these adolescents.

Studies using the perceived gender presentation question with smaller numbers of TGD participants may be tempted to collapse across perceived presentation categories (e.g., combining somewhat and very/mostly feminine) to maximize statistical power. Our findings indicate that this type of data reduction should be avoided where possible as adjacent categories often had substantially different risk profiles (i.e., ≥10 percentage point differences in prevalence). Due to the wording of the question, we were unable to examine whether patterns of results may have differed for youth identifying as genderqueer, nonbinary, or questioning compared with those identifying as male-to-female or female-to-male. Given documented associations between gender nonconformity and peer victimization in adolescence,[12] future research examining associations between perceived gender presentation and current gender identity would be useful in further describing well-being for TGD youth.

A key conceptual and analytical question is whether approaches to perceived gender presentation should or could vary based on the dependent variables under consideration. In this article, different patterns characterized emotional distress indicators, such that trends across presentation groups were less clear, particularly for those reporting their sex as female. In contrast, peer victimization was closely linked to perceived gender presentation and peer group norms,[4] and thus it is possible that even slight variations in perceived presentation may be related to experiences of victimization because it is more visible to peers. For nearly all forms of victimization, those indicating the most gender-congruent category (e.g., very/mostly feminine for those reporting their sex as female) experienced less victimization than all other presentation groups or all but the next closest group (e.g., somewhat feminine for those reporting their sex as female). The exceptions to this trend were physical bullying victimization for youth reporting their sex as male and relational bullying victimization for youth reporting their sex as female. These forms of victimization had almost no significant differences across perceived gender presentation groups.

This study clearly demonstrates that among TGD youth, perceived gender presentation is related to emotional distress and bullying victimization. Youth perceived as highly gender

incongruent were more likely to report depression, self-harm, suicidality, and bullying victimization than those perceived as more congruent, and this was especially true for youth who reported their sex as male. Elevated rates of bullying victimization contribute directly to minority stress[28] and can be addressed by school-based prevention. Given that TGD youth are already at elevated risk of emotional distress and victimization compared with their cisgender peers, these results support the need for additional training for mental health providers working with TGD youth with respect to perceived gender presentation and highlight important variations within the TGD youth population. Schools should simultaneously implement bullying prevention programs that address bias-based bullying while also providing support for TGD youth, such as gay-straight alliances/gender-sexuality alliances or similar clubs, trained supportive teachers, and inclusion of LGBT figures in the curriculum.[29] In addition, schools may consider efforts to foster a school climate that is more accepting of a broad range of gender expression for all students.[30]

Limitations

This study has several strengths, most notably a large population-based sample of TGD youth and the inclusion of three measures of gender. However, some limitations must be noted. The measures of gender deviate somewhat from gold standard approaches. Use of the term ''biological sex'' instead of ''birth-assigned sex'' may be unfamiliar to, not preferred by, or considered perjorative[19] by some youth. Furthermore, the wording of the gender identity question precludes a more detailed examination of potential differences among those who are questioning their gender identity, those who identify as transgender, and those with nonbinary identities (e.g., genderqueer and genderfluid). The survey did not assess students' ideal gender presentation, which could elucidate how congruence in ideal and perceived gender presentation is related to well-being. As with all school-based cross-sectional research, causality cannot be determined, and conclusions are limited by the coverage of enrolled students and to TGD youth enrolled in public schools. Interpretation of results should be limited to the forms of bullying presented here; future work examining cyberbullying, for example, is warranted. Because all youth attended public schools in Minnesota, care should also be taken in generalizing findings to other states or private/alternative school settings.

Conclusion

Although documented disparities exist in bullying victimization and emotional distress for TGD youth compared with their cisgender peers, this study demonstrates significant variation among TGD youth by perceived gender presentation. TGD youth perceived as more gender incongruent were more likely to report bullying victimization, prejudice-based harassment, emotional distress, and suicidality, and these effects were greater for those reporting their sex as male rather than female. Researchers should select data analysis strategies that allow for comparisons of all perceived gender presentation categories. Clinicians, youth workers, and school personnel who interface with TGD youth should be particularly attuned to gender-incongruent youth as they may be more likely to experience minority stressors.

While developing healthy coping mechanisms is important, the frequency of prejudice-based harassment described by TGD youth, which can be 10–20 times higher than for cisgender youth, provides strong evidence for the need for school-based antibias programs that address gender identity and expression. Making schools safer and more supportive for all students, including TGD youth, is critical to reducing health disparities. Prejudice-based harassment experiences can set in motion a cascade of events (e.g., depression, anxiety, and social withdrawal) that limit opportunities for healthy youth development and accessing social support. Intervening early in this chain of events has the greatest potential to improve health and well-being of TGD youth.

Disclaimer

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Author Disclosure Statement

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References

1. Connolly MD, Zervos MJ, Barone CJ 2nd, et al.: The mental health of transgender youth: Advances in understanding. J Adolesc Health 2016;59:489–495.
2. Eisenberg ME, Gower AL, McMorris BJ, et al.: Risk and protective factors in the lives of transgender/gender nonconforming adolescents. J Adolesc Health 2017;61:521–526.
3. Guss C, Shumer D, Katz-Wise SL: Transgender and gender nonconforming adolescent care: Psychosocial and medical considerations. Curr Opin Pediatr 2015;27:421–426.
4. Russell ST, Ryan C, Toomey RB, et al.: Lesbian, gay, bisexual, and transgender adolescent school victimization: Implications for young adult health and adjustment. J Sch Health 2011;81:223–230.
5. Veale JF, Watson RJ, Peter T, Saewyc EM: Mental health disparities among Canadian transgender youth. J Adolesc Health 2017;60:44–49.
6. Institute of Medicine (US) Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gaps and Opportunities: *The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding.* Washington, DC: National Academies Press, 2011.
7. Office of Disease Prevention and Health Promotion, U.S. Department of Health and Human Services: Healthy People 2020. Available at www.healthypeople.gov Accessed May 17, 2017.
8. Office of Minority Health, U.S. Department of Health and Human Services: Improving data collection for the LGBT community. Available at https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=3&lvlid=57 Accessed May 18, 2017.

9. Hendricks ML, Testa RJ: A conceptual framework for clinical work with transgender and gender nonconforming clients: An adaptation of the Minority Stress Model. Prof Psychol Res Pract 2012;43:460–467.

10. Meyer IH: Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. Psychol Bull 2003;129:674–697.

11. Clark TC, Lucassen MF, Bullen P, et al.: The health and well-being of transgender high school students: Results from the New Zealand adolescent health survey (Youth'12). J Adolesc Health 2014;55:93–99.

12. Toomey RB, Ryan C, Diaz RM, et al.: Gender-nonconforming lesbian, gay, bisexual, and transgender youth: School victimization and young adult psychosocial adjustment. Dev Psychol 2010;46:1580–1589.

13. Rieger G, Savin-Williams RC: Gender nonconformity, sexual orientation, and psychological well-being. Arch Sex Behav 2012;41:611–621.

14. Roberts AL, Rosario M, Corliss HL, et al.: Childhood gender nonconformity: A risk indicator for childhood abuse and posttraumatic stress in youth. Pediatrics 2012;129:410–417.

15. Russell ST, Sinclair KO, Poteat VP, Koenig BW: Adolescent health and harassment based on discriminatory bias. Am J Public Health 2012;102:493–495.

16. Goffman E: *The Presentation of Self in Everyday Life*. New York, NY: Doubleday, 1959.

17. Rider GN, McMorris BJ, Gower AL, et al.: Health and care utilization of transgender and gender nonconforming youth: A population-based study. Pediatrics 2018;141:e20171683.

18. The GenIUSS Group: *Gender-Related Measures Overview*. Los Angeles, CA: The Williams Institute, 2013.

19. Trans Student Educational Resources: LGBTQ+ definitions. Available at www.transstudent.org/definitions Accessed December 5, 2017.

20. Conron KJ, Landers SJ, Reisner SR, Sell RL: Sex and gender in the US health surveillance system: A call to action. Am J Public Health 2014;104:970–976.

21. Reisner SL, Conron KJ, Tardiff LA, et al.: Monitoring the health of transgender and other gender minority populations: Validity of natal sex and gender identity survey items in a U.S. national cohort of young adults. BMC Public Health 2014;14:1224.

22. Wylie SA, Corliss HL, Boulanger V, et al.: Socially assigned gender nonconformity: A brief measure for use in surveillance and investigation of health disparities. Sex Roles 2010;63:264–276.

23. Kroenke K, Spitzer RL, Williams JB: The Patient Health Questionnaire-2: Validity of a two-item depression screener. Med Care 2003;41:1284–1292.

24. California Department of Education (Safe and Healthy Kids Program Office) and WestEd (Health and Human Development Department): California Healthy Kids Survey. 2015. Available at http://chks.wested.org Accessed November 13, 2017.

25. Gower AL, Borowsky IW: Associations between frequency of bullying involvement and adjustment in adolescence. Acad Pediatr 2013;13:214–221.

26. Lumley T, Diehrs P, Emerson S, Chen L: The importance of normality assumption in large public health data sets. Annu Rev Public Health 2002;23:151–169.

27. Smith TE, Leaper C: Self-perceived gender typicality and the peer context during adolescence. J Res Adolesc 2006; 16:91–104.

28. Roberts AL, Rosario M, Slopen N, et al.: Childhood gender nonconformity, bullying victimization, and depressive symptoms across adolescence and early adulthood: An 11-year longitudinal study. J Am Acad Child Adolesc Psychiatry 2013;52:143–152.

29. Greytak EA, Kosciw JG, Boesen MJ: Putting the ''T'' in ''Resource'': The benefits of LGBT-related school resources for transgender youth. J LGBT Youth 2013;10:45–63.

30. Orr A, Baum J, Brown J, et al.: Schools in transition: A guide for supporting transgender students in K-12 schools. National Center for Lesbian Rights, Gender Spectrum, HRC Foundation, the American Civil Liberties Union, and the National Education Association, 2016. Available at www.genderspectrum.org/staging/wp-content/uploads/2016/06/Schools_In_Transition_6.3.16.pdf Accessed November 2, 2017.

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