



# Weight enumeration in United States anti-bullying laws: associations with rates and risks of weight-based bullying among sexual and gender minority adolescents

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## Abstract

Weight-based bullying is among the most prevalent forms of peer harassment and carries significant health consequences—particularly among adolescents who identify as a sexual and/or gender minority (SGM). We examined how anti-bullying legislation that includes weight as a protected class (enumeration) contributes to the prevalence of weight-based bullying and its adverse health sequelae among SGM adolescents. We collected data on weight-based bullying and health risk (stress, unhealthy eating behaviors, self-rated health) from the *LGBTQ National Teen Survey* and linked these to state anti-bullying legislation obtained from the United States (US) Department of Health and Human Services. Weight-based bullying was less frequent, but associated with greater health risk for SGM adolescents in states with, versus without, weight-enumerated anti-bullying laws. Adding weight as a protected class in anti-bullying legislation may be an effective strategy for reducing weight-based bullying, but additional supports are needed to support adolescents who continue to experience weight-based bullying.

**Keywords** Weight-based bullying · Weight stigma · Anti-bullying policy · Adolescence · Sexual and gender minority

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## Key Messages

- Weight-based bullying was reported to be less frequent among adolescents living in states with anti-bullying laws that enumerated weight compared to those in states that did not enumerate weight.
- Weight-based bullying was related to greater stress, more unhealthy eating behaviors, and poorer perceived health, but the strength of these associations varied across states with versus without weight enumerated anti-bullying laws.

## Introduction

Despite increases in body weight at the population level [1], weight is one of the most common reasons that adolescents across sociodemographic groups experience bullying at school [2]. Research suggests that a majority of adolescents have observed instances of teasing or bullying at school, or both, due to body weight (weight-based bullying) [3]. These experiences can contribute to multiple adverse health outcomes for bullied youth [4]. Robust prospective evidence links related weight-based peer mistreatment (such as teasing or discrimination) in adolescence with compromised health, including depression [5], somatic symptoms (such as nausea or fatigue) [6], and disordered eating (such as eating as a coping strategy and unhealthy weight control behaviors) [4].

The health consequences of weight-based bullying are particularly salient among adolescents who identify as a sexual and/or gender minority (SGM). Evidence from a recent systematic review suggests that SGM adolescents have a greater prevalence of higher weight (overweight and obesity) [7], and meta-analytic data indicate heightened vulnerability to multiple health disparities among SGM youth relative to their non-SGM peers [8], including increased risk for disordered eating [9]. While these health risks have been accounted for in part by SGM stigma [10], there has also been increased recognition that weight-based bullying takes a significant toll on SGM health [11]. Indeed, SGM adolescents are disproportionate targets of weight-based peer mistreatment [12]. And, over half of SGM adolescents report being bullied at school for their weight [13]; this has direct, adverse implications for their health and overall wellbeing [11]. Thus, to support healthy adolescent outcomes, identifying strategies to reduce weight-based bullying (primary prevention) and its adverse health sequelae (secondary prevention) is a critical public health priority.

Anti-bullying laws could be particularly useful in prevention efforts given their demonstrated effectiveness in reducing generalized (non-bias-based) bullying [14, 15]. Emerging research on the potential of state laws to affect rates of bias-based bullying (such as homophobic bullying) [16] suggests that state anti-bullying laws may also be effective in reducing weight-based bullying. Given that the odds of generalized bullying are lower in states with laws that include a description of prohibited bullying behaviors [14], it is likely critical that anti-bullying laws enumerate weight as a distinguishing characteristic that motivates bullying. Indeed, at the



school level, when anti-bullying policies enumerate sexual orientation and gender identity, sexuality- and gender-based victimization is less common among SGM adolescents [17]. Also, after a recent investigation found that enumerating ‘physical appearance’ in state anti-bullying laws was unrelated to weight-based bullying disparities, the authors presumed such null findings reflected the lack of specificity with respect to articulating ‘weight’ in the laws [18]. Although all states in the US currently have anti-bullying laws, only three states (Maine, New Hampshire, New York) have anti-bullying laws that enumerate body weight [19]. Yet, despite overwhelmingly strong public support to strengthen existing state anti-bullying laws to include protections against weight-based bullying [20], no study to our knowledge has tested how weight enumeration contributes to the rates of, and risks associated with, weight-based bullying.

To address this research gap, in the current study, we examine how experiences of weight-based bullying vary as a function of weight enumeration in state anti-bullying laws. Extending past research on state legislation as a primary prevention strategy to reduce bullying [14], we also test how weight enumeration contributes to the health risks associated with weight-based bullying. This approach is consistent with a recent call from the National Academies of Sciences, Engineering, and Medicine for studies to consider how anti-bullying laws can function as a secondary prevention strategy for reducing the adverse sequelae among bullied youth [21]. Health risk is assessed with three indicators—unhealthy eating behaviors, stress, and self-rated health—which can contribute to adverse health and obesity [22, 23]. While it is often presumed that anti-bullying laws may reduce unhealthy outcomes among bullied youth by preventing bullying [14], it is also possible based on the “healthy context paradox” (that is, low rates of bullying increase risks for those who are bullied) [24] that health risk may be exacerbated among youth bullied for their weight in states with weight-related anti-bullying legislation. The current study tests these competing hypotheses among a large, diverse sample of SGM adolescents, who disproportionately experience both weight-based bullying [13] and adverse health outcomes [8, 9].

## Data and methods

### Participants

Participants (ages 13–17 years) completed the *LGBTQ National Teen Survey*, a large national web-based survey of SGM adolescents [25], comprising a battery of questionnaires to assess victimization, health, family relationships, and school experiences (hosted by Qualtrics.com). All participants identified as LGBTQ, lived in the US, and spoke English. We excluded respondents found ineligible at screening (such as those outside the age range;  $n=8985$ ), who completed less than 10% of the survey ( $n=3006$ ), or were flagged in post hoc mischievous responder’s sensitivity analyses (i.e., survey respondents who were not LGBTQ



**Table 1** Analytic sample demographics ( $N=17,082$ )

	<i>N</i>	%
Sex		
Male	4718	27.6
Female	12,364	72.4
Ethnoracial identity <sup>a</sup>		
White	10,220	61.9
African American	951	5.8
Latino/a	1859	11.3
Asian	674	4.1
Other	2794	16.9
Gender identity		
Cisgender	11,452	67.0
Transgender	5630	33.0
Sexual orientation		
Gay or lesbian	6385	37.4
Bisexual	5960	34.9
Straight	278	1.6
Other	4459	26.1

<sup>a</sup>584 ethnoracial identity non-respondents

youth and provided extreme or misleading values on several questions) [25]. The analytic sample for the present study included participants who reported living in one of the 50 US states or the District of Columbia (Washington, DC) ( $N=17,082$  of 17,112;  $M_{\text{age}}=15.57$ ,  $SD_{\text{age}}=1.27$ ). Demographic characteristics for the analytic sample appear in Table 1.

The authors' Institutional Review Board approved all procedures. We recruited participants in partnership with the Human Rights Campaign (HRC), through HRC's diverse networks, community partners, and a comprehensive social media strategy [25]. We conducted all data collection online from April to December in 2017. Additional survey and recruitment details appear elsewhere [25].

## Health outcomes

We assessed three health outcome variables: stress, unhealthy eating behaviors, and self-rated health:

- *Stress* by self-reported average level of stress in general using a scale of 1 (not at all stressed) to 10 (very stressed) [26].
- *Unhealthy eating behaviors* as the extent to which participants use eating as a coping strategy. We drew five items from the coping subscale of the Motivations to Eat Scale [27] that assessed frequency of eating as a method of avoidance (for example, by distraction) or to cope with negative emotions (such as sadness) on



a scale of 0 (almost never/never) to 4 (almost always/always). For example, participants were asked how often they eat as a way to comfort themselves.

- *Self-rated health* by asking participants, “how would you describe your health?” with response options ranging from 0 (poor) to 3 (excellent). We drew this question from the Project EAT-II Survey for High School Students (a longitudinal study examining eating and activity behaviors in diverse young people) after its extensive pilot testing and test–retest reliability testing by adolescents [28].

Supplemental analyses considered differences in self-esteem between youth bullied, versus not bullied, for their weight as a function of state anti-bullying laws. We measured *self-esteem* with the 10-item Rosenberg Self-Esteem Scale [29] on a 4-point (0 = strongly disagree to 3 = strongly agree).

## Individual-level predictors

### Weight-based bullying

To assess experiences of weight-based bullying, adolescents read a brief description of bullying, and the survey questionnaire subsequently asked how often on a 5-point scale (0 = never to 4 = very often) each had been teased or treated badly by other students at school because of their body weight.

### Covariates

In addition to reporting their *sex at birth* (male or female), participants noted their current *gender identity*, dichotomized as *cis-* or *transgender*. To assess *sexual orientation*, participants selected their sexual identity from a series of response options combined for parsimony in the current analyses as gay or lesbian, bisexual, straight, and other (such as pansexual or asexual). We represented self-reported *ethnoracial identity* by four dummy variables (African American, Latino/a, Asian, Other ethnoracial identity) using White participants (the largest racial or ethnic group in the sample) as the reference group. The analyses also controlled for *parental level of education* and participant *age*. Additionally, we controlled for students’ self-reported *disability status* (0 = no disability, 1 = disability), as well as their *BMI* percentile, calculated based on self-reported height, weight, age, and sex using the Centers for Disease Control growth charts [30] ( $M_{\text{BMI percentile}} = 65.51$ ,  $SD_{\text{BMI percentile}} = 30.50$ ). To facilitate interpretation in the regression analyses, we transformed BMI percentile scores (divided by 10). Finally, to assess disclosure of sexual identity to teachers (“outness to teachers”), we relied on a binary indicator of participants’ reports of how many teachers currently they think know of their sexual orientation (zero versus at least one teacher).



## State-level predictors

### Enumeration of weight in state anti-bullying laws

We obtained data on anti-bullying laws at the state level, including all 50 states and the District of Columbia ( $n=51$ ), based on the US Department of Health and Human Services comprehensive evaluation of state bullying laws enacted through January 2018 [19]. We coded laws based on whether they contained an enumerated list of groups (that is, whether the law conveyed specific protections for individuals with characteristics that may motivate bullying behavior, such as race or ethnicity, sexual orientation, or others). We created an indicator variable to specify whether the enumerated list in each law included language about body weight (that is, listing the terms “weight” [ $n=2$ ] or “obesity” [ $n=1$ ] as protected classes), or not [18].

### Statistical analysis

The study team analyzed the data in SPSS and Mplus 8.0. First, we provide descriptive information regarding state-level anti-bullying laws. Second, we present results of standard multilevel linear models (accounting for individuals nested within US states) examining individual (weight-based bullying)- and state (anti-bullying law enumeration)-level effects on health risk (stress, unhealthy eating behaviors, self-rated health). The regression models accounted for ethnoracial identity, sex, gender identity, sexual orientation, parental level of education, disability status, age, outness to teachers, and BMI percentile. We included a cross-level interaction term between weight-based bullying and state-level anti-bullying laws to test our primary contextual moderator hypothesis. For statistically significant interactions, we conducted tests of simple slopes to compare the health risk outcomes of youth in states with, versus without, weight enumeration in anti-bullying laws. Initial exploratory analyses examining whether the moderating effect of anti-bullying laws varied as a function of BMI. We also tested these with three-way interactions. However, given that the three-way interaction terms (that is, BMI  $\times$  weight-based bullying  $\times$  anti-bullying laws) were non-significant, we excluded these from the final regression models. We used full information maximum likelihood (FIML) estimation methods for missing data.

## Results

We found substantial variation across states in the prevalence rates of weight-based bullying (see Fig. 1), ranging from 49 (Delaware) to 86% (Wyoming). Three states' anti-bullying laws provided special protections for individuals based on weight: Maine, New Hampshire, New York. An independent samples  $t$  test revealed that weight-based bullying occurred less frequently among adolescents living in states with anti-bullying laws that enumerated weight compared to those living in states that did not enumerate weight ( $t(856.15)=2.59, p=0.010$ ).



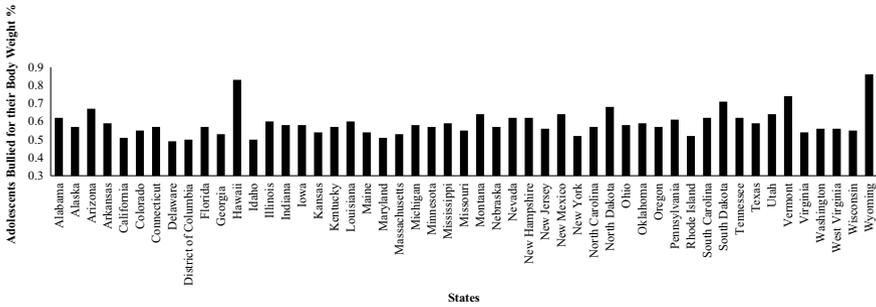


Fig. 1 Percentages of adolescents who reported being bullied for their body weight, by state

### Multilevel models

Table 2 displays the summary of the multilevel models testing our contextual moderation hypothesis. Over and above covariate effects, higher levels of weight-based bullying were associated with more unhealthy eating behavior ( $b=0.19$ , 95% CI 0.18–0.21), stress ( $b=0.31$ , 95% CI 0.29–0.34), and lower perceived health ( $b=-0.12$ , 95% CI -0.13 to -0.11). At the state level, adolescents reported less stress ( $b=-0.18$ , 95% CI -0.27 to -0.09) and higher perceived health ( $b=0.10$ , 95% CI 0.07–0.13) in states with weight enumerated in their anti-bullying law; unhealthy eating behavior was unrelated to weight enumeration ( $b=-0.04$ , 95% CI -0.12 to -0.03).

Controlling for these main effects, the weight-based bullying by state anti-bullying law interaction was significant across each of the three health outcomes (unhealthy eating behaviors:  $b=0.04$ , 95% CI 0.02–0.07; stress:  $b=0.14$ , 95% CI 0.02–0.26; self-rated health:  $b=-0.04$ , 95% CI -0.05 to -0.02). To interpret these cross-level interactions, follow-up analyses examined simple slopes between weight-based bullying and health risk among states who do, versus do not, enumerate weight in their anti-bullying law. Simple slopes analyses (see Fig. 2, similar pattern across all outcomes) showed that associations between weight-based bullying and health risk were stronger in states that enumerated weight in their anti-bullying laws (unhealthy eating behaviors:  $b=0.23$ , 95% CI 0.21–0.25; stress:  $b=0.45$ , 95% CI 0.34–0.57; self-rated health:  $b=-0.16$ , 95% CI -0.17 to -0.15) compared to in states that did not enumerate weight (unhealthy eating behaviors:  $b=0.19$ , 95% CI 0.18–0.21; stress:  $b=0.31$ , 95% CI 0.29–0.34; self-rated health:  $b=-0.12$ , 95% CI -0.13 to -0.11).

### Supplemental analyses

To elucidate why youth bullied for their weight experienced poorer health in states that did, versus did not, enumerate weight, we conducted supplemental analyses relying on participant-reported self-esteem. Specifically, we tested for self-esteem differences between youth bullied for their weight in states that enumerated versus did not enumerate weight. Although youth who did not report having



**Table 2** Summary of regression models of individual- and state-level variables on health outcomes

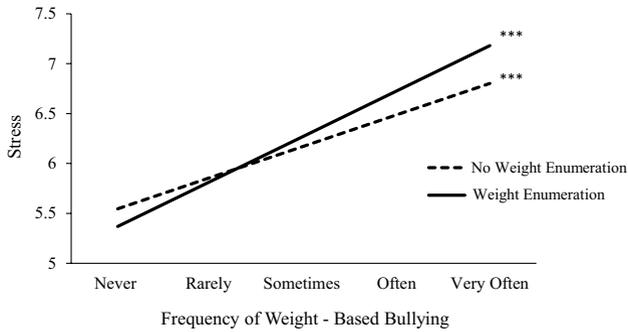
Variable	Unhealthy eating behaviors <i>b</i> (SE)	Self-rated health <i>b</i> (SE)	Stress <i>b</i> (SE)
<b>Individual level</b>			
<i>Covariates</i>			
Sex			
Female	0.20*** (0.03)	− 0.12*** (0.02)	0.46*** (0.04)
Ethnoracial identity			
African American	− 0.02 (0.07)	− 0.04 (0.02)	− 0.17 (0.12)
Latino/a	− 0.07 (0.04)	− 0.08** (0.03)	− 0.05 (0.05)
Asian	0.04 (0.04)	− 0.13*** (0.03)	0.08 (0.09)
Other ethnic	− 0.01 (0.03)	− 0.04 (0.02)	0.11 (0.06)
Gender identity			
Transgender	0.09** (0.03)	− 0.16*** (0.02)	0.26*** (0.04)
Sexual orientation			
Gay or lesbian	0.21** (0.07)	− 0.21** (0.07)	− 0.10 (0.16)
Bisexual	0.28** (0.08)	− 0.22** (0.07)	− 0.10 (0.16)
Other	0.24*** (0.07)	− 0.29*** (0.07)	0.04 (0.15)
Disability status			
Disability	0.22*** (0.03)	− 0.29*** (0.02)	0.40*** (0.04)
Age	0.02** (0.01)	− 0.01 (0.01)	0.07*** (0.01)
Parental level of education	− 0.01 (0.01)	0.06*** (0.004)	0.00 (0.01)
BMI percentile	0.04*** (0.004)	− 0.03*** (0.002)	− 0.01 (0.01)
Outness to teachers	0.03 (0.02)	0.01 (0.02)	− 0.01 (0.04)
<i>Predictor</i>			
Weight-based bullying	0.19*** (0.01)	− 0.12*** (0.01)	0.31*** (0.02)
State level			
Anti-bullying law enumeration	− 0.04 (0.04)	0.10*** (0.01)	− 0.18*** (0.05)
Cross level interaction			
Weight-based bullying × anti-bullying law enumeration	0.04** (0.01)	− 0.04*** (0.01)	0.14* (0.06)

*SE* standard error. Coefficients represent unstandardized estimates. Sex reference group= male. Ethnoracial identity reference group= White; Gender identity reference group= cisgender; Sexual orientation reference group= straight; Disability status reference group= no disability; BMI= body mass index

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ , \* $p < 0.05$

experienced weight-based bullying showed similar levels of self-esteem across states ( $t(4258) = 1.22$ ,  $p = 0.224$ ), youth bullied for their weight reported lower self-esteem in states that enumerated versus did not enumerate weight ( $t(380.25) = 2.65$ ,  $p = 0.008$ ).





**Fig. 2** Moderating effect of weight enumeration in anti-bullying laws on association between weight-based bullying and stress. \*\*\* $p < 0.001$

## Discussion

As evidence of the prevalence and harm associated with weight-based bullying continues to mount [3, 4], particularly among SGM adolescents [13], identifying mechanisms that address weight-based bullying is crucial to support healthy outcomes. Although enumeration in anti-bullying legislation has proven effective in reducing rates of generalized bullying [15], little is known about the efficacy of legislation in reducing weight-based bullying and its adverse health sequelae. We begin to address this gap in the current study. Our findings provide the first evidence that weight-based bullying is less frequent among SGM adolescents in states where anti-bullying laws enumerate weight, underscoring the importance of specifying forms of stigma-based mistreatment when developing bullying-related legislation and policies [17]. Our results, however, also indicate that such enumeration was associated with amplified health risk (such as more unhealthy eating behavior, greater stress, lower perceived health) among youth who—despite the existence of weight-based anti-bullying laws—had been bullied for their weight.

While these findings may appear counterintuitive, they highlight the importance of distinguishing between policies' effectiveness in reducing overall rates of bullying and the harm associated with bullying. Whereas weight enumeration in anti-bullying laws was associated with lower rates of weight-based bullying (prevalence reduction), it was also related to elevated health risk among SGM youth bullied for their weight (victimization-related harm). These findings are consistent with emerging research on the “healthy context paradox”. That is, when anti-bullying programs or policies successfully reduce the prevalence of bullying in schools, youth who continue or begin to experience bullying in these contexts feel particularly distressed [24, 31]. Indeed, recent evidence demonstrates that experiencing peer victimization in contexts where it is uncommon predicts elevated somatic complaints [32]. Thus, despite collective benefits of reducing overall rates of bullying, such reductions can also take a physical toll on the most vulnerable youth (those who remain or become bullied).



Our findings are among the first to provide evidence for the healthy context paradox in the context of bias-based bullying and offer a mechanism consistent with the existing literature. Namely, past research indicates that in schools where bullying becomes less normative (that is, “healthier” contexts), remaining bullied youth are especially likely to blame themselves (that is, to feel “this must be my fault”) [33]. Our supplemental analyses suggest that when fewer peers are bullied for their weight (lower rates of weight-based bullying), SGM youth bullied for their weight report lower self-esteem. Such feelings of low self-worth and self-blame related to weight-based mistreatment (weight bias internalization) have recently been identified as a key predictor of long-term distress among adults [34], as well as compromised psychological and physical health during adolescence [35]. Thus, although internalized weight bias was not addressed in the present study, it is likely to be an important target for future research.

The current results underscore some of the challenges and complexities of developing successful weight-based anti-bullying interventions. While we are by no means suggesting that efforts to reduce (or eliminate) weight-based bullying should be abandoned, it is critical to ensure that intervention efforts go beyond a singular focus on bullying reduction. Instead, a greater emphasis should be placed on cultivating comprehensive, multi-tiered climates of acceptance and inclusion [36], so that youth feel collectively responsible for supporting their peers who may be targeted because of their weight. Recent evidence suggests that such broad-reaching climates of inclusion can help support healthy outcomes among SGM adolescents [37].

## Limitations

This current study has several limitations. First, this research represents cross-sectional data and non-probability sampling methods; therefore, causal associations between anti-bullying laws and weight-based bullying cannot be established. To provide insights into the temporal sequence and directionality of this effect, it would be useful to compare rates of weight-based bullying using within-state pre- and post-designs before and after the implementation anti-bullying legislation that includes special protections based on weight. Second, all measures in this study were self-reported by adolescents. Future studies are needed to replicate the current findings with other assessments (such as peer nominations of victimization, physiological indices of health) and more extensive measures of health risk and weight-based bullying (for example, duration, severity).

Although we controlled for numerous potential individual-level confounders, there may be fundamental differences between states with and without weight enumeration that contribute to the rates and risks of weight-based bullying that we did not assess. For example, it is possible that states with less tolerance for weight-based bullying are more likely to enumerate weight in their legislation. Furthermore, given probable within-state heterogeneity in adherence and implementation of anti-bullying laws, future studies will be needed to learn about school-level mechanisms that contribute to reduced weight-based bullying. Finally, despite a large, diverse sample,



these results are only generalizable to SGM adolescents. Although this group is disproportionately targeted for weight-based bullying [12], it will be useful for additional research to replicate the present findings in more nationally representative samples.

## Conclusions

Although all US states have anti-bullying laws, with nearly half including special protections for individuals with characteristics that motivate bullying (such as race or ethnicity, sexual orientation), only three states contain provisions against weight-based bullying. The current results suggest that adding weight as a protected class in state anti-bullying laws may be an effective mechanism of reducing weight-based bullying. Just as with generalized bullying, however, weight-based bullying is multifaceted and likely necessitates intervention at multiple levels of influence (within laws, schools, families, peer groups). Thus, public health professionals, community leaders, and school administrators should ensure that supplemental supports are in place for SGM adolescents bullied for their weight, particularly in ostensibly safer environments.

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## Declarations

**Conflict of interest** On behalf of all authors, the corresponding author states that there is no conflict of interest.

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