

The Intersectionality of Discrimination Attributes and Bullying Among Youth: An Applied Latent Class Analysis

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Abstract Discrimination is commonly experienced among adolescents. However, little is known about the intersection of multiple attributes of discrimination and bullying. We used a latent class analysis (LCA) to illustrate the intersections of discrimination attributes and bullying, and to assess the associations of LCA membership to depressive symptoms, deliberate self harm and suicidal ideation among a sample of ethnically diverse adolescents. The data come from the 2006 Boston Youth Survey where students were asked whether they had experienced discrimination based on four attributes: race/ethnicity, immigration status, perceived sexual orientation and weight. They were also asked whether they had been bullied or assaulted for these attributes. A total of 965 (78 %) students contributed to the LCA analytic sample (45 % Non-Hispanic Black, 29 % Hispanic, 58 % Female). The LCA

revealed that a 4-class solution had adequate relative and absolute fit. The 4-classes were characterized as: low discrimination (51 %); racial discrimination (33 %); sexual orientation discrimination (7 %); racial and weight discrimination with high bullying (intersectional class) (7 %). In multivariate models, compared to the low discrimination class, individuals in the sexual orientation discrimination class and the intersectional class had higher odds of engaging in deliberate self-harm. Students in the intersectional class also had higher odds of suicidal ideation. All three discrimination latent classes had significantly higher depressive symptoms compared to the low discrimination class. Multiple attributes of discrimination and bullying co-occur among adolescents. Research should consider the co-occurrence of bullying and discrimination.

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Introduction

The prevalence and deleterious health effects of racial discrimination among adults have been documented, but less is known about discrimination among adolescents (Williams and Mohammed 2009; Williams et al. 2008). Furthermore, research on discrimination has been focused on racial discrimination, but emerging evidence highlights the importance of other forms of discrimination, including that based on sexual orientation and weight (Meyer 2003; Puhl and Latner 2008). However, little is known about the co-occurrence of multiple forms of discrimination and bullying among youth.

As bullying prevention has become a national priority, greater attention needs to be given to the theoretical and empirical intersections between bullying and discrimination (Hong and Espelage 2012). Bullying is often not random and may be driven by prejudicial beliefs that the targeted individuals have lower status because of their perceived group affiliation or stigmatized characteristic. Identity-based bullying, also referred to as bias-based bullying, refers to the intentional use or perceived use of a claimed or perceived identity to target an individual or group (Bradshaw and Johnson 2011; Poteat et al. 2011). Identity based bullying, such as homophobic or weight based bullying, have clear and often overlooked connections between discriminatory attitudes towards overweight and minority sexual orientations, or structural discrimination, such as same-sex marriage laws (Benner and Graham 2011; Poteat et al. 2011; Hatzenbuehler et al. 2009). Furthermore, in several existing state school based anti-bullying legislation, bullying, harassment, and discrimination are all mentioned, often without discussion of their similarities and differences, and more importantly without a clear description of strategies to address these issues (Stuart-Cassel et al. 2011).

Intersectionality is a useful theoretical model to apply to discrimination and bullying research that focuses on the intersections of multiple social identities. Intersectionality advocates studying the mutual and simultaneous construction of various social categories, such as race, class, gender and sexual orientation in order to not privilege a specific type of oppression and identify the unique patterns of oppression that might stem from the various intersections of claimed and perceived identities (Andersen and Hill Collins 2010; Crenshaw 1989, 1991; Bowleg 2012). As articulated by Bowleg, the core tenets of intersectionality relevant to public health include: (1) social identities interact, (2) multiply oppressed groups are common

population foci as they are influenced by the interaction of multiple marginalized identities, and (3) the intersections of social identities at the individual level are organized by macro-level structural forces (Bowleg 2012). Emerging quantitative research has applied intersectionality to guide research questions, methodological decisions, and interpretation of findings and this framework has been uniquely applied to discrimination and bullying research among youth (Seaton et al. 2010; Stirratt et al. 2008; Bowleg 2008; Daley et al. 2006; Poteat et al. 2011).

To our knowledge no prior study has examined the intersection between multiple attributes of discrimination and bullying among a sample of ethnically diverse adolescents using a latent variable method. With the utilization of latent class analysis (LCA) to illustrate the patterning of discrimination attributes and bullying directly informed by intersectionality, this study is focused on the co-occurrence of multiple attributes of discrimination and bullying reported to be based on: race, immigration status, sexual orientation and weight among adolescents. The co-occurrence and clustering of discrimination and bullying attributes will likely have unique associations to emotional distress and other adverse outcomes that may affect adolescent social, emotional and academic development.

Attributional Ambiguity and Intersectionality

The attribution of a discriminatory experience based on an individual (perceived or claimed) identity or characteristic is little understood. Individuals are often uncertain of the reason for the discriminatory act or experience (Crocker et al. 1991), thus creating attributional ambiguity. Research on racial discrimination indicates that pervasive discrimination may be more susceptible to attributional ambiguity compared to “major, blatant events” (Deitch et al. 2003, p. 1302). The effects of attributional ambiguity on the self-report of sexual orientation and weight-based discrimination, particularly among adolescents, are still unknown.

Identity-based discrimination and bullying increases in adolescence as one’s awareness of their sexual orientation and racial identity are developing (Seaton et al. 2008; Smetana et al. 2006). Thus, adolescence maybe a particularly salient time for youth to attribute and make meaning of discriminatory and bullying experiences based on their own identity development. For example, a qualitative study among lesbian, gay, bisexual, and transgender (LGBT) adolescents highlights the complex meaning making process that adolescents undergo when trying to interpret discriminatory and bullying behavior. Specifically referring to the intersections between race and sexual orientation, one adolescent provided a particularly illustrative quote: “You got bashed because you’re queer. No, no, no; it happened because I’m Black... it’s never that clear”

(Daley et al. 2006, p. 19). The process that youth undergo to attribute a discriminatory experience may be, in part, driven by the contextual saliency of a social identity (Graham et al. 2009). Thus, the social and contextual cues that youth draw from when attributing cause to a discriminatory or bullying experience are important to understand.

Social Epidemiology of Identity-Based Bullying and Discrimination

Survey data indicate that between 40 and 80 % of school aged youth have experienced some form of peer victimization (Nansel et al. 2001). In the most recent Youth Risk Behavior Surveillance Survey (YRBSS), which is a national school-based survey of adolescents conducted by the Centers for Disease Control and Prevention (CDC), 20.1 % of high school students indicated that they had been bullied on school property in the past 12 months (CDC 2011). As many of the most commonly used measures of bullying do not ask youth to attribute their experiences to an identity or other characteristic, national data on identity-based bullying experiences are lacking. However, based on community-samples and the Gay Lesbian Straight Education Network's (GLSEN) School Climate Survey, rates of bullying and victimization are significantly higher among overweight youth and LGBT youth (Kosciw et al. 2012; Neumark-Sztainer et al. 2002).

Comparable to bullying research and measures, most studies involving youth employ a variety of discrimination measures and do not always ask youth to attribute their experience to a specific personal characteristic. Furthermore, as much of the research on discrimination is focused on racial discrimination, it is difficult to assess the prevalence of different forms of discrimination among adolescents. Findings from a nationally representative sample of African American and Caribbean Black adolescents, indicate that 87 % of African American youth and 90 % of Caribbean black youth experienced at least one discriminatory experience in the past year measured by the Everyday Discrimination Scale (Seaton et al. 2008; Williams et al. 1997). As differences in language or immigration status can be a component of racial discrimination, the field of immigration discrimination is inextricably linked to racial discrimination (Rosenbloom and Way 2004). Thus, it is difficult to provide an accurate assessment of discrimination solely based on immigration status. Furthermore, the experiences of discrimination based on immigration status will likely vary across racial/ethnic groups, geography, and time spent in the US (Juang and Cookston 2009). Researchers have noted that the prevalence of weight based discrimination has increased by

66 % in the past 10 years in the United States, concurrent with the rising rates of childhood obesity (Latner and Stunkard 2003). Findings from the National Education Association's survey of teachers and other educational support professionals, indicate that 24 % school staff nominate weight based bullying as a major concern for their school (Gulemetova et al. 2011).

Health Implications of Bullying and Discrimination

Across all forms of discrimination and bullying, there are clear associations between experiencing discrimination and bullying with indicators of emotional distress, psychological functioning and academic achievement. The present study is focused on the relationship among discrimination and bullying and depressive symptoms, deliberate self harm, and suicidal ideation. Suicide is the third leading cause of death among young people ages 12–19, and data from the 2011 YRBSS, indicate that 15.8 % of high school students reported seriously considering suicide in the past year (Miniño 2010; CDC 2011). Among a school-based sample of high school students, 18 % reported symptoms of depression (Saluja et al. 2004). Lifetime prevalence of deliberate self harm among community based samples of adolescents range from 2 to 15 % (Lloyd-Richardson et al. 2007). Suicidal ideation, depressive symptoms and deliberate self harm are mental health problems commonly experienced by youth and thus, warrant research attention.

Bullying has been linked with a variety of suicide-related behaviors; in so much as the term “bullycide” has been coined in the literature to describe the relationship between bullying and suicidal deaths among youth (Marr and Field 2001; Kim and Leventhal 2008). In 2010, the CDC convened an expert panel of bullying researchers to investigate the relationships between bullying and suicide related behaviors. The panel concluded that involvement in bullying has strong associations with suicide related behaviors, but those associations are often mediated by factors like depression and delinquency, therefore the causal relationship between bullying and suicide related behaviors is still unclear (Hertz et al. 2013; Espelage and Holt 2013). Discrimination among Black, Latino and Asian American adolescents has been associated with increased stress and depressive symptoms (Greene et al. 2006). Community based-samples of high school students have associated homophobic bullying and discrimination with suicidal ideation and depression (Espelage et al. 2008; Poteat and Espelage 2007; Poteat et al. 2011). Adolescents who experienced weight based teasing have higher rates of depressive symptoms and suicidal ideation (Eisenberg et al. 2003, 2006). Based on the studies that have examined the

associations between identity-based bullying and discrimination and suicide related outcomes, it appears that these experiences are associated with suicide related outcomes and potentially with a greater magnitude compared to general victimization experiences (Poteat et al. 2011).

Latent Class Analysis (LCA): A Useful Method to Study Discrimination and Bullying

Discrimination and bullying are complex social phenomena that require innovative analytic methods to capture the nuances of these constructs (Seaton et al. 2010). As opposed to attempting to disentangle the different attributes of discrimination and bullying, LCA can examine how they jointly co-occur (Chung et al. 2006). LCA is a data reduction framework that can identify subgroups of individuals based on their response patterns to multiple indicators (Lanza and Rhoades 2011). Through a LCA, two informative parameters are produced: (1) the overall probability of being in a given class for each individual (posterior class probability) and, (2) the probability of responses to a set of selected indicators, conditional on class membership (item-class probabilities) (Muthen and Muthen 2000). LCA has been demonstrated to be an appropriate methodology to understand youth's experiences of multiple types of victimization (Nylund et al. 2007). Consistent with the intersectionality framework, we utilized LCA to: (1) capture the intersections between multiple and overlapping experiences of discrimination and bullying, and (2) assess the association between LCA membership and three indicators of emotional distress.

The Current Study Hypotheses

Because there is limited empirical quantitative research using latent variable methods to illustrate the intersections between multiple attributes of discrimination and bullying among ethnically diverse youth, our LCA analysis is exploratory. However, based on previous empirical research, we hypothesize that youth with multiple marginalized identities (e.g., LGBT youth of color) will attribute their experiences of bullying and discrimination to multiple perceived and claimed social identities (Diaz and Kosciw 2009; LeVasseur et al. 2013; Stirratt et al. 2008). Given previous research that has documented the differential effects of homophobic victimization and weight based victimization compared to general victimization, we further hypothesize that students who attribute their experiences to their perceived sexual orientation or weight will exhibit significant mental health problems (Poteat et al. 2011; Swearer et al. 2008; Neumark-Sztainer et al. 1998).

Methods

Sample and Data Collection

The data for this study come from the 2006 Boston Youth Survey (BYS), which is a biennial cross-sectional survey of high school students (9th–12th grades) in selected Boston public schools. This survey is administered by the Harvard Youth Violence Prevention Center and the Institutional Review Board at the Harvard School of Public Health approved research activities. The BYS is a two-stage stratified random sample, where the first stage of sampling consists of all 37 eligible high schools in the Boston Public School System. Thirty schools were randomly selected from the original sample, with a probability of selection proportional to the enrollment size of each school. Eighteen schools agreed to participate in the 2006 BYS. For each participating school, a numbered list of unique homeroom classrooms was generated, excluding those classrooms comprised of students with severe physical or cognitive disabilities or classrooms with fewer than five students. The eligible classrooms were then stratified by grade and randomly selected for survey administration to result in approximately 100–125 students surveyed from each school. The documentation of survey administration and sampling process has been detailed elsewhere (Azrael et al. 2009). Passive consent from students' parents/caregivers and student assent were acquired prior to survey administration. Approximately 5 % of students declined to participate in the survey. In 2006, 1,223 high school students completed the survey with an average of 67 students from each of the 18 schools (range 23–114 students).

Measures

Perceived Discrimination

In order to measure perceived discrimination, students were prompted with this statement, "Sometimes people feel they are discriminated against or treated badly by other people" and then asked to affirm or deny if they had been discriminated against in the past 12 months based on 4 attributes: (1) "Because of your race, ethnicity or color?" (2) "Because you are (or your family is) from another country" (3) "Because someone thought you were gay, lesbian or bisexual", and (4) "Because of your weight." Students were allowed to check all that applied.

Bullying

Immediately following the perceived discrimination question, students were then asked "In the past 12 months have you ever been bullied or assaulted because of any of those

reasons?” These items comprise the five observed indicators of the latent variable, perceived discrimination, for the LCA.

Covariates

Gender Students were asked to report “sex or gender” as either “Male or Female”.

Age Students were given seven options to indicate their age: “13 or younger; 14; 15; 16; 17; 18; 19 or older”. Age was modeled as a continuous variable in all of the analyses.

Self-reported Height and Weight Student’s body mass index (BMI) was calculated using their self-reported height and weight. To obtain age- and sex specific BMI percentiles to categorize students’ weight status, we followed CDC guidelines for youth under the age of 18 and categorized youth as follows: underweight <5th percentile, healthy weight \geq 5th percentile and <85th percentile, overweight \geq 85th percentile to <95th percentile and obese \geq 95th percentile (CDC 2012).

Race/Ethnicity In order to measure racial and ethnic identification, students were first asked to indicate (allowing for more than one option) if they thought of themselves as “White, American Indian/Alaskan Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, or Some Other Race.” Following this question, students were then asked if they thought of themselves as Hispanic/Latino. Using the responses to these two questions, a five category self-reported race/ethnicity variable was created preserving Hispanic as a separate category; (1) Non-Hispanic White, (2) Non-Hispanic Black, (3) Hispanic, (4) Non-Hispanic Asian, and (5) Other.

Sexual Orientation In order to characterize sexual orientation, students were prompted by the question “Which one of the following best describes your feelings” and given six options: (1) “100 % heterosexual (only attracted to persons of the opposite sex), (2) mostly heterosexual (attracted to both sexes, but mostly persons of the opposite sex), (3) bisexual (pretty much equally attracted to both males and females), (4) mostly homosexual (attracted to both sexes, but mostly persons of the same sex), (5) 100 % homosexual (gay or lesbian; only attracted to persons of the same sex), and (6) not sure.” Questions similar to this one have been used in other studies of adolescents (Berlan et al. 2010; Poteat and Espelage 2007). Following precedent from previous research and to preserve sample size, we created a two-category sexual orientation variable where students who indicated that they were mostly heterosexual,

bisexual, mostly homosexual, homosexual, or “not sure” were coded as having a sexual minority orientation (Almeida et al. 2009; Poteat et al. 2009).

Depressive Symptoms

Depressive symptoms were measured using a 5-item scale adapted from the 26-item Modified Depression Scale (MDS) to assess depressive symptomatology among students (Roberts et al. 1997; Kelder et al. 2001; Dahlberg et al. 2005). The 5-item adapted scale has been previously used in other school based samples of middle and high school students and can be found in the 2005 CDC compendium of assessment tools that measure violence-related attitude, behaviors, and beliefs (Dahlberg et al. 2005; Bosworth et al. 1999; Agresti 2002; Edwards et al. 2006). This scale demonstrated high internal consistency, with a Cronbach’s alpha of 0.75. For the students who completed all five items, a composite score from the 5-items was calculated ranging from 5 to 25, with higher scores representing higher depressive symptoms. Depressive symptoms was modeled as a continuous outcome (Dunn et al. 2012).

Deliberate Self Harm and Suicidal Ideation

The two suicide related outcomes were captured by the following questions. “In the past 12 months, did you ever cut, or otherwise injure yourself on purpose” measured deliberate self-harm and “In the past 12 months, did you ever seriously consider attempting suicide” measured suicidal ideation. The suicidal ideation measure came from the CDC Youth Risk Behavior Surveillance Survey (CDC 2009).

Analysis Plan

LCA employs a full information maximum likelihood (FIML) method to handle missing data on indicators of class membership. Of the 1,228 students who completed the BYS 2006 survey, 179 were missing on all five indicators and excluded from analyses. FIML cannot accommodate additional missing on predictors of latent class membership therefore an additional 84 observations, missing on covariates of interest, mainly sexual orientation, were also excluded (Collins and Lanza 2009). Data management and regression models were conducted in Stata12, latent class enumeration and model building were conducted in Mplus 6.12.

Our LCA analytic plan is briefly summarized below and follows a systematic framework proposed by Masyn, described in detail elsewhere (Masyn 2012). We followed sequential steps to: (1) determine the appropriate number

Table 1 Description of the 2006 BYS analytic sample by experiencing any form of discrimination, N = 965

	Total sample (N = 965) %	No discrimination (N = 429) %	Any discrimination ^a (N = 513) %	<i>p</i> value ^b
Covariates				
Gender				0.29
Male	41.55	47.57	52.43	
Female	58.45	44.10	55.90	
Race/ethnicity				0.06
NH Black	45.08	45.58	54.42	
NH White	14.61	53.24	46.76	0.04
Hispanic	29.02	45.13	54.87	
Asian/PI	6.53	41.94	58.06	
Bi-/multi-racial/other ^c	4.77	28.89	71.11	0.02
Weight status				0.32
Healthy	56.06	46.97	43.72	
Overweight/obese ^d	43.94	53.03	56.28	
Sexual orientation				0.06
100 % heterosexual	87.98	46.63	37.27	
Sexual minority ^e	12.02	37.27	62.73	
Outcomes				
Suicidal ideation ^f	9.06	28.57	71.43	<0.01
Self-harm ^f	7.63	25.35	74.65	<0.01
	M (SD)	M (SD)	M (SD)	
Depressive symptoms	13.43 (3.99)	12.35 (3.79)	14.35 (3.93)	<0.01

^a Refers to responding “yes” to experiencing any form of discrimination within the past 12 months

^b *p* value generated from simple Chi square statistic comparing the distribution of covariates and outcomes across discrimination

^c Refers to indicating race/ethnicity as either bi-racial, multi-racial or “other”

^d Includes students classified as either obese (≥ 95 th percentile of BMI for age and sex) or overweight (≥ 85 th percentile and < 95 th percentile)

^e Sexual minority refers to students who indicated that they were either, “mostly heterosexual”, “bisexual”, “mostly homosexual”, “homosexual”, or “not sure”

^f In the past 12 months

Table 2 Results of the latent class enumeration and measures of absolute and relative fit of latent classes among Boston Highschool students, 2006 BYS (N = 965)

	LL ^a	X^2_{LRT} ^b (<i>p</i> value)	E_k^c	BIC ^d	AIC ^e	LMR-LRT ^f (<i>p</i> value)
1 Class	−2,119.95	224.64 (<0.01)		4,274.26	4,249.90	
2 Class	−1,962.55	78.19 (<0.01)	0.66	4,000.68	3,947.10	307.36 (<0.01)
3 Class	−1,923.84	22.66 (0.07)	0.75	3,964.50	3,881.68	75.58 (0.03)
4 Class	−1,916.31	11.15 (0.19)	0.82	3,990.69	3,878.63	14.69 (0.58)
5 Class	−1,912.48	4.85 (0.09)	0.90	4,024.26	3,882.96	7.48 (0.39)

^a Log likelihood

^b Likelihood ratio Chi square goodness-of-fit (X^2_{LRT})

^c Entropy

^d Bayesian Information Criteria (BIC)

^e Akaike’s Information Criteria (AIC)

^f Lo–Mendell–Rubin likelihood ratio test (LMR-LRT)

Table 3 Model classification diagnostics of the 3-class and 4-class solutions among Boston Highschool students, BY5 2006 (N = 965)

3-class		$E_k^a = 0.75$		
Class k	π_k^b	mcaP _k ^c	AvePP _k ^d	OCC _k ^e
Class 1	0.1043	0.0735	0.881	63.5780514
Class 2	0.2493	0.3637	0.673	6.19742741
Class 3	0.6463	0.5626	0.983	31.6450292
4-class		$E_k = 0.82$		
Class k	π_k	mcaP _k	AvePP _k	OCC _k
Class 1	0.0774	0.0632	0.823	55.4241522
Class 2	0.0761	0.0445	0.932	166.397697
Class 3	0.5131	0.5285	0.955	20.1385695
Class 4	0.3332	0.3637	0.901	18.2129458

^a Relative entropy (E_k)

^b Model estimated proportion for class k (π_k)

^c Modal class assignment proportion for class k (mcaP_k)

^d Average posterior probability for class k (AvePP_k)

^e Odds of correct classification (OCC_k)

of classes, (2) relate latent class membership to descriptors of latent class, and (3) to determine the associations between latent class membership and three outcomes of interest. These analyses control for the non-independence of observations within schools by adjusting standard errors using sandwich estimators (Asparouhov and Muthén 2008). A central assumption of the LCA model is local independence, which specifies that conditional on the latent variable, the observed indicators must be independent. To evaluate the local independence assumption, the bivariate residuals will be examined after the latent class enumeration (Vermunt and Magidson 2005; Guo et al. 2009; Reboussin et al. 2008).

The final number of classes should be determined by considering multiple indicators of model fit and model diagnostics in combination with theory, empirical evidence and interpretability (Jung and Wickrama 2008). There are several relative and absolute measures of model fit that are useful to examine during class enumeration. A common measure of absolute fit is the likelihood ratio Chi square goodness-of-fit test (X^2_{LRT}) where the null hypothesis is that the LCA model proposed adequately fits the data. A significant *p* value indicates a lack of adequate model fit (Agresti 2002). The Lo–Mendell Rubin likelihood ratio test (LMR-LRT) is a measure of relative fit where a failure to reject the null hypothesis implies there is no difference in model fit between a model with *k* classes compared to a model with *k* + 1 classes (Lo et al. 2001).

Additionally, there are a series of classification diagnostics that provide information related to class separation and homogeneity. The odds of correct classification

(OCC_k) is a class specific diagnostic that measures the certainty of classification of individuals. Generally an OCC_k above 5 is considered desirable (Nagin 2005). The average posterior class probability (AvePP_k) provides class-specific measures of latent class assignment error, with a value of 0.70 or higher suggesting well-separated classes (Nagin 2005).

Once the final number of latent classes is established, descriptors of class membership can be examined through a multinomial logistic regression (Muthén 2002). To relate LCA membership to the three mental health outcomes of interest, we utilized the classify-analyze approach where class assignment (based on an individual’s highest posterior class probability, i.e., modal class assignment) is a predictor in a multivariable regression model (Lanza and Rhoades 2011).

Results

Our final analytic sample consisted of 965 students, 78 % of original BY5 sample, who had complete information on all five LCA indicators and the demographic variables of interest. We found significant differences on race/ethnicity, gender and weight status where students excluded from the analyses compared to students included were more likely to be male (52.8 vs. 41.6 %, *p* value <0.01), overweight/obese (53.7 vs. 43.9 %, *p* value <0.01) and Non-Hispanic Black (61.7 vs. 45.1 %, *p* value <0.01).

More than half of the students in this sample reported at least one discriminatory experience in the past year and approximately 11 % of the sample indicated that they had been bullied or physically assaulted in the past year. Self reported experiences of bullying were comparable across most socio-demographic subgroups, except sexual orientation, with sexual minority students reporting greater experiences of bullying and assault compared to their heterosexual peers (17.2 vs. 10.6 %, *p* value 0.04). About 7 % of the students affirmed that they had engaged in deliberate self harm in the past 12 months and 9 % affirmed that they had seriously considered attempting suicide in the past year (see Table 1). Table 1 presents the distribution of covariates and outcomes of interest by experiencing at least one form of discrimination. In bivariate analyses, individuals who experienced any form of discrimination compared to those who experienced none had on average higher levels of depressive symptoms [14.3 (SD3.9) vs. 12.4 (SD3.8), *p* value <0.01], reported higher rates of deliberate self harm (10.8 vs. 4.3 %, *p* value <0.01), and suicidal ideation (12.2 vs. 5.8 %, *p* value <0.01).

Tables 2 and 3 display detailed information regarding the absolute and relative fit statistics as well as classification

Fig. 1 Conditional item-probability profile plot for the 4-class model of perceived discrimination, BYS (N = 965)

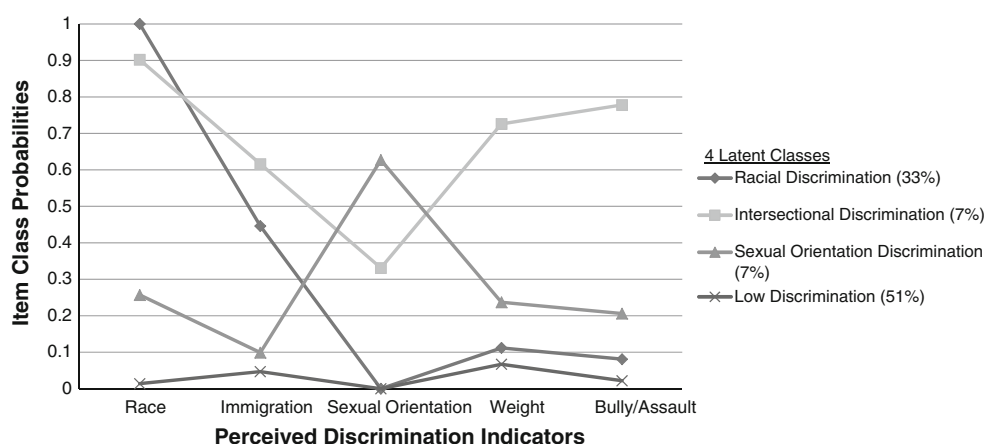


Table 4 Odds of latent class membership compared to students in the low discrimination class among relevant descriptors, BYS 2006 (N = 965)

	Wald test	Racial discrimination class ^a versus low discrimination ^b		Sexual orientation discrimination ^c versus low discrimination ^b		Intersectional discrimination class versus low discrimination ^b	
		OR (95 % CI)	<i>p</i> value	OR (95 % CI)	<i>p</i> value	OR (95 % CI)	<i>p</i> value
Male		Referent		Referent		Referent	
Female	<0.01	1.41 (0.86–1.95)	0.22	4.63 (4.00–5.26)	<0.01	0.93 (0.33–1.52)	0.80
Healthy weight		Referent		Referent		Referent	
Overweight/obese	<0.01	0.85 (0.29–1.45)	0.62	2.75 (2.05–3.46)	<0.01	2.83 (1.97–3.69)	0.02
100 % heterosexual		Referent		Referent		Referent	
Sexual minority ^e	<0.01	1.33 (0.82–2.16)	0.33	12.39 (5.64–24.00)	<0.01	3.57 (1.61–7.96)	<0.01
Non-Hispanic White		Referent		Referent		Referent	
Non-Hispanic Black	0.62	0.96 (0.63–1.47)	0.88	0.60 (0.31–1.17)	0.21	1.05 (0.66–1.66)	0.87
Asian/PI	<0.01	2.17 (1.42–4.48)	0.04	0.68 (–1.02 to 2.39)	0.67	2.43 (1.54–3.32)	0.05
Hispanic	<0.01	2.36 (1.50–2.36)	<0.01	1.38 (0.38–4.92)	0.68	0.75 (0.43–1.33)	0.42

^a Refers to the latent class characterized by the high endorsement of racial discrimination and low endorsement of other forms

^b Refers to the latent class characterized by low endorsement of all forms of discrimination and bullying

^c Refers to the latent class characterized by high endorsement of sexual orientation discrimination and low endorsement of other forms

^d Refers to the latent class characterized by high endorsement of racial, immigration, and weight discrimination and bullying

^e Refers to students who indicated that they were either, “mostly heterosexual”, “bisexual”, “mostly homosexual”, “homosexual”, or “not sure”

diagnostics that were used to empirically determine that a 4-class solution adequately fit the data. Both the X^2_{LRT} and the LMR-LRT suggest that the 3-class model has adequate model to data fit and an additional 4th class may not be required. However, the X^2_{LRT} relies on larger sample theory and may not work effectively with small data sets or when the data are sparse (Masyn 2012). The 4-class solution based on the AvePPk has higher class-specific separation compared to the 3-class, higher OCC_k and also higher entropy (0.82 vs. 0.75) indicating that the 4-class solution demonstrates greater homogeneity and separation. Additionally, the 4-class solution supports previous research on victimization experiences of adolescents and adults with multiple marginalized identities (Daley et al. 2006;

Neumark-Sztainer et al. 1998; Pritchard 2013; Diaz and Kosciw 2009; LeVasseur et al. 2013). We found no significant bivariate residuals among the five LCA indicators conditional on latent class membership indicating that our final latent class model met the local independence assumption.

The largest class (51 %) represents the Low Discrimination class comprised of students who had low (less than 0.10) item-class probabilities on any one of the latent class indicators. The Racial Discrimination class (33 %) is characterized by endorsing experiencing racial discrimination and alternatively by low endorsement of bullying or discrimination due to sexual orientation or weight. The final two classes both approximately equaling 7 % of the

Table 5 Emotional distress outcomes of discrimination class membership, BYS, 2006 (N = 965)

	Model 1: depressive symptoms		Model 2: deliberate self harm		Model 3: suicidal ideation	
	β^a (95 % CI ^b)	<i>p</i> value ^a	OR ^c (95 % CI ^b)	<i>p</i> value ^c	OR (95 % CI ^b)	<i>p</i> value ^d
Class membership						
Low discrimination	Referent		Referent		Referent	
Racial Discrimination	1.34 (1.01–1.67)	<0.01	1.52 (0.78–2.85)	0.21	1.29 (0.77–2.16)	0.327
Sexual orientation	2.61 (1.44–3.76)	<0.01	7.93 (2.53–24.79)	<0.01	2.21 (0.62–7.91)	0.220
Intersectional ^e	2.84 (1.74–3.94)	<0.01	7.61 (2.72–21.28)	<0.01	6.41 (2.74–15.01)	<0.001
Race/ethnicity						
Non-Hispanic White	Referent		Referent		Referent	
Non-Hispanic Black	−0.52 (−1.08 to 0.04)	0.07	0.85 (0.43–1.71)	0.656	0.75 (0.36–1.57)	0.457
Hispanic	−0.56 (−1.16 to 0.02)	0.06	0.89 (0.45–1.75)	0.741	1.24 (0.62–2.47)	0.541
Asian/Pacific Islander	−1.06 (−2.37 to 0.24)	0.10	0.94 (0.41–2.17)	0.889	0.41 (0.11–1.54)	0.189
Bi/multi/other ^f	−0.97 (−2.38 to 0.43)	0.16	1.72 (0.60–4.94)	0.312	1.75 (0.84–3.65)	0.134
Gender						
Male	Referent		Referent		Referent	
Female	2.22 (1.71–2.74)	<0.01	1.21 (0.69–2.13)	0.489	1.86 (0.85–4.07)	0.120
Weight status						
Healthy	Referent		Referent		Referent	
Overweight/obese	0.13 (−0.31 to 0.56)	0.53	0.90 (0.51–1.59)	0.725	1.33 (0.85–2.57)	0.393
Sexual orientation						
100 % heterosexual	Referent		Referent		Referent	
Sexual minority ^g	0.85 (−0.15 to 1.86)	0.09	1.89 (0.79–4.52)	0.148	4.07 (2.47–6.69)	<0.001
Age	0.10 (−0.13 to 0.34)	0.36	1.03 (0.84–1.28)	0.725	1.04 (0.82–1.33)	0.735

^a Regression parameters and *p* values from a linear regression model predicting depressive symptoms controlling for age, sexual orientation, weight status, gender, race/ethnicity and non-independence of observations clustered within school

^b 95 % confidence intervals

^c Odds ratios (OR) and *p* values from a logistic regression model predicting deliberate self harm controlling for age, sexual orientation, weight status, gender, race/ethnicity and non-independence of observations clustered within school

^d OR and *p* values from a logistic regression model predicting suicidal ideation controlling for age, sexual orientation, weight status, gender, race/ethnicity and non-independence of observations clustered within school

^e Refers to the intersectional discrimination latent class characterized by high endorsement of racial, immigration, weight discrimination and bullying

^f Refers to indicating race/ethnicity as bi-racial, multi-racial or other

^g Sexual minority refers to students who indicated that they were either, “mostly heterosexual”, “bisexual”, “mostly homosexual”, “homosexual”, or “not sure”

sample are labeled as the Sexual Orientation Discrimination class, as endorsing this item most clearly characterizes this class, and the Intersectional Discrimination class as this class represents high endorsement of racial, immigration, and weight-based discrimination in addition to being bullied/assaulted. Figure 1 represents the profile plot of the 4-class solution where the specific item-class probabilities are plotted on the y-axis and the five LCA indicators are on the x-axis. Using most likely class membership, we computed a post hoc ANOVA to determine if the probability of endorsing a specific attribute of discrimination was significantly different between two classes where the item-class probabilities may not be qualitatively distinct from the profile plot (e.g., experiencing sexual orientation discrimination in the Sexual Orientation Discrimination class

compared to the Intersectional Discrimination Class). Based on the results from the ANOVA, the probability of endorsing sexual orientation discrimination in the Sexual Orientation Discrimination class was higher compared to Intersectional Discrimination Class (0.45 vs. 0.30, *p* value <0.01). Additionally, there was no significant difference in the probability of endorsing immigration discrimination between the Intersectional Discrimination Class and the Racial Discrimination Class.

Descriptors of Latent Class Membership

Table 4 presents the results from the multinomial logistic regression models relating LCA membership to relevant covariates. There were several significant descriptors of

class membership. For example, odds of class membership in the Sexual Orientation Discrimination class compared to the Low Discrimination class were almost three times higher for overweight/obese students compared to their healthy weight peers (OR 2.7, 95 % CI 2.1–3.5); were more than four times higher for female students compared to male students (OR 4.6, 95 % CI 4.0–5.3); and more than twelve times higher for sexual minority students compared to their heterosexual peers (OR 12.4, 95 % CI 5.6–24.0). Additionally, overweight students and sexual minority students were more than twice as likely to be in the Intersectional Discrimination class compared to the Low Discrimination class and Asian/PI students were also more likely to be in the Intersectional Discrimination class compared to the Low Discrimination Class.

Finally, we assessed whether latent class membership was significantly related to three indicators of emotional distress. Table 5 presents the results from these regression models that all control for relevant covariates (Model 1: depressive symptoms; Model 2: deliberate self harm; and Model 3: suicidal ideation). Individuals in the Sexual Orientation Discrimination class and in the Intersectional Discrimination class had significantly higher odds of engaging in deliberate self harm (OR 7.9, 7.6 respectively p values <0.01) compared to individuals in the Low Discrimination class. Students in the Intersectional Discrimination class were significantly more likely to report suicidal ideation compared to students in the Low Discrimination class (OR 6.4, p value <0.01). In model 3, sexual minority youth still had four times the odds of suicidal ideation compared to their heterosexual peers (OR 4.1, p value <0.01). Students in any of the three discrimination classes reported significantly higher depressive symptoms compared to students in the Low Discrimination class.

Discussion

Bullying and discrimination are commonplace among youth with detrimental associations to a variety of emotional, academic and health indicators. Furthermore, research has documented that observing bullying at school is associated with several mental health risk factors for students not directly involved in the bullying behavior (Rivers et al. 2009). We found evidence that discrimination attributes and bullying co-occur among adolescents and that specific combinations of these experiences were associated with heightened depressive symptoms, suicidal ideation and deliberate self harm. Students in latent classes comprised of discrimination based on multiple social identities reported more use of deliberate self harm compared to students in the Racial Discrimination and Low

Discrimination classes, which is a novel finding of this study given the paucity of research on intersecting identities, discrimination and deliberate self harm among ethnically diverse youth. Given that the focus of this study is on the application of intersectionality and the overlaps of multiple discrimination attributes, we have tried to structure our discussion so that we are not singularly discussing specific types of identity based discrimination and bullying but rather focus on the implications that stem from their interactions. However, most empirical evidence has focused on singular aspects of identity; thus, in order to situate our study within the larger research base, we, at times, have to discuss singular aspects of identity as it relates to discrimination and bullying in order to draw conclusions and interpretations.

Being bullied or assaulted based on nominated personal attributes was most likely to co-occur with weight-based discrimination in the Intersectional Discrimination class as no other class had high endorsement of weight discrimination. Several studies have documented that overweight youth are more likely to be bullied than their healthy weight peers (Wang et al. 2010). Additionally, students in the Intersectional Discrimination class had higher odds of suicidal ideation compared to students in the Low Discrimination class, a finding not documented in the Racial or Sexual Orientation Discrimination classes. Given that students in the Intersectional Discrimination class experienced multiple forms of identity based discrimination and bullying, one hypothesis to explain this differential association with suicidal ideation is that the interactions of discrimination attributions and bullying produced unique and differential associations, which is consistent with the intersectionality framework. A second hypothesis could be specifically related to the addition of weight based discrimination in the Intersectional Discrimination Class, as no other class endorsed weight based discrimination. Puhl and Brownell have stated that “obese persons are the last acceptable targets of discrimination” and previous research has documented increased rates of suicidal ideation among students who experienced weight-based bullying (Eisenberg et al. 2003; Puhl and Brownell 2001, p. 788). Because of pervasive anti-fat bias and the societal acceptability of weight based bullying and discrimination, the mental health implications that stem from this form of bias may be unique compared to other forms of identity based bullying and discrimination (Latner et al. 2008; Puhl and Brownell 2003; Puhl and Latner 2007; Puhl and Heuer 2010).

The magnitude of association between the Intersectional Discrimination class and the Sexual Orientation Discrimination class with deliberate self harm is astonishing. Research on the relationship between bullying and discrimination and deliberate self harm is limited. In a study among youth in the United Kingdom, when asked main

motivations for self-injury they nominated bullying and teasing as major contributing factors (Fortune et al. 2008). It is possible that students experiencing bullying and discrimination use self-injury as a coping mechanism (Klonsky 2007). Further work to understand the association between deliberate self harm and the intersections of multiple forms of discrimination is needed to inform targeted prevention work.

In the present study, racial discrimination characterized two separate classes, one which was comprised mainly of racial discrimination and the other which was also classified by high endorsement of weight-based discrimination, immigration discrimination and bullying. There are several potential hypotheses to explain why the Racial Discrimination class did not exhibit increased suicidal ideation or deliberate self harm. First, students within the Racial Discrimination class belonged to a variety of racial/ethnic groups and it is documented that Hispanic and African American youth have lower rates of suicidal ideation compared to their White peers (Evans et al. 2005; Benner and Graham 2011). Secondly, research indicates that a strong racial identity and self-esteem (Stevenson and Arrington 2009) may mitigate the negative effects of experiencing racial discrimination among adolescents (Sellers et al. 2006). Although racial identity has been primarily studied among African American adolescents, a high racial identity may offer a similar protective effect among Hispanic and Asian adolescents who experience racial discrimination.

Conversely, the inability for individuals to reject weight stigma due to of a lack of group identity and support may be a mechanism for the increased risk for suicidal ideation and deliberate self harm among the Intersectional Discrimination latent class singularized by weight discrimination (Crandall 1994; Davison et al. 2008). Research among overweight individuals document the pervasive anti-fat attitudes held by this group and suggest a deep internalization of negative attitudes of excess weight (S. S. Wang et al. 2004). Similarly this lack of in-group identity and social support, due to social isolation and family rejection, which may manifest as internalized homophobia among sexual minority youth, may also be influential contextual factors for students experiencing sexual orientation discrimination and their increased risk in engaging in deliberate self harm (Meyer 2003).

This study is cross-sectional therefore we are unable to infer causation and determine directionality between discrimination and suicide-related outcomes and depression. It is possible that mental health problems influence one's perceptions of discrimination and bullying, although to the author's knowledge, there is no longitudinal evidence to determine the directionality of that relationship. All

measures in this study were self-reported by students and thus the relationship between our outcomes of interest and objective experiences of discrimination and bullying cannot be inferred. Also, the measures do not assess frequency of experiencing discrimination and bullying, hindering the ability to assess a dose–response relationship between frequent discrimination and bullying and measures of emotional distress. The measure of discrimination asks respondents to reflect on the past year and these findings may be affected by recall bias. Using modal class assignment to relate latent class membership to outcomes may bias the standard errors on those regression estimates, as true latent class membership is unknown and therefore modeled with classification error. However, given the magnitude of the association between latent class membership and our outcomes of interest and the high degree of separation and homogeneity in our latent class measurement model, we do not expect Type 1 error in our statistical tests (Clark and Muthén 2009). The bullying measure included in the latent class enumeration asks youth if they have ever been “bullied or physically assaulted” for any of the attributes listed in the discrimination question, therefore limiting the ability to connect the bullying experience to a perceived or claimed attribute. Additionally, evidence suggests that prompting students with the word bullying leads to differential prevalence rates of self-reported bullying behaviors compared to providing examples of the behaviors without naming them as bullying; therefore the bullying item, as it appears in the 2006 BYS, may have resulted in underreporting of bullying victimization experiences (Vaillancourt et al. 2008, 2010; Sawyer et al. 2008). Finally, as this data was collected in 2006, the timeliness of these findings to current bullying and discrimination research may be limited but this data set provides a unique opportunity to study the intersections of multiple attributes of discrimination and bullying and their related associations to indicators of emotional distress among a diverse sample of urban youth. Additional research employing a similar person-centered analytic method is needed to corroborate the patterning of discrimination attributes and bullying detailed in this paper.

Conclusion

In August 2010, the White House held its first ever National Summit on bullying prevention, which reviewed the evidence of bullying and its implications for child health and well-being and considered the most effective prevention and legislative options. Not mentioned at the summit was the explicit connection between bullying and discrimination or the co-occurrence of multiple forms of

discrimination and bullying among youth. In October 2010, the Office of Civil Rights issued a Dear Colleague Letter to the Department of Education informing schools and school leaders that “some student misconduct that falls under a school’s anti-bullying policy may also trigger responsibilities under one or more of the federal antidiscrimination laws enforced by the Department’s Office for Civil Rights (OCR)” (Ali 2010, p. 1). Despite the issuance of this letter, there is still a lack of national conversation and research attention dedicated to the overlaps and connections between bullying, discrimination and harassment among youth. Identity-based, or biased based bullying, is an experience that clearly links bullying and discrimination and furthermore “failure to assess for bias in bullying masks its added consequence” (Poteat et al. 2011, p. 606).

This research highlights the importance of considering the varying health implications of bullying and discrimination based on the intersections of specific attributes through theory-informed research questions. Without the application of the intersectionality framework to inform our methodological approach and research questions, the overlaps and intersections between multiple attributes of discrimination and bullying may have been overlooked. Furthermore, without considering the multiple forms of discrimination and bullying that youth experience, the relationship among these exposures and indicators of emotional distress, including depression, suicidal ideation and self harm, may be underestimated.

GLSEN has demonstrated that there are lower reports of homophobic bullying and harassment in schools where there are specific anti-bullying and harassment policies to protect LGBT students (Kosciw et al. 2012). Schools need to enact anti-bullying laws that prohibit the marginalization of students based on any perceived personal attribute and have professional training for teachers and staff regarding appropriate protocol for addressing bullying and discrimination based on specific attributes. Additional research should be dedicated to understanding the effectiveness of school-based anti-bullying policies that include language to protect a myriad of groups in reducing specific identity-based bullying and discrimination.

National surveys and population-based cohorts of adolescents need to incorporate measures of discrimination that take into consideration the complexity of discrimination illustrated in this study, including attributes and their intersection with assault and bullying. More research is needed to understand the effects of experiencing co-occurring discrimination on physical, social, academic and emotional outcomes to reflect the intersections of social identities that most appropriately align with the lived experiences of youth. Youth bullying and discrimination researchers must capitalize on the unprecedented national attention and political will for bullying prevention work by

translating research to inform school based programs and policies, specifically focusing on the importance of identity and attributes in the context of victimization experiences.

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