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Teacher Involvement as a Protective Factor from the Association between Race-Based Bullying and Smoking Initiation

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Abstract

Experiencing bullying as a victim is associated with negative health and health behavior outcomes, including substance use, among adolescents. However, understandings of protective factors – factors that enhance adolescents' resilience to the negative consequences of bullying – remain limited. The current study investigates whether teacher involvement protects adolescent students from the association between being bullied due to race and smoking initiation. Students were recruited from 12 Kindergarten through 8th grade schools in an urban school district in the Northeast United States. The analytic sample included 769 students who responded to surveys in 5th or 6th grade (2009), and two years later in 7th or 8th grade (2011). Students primarily identified as Latino and/or Black, and 90% were eligible for free or reduced lunch. Fifty-four (7%) students initiated smoking between survey time points. Among students reporting lower teacher involvement, race-based bullying was associated with higher likelihood of smoking initiation (OR = 1.69, p = .03). In contrast, among students reporting higher teacher involvement, racebased bullying was not associated with higher likelihood of smoking initiation (OR = 0.95, p = .81). Results suggest that teacher involvement may protect students from the association between race-based bullying and smoking initiation. Enhancing teacher involvement among students experiencing race-based bullying in schools may limit smoking initiation.

Keywords

bully victim; discrimination; race; smoking; teacher involvement

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1. Introduction

Bullying remains prevalent within schools throughout the world (Bibou-Nakou et al. 2012; Hussein 2010; Rigby and Smith 2011), where it poses a threat to the health of students internationally. Bullying is characterized by aggressive behavior that is intentionally harmful, occurs repeatedly, and involves an imbalance of physical or psychological power between victim and perpetrator (Olweus 1993). Approximately 30–50% of children report involvement in bullying with 10–30% experiencing bullying as a victim in nationally representative samples of middle- and high-school students in the United States (Nansel 2001; Wang, Iannotti, and Nansel 2009). Students who experience more bullying victimization have poorer psychological and physical health (Knack, Jensen-Campbell, and Baum 2011; Nansel 2001) and engage in more substance use including tobacco use (Fleming and Jacobsen 2009). Given that initiation of smoking during adolescence – even infrequent experimentation – is a powerful risk factor for smoking during adulthood (Chassin et al. 1990, 1996), it is important to uncover factors that protect students from the association between being bullied and smoking initiation.

In the current study, we examined whether teacher involvement protects students who experience race-based bullying from smoking initiation. Before describing the study, we review literature on the association between bullying and substance use as well as known protective factors of this association. In doing so, we draw on findings from both the bullying and discrimination literatures. Although they have been conceptualized as distinct constructs, they share some important similarities. Like bullying, discrimination occurs repeatedly over time (i.e., is chronic; Williams, Neighbors, and Jackson 2003), and relies on an imbalance of power between those who discriminate and those who experience discrimination (Link and Phelan 2001). Unlike bullying, discrimination may be perpetrated without intention (Dovidio and Gaertner 2004). However, like bullying, people who experience discrimination have poorer psychological and physical health outcomes, and engage in risky health behaviors including substance use and smoking (Williams and Mohammed 2008). By drawing on the discrimination literature, we can better understand the association between race-based bullying and substance use as well as protective factors of this association.

1. 1. DISCRIMINATION, BULLYING, AND SUBSTANCE USE

An accumulating body of evidence suggests that discrimination is associated with substance use, contributing to racial/ethnic disparities in substance use as well as health more generally. Williams and Mohammed (2009) reviewed evidence that discrimination is linked to use of alcohol, cocaine, marijuana, prescription drug, and tobacco among a variety of racial and ethnic groups. Although the bulk of this evidence comes from cross-sectional surveys, the existing longitudinal work demonstrates that discrimination is predictive of subsequent substance use (Gibbons et al. 2004, 2012). The association between discrimination and tobacco use has been found across the lifespan, among samples of adults (Krieger et al. 2005), college-aged students (Bennett et al. 2005), and adolescents (Gibbons et al. 2012).

Evidence of the association between being bullying and substance use, however, is more mixed. Some work suggests that perpetrators of bullying, rather than victims of bullying, are more likely to engage in alcohol and tobacco use (Nansel 2001). Other work suggests that bully-victims, or students who are both bullies and victims, are particularly likely to engage in smoking (Weiss et al. 2011). Still other work finds that victims of bullying are more likely than non-victims to have tried smoking (Fleming and Jacobsen 2009). Research on adolescents demonstrates that those who experience discrimination due to their race specifically are more likely to engage in substance use, including smoking (Gibbons et al. 2012). It is possible that students who are bullied due to their race specifically are also more likely to engage in substance and tobacco use.

Why might students who experience race-based discrimination and/or bullying be more likely to engage in substance and tobacco use? Longitudinal and experimental research by Gibbons and colleagues has identified anger (Gibbons et al. 2010, 2012) and self-control (Gibbons et al. 2012) as mediators of the association between race-based discrimination and substance use, including tobacco use, among African American adolescents. That is, adolescents who experience more race-based discrimination experience more anger and reduced self-control. In turn, more anger and reduced self-control are associated with increased substance use. Additionally, substance and tobacco use have been characterized as coping mechanisms for people experiencing the stressor of discrimination (Williams and Mohammed 2008). Similarly, adolescents experiencing race-based bullying may be more likely to initiate smoking due to increased anger and decreased self-control, and/or to cope with their experiences of bullying.

1. 2. PROTECTIVE FACTORS

Several factors have been identified that protect adolescents from the negative effects of bullying and discrimination on health and health risk behaviors, including substance use. These protective factors enhance adolescents' resilience to bullying, or their "capacity for… successful adaptation despite challenging or threatening circumstances" (p. 425; Masten, Best, and Garmezy 1990). That is, protective factors buffer victims of bullying by lessening the impact of bullying on negative outcomes. Although some research has focused on factors that reduce adolescents' likelihood of experiencing bullying (e.g., Baldry and Farrington 2005; Wang et al. 2009), we focus on protective factors that enhance resilience to the ongoing experiences of bullying, given that bullying persists in the United States (Nansel 2001; Wang et al. 2009) and elsewhere in the world (Bibou-Nakou et al. 2012; Hussein 2010; Rigby and Smith 2011) despite efforts to end it (Fekkes 2004; Olweus 1996). Other people serve as significant protective factors for adolescents experiencing bullying.

Parents and friends play an important role in protecting adolescents from the negative impact of bullying and discrimination. Brody and colleagues (Brody et al. 2006) found that African American adolescents who had nurturant-involved parents and had prosocial friends were at least partially protected from the negative impact of discrimination on conduct problems and depressive symptoms. Rothon and colleagues (2011) found that support from family and friends was protective of the impact of bullying on poor academic achievement, but not on depressive symptoms. Gibbons and colleagues found that African American

adolescents who have effective (Gibbons et al. 2004) and supportive (Gibbons et al. 2010) parents were protected from the negative impact of discrimination on substance use, including tobacco.

Teachers and other school adults may play additional roles in protecting adolescents from the negative impact of bullying and discrimination. Teachers are not always effective in ending bullying itself: teachers may neither know about bullying, nor be able to stop it when they do. One study revealed that only half of students experiencing bullying told teachers that they had been bullied, and that only half of teachers who knew about bullying were effective in stopping it (Fekkes 2004). Troublingly, the bullying sometimes becomes worse after teacher involvement. Although teachers may not always be able to end bullying, they may be able to act as protective factors for adolescents who are bullied thereby enhancing adolescents' resilience to bullying. Indeed children who have positive school experiences and relationships with competent adults – not just parents – demonstrate more resilience to risk (Masten et al. 1990). Further, adolescents who feel supported by teachers are less likely to initiate a range of health risk behaviors, including drinking alcohol, using marijuana, suicidal ideation or attempt, sexual intercourse, weapon-related violence, and smoking cigarettes (McNeely and Falci 2004).

1. 3. CURRENT STUDY

We hypothesized that teacher involvement protects adolescent students from the association between race-based bullying and smoking initiation. As recommended by Baldry and Farrington (2005), we adopted a moderation approach to examine this protective factor by conceptualizing teacher involvement as a moderator of the association between race-based bullying and smoking initiation. We therefore hypothesized that at low levels of teacher involvement, students who experienced race-based bullying would be more likely to have initiated smoking. We further hypothesized that at high levels of teacher involvement, students who experienced race-based bullying would be less likely to have initiated smoking.

2. Method

2. 1. PROCEDURE

Data are drawn from a study conducted by the Yale School of Public Health's Community Alliance for Research and Engagement in partnership with the New Haven Public Schools. Study sites included 12 K-8 (kindergarten through eighth grade) schools that were randomly selected from the 27 K-8 schools in the district. Students in grades 5 and 6 completed surveys in Fall 2009, and again in Fall 2011 when they were in grades 7 and 8. Eighty-eight percent of all eligible students participated at time 1, and 85.5% participated at time 2. Those not included were either absent from school during study administration, or had parents who requested that they did not participate. All procedures were approved by the Yale University Human Subjects Committee and the local Board of Education. Parental consent and child assent were obtained for all participants in English or Spanish.

2. 2. MATERIALS

Control variables including participant gender, age, and race/ethnicity were collected at time 1. Additionally, participants' eligibility for free or reduced lunch was collected from school district administrative records. Academic achievement was measured by standardized test scores on Connecticut Mastery Tests for reading, writing, science, and mathematics ("Connecticut Mastery Test" 2010), and were also obtained from school district administrative records. Scores for each subject area include *below basic* (1), *basic* (2), *proficient* (3), *goal* (4), *advanced* (5). An average score across all four subjects was created ($\alpha = .87$).

Race-based bullying and teacher involvement were measured at time 2. Race-based bullying was measured using one item, based on previous studies of stigma-related bullying (Haines 2006; Neumark-Sztainer et al. 2002): "How often have you been teased or bullied about your race/ethnicity?" Response options included *never or rarely* (1), *a few times a year* (2), *a few times a month* (3), and *at least once a week* (4). Teacher involvement was measured with two items, developed for the 2011 survey. Students were first asked "Do you feel like you have at least one teacher or other grown-up at school who" followed by "Cares about your school work?" and "Listens to you when you have something to say?" Response options included *no, never* (1), *yes, some of the time* (2), *yes, most of the time* (3), and *yes, all of the time* (4). A mean score was created ($\alpha = 0.69$).

At both time points, students were asked: "Have you ever tried cigarette smoking, even one or two puffs?" ("Global Youth Tobacco Survey" 2008). Response options included *yes* and *no.* Students who responded *no* at time 1 and *yes* at time 2 were coded as having initiated smoking. All other students were coded as not having initiated smoking.

2. 3. PARTICIPANTS

Seven hundred and ninety students participated in both waves of data collection. Of these, 769 had no missing data and were therefore included in the analytic sample. Characteristics of this analytic sample are shown in Table 1. Fifty-four students (7%) initiated smoking between times 1 and 2. Slightly over half of the sample was female. Participants were on average 11 years old at time 1, and 13 years old at time 2. Ninety percent of the sample was eligible for free or reduced lunch, 46.7% identified as Latino and 39.3% as Black. The average score across subjects on the Connecticut Mastery Test was 3.10, in the proficient range. Overall, participants reported low levels of race-based bullying and high levels of teacher involvement.

3. Results

Logistic regression analyses controlling for school clustering (PROCSURVEY LOGSTIC in SAS 9.2) were used to examine the study hypotheses. An initial series of analyses were conducted to examine the bivariate relationships between sociodemographic characteristics (i.e., gender, age, eligible for free or reduced lunch, Black, Latino, Connecticut Mastery Test Average) and smoking initiation, as well as the primary predictors (i.e., race-based bullying, teacher involvement) and smoking initiation (Table 2). Results demonstrated that older

students were more likely to have initiated smoking, but no other sociodemographic characteristics were associated with smoking initiation. There were marginally statistically significant associations between race-based bullying and teacher involvement with smoking initiation. Students who experienced more race-based bullying were more likely to have initiated smoking, and students who reported more teacher involvement were less likely to have initiated smoking.

Next, a multivariate logistic regression was conducted including age, race-based bullying, teacher involvement, and the interaction between teacher involvement and race-based bullying (Table 3). Variables included in the interaction were centered to prevent multicollinearity (Aiken and West 1991). As hypothesized, the interaction between race-based bullying and teacher involvement was statistically significant. To further examine this interaction the sample was split based on the mean of teacher involvement, and then the association between race-based bullying and smoking initiation was examined among students who reported higher versus lower levels of teacher involvement. At lower levels of teacher involvement, there was a positive association between race-based bullying and smoking initiation, [$B = 0.52$, $SE = 0.24$, Odds Ratio = 1.69 (1.06 – 2.69), $p = 0.03$]. In contrast, at higher levels of teacher involvement, there was no association between race-based bullying and smoking initiation [$B = -0.05$, $SE = 0.20$, Odds Ratio = 0.95 (0.65 – 1.41), $p = 0.81$].

In a supplemental analysis, we examined whether this pattern of effects replicated using an indicator of bullying in general rather than bullying specific to race (i.e., “How often, if ever, have you been teased or bullied?”). The interaction between general bullying and smoking initiation was marginal ($B = 0.28$, $SE = 0.16$, $p = 0.09$), and general bullying was not associated with smoking initiation at lower [$B = -0.24$, $SE = 0.18$, Odds Ratio = 0.79 (0.55 – 1.12), $p = 0.09$] or higher [$B = 0.03$, $SE = 0.21$, Odds Ratio = 1.03 (0.66 – 1.56), $p = 0.90$] levels of teacher involvement. The consequences of race-based bullying were therefore unique in this sample.

4. Discussion

In the current study, we found that students who experienced more race-based bullying were more likely to have initiated smoking within the past two years. This overall effect was marginally significant, and it was moderated by teacher involvement. At lower levels of teacher involvement, students who experienced more race-based bullying were significantly more likely to have initiated smoking. With every one point increase in race-based bullying indicating higher frequency of bullying, these students were 69% more likely to have initiated smoking within the past two years. In contrast, at higher levels of teacher involvement, students who experienced more race-based bullying were not more likely to have initiated smoking. Therefore, teacher involvement was a protective factor of the association between experiencing race-based bullying and initiating smoking between time points.

These findings primarily contribute to knowledge of protective factors of the association between bullying and discrimination among adolescents with substance use. Past work has

focused on the role of parents and peers as protective factors of this association among adolescents. This is the first known study to demonstrate that teacher involvement may serve as an additional protective factor, buffering adolescents who experience more race-based bullying from initiating smoking.

These findings further contribute to understandings of the association between bullying and smoking. As noted in the introduction, past work regarding this association has been mixed with some studies finding that victims of bullying are more likely to smoke (Fleming and Jacobsen 2009; Gibbons et al. 2012) and others finding that victims of bullying are not more likely to smoke (Nansel 2001). There are at least two reasons why past studies may not have found this association. First, we found a marginally statistically significant main effect of race-based bullying on smoking initiation. It was only among a subgroup of students, those who had lower teacher involvement, that this association was statistically significant. Studies that do not take moderators into account, or examine particular risk groups experiencing bullying, may not find the association between bullying and smoking.

Second, we found that race-based bullying specifically was associated with smoking initiation. Race-based bullying may pose a unique threat to adolescents. Unlike general bullying or bullying associated with characteristics such as looks or speech (Nansel 2001), race-based bullying is attributable to a stigma – a characteristic that is devalued or discredited within society (i.e., race; Goffman 1963). Bullying associated with a stigma may impact adolescents more similarly to discrimination, which is unfair or unjust treatment due to a stigma (Link and Phelan 2001). Similar to adolescents who experience racial discrimination (Gibbons et al. 2010; Whitbeck et al. 2001), those who perceive that they are bullied due to their race may be more likely to have externalizing reactions to their experiences, such as anger and hostility, that are predictive of substance use. In contrast, students who perceive that they are bullied due to other characteristics may instead have internalizing reactions to their experiences, including depressive symptoms, which may not be as predictive of substance use (Whitbeck et al. 2001).

4. 1. LIMITATIONS, FUTURE DIRECTIONS, AND STRENGTHS

The current study has several limitations which may be improved upon with future work. We measured experiences of victimization with bullying. However, research suggests that bullying is a complex phenomenon with health risks for victims, perpetrators, and bully-victims (Nansel 2001; Weiss et al. 2011). Future work on the associations between bullying, smoking initiation, and protective factors should differentiate between these three roles of bullying (i.e., victims, perpetrators, bully-victims). Such research can provide insight into which types of bullying are associated with smoking initiation, and whether teaching involvement is also a protective factor for bullies and bully-victims. Further, we only asked about race-based bullying specifically. Future work should differentiate between generalized bullying and race-based bullying. Such work can provide insight into whether race-based bullying is experienced differently and/or is associated with different outcomes than generalized bullying or bullying associated with other specific characteristics (e.g., speech, appearance). The measure of bullying employed in the current study was modeled after previously published measures of bullying that have shown associations with negative health

outcomes and behaviors (Haines 2006; Neumark-Sztainer et al. 2002). However, future work might employ multi-item measures of bullying with different wording (e.g., "How often have you been bullied *because of* your race/ethnicity?").

Although we drew from a longitudinal dataset, race-based bullying and teacher involvement were not measured at time 1. Therefore, we were able to show that race-based bullying was associated with increased likelihood of smoking initiation in the past two years, but we were unable to test whether race-based bullying predicts smoking initiation over time. We were also unable to test whether teacher involvement acts as a protective factor of this association over time. Future work should adopt longitudinal and experimental methodologies (e.g., following the paradigm modeled by Gibbons et al. 2010, 2012) to continue to study this association to examine the roles that race-based bullying and teacher involvement play in subsequent smoking initiation, as well as whether race-based bullying and teacher involvement have a causal effect on smoking initiation.

Furthermore, future work might test mechanisms to help explain why race-based bullying is associated with smoking initiation and why teachers may be protective factors for this association. Externalizing reactions and reduced self-control may help to explain the association between racial discrimination and substance use among adolescents (Gibbons et al. 2010; Whitbeck et al. 2001). Future work might test if the same is true for race-based bullying. Additionally, adolescents with supportive parents feel less anger in response to discrimination (Simons et al. 2006), thus diminishing the externalizing reaction to discrimination. It is possible that teachers have a similar effect.

Finally, a small number of students initiated smoking between times 1 and 2 in this sample (n = 54). This may be due to their age: on average, students were under 13 years old. The multivariate logistic regression analysis included only four predictors, and therefore the analysis was adequately powered with greater than ten cases per predictor (Agresti 2007). However, future research might examine these associations among older, more diverse samples of students to test the extent to which findings are generalizable.

Despite these limitations, the current study has several key strengths which reinforce its contribution to understandings of the associations between race-based bullying, teacher involvement, and smoking initiation. The study took place in New Haven, Connecticut, an area in which adult smoking rates are approximately double those of the national average (Rosenthal et al. 2013). Therefore, many participants of this study may have had parents or other adult role models who smoke – a risk factor for smoking initiation during adolescence (Peterson et al. 2006). Further, 90% of the sample was eligible for free or reduced lunch, indicating socioeconomic disadvantage – a major risk factor for smoking prevalence in adulthood (Barbeau, Krieger, and Soobader 2004). It is critical to study both predictors and protective factors of smoking initiation in such high-prevalence areas and among such risk groups to inform interventions to reduce smoking initiation and close smoking related disparities in these areas and among these populations. The study was also conducted over time, allowing us to examine smoking initiation over two years.

4. 2. CONCLUSION

The results of the current study suggest that teachers can play a protective role in the association between race-based bullying victimization and smoking initiation. Interventions that strengthen teacher-student relationships may help to reduce smoking initiation among students experiencing race-based bullying. Strong teacher-student relationships have a positive impact on other health risk behaviors as well (McNeely and Falci 2004), and therefore such interventions may even have positive impact beyond smoking initiation. By increasing adolescents' resilience to race-based bullying, we may be able to attenuate adolescent disparities in health risk behaviors and ultimately adult disparities in health outcomes.

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Table 1

Analytic sample characteristics

Characteristic	Total (n = 769)	Did Not Initiate Smoking (n = 715)	Initiated Smoking (n = 54)
Gender			
Male	342 (44.5%)	319 (44.6%)	23 (42.6%)
Female	427 (55.5%)	396 (55.4%)	31 (57.4%)
Age at time 1	10.87 (0.73)	10.86 (0.74)	10.96 (0.67)
Age at time 2	12.76 (0.76)	12.75 (0.77)	12.93 (0.64)
Free or Reduced Lunch Eligibility			
Eligible	692 (90.0%)	643 (89.9%)	49 (90.7%)
Not eligible	77 (10.0%)	72 (10.1%)	5 (9.3%)
Race/Ethnicity			
Latino	359 (46.7%)	334 (46.7%)	25 (46.3%)
Black	302 (39.3%)	277 (38.7%)	25 (46.3%)
White + Other	108 (14.0%)	104 (14.5%)	4 (7.4%)
Connecticut Mastery Test Average	3.10 (1.05)	3.12 (1.06)	2.93 (0.93)
Race-Based Bullying	1.25 (0.65)	1.24 (0.63)	1.37 (0.78)
Teacher Involvement	3.28 (0.76)	3.30 (0.75)	3.07 (0.92)

Note: n (%) or *M* (*SD*) presented. Race-Based Bullying and Teacher Involvement range from 1 to 4 with higher scores indicating more bullying or involvement.

Table 2

Bivariate logistic regressions predicting smoking initiation

	B (SE)	Odds Ratio	Wald χ^2
Demographics			
Female	0.08 (0.23)	1.09 (0.69 – 1.72)	0.13
Age	0.19 (0.08)	1.20 (1.02 – 1.42)	4.87*
Free or Reduced Lunch Eligible	0.09 (0.56)	1.10 (0.37 – 3.27)	0.03
Black	0.31 (0.38)	1.36 (0.65 – 2.85)	0.68
Latino	−0.02 (0.45)	0.98 (0.40 – 2.40)	0.01
Connecticut Mastery Test Average	−0.17 (0.15)	0.85 (0.63 – 1.14)	1.24
Race-Based Bullying	0.26 (0.16)	1.30 (0.95 – 1.78)	2.62†
Teacher Involve	−0.35 (0.20)	0.71 (0.48 – 1.04)	3.08†

Note:

† $p \leq .10$,

* $p \leq .05$

Table 3

Multivariate logistic regression predicting smoking initiation

	B (SE)	Odds Ratio	Wald χ^2
Demographics			
Age	0.23 (0.09)	1.26 (1.06 – 1.51)	6.45**
Race-Based Bullying	−0.03 (0.21)		0.03
Teacher Involve	−0.29 (0.18)		2.53
Teacher Involve X Race-Based Bullying	−0.49 (0.15)		11.02***

Note:

** $p \leq .01$,

*** $p \leq .001$.

Odds ratios associated with variables included in the interaction term are not reported by SAS due to difficulty of interpretation (Lewis, 2007).