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The Role of Perceived Peer Prejudice and Teacher Discrimination on Adolescent Substance Use: A Social Determinants Approach

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Abstract

Although Black adolescents have reported a lower prevalence of substance use relative to non-Hispanic Whites, Black youth are disproportionately affected by adverse social outcomes. Social scientists have highlighted that using a framework that includes perceived peer prejudice and teacher discrimination as social determinants of adolescent risk behaviors is essential to fully understanding substance use behaviors in adolescents. However, this area of research remains underdeveloped. This study examined whether and to what extent perceived peer prejudice and teacher discrimination affect binge drinking and marijuana use by Black ($n = 514$) and non-Hispanic White ($n = 2,818$) adolescents using data from the National Longitudinal Study of Adolescent Health, Wave 2, Public Use dataset. Findings suggest that peer prejudice increased the risk of substance use in non-Hispanic White youth only, whereas experiences of teacher discrimination increased the risk of substance use in both Black and non-Hispanic White youth. The study's limitations are noted, and implications for future research are discussed.

Keywords

adolescents; social determinants; peer prejudice; teacher discrimination; binge drinking; marijuana use

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INTRODUCTION

Substance use, including binge drinking and marijuana use, remains a serious public health concern facing America's youth. In general, Black youth are less likely to report substance use as compared to non-Hispanic White youth (Eaton et al., 2012; Johnston, O'Malley, Bachman, & Schulenberg, 2012; Substance Abuse and Mental Health Services Administration, 2012). Findings from the Youth Risk Behavior Surveillance Survey indicate that Black adolescents are less likely to report binge drinking (12.4%) relative to non-Hispanic Whites (24%) (Eaton et al., 2012). However, according to the Youth Risk Behavior Surveillance Survey, Black youth report a higher prevalence on some illicit substances. For example, Black youth are more likely to report having used marijuana in the 30 days before the survey compared with non-Hispanic White youth (29.1% versus 24.4%, respectively) (Eaton et al., 2012). These recent trends are disconcerting because, relative to non-Hispanic White youth, Black youth are more likely to report adverse social and educational consequences from substance use, such as not getting along with friends and teachers and having poor academic performance (Bergen, Martin, Roeger, & Allison, 2005; Cox, Zhang, Johnson, & Bender, 2007; Timmermans, van Lier, & Koot, 2008). Furthermore, even without reports of substance use, Black youth are also more likely to experience peer prejudice and teacher discrimination compared with non-Hispanic White youth (Broman, 2007; Pachter & Coll, 2009; Williams & Mohammed, 2009).

Prevention and social scientists have begun to highlight the ways in which social determinants of health, including perceived peer prejudice and teacher discrimination, may play an essential role in adolescent substance use (Broman, 2007; Córdova & Cervantes, 2010; Pachter & Coll, 2009; Respress, 2012; Williams & Mohammed, 2009). Moreover, adolescent health scholars are beginning to examine the ways in which taking a determinants of health approach, including perceived peer prejudice and teacher discrimination, are essential to fully understanding adolescent risk behaviors (Respress, 2012). Despite the profound effect perceived peer prejudice and teacher discrimination may have on Black adolescent binge drinking and marijuana use, this line of research remains underdeveloped. Therefore, the purposes of this study were to examine the role of perceived peer prejudice and teacher discrimination on adolescent substance use, including binge drinking and past 30 day marijuana use, and to ascertain whether and to what extent perceived peer prejudice and teacher discrimination affect adolescent substance use as a function of race (i.e., Blacks relative to non-Hispanic Whites).

Building on the social determinants of health model, the social determinants of adolescent risk behaviors is conceptualized as the integration of racial and social determinants in health processes operating in the lives of adolescents. This research study is guided by the social determinants of adolescent risk behaviors model, which is an adaptation of the conceptualization of race (LaVeist, 1994) and the social determinants of health disparities (LaVeist, 2005b) models, all of which position race at the center of a system of judgment (Respress, 2012). From this perspective, judgments based on racial phenotype are embedded within the social fabric of the United States (LaVeist, 1994). The social determinants of adolescent risk behaviors model postulates that racial disparities in adolescent substance use may be a result of, among other things, social mechanisms of prejudice and discrimination, including perceived peer prejudice and teacher discrimination, which may affect health risk behaviors, including binge drinking and marijuana use, among Black adolescents (Jones, Oeltmann, Wilson, Brener, & Hill, 2001; LaVeist, 2005a, 2005b; LaVeist & Wallace, 2000). The current study uses a quantitative methodology to address the social determinants of health, which researchers suggest are imperative to adequately explore the complexities of health disparities among vulnerable populations, including Black youth (Brown, 2008; Williams & Jackson, 2005).

Several studies have documented the effect of perceived discrimination on substance use among racial and ethnic minority adolescents, including Black youth (Broman, 2007; Pachter & Coll, 2009; Williams & Mohammed, 2009). Some research has indicated that perceived discrimination is an important antecedent to substance use among minority adolescents (Brody, Kogan, & Chen, 2012; Gerrard et al., 2012; Gibbons et al., 2010). Prospective studies have indicated that poverty, discrimination, and prejudice are socially oppressive forces that may increase problem behaviors, including substance use, among Black youth and prevent them from participating at their full potential in the major areas of their lives (Garcia Coll et al., 1996; Williams, 1999). However, few studies have examined the role of perceived peer prejudice and teacher discrimination on adolescent substance use, including binge drinking and marijuana use. Therefore, we examined the role of perceived peer prejudice and teacher discrimination on adolescent substance use and whether and to what extent these effects vary for Black and non-Hispanic White youth. This study contributes to existing knowledge in at least three ways: (a) to the best of our knowledge, no studies exist that examine the effect of prejudice and discrimination on adolescent substance use using two indicators that are relevant within the context of schools (i.e., perceived peer prejudice and teacher discrimination); (b) we use Add Health data, which consists of a nationally representative sample; and (c) to our knowledge, no other study examines this issue using the above framework. The findings of this study may increase our understanding of substance use among Black adolescents in lieu of their increased risk for disparate physical, mental, and economic outcomes related to socioenvironmental factors of poverty, discrimination, and prejudice (Cummings, Wen, & Druss, 2011; Molina, Alegría, & Chen, 2012; Tran, Lee, & Burgess, 2010). Furthermore, the current study may lay the groundwork for additional studies in this area guided by the social determinants of adolescent risk behaviors framework.

For the purposes of this study, we define prejudice as psychosocial constructs related to peer, educational, and societal biases; assumptions; and negative stereotypes based on race and culture (Fisher, Wallace, & Fenton, 2000). On the other hand, discrimination is defined as beliefs, attitudes, institutional arrangements, and unfair acts or negative treatment that tend to denigrate individuals or groups because of phenotypic characteristics, racial/ethnic group affiliation, bias, or prejudice (Clark, Anderson, Clark, & Williams, 1999; Harrell, 2000; Harris-Britt, Valrie, Kurtz-Costes, & Rowley, 2007). Overall, we posit that experiences of prejudice and discrimination within schools may contribute to the complex interactions among socioenvironmental and developmental processes and provide some understanding of the paradoxical relationship between the lower prevalence of substance use behaviors among minority youth and the disproportionate prevalence of negative consequences related to substance use in adulthood.

The current study sought to examine peer prejudice, teacher discrimination and academic performance as determinants of substance use among high school adolescents. Our study examined the following research questions:

1. What is the relationship among academic performance, peer prejudice, teacher discrimination, and substance use among Black and non-Hispanic White high school adolescents?
2. Which combination of socioenvironmental factors (socioeconomic status [based on parental education, household income and poverty status] peer prejudice, teacher discrimination, and academic performance) best predict substance use (alcohol and marijuana use) in high school adolescents?

As part of this study, we tested the following hypotheses:

H1: Experiences of poor socioeconomic status and teacher discrimination are stronger predictors of binge drinking and marijuana use, relative to academic performance.

H2: The impact of poor socioeconomic status and teacher discrimination on adolescent binge drinking and marijuana use will vary by race.

METHODS

Dataset

This study analyzed data from the National Longitudinal Study of Adolescent Health (Add Health), which is a prospective study that began during the 1994–1995 school year. It is a nationally representative sample of 20,000 adolescents in grades 7–12 in the United States. The study was designed to examine various determinants of health and health related behaviors and thus provides a unique opportunity to studying the relationship between contextual factors and life's achievement outcomes (Udry, Bearman, Harris, & Bauman, 2007).

Sample

The study used Wave II data on 514 Black and 2,818 non-Hispanic White high school adolescents randomly selected from the restricted data set. All Add Health research protocols for the original study were reviewed and approved by the Institutional Review Board for the Protection of Human Subjects at the University of North Carolina at Chapel Hill. Secondary data analysis of the Public Use dataset was approved by the Institutional Review Board at Case Western Reserve University.

Dependent Variables

Substance use—The current study included two dependent variables on substance use: binge drinking and marijuana use. Binge drinking was defined as having 5 drinks in a row in one episode of drinking and assessed using the item “How many days in the past 12 months, have you had 5 or more drinks in a row?,” which was dichotomized as “Never” (0) and “1 or more days” (1). Marijuana use was measured by assessing how many times in the past 30 days, marijuana was used. The responses were then dichotomized as “Never” (0) and “1 or more days” (1).

Independent Variables

Socioenvironmental factors: socioeconomic status—Three measures of socioeconomic status were used: household income, poverty status, and mother's education (Respress, 2010). Income was defined as all sources of income, including public assistance, and was based on parental report and rounded to the nearest \$1,000. Median incomes, ranging from \$4,000 to \$101,000, were used in this study. Poverty status was measured using the Federal Poverty Levels established in 1989. Groups were categorized by the proportion of the population with income below the poverty level: >11.6% (low); between 11.7% and 23.9% (medium); and 23.9% (high). Parental education was based on standard categorizations for educational attainment. The categories for mother's education were (a) less than high school, (b) completed high school, and (c) completed college or more.

Academic performance—Academic performance was defined as the grade point average across four subjects on a 4-point scale. Adolescents' self-reported grade point average (GPA) was calculated as a mean of four items asking for their most recent grades received in English or language arts, mathematics, history or social studies, and science. Letter grade responses were A = 4; B = 3; C = 2; D or below = 1.

Perceived peer prejudice and teacher discrimination—Items to assess perceived prejudice and discrimination among peers and teachers focused on interpersonal relationships within the school environment. Peer prejudice was assessed using a single-item that asked participants whether “students at your school are prejudiced.” Participants responded using the following response options: 1 = “strongly agree” to 5 = “strongly disagree,” with lower scores indicating greater perceived peer prejudice.

Teacher discrimination was assessed using a single-item variable that asked participants whether “teachers at your school treat students fairly.” Participants responded using the following response options: 1 = “strongly agree” to 5 = “strongly disagree.” Responses were reverse coded, with higher scores indicating greater perceived teacher discrimination. These measures have been used previously in other studies to assess discrimination using Add Health data (Goosby & Walsemann, 2012; Le & Stockdale, 2011; Schwartz & Beaver, 2011; Walsemann, Bell, & Maitra, 2011).

Analysis Plan

The analytic plan proceeded in three steps. First, descriptive analyses were conducted to determine whether and to what extent significant differences existed by racial group. Demographic variables, including age and gender, were controlled for in this study and were used for descriptive purposes. Second, analyses of frequency, variance, and correlations were used to determine the relationship between socioenvironmental factors and adolescent substance use by racial group. Last, regression analyses were used to assess relationships among variables and to predict the likelihood of substance use based on socioenvironmental factors, such as socioeconomic status (i.e., poverty level). Confidence intervals were calculated for binge drinking and marijuana use. All analyses were stratified by race to identify differences within and between racial groups (LaVeist, 1994). Data were analyzed using the SPSS Complex Samples Module version 20.0 for Windows software (SPSS Inc., Chicago, IL). Survey weights were applied to the data to produce estimates representative of a national sample of high school adolescents and estimate 95% confidence intervals.

RESULTS

The descriptive statistics analysis indicated that, of the 1279 respondents reporting a history of substance use, 1192 (93.2%) were non-Hispanic White, 680 (53.2%) were male, 645 (50.4%) were from relatively middle income families, and participants had a mean age of 16 years (range, 15.9, 16.3). The majority of adolescents in this sample reported binge drinking ($n = 833$; 65.1%) compared with marijuana use ($n = 298$; 26.0%). Among those reporting binge drinking or marijuana use, approximately 27.4% ($n = 343$) reported an annual income of \$38,000 or more. Among the adolescents, 60% ($n = 302$) with high poverty backgrounds reported binge drinking; whereas 21.2% ($n = 207$) of adolescents with similar backgrounds reported marijuana use. In addition, nearly half of all adolescents reported some level of peer prejudice in their school within the past year and one-quarter of the adolescents reported experiencing discrimination of some sort from their teachers within the past year (Table 1).

Table 1 reports the respondent’s characteristics, stratified by reports of substance use and race. In comparison with non-Hispanic White adolescents who reported binge drinking or marijuana use, Black adolescents overall were significantly more impoverished, were more likely to report lower incomes, and have parents with a less than a high school education. In addition, Black adolescents reported a lower academic performance and were less likely to report experiences of peer prejudice in their school. There were no significant differences between Black and non-Hispanic White youth on reports of teacher discrimination. However, within the respective racial groups, reports of teacher discrimination were lower

in Black versus non-Hispanic White adolescents. Lastly, significant gender differences were also noted among adolescents who reported marijuana use. Black males were more likely to report marijuana use than non-Hispanic White males, whereas non-Hispanic White females were more likely to report marijuana use than Black females.

Relationships Among Socioenvironmental Factors, Peer Prejudice, Teacher Discrimination and Substance Use by Racial Group

On average, both Black and non-Hispanic White adolescents who reported substance use behaviors had higher incomes relative to those who did not report substance use. Similarly, adolescents with higher incomes were more likely to report experiences of peer prejudice and teacher discrimination compared with adolescents with lower incomes. Differences among Black and non-Hispanic White adolescents emerged with the inclusion of academic performance. GPAs for Black adolescents varied across income-based groups; however, those with the highest GPAs were also those who reported experiencing peer prejudice or teacher discrimination. In stark contrast, non-Hispanic White adolescents who reported teacher discrimination had lower incomes and slightly lower GPAs than non-Hispanic White adolescents, who did not report teacher discrimination.

There are interesting income differences between those who reported discrimination, prejudice, and substance use. In general, Black adolescents who reported experiencing teacher discrimination or peer prejudice and reported at least one substance use risk behavior had higher GPAs relative to those who did not report teacher discrimination, peer prejudice, or substance use. However, within group differences were most noted based on the substance reported. For example, Black adolescents who reported peer prejudice, teacher discrimination, and marijuana use had an average GPA of 3.44; however, the average household income was \$14,994. Similarly, Black adolescents who reported binge drinking and experiencing either teacher discrimination or peer prejudice also had higher GPAs compared with those who did not report binge drinking. However, this pattern was not observed among non-Hispanic White adolescents.

Multivariate Analyses

Table 2 shows the results of the multivariate linear model in regard to racial differences in binge drinking and marijuana use. Chi-square analyses revealed that there were significant racial differences in the major variables of the study (Table 1). There were statistically significant differences between Black and non-Hispanic White youth with respect to parental education ($p < 0.0001$), household income ($p < 0.0001$), poverty level ($p < 0.0001$), academic performance ($p < 0.05$), and peer prejudice ($p < 0.05$), among both binge drinkers and marijuana users. A marginally significant difference was noted for teacher discrimination among Black adolescents who reported binge drinking and marijuana use. Black adolescents were almost twice as likely to report agreement with teacher discrimination than non-Hispanic Whites (8.2% versus 4.9%, respectively; $p = 0.052$). Similarly, Blacks who reported marijuana use were 1.4 times more likely to report teacher discrimination than non-Hispanic Whites (7.4% versus 5.3%, respectively; $p = 0.086$). To explore these differences, the multivariate models were run separately for each racial group. The stratified analyses suggest that teacher discrimination was more related to marijuana use (odds ratio [OR] = 1.305–1.315, $p < 0.037$), than binge drinking (OR = 0.907–1.107, $p = \text{ns}$) among Black and non-Hispanic White adolescents.

Binge Drinking

Sixty-five percent of all adolescents in this study reported engaging in binge drinking behavior, with non-Hispanic Whites more likely to report binge drinking than Blacks (67.1% vs. 41.9%, respectively; $p = 0.001$). Logistic regression was conducted to determine

which independent variables (i.e., gender, age, parental education, poverty status, academic performance, peer prejudice and teacher discrimination) were predictors of binge drinking. Regression results using the entire sample indicate the overall model of three predictors (gender, academic performance, and peer prejudice) were statistically reliable in distinguishing between binge drinkers and non-binge drinkers (Wald $\chi^2[2] = 2.693, p < 0.007$). The predictors that increased the risk for binge drinking were similar among Black and non-Hispanic White adolescents. Although non-Hispanic White males were at greater risk for binge drinking than Black males, no significant differences were found between the groups ($\chi^2 = 1.09, p = \text{ns}$), despite reports of approximately 60% of Black males reporting binge drinking compared with 55% of non-Hispanic White males. Older Black adolescents (OR = 1.436, $p < 0.0001$) were at greater risk for binge drinking than younger adolescents and non-Hispanic White adolescents (OR = 1.280, $p < 0.0001$). Parental education was a nonsignificant contributor to binge drinking among adolescents (OR = 0.720, $p = \text{ns}$; results not shown). Moreover, the risk of binge drinking did not vary across parental education for Blacks (OR = 0.620, $p = \text{ns}$) or non-Hispanic Whites (OR = 0.560, $p = \text{ns}$). Black adolescents (OR = 0.783, $p = \text{ns}$) who were the most impoverished had a lower risk for binge drinking compared with non-Hispanic White adolescents with similar poverty status (OR = 1.107, $p = \text{ns}$). However, the most impoverished Blacks were at an increased risk for binge drinking compared to less impoverished Black adolescents (OR = 0.455, $p = \text{ns}$).

Similarly, among non-Hispanic White adolescents, higher rates of poverty increased the risk of binge drinking compared with those in lower rates of poverty (OR = 0.997, $p = \text{ns}$); however, the risk of binge drinking was greater than Black adolescents (OR = 0.455, $p = \text{ns}$) with similar reports of poverty. In contrast, adolescents with higher incomes were at greater risk for binge drinking, although the risk was not statistically significant (OR = 0.455, $p = \text{ns}$). Despite poverty level not being a significant predictor of binge drinking for Blacks, poverty level was the largest contributor to the significance of this model ($\beta = -.543, p = \text{ns}$), controlling for all other variables. Conversely, gender ($\beta = .266, p = 0.084$) was marginally significant and contributed the most variance to the model for non-Hispanic Whites, controlling for all other variables. Poor academic performance was a significant predictor of binge drinking among both Black (OR = 0.574, $p = 0.041$) and non-Hispanic White (OR = .769, $p = 0.034$) adolescents compared to those with higher GPAs; this phenomenon was more pronounced among Blacks than non-Hispanic Whites. Of the remaining socioenvironmental factors, perceptions of peer prejudice and teacher discrimination did not significantly increase the risk for binge drinking in Blacks (OR = 0.996, $p = \text{ns}$; OR = 0.907, $p = \text{ns}$, respectively) and non-Hispanic Whites (OR = 1.120, $p = \text{ns}$; OR = 1.107, $p = \text{ns}$, respectively).

Marijuana Use

Marijuana use was relatively low (26%) in this sample, with non-Hispanic Whites reporting greater use than Blacks; however, there was no significant difference in marijuana use between the two groups (24.2% versus 26.1%, respectively; $p = \text{ns}$). Logistic regression was conducted to determine which independent variables (i.e., gender, age, parental education, poverty status, academic performance, peer prejudice, and teacher discrimination) were predictors of marijuana use. Regression results indicate the overall model of 5 predictors—gender, parental education, household income, academic performance and teacher discrimination—were statistically reliable in distinguishing between those who reported marijuana use and those who did not (Wald $\chi^2[2] = 7.566, p < 0.0001$). The predicting variables that increased the risk of marijuana use differed between the racial groups. For example, gender and parental education increased the risk for marijuana use among Black youth, whereas poor academic performance increased the risk among non-Hispanic White

youth. However, among both groups, teacher discrimination was a predictor of marijuana use.

Black males were at an increased risk for marijuana use than Black females (OR = 2.029, $p = 0.011$). Non-Hispanic White females were at increased risk for marijuana use than non-Hispanic white males (OR = 0.936, $p = ns$); however, their risk was not significantly different than their male counterparts. Age was not a factor in increasing the risk among high school adolescents; however, the pattern of risk due to age was different between the two groups. For example, younger Black adolescents were at greater risk for marijuana use than older Black adolescents (OR = 0.971, $p = ns$), whereas older non-Hispanic white adolescents were at greater risk than younger non-Hispanic white adolescents (OR = 1.233, $p < 0.0001$). Risk of marijuana use varied across parental education and racial groups. Non-Hispanic Whites' risk for marijuana use decreased with parents having a college education (OR = 0.868, $p = ns$) compared to those with a high school education or less (OR = 0.999, $p = ns$). On the contrary, Blacks whose parents had a college education were 3 times at greater risk for using marijuana (OR = 3.034, $p = 0.046$) than Blacks whose parents had a high school level education or less (OR = 1.266, $p = ns$). Non-Hispanic Whites (OR = 1.237, $p = 0.001$) were at an increased risk for marijuana use based on income compared with Blacks (OR = 1.010, $p = ns$). Despite income not being a significant predictor of marijuana use among Black adolescents, the higher the income, the more likely they were to use marijuana, compared with those with lower household incomes.

Impoverished adolescents were at a greater risk for marijuana use compared with those who were not considered impoverished. Poverty level was only significant for non-Hispanic Whites who reported marijuana use (OR = 1.758, $p = 0.044$). In other words, non-Hispanic White youth who were impoverished were 1.7 times more likely to report marijuana use compared to non-Hispanic Whites who were less impoverished. Impoverished Blacks were also at greater risk of reporting marijuana use; however, poverty status was not a significant predictor of the behavior (OR = 1.735, $p = ns$). Poor academic performance was also a significant predictor of marijuana use among non-Hispanic Whites compared with non-Hispanic Whites who had higher GPAs (OR = 0.631, $p < 0.0001$). The relationship between marijuana use and poor academic performance for Blacks is similar to that of non-Hispanic Whites; however, poor academic performance does not increase the risk of marijuana use for Blacks (OR = 0.646, $p = 0.065$).

Finally, on examination of the relationship among peer prejudice, teacher discrimination, and marijuana use, the experience of peer prejudice was not a significant factor in marijuana use for either racial group, despite finding significant relationships between peer influence and substance use behaviors. Notably, peer prejudice appears to operate as a risk factor for non-Hispanic Whites (OR = 1.091, $p = ns$) and a protective factor for Blacks (OR = 0.886, $p = ns$). However, teacher discrimination did increase the risk for marijuana use among both Black and non-Hispanic White adolescents. Black adolescents (OR = 1.315, $p = 0.037$) who reported experiencing teacher discrimination are at increased risk for marijuana use relative to non-Hispanic White adolescents (OR = 1.305, $p < 0.0001$).

DISCUSSION

The current study sought to explore socioenvironmental predictors of substance use by examining racial differences in patterns of binge drinking and marijuana use within a national representative sample of high school adolescents. Our findings suggest that there are significant relationships in this sample between peer prejudice, teacher discrimination, and substance use. These relationships integrate to create different patterns of risk across racial groups. Study results indicate that adolescents' substance use is associated with

teacher discrimination and, to a lesser degree, peer prejudice. These findings are consistent with previous studies on discrimination and substance use, which suggest that discrimination has an effect on substance use (Gibbons et al., 2010). Our findings also suggest that socioeconomic status is also associated with substance use, but in patterns that are inconsistent in comparison with other adolescent studies on substance use (Molina et al., 2012). For example, adolescents with lower incomes have an increased risk of engaging in substance use behaviors compared with their higher income counterparts. Conversely, adolescents with higher incomes were more likely to use substances than their lower income counterparts. This pattern of substance use was consistent across both Black and non-Hispanic White adolescents.

Prior studies that have examined racial differences in substance use are limited in that they have not explored peer prejudice and teacher discrimination as potential social determinants of adolescent substance use (Brody et al., 2012; Gerrard et al., 2012). Understanding these potential relationships may have important policy and practice implications. In addition, our findings suggest a need for a closer scrutiny of school-based factors that may contribute to adolescents' substance use behaviors. We postulate, as some other researchers have, that individuals who experience prejudice and discrimination are at increased risk for substance use and other psychological problems commonly associated with substance use, such as depression, anxiety, and suicide (Fuller-Rowell et al., 2011; Gerrard et al., 2012; Respress, Joe, & Francis, 2012; Respress, Morris, Gary, Lewin, & Francis, in press; Tran et al., 2010). Racial minorities in particular may be at increased risk for these problems due to repeated historical exposure to racial prejudice and discrimination. Moreover, the cumulative effects of related discrimination experiences can set minorities on a trajectory of poor health and life outcomes, which are often exacerbated as a result of substance use (Borrell et al., 2007; Broman, 2007; Gerrard et al., 2012). Peer prejudice and teacher discrimination need to be examined over time in a longitudinal design to support the findings from cross-sectional designs. The Add Health data allows one to examine these relationships over time and is an essential next step to further understand risk factors for adolescent substance use and the effect of the risk factors across the life course.

The current study found that there is a statistically significant relationship between perceptions of teacher discrimination and reported adolescents alcohol and marijuana use. Adolescence is a stressful time of growth and development; adolescents may turn to negative coping mechanisms and behaviors that are self-limiting, such as substance use, as a way of coping with the discrimination and prejudice they may be experiencing within their schools or in individual classrooms. Adolescents who begin to act out place themselves at greater risk of positioning themselves on a trajectory of a lifetime of potential struggles economically, educationally, and mentally due to substance use. In addition, discriminatory experiences are most likely different, and possibly exacerbated, for students in schools that are characterized as not race concordant or schools in which they are in the minority.

Our findings build on prior research highlighting the deleterious effects of discrimination on health and health behaviors among adolescents, and minority adolescents in particular. The existent literature has focused on internalizing behaviors, such as depression and suicide (Respress, 2010; Respress et al., 2012, in press). Few studies have explored substance use and discrimination in adolescents; however, among those few, adolescents who had higher perceptions of discrimination were more likely to have reported substance use within the past 30 days and their lifetime, which is also supported by the current findings (Broman, 2007; Okamoto, Ritt-Olson, Soto, Baezconde-Garbanati, & Unger, 2009). Our findings contribute to the existent literature examining the effects of discrimination on adolescent risk behaviors and aids in understanding possible explanations for racial disparities in adolescent substance use.

Findings from this study also suggest the need for further examination between socioeconomic status and substance use behaviors. Higher socioeconomic status has been found to be a protective factor against substance use; however, there may be group differences between racial groups with similar socioeconomic status status. Empirical evidence has demonstrated a variety of factors that may increase the risk of an adolescent engaging in binge drinking or marijuana use, which are typically viewed as protective factors (i.e., higher incomes and parental education) (Blum et al., 2000; Goodman, 2002; Humensky, 2010). Distinguishing circumstances that may expose non-Hispanic White adolescents to discrimination within schools and increase their risk for health adverse behaviors and maladaptive coping must also be examined. Moreover, socioenvironmental factors associated with educational attainment, family structure, and neighborhood environment can contribute to an environment of risk behaviors and maladaptive coping among youth, thus continuing the cycle of poverty and associated health and behavioral risks most common among racially vulnerable youth (Geronimus, Hicken, Keene, & Bound, 2006; Walsemann, Gee, & Geronimus, 2009).

The theory of “weathering” may provide additional insight to the study findings regarding the relationship between socioeconomic status and substance use behaviors, as a maladaptive coping mechanism among adolescents. Given the cumulative effects of racism, the concept of weathering could be a potential explanation of the findings in regards to discrimination. For example, our findings suggest there may be a cumulative process occurring, further contributing to the increasingly significant differences in educational, economic, and mental health outcomes that continue to exist, and, in particular, worsen among minorities in the United States (Geronimus et al., 2006; Gibbons, Gerrard, Cleveland, Wills, & Brody, 2004; Walsemann et al., 2009). However, further work examining the relationship between perceived prejudice and substance abuse, guided by Geronimus et al.’s (2006) concept of weathering, using cross-sectional and longitudinal analysis is warranted.

The results of the current study should be considered within the context of several limitations. First, as a secondary analysis of existing data, this study is limited by the data available to address the aims of the research. Second, this study used data from the Public Use dataset of the Add Health, Wave II study, which has limited the representation of Black and other minority adolescents in the study in comparison to non-Hispanic Whites. Despite many implications of experiences of prejudice and discrimination on substance use behaviors, the results may not be generalizable to other minority groups (e.g., Hispanic and Asian) because of varying reports of their experiences of prejudice and discrimination and substance use patterns among those groups, as well as the ethnic variation within minority groups. Third, the questionnaire items used to determine discrimination and prejudice were not specified to indicate race-based discrimination and prejudice. Therefore, the single-item measures of discrimination and prejudice may have decreased the tendency for adolescents to underreport stigmatized behavior of their peers or teachers. However, previous studies (e.g., Goosby & Walsemann, 2012; Le & Stockdale, 2011) have used these items to measure discrimination. In addition, we did show that these items predicted alcohol and marijuana use among adolescents, which suggests that they may still be useful measures, despite their limitations. Last, the survey data were based solely on self-report, thus the findings are vulnerable to biases inherent to all selfreported surveys.

Implications

This work represents an important contribution to the literature on negative health associates of perceived discrimination and prejudice within the school settings. We have to remain cognizant that adolescence is a time of profound change as adolescents’ transition between childhood and adulthood. Specifically for Black adolescents, the culmination of discriminatory and prejudicial beliefs and perceptions that have been shaped and influenced

by peers and teachers, promoting negative events leading to substance use behaviors substantially increasing the risk for harmful patterns of maladaptive coping, often leading deleterious effects in multiple areas and across the life course.

Within the school setting, teachers are in a position of power over students, which may cause adolescents to explore and question their own identity as it relates to peers and society as a whole. Their cumulative experiences with teachers may contribute to their views of the prejudice, discrimination, and, possibly, racism within the educational system. The educational system, much more than any other social system (or environment) adolescents are exposed, may be one of the most important social environments for exposing adolescents of all races to the effects of deep rooted issues of race within the United States and causing them to experience and learn to cope with those experiences first hand. Despite the implications presented in this study, we are aware that, over time, no one student's experiences with teachers may all be negative. However, we are cognizant that one positive or negative experience with a teacher may change the course of an adolescents' life trajectory.

At a time when there is concern about academic failure and substance use among minority adolescents, we need to pay closer attention to discrimination and other factors that expose adolescents to greater substance use risk behaviors and increase their vulnerability to problems associated with the use of alcohol and marijuana. Teachers and school administrators should be provided with cultural competency training. Specifically, they should be provided with training in race relations and how to engage students, parents, teachers, and administrators in dialogues around prejudices, biases, and stereotypes and how the negative aspects of these ideologies play a role in many of the discriminatory actions that are acted out within school settings. Therefore, future studies are needed to address the processes of discrimination and how it impacts substance use during the transition to early adulthood to accurately assess the cumulative role of racialized stress. In addition, further research is warranted to understand how adolescents actually perceive discrimination and prejudice, cognitively, as a way to both understand how it influences adolescent behaviors and to gain a better understanding of how to help them cope with their perceptions and experiences. Thus, identifying pathways between discrimination and risk behaviors and identifying ways to reduce experiences of prejudice and discrimination are major tasks that remain for adolescent health and education researchers.

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TABLE 1
Baseline Characteristics of Binge Drinking and Marijuana Use among High School Adolescents

Unweighted n Characteristic	Binge drinking				Marijuana use			
	Black		White		Black		White	
	N	%	N	%	N	%	N	%
Gender								
Male	45	59.7	635	54.3	91	64.0	480	49.7
Female	42	40.3	557	45.7	58	36.0	519	50.3
Age, mean	16.1		15.6		15.8		15.3	
Educational Attainment (Parental)								
No High School	41	45.8	85	7.9	59	38.3	80	8.6
High School	43	51.5	967	80.6	80	57.8	790	79.8
College or Higher	3	2.7	138	11.4	9	3.9	128	11.6
Household Income								
Median Income, \$	19,325		33,758		18,857		32,596	
<= \$20,999	56	66.5	210	17.7	87	67.9	182	18.5
\$21,000-\$37,999	23	27.6	622	54.1	42	25.5	500	52.0
\$38,000+	5	5.9	330	28.2	15	6.6	297	29.5
Poverty								
Low	11	13.7	768	64.5	29	13.9	646	62.9
Medium	17	16.3	276	22.9	28	18.1	208	21.5
High	59	70.1	148	12.7	92	67.9	145	15.6
Academic Performance								
GPA, mean	2.58		2.83		2.54		2.91	
Perceived Peer Prejudice								
Strongly Disagree	9	12.8	67	6.2	26	19.4	57	6.6
Disagree	23	32.7	206	17.9	29	21.3	162	16.8
Neutral	18	27.4	253	25.0	38	31.6	226	27.1
Agree	13	15.8	333	32.2	30	17.2	272	31.2

Unweighted n Characteristic	Binge drinking				Marijuana use				χ^2_{adj} ; p-value	χ^2_{adj} ; p-value
	Black		White		Black		White			
	N	%	N	%	N	%	N	%		
Strongly Agree	10	11.3	190	18.7	10	10.5	153	18.3		
Perceived Teacher Discrimination									2.45; 0.052	2.09; 0.086
Strongly Disagree	6	8.2	55	4.9	10	7.4	54	5.3		
Disagree	15	15.3	208	20.3	30	19.3	181	22.2		
Neutral	24	37.9	278	26.1	45	35.9	231	25.9		
Agree	19	25.6	405	38.7	35	28.4	322	37.0		
Strongly Agree	9	12.9	105	10.0	13	8.9	82	9.6		

Note. All estimates represent unweighted frequencies and weighted percentage. Rao-Scott Chi-Square statistics are adjusted for the sampling stratification, clustering and weighting of the data. The adjusted F is a variant of the second-order Rao-Scott adjusted chi-square statistic. Significance is based on the adjusted F and its degrees of freedom. Means and medians are based on mean age, median income, and mean GPA per race and outcome group.

Socioenvironmental factors predicting binge drinking and marijuana use by race among high school students in the Add Health Study, Wave II *Public Use Data*

TABLE 2

Unweighted cases	Binge drinking				Marijuana use			
	Black		White		Black		White	
	Odds ratio	95% Confidence interval	Odds ratio	95% Confidence interval	Odds ratio	95% Confidence interval	Odds ratio	95% Confidence interval
Gender	1.154	.406 3.278	1.305	.964 1.766	2.029	1.180 3.490	.936	.753 1.163
Age	1.436	1.040 1.983	1.280	1.139 1.438	.971	.745 1.265	1.233	1.119 1.358
Educational Attainment								
High School	.620	.227 1.694	.560	.244 1.288	1.266	.368 4.354	.999	.592 1.687
College	.626	.123 3.179	.512	.182 1.438	3.034	1.005 9.160	.868	.440 1.712
Household Income	1.114	.575 2.160	1.088	.954 1.240	1.010	.656 1.556	1.237	1.097 1.395
Poverty Level								
Medium	.455	.055 3.777	.997	.691 1.438	1.120	.260 4.820	1.058	.745 1.502
High	.783	.108 5.667	1.107	.639 1.917	1.735	.288 10.465	1.758	1.093 2.828
Academic Performance	.574	.337 .976	.769	.604 .981	.646	.406 1.028	.631	.528 .755
Peer Prejudice	.996	.677 1.467	1.120	.958 1.310	.886	.652 1.203	1.091	.972 1.224
Teacher Discrimination	.907	.601 1.369	1.107	.940 1.305	1.315	1.017 1.700	1.305	1.164 1.463
Adjusted or Total R ²		.108		.053		.070		.063

Note. Used Cox and Snell Pseudo R-square estimates