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Even worse for Black girls: the longitudinal association of racial bullying with the initiation of alcohol and tobacco use

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Abstract

We used Poisson's linear regression to examine the association between racial bullying (RB) and the initiation of alcohol and tobacco uses after 9 months. Two cluster-randomized controlled trials were conducted in 2019 with children in grades five (girls: 50.0%; 10 years old: 82.0%; White: 36.8%; Black: 58.7%; others: 4.5%) and seven (girls: 49.5%; 12 years old: 78.1%; White: 33.2%; Black: 60.4%; others: 6.4%) from 30 public schools in the municipality of São Paulo, Brazil. We restricted our analyses to 2 subsets of students in each grade: those who reported no lifetime alcohol use at baseline and those who reported no lifetime baseline tobacco use. At baseline, 16.2% of fifth and 10.7% of seventh graders reported suffering from RB in the 30 days before data collection. After 9 months, 14.9% of fifth graders started using alcohol and 2.5%, tobacco. Among seventh graders, the figures were 31.2% and 7.7%, respectively. RB predicted the initiation of use of alcohol (risk ratio [RR] = 1.36; 95% CI, 1.07-1.70) and tobacco (RR = 1.81; 95% CI, 1.14-2.76) among seventh graders, with race-gender differences, particularly in Black girls (alcohol: RR = 1.45; 95% CI, 1.07-1.93; tobacco: RR = 2.34; 95% CI, 1.31-3.99). School-based programs and policies must explicitly address issues related to racism and gender in alcohol and tobacco prevention strategies.

Key words: racism; bullying; underage drinking; smoking; adolescent; prevention; control.

Introduction

Student bullying is any form of unwanted aggression involving power imbalance (real or perceived) between bullies and targets and which is recurrent or has a high probability of reoccurring.[1] Bullying results from a complex interaction between individual, interpersonal, and structural factors, and can negatively affect anyone involved.[1,2]

Due to multiple contextual risk factors (eg, living in a more deprived community or studying in an adverse school environment), racial/ethnic-minority students experience greater exposure to general bullying than their White peers do.[3] In addition, these students also are targets of racial bullying,[4] a type of bullying motivated by targets' race/ethnicity, and which has similarities and differences with racial discrimination in general. Both racial bullying and general racial discrimination can occur only one time or recurrently, and involve physical and verbal aggression, embarrassment, and rejection. However, while some cases of racial discrimination may be unintentional, racial bullying deliberately targets individuals based on their race/ethnicity.[2]

Studies have shown that the association between bullying and negative outcomes depends on whether the students are bullied based on any socially devalued characteristic (eg, gender, race/ethnicity, or physical disability) or for other reasons not related to discrimination.[4] When prejudice motivates bullying, it also matters whether targets suffer because of one or several facets of their social identities.[4,5] Indeed, the ecosocial theory cautions against treating "exposures" and "behaviors" as disembodied factors that interact with decontextualized biological factors in the health-illness process.[6,7] Thus, in line with other biopsychosocial approaches, this theory explains how sociostructural factors (eg, racism, sexism, etc.) produce differences in the distribution of health risk factors not only according to devalued social characteristics but also according to intersections of them.[8,9]

In particular, being a target of racial/ethnic bullying has been associated with the use of alcohol and tobacco among children and adolescents.[4,10] Because of the close relationship between being the target of racial bullying and being racially discriminated against, we can assume that there are similar mechanisms linking these exposures to adolescents' health. Studies have shown that racial/ethnic discrimination in adolescence can lead to alcohol and tobacco use[11-13]; that its relationship with the adolescents' health may vary by race and gender[13]; that the use of these substances can be a way of coping with the stress caused by racial discrimination[9,12,14]; and that both alcohol use and stress can, individually and synergistically, alter the neurodevelopment of adolescents.[15,16]

Although further research is necessary to explore the effect of racial bullying on health outcomes,[4] studies suggest that to cope with the stress and emotions stemming from being subjected to racial bullying, some targeted students may resort to alcohol or tobacco consumption. Racial bullying can induce feelings of loneliness and exclusion, leading the targets to succumb to peer pressure and engage in alcohol or tobacco use to gain acceptance within a specific social circle. In Brazil, the sale of cigarettes and alcoholic beverages to individuals under the age of 18 years is prohibited. However, 63.3% of Brazilian students aged 13 to 17 reported having tried alcohol at some point in their lives, and 28.1% consumed alcoholic beverages in the 30 days prior to the survey. For tobacco, these percentages were 22.6% and 6.8%, respectively.[17]

Despite the later negative outcomes arising from the precocious use of these substances,[15,16,18,19] we are not aware of prospective cohort studies addressing the association between racial bullying and the use of alcohol and tobacco among students; the few existing studies are cross-sectional.[4,10] Even when we consider more broadly the association between racial discrimination and the use of alcohol and tobacco[9,20-23] or between racial discrimination and health-related outcomes[11,13] among adolescents, most evidence comes from cross-sectional studies, which limits the determination of temporal event sequences.

Therefore, this study examined the association of racial bullying and the initiation of alcohol and tobacco use over a 9-month follow-up in fifth- and seventh-grade students from public schools in the municipality of São Paulo. We hypothesized that suffering racial bullying at baseline would predict the initiation of alcohol and tobacco use at our 9-month follow-up and that the intersection of race (socially constructed) and gender would affect these relationships.

Methods
Participants and data collection

Two cluster-randomized controlled trials (cRCTs) evaluated the effectiveness of the Educational Program for Resistance to Drugs and Violence (*Programa Educacional de Resistência às Drogas e Violência–PROERD*), a Brazilian school-based program delivered by police officers to prevent drug use and violence, encompassing bullying. We conducted our study with 1334 fifth- and 1739 seventh-year students from 30 public schools in a socially vulnerable area of São Paulo (Figure S1). The PROERD intervention, in both grades, applied 10 weekly classes of 50 minutes, covering mainly strategies of resistance to avoid drug use.[24]

Participants of both arms (intervention and control) of each cRCT responded to the same audio-guided questionnaire via smartphones both at baseline and our 9-month follow-up. Without the presence of teachers or police officers in the classrooms, trained researchers distributed questionnaires assessing information on sociodemographic characteristics, bullying experience, and the use of alcohol and tobacco. Only the intervention group received the PROERD lessons between the 2 data collections.

Both cRCTs were registered in the Brazilian Registry of Clinical Trials (REBEC) under protocol number 6q23nk. The Research Ethics Committee of Universidade Federal de São Paulo approved our study (protocol number 1327/2018). All the school principals and their respective students signed the informed consent forms. Detailed information on sampling, randomization, the questionnaire, and data collection are described elsewhere.[24]

Since our primary interest was the initiation of alcohol and tobacco use at our 9-month follow-up, we considered 4 analytical samples: (1) 1097 fifth graders who reported no lifetime alcohol at baseline; (2) 1311 fifth graders with no lifetime tobacco at baseline; (3) 1122 seventh graders with no lifetime alcohol use at baseline; and (4) 1668 seventh graders with no lifetime tobacco use at baseline (Figure S1).

Racial bullying

Our dichotomous racial bullying measure (RB: no or yes) indicated whether the student was subjected to racial mockery and insults at baseline. RB was extracted from an Olweus scale question, which was translated, adapted, and validated (fifth grade: comparative fit index [CFI] = 0.985, root mean square error of approximation [RMSEA] = 0.020; seventh grade: CFI = 0.990, RMSEA = 0.015; loading higher than 0.4 for all items) for our study population.[25] For the seventh graders, one question asked whether, in the 30 days before data collection, any classmate had mocked or offended them with comments about their race/skin color (0 = never; 1 = only 1 or 2 times; 2 = 2 or 3 times a month; 3 = about once a week; 4 = several times a week).

Fifth graders did not understand the meaning of "in the last 30 days." Consequently, the question was divided into two: one asking whether, recently, any classmate had cursed, mocked, or offended them because of their race/skin color (0 = no; 1 = yes), and another question assessing if this already happened before (0 = no; 1 = yes). Because of small frequencies, all responses other than "never" among seventh graders were classified as "yes" to RB. Regardless of frequency, all fifth graders who reported at baseline being cursed, mocked, or offended because of their race/skin color was considered as "yes" RB. Any such episode in a country marked by socioracial inequalities like Brazil[26-31] has a high probability of being repeated in the school context, and we can characterize it as racial bullying[2] according to a more uniform definition of bullying.[1]

Alcohol and tobacco initiation

Information on alcohol and tobacco consumption was assessed based on the European Drug Addiction Prevention Trial questionnaire, the World Health Organization questionnaire, and the Brazilian National Survey of School Health (*Pesquisa Nacional de Saúde do Escolar*—PeNSE).[24] In both grades and time-points, students were asked whether they had ever consumed alcohol and whether they had ever smoked a cigarette in their lives. We considered initiation of alcohol use (no or yes) and initiation of tobacco use (no or yes) if students reported "no" lifetime use at baseline and "yes" lifetime use at our 9-month follow-up.

Demographic and socioeconomic variables

Information on sex/gender (male or female), self-reported race/skin color (White, Black [*pardos* and *pretos*], and "others" [*amarelos* and *indígenas*]), age (fifth graders: ≤9-, 10-, or ≥11-year-olds; seventh graders: ≤11-, 12-, or ≥13-year-olds), and socioeconomic status (SES) was assessed at baseline except SES for fifth-graders, which was collected at our 9-month follow-up. SES followed the 2018 Brazilian Economic Classification Criteria from the Brazilian Association of Research Companies (*Associação Brasileira de Empresas de Pesquisa*–ABEP). The 2018 ABEP considered major socioeconomic groups (A, B, C, or D-E), with A representing the wealthiest group and D-E the poorest. This classification considers indicators of household basic sanitation, educational attainment of the head of the household, possession of goods and services (televisions, desktops, laptops, vehicles, and number of domestic workers), geographic region, location of the
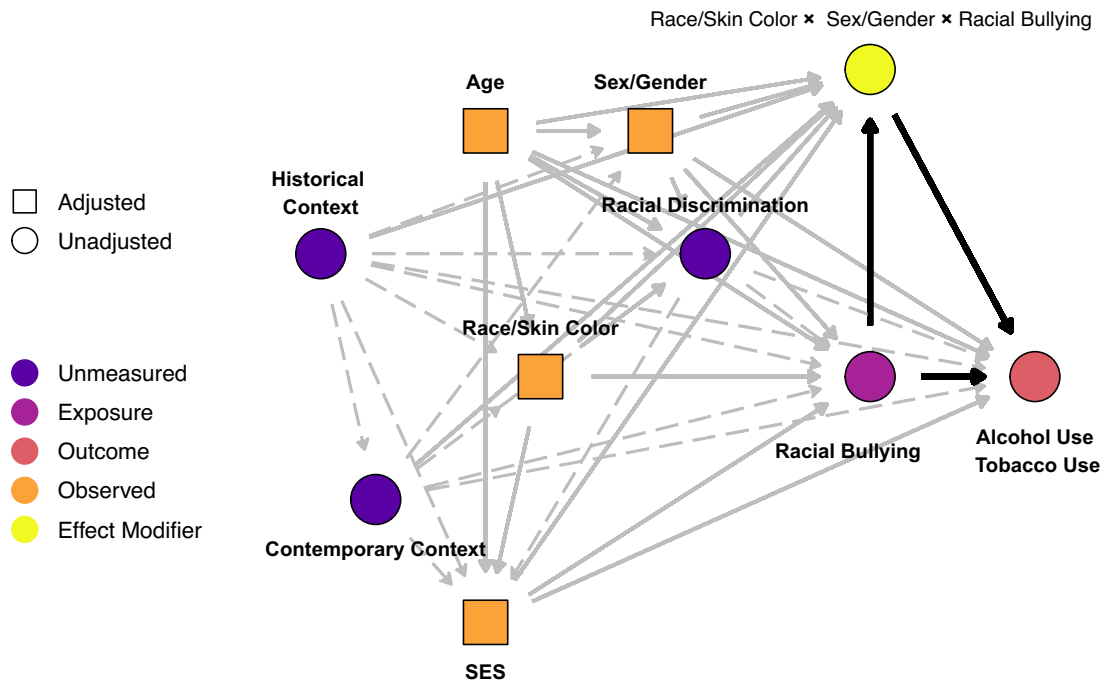
Figure 1. Directed acyclic graph depicting study's theoretical model. Dark solid lines show the associations really examined in this study, ie, the total effect of racial bullying (RB, exposure) on the 9-month risk of initiation of alcohol or tobacco use (outcomes), assumed to be affected by intersection of race/skin color and sex/gender (effect modifier). Light solid lines represent paths blocked by the adjustment for observed variables. Light dotted lines are paths that remain open. Age, sex/gender, status socioeconomic (SES), race/skin color, and RB are measure at baseline. Brazilian historical context includes, for instance, Black slavery followed by "freedom" without housing, work, and education policies; whitening ideology; and Black Movement. Brazilian contemporary context includes, for example, the living conditions of the population and affirmative action.

household, and number of adults and children under 18 living in the household.[32,33]

Statistical analysis

In Figure 1, a directed acyclic graph (DAG) provides our study's theoretical model. DAGs are graphical tools for displaying the assumed relationships between the variables.[34] Based on previous studies,[35-37] Figure 1 depicts the causal association between key unmeasured constructs (historical and contemporary Brazilian contexts and racial discrimination) and observed variables (race/skin color, sex/gender, SES, and age) on the total effect of RB (exposure) on the 9-month risk of initiation of alcohol and tobacco use (outcomes).

From the literature about bullying[2,3] and substance use,[15,16,18] we assumed that sex/gender, race/skin color, SES, and age are potential confounders for the association between RB and initiation of alcohol and tobacco use. Following Rowe et al,[37] we emphasize race/skin color as socially constructed by historical (eg, Black slavery followed by "freedom" without housing, work, and education policies; whitening ideology[38]; activism of the Brazilian Black Movement[31]) and contemporary (eg, current life condition[26-30]; affirmative action[39,40]) Brazilian contexts, with racism leading to non-White racial groups facing racial discrimination and RB. Because of the influence of racism and sexism on bullying[2] and adolescents' health,[11,13] we assumed that the intersection of race/skin color and sex/gender[8] would modify the exposure's effect on the outcome and included it in the DAG as suggested by Attia et al.[35] We show all direct and indirect pathways of exposure to outcomes, signaling which were blocked by adjustments and which remained open.[37]

The PROERD intervention had different curricula for fifth and seventh grades; thus, we performed the analyses in separate grades as follows. Fifth ($n = 1334$) and seventh ($n = 1739$) graders' binary and categorical baseline characteristics were first summarized as absolute numbers and percentages according to RB at baseline. Then, we did the same with those baseline variables for each total analytical sample and race/skin color. The χ^2 test evaluated differences in those proportions across groups with the Rao-Scott correction. We also estimated the cumulative incidence (risk) of alcohol and tobacco use initiation at our 9-month follow-up for our overall sample and by race/skin color.

Because of the non-rare nature of alcohol use, we performed Poisson's generalized linear regressions with log-link models to estimate the total effect of RB on initiation of alcohol and tobacco use after 9-month follow-up with risk ratios (RRs) and 95% CIs. We derived these CIs from a model-robust sandwich estimator, which calculated standard errors to account for the complex structure of our data (students clustered in schools). We used multivariable models to adjust for sex, age, race, and SES, without the intervention. PROERD was randomized after baseline data collection, eliminating any past impact on the RB (only may affect the outcome), and making such an adjustment unnecessary.[41] However, for some follow-up occurrences (Figure S2), PROERD adjustment can introduce or mitigate biases. Therefore, we tested this also considering multivariable models containing the PROERD.

If the incidence of alcohol and tobacco use initiation varied by the intersection of race/skin color and sex/gender, we employed a model-based recursive partitioning algorithm (generalized linear mixed effects model trees)[42] to our clustered data to detect RB-subgroup interactions by splitting data by sex/gender and race/skin color. To control for multiple testing, we adjusted the P value from the parameter stability test by the Bonferroni correction. Once the recursive partitioning algorithm showed a

significant RB-sex/gender interaction with alcohol use initiation among seventh graders, multiplicative and additive scales formally assessed it.

For the multiplicative interaction measure, we included the cross-product term of RB with sex/gender in our multivariable-adjusted model. The Wald test assessed the statistical significance of these multiplicative interaction measures (RRR: ratio of relative risk for RB among girls vs that among boys[43]). For the additive interaction measure, the joint exposition of sex/gender (male or female) and RB (no or yes) was first performed considering boys without RB (male and non-RB) as our reference group. The Wald test assessed the statistical significance of the association between sex/gender and RB. We calculated the relative excess risk due to interaction (RERI),[43] a measure of additive interaction, by standardizing our generalized Poisson regressions. Their respective 95% CIs were determined from standard errors, calculated by the delta method and a robust sandwich estimator to account for the complex structure of our data.[44]

Finally, we evaluated the risk of RB influencing the initiation of alcohol and tobacco use for the 6 subgroups formed by the intersection of race/skin color (White, Black, or others) and sex/gender (male or female). Because of groups' size (small), we considered unadjusted models to avoid convergence problems.

We considered $P < 0.05$ to be statistically significant differences and performed all analyses and visualization (safe colors) with the R (version 4.3.1; R Foundation for Statistical Computing, Vienna, Austria).

Results

Table 1 shows that in both grades (fifth grade: $n = 1334$; seventh grade: $n = 1739$), approximately half of the students were girls (fifth graders: 50.0%; seventh grade: 49.5%) and most students in the appropriate age for their grades (fifth grade: 10 years = 82.0%; seventh grade: 12 years = 78.1%). At baseline, 16.2% of fifth and 10.7% of seventh graders reported suffering from RB in the 30 days before data collection.

The analysis of participant characteristics by race/skin color across the entire sample (Table S1), among those with no baseline lifetime alcohol use (Table S2), and among those with no baseline tobacco use (Table S3) indicates that students from Black or "others" racial backgrounds reported more RB complaints than their White counterparts.

Both grades showed a higher prevalence of baseline alcohol use (fifth grade: 17.8%; seventh grade: 35.4%) than tobacco use (fifth grade: 1.7%; seventh grade: 3.9%) (Table 1), and this persisted at our 9-month follow-up (fifth grade: 14.9% vs 2.5%; seventh grade: 31.2% vs 7.7%) (Table S4). Among fifth graders, the racial group "others" had almost 1.5 times the incidence of alcohol use as the White and Black groups separately (Table S4).

We found no evidence that PROERD affected the studied relationship, so we show the results of the multivariable models without the intervention.

Seventh-grade girls were at a greater risk of alcohol use initiation (RR = 1.48; 95% CI, 1.28-1.70) than boys (Table S5). In both grades, non-White students had greater risk of initiating alcohol use (fifth grade: others, RR = 1.78 [95% CI, 1.03-2.88]; seventh grade: Black, RR = 1.18 [95% CI, 1.02-1.37]) and tobacco use (fifth grade: others, RR = 1.72 [95% CI, 1.18-2.43]; seventh grade: Black, RR = 1.13 [95% CI, 1.02-1.25]) than their White counterparts (Table S6).

We found a nonsignificant association between RB and the initiation of alcohol use (RR = 1.35; 95% CI, 0.91-1.95) and tobacco use (RR = 2.31; 95% CI, 0.86-5.73) among fifth graders (Table 2). For seventh graders, however, we found a significant association between RB and higher risk of initiation of alcohol use (RR = 1.36; 95% CI, 1.07-1.70) and tobacco use (RR = 1.81; 95% CI, 1.14-2.76) (Table 2).

Our recursive partitioning algorithm provided evidence for the interaction between sex/gender and RB on alcohol initiation among seventh graders (Figure S3). Being a boy who reported baseline RB failed to confer a significantly higher risk of initiating alcohol use than those without baseline RB (RR = 1.16; 95% CI, 0.71-1.81) (Table 3). However, being a girl who reported RB showed a significantly higher risk of alcohol use initiation than being a girl without RB (RR = 1.43; 95% CI, 1.17-1.74). We found nonsignificant sex/gender-RB interaction on both the additive scale (adjusted RERI = 0.50; 95% CI, −0.46 to 1.47) and multiplicative (adjusted RRR = 1.27; 95% CI, 0.82-2.00) scales (Table 3).

The unadjusted models in Figure 2 and Table S7 show that the risk of RB influencing the initiation of alcohol and tobacco use differed by the intersection of race/skin color and sex/gender. Among White girls, RB was significantly associated with alcohol use initiation (fifth grade: RR = 2.40 [95% CI, 1.17-4.46]; seventh grade: RR = 2.07 [95% CI, 1.26-3.23]). Among Black girls, RB was significantly associated with a greater risk of initiation of alcohol use (RR = 1.45; 95% CI, 1.07-1.93) and tobacco use (RR = 2.34; 95% CI, 1.31-3.99).

Discussion

We evaluated the association between racial bullying and initiation of alcohol and tobacco use at our 9-month follow-up in fifth and seventh graders from socioeconomically disadvantaged neighborhoods in the municipality of São Paulo, Brazil. In our study, being previously subjected to racial bullying predicted seventh graders' initiation of alcohol and tobacco use. Regardless of RB, seventh-grade girls were at a higher risk of initiating alcohol use than boys. Among seventh-grade White girls, RB conferred a greater risk of initiation of alcohol use when compared with those without RB. However, among Black girls, RB conferred a greater risk for the initiation of both alcohol and tobacco use. Our study extends knowledge about the association between RB and substance use, suggesting that racial/ethnic–gender interventions on RB may prevent (primary prevention) substance use, particularly in racial/ethnic-minority adolescents. Moreover, when primary prevention fails, RB should be treated as a risk factor for substance use, and secondary prevention strategies should be additionally considered.

Our results showed that the effect of RB on alcohol and tobacco use initiation varied by student's race and gender. These findings are consistent with previous studies suggesting that bullying can have different effects on racial/ethnic minorities, particularly those with additional stigmatized social attributes, such as gender.[4] It is worth noting that race and gender shape intergroup relationships in schools[45] via stereotypes that independently and jointly culminate in prejudice, discrimination, and aggression.[46,47] Consequently, the school environment can present distinct challenges for populations that differ in their levels of historical oppression. For Black girls, these challenges are present not only in interactions with peers, but also include disciplinary practices and attention received from school staff, as highlighted in several studies.[48-52]

We found seventh-grade girls more susceptible to the risk of alcohol use initiation than boys. Similarly, a previous study

Table 1. Baseline characteristics of fifth ($n = 1334$) and seventh graders ($n = 1739$), according to baseline racial bullying, Brazil, 2019.

Baseline variables	Fifth grade			Seventh grade		
	Overall	RB No	RB Yes	Overall	RB No	RB Yes
No. (%)	1334 (100.0)	1108 (100.0)	214 (100.0)	1739 (100.0)	1466 (100.0)	176 (100.0)
Sex/gender (female)	667 (50.0)	548 (49.5)	112 (52.3)	861 (49.5)	701 (47.8)[a]	106 (60.2)[a]
Age: fifth grade (seventh grade)						
≤9 years (≤11 years)	79 (6.0)	58 (5.3)[a]	20 (9.4)[a]	66 (3.8)	57 (3.9)	6 (3.4)
10 years (12 years)	1,085 (82.0)	917 (83.4)[a]	159 (75.0)[a]	1,353 (78.1)	1,155 (79.0)	130 (74.3)
≥11 years (≥13 years)	159 (12.0)	124 (11.3)[a]	33 (15.6)[a]	314 (18.1)	250 (17.1)	39 (22.3)
Range: min-max	9-14	9-14	9-12	11-17	11-17	11-15
SES (ABEP[b,c])						
A	117 (9.0)	91 (8.4)	24 (11.7)	92 (5.3)	73 (5.0)[a]	14 (8.0)[a]
B	447 (34.4)	380 (35.1)	67 (32.7)	580 (33.5)	506 (34.6)[a]	45 (27.5)[a]
C	646 (49.7)	534 (49.3)	103 (50.2)	951 (55.0)	798 (54.6)[a]	102 (58.3)[a]
D-E	90 (6.9)	79 (7.3)	11 (5.4)	106 (6.1)	85 (5.8)[a]	14 (8.0)[a]
Race/skin color						
White	491 (36.8)	451 (40.7)[a]	36 (16.8)[a]	578 (33.2)	514 (35.1)[a]	41 (23.3)[a]
Black	783 (58.7)	608 (54.9)[a]	168 (78.5)[a]	1050 (60.4)	863 (58.9)[a]	121 (68.8)[a]
Others	60 (4.5)	49 (4.4)[a]	10 (4.7)[a]	111 (6.4)	89 (6.1)[a]	14 (8.0)[a]
Lifetime alcohol use	237 (17.8)	177 (16.0)[a]	59 (27.6)[a]	615 (35.4)	496 (33.8)	72 (40.9)
Lifetime tobacco use	22 (1.7)	19 (1.7)	3 (1.4)	68 (3.9)	49 (3.3)	8 (4.5)
PROERD[d]	634 (47.5)	529 (47.7)	98 (45.8)	903 (51.9)	763 (52.0)	89 (50.6)

Abbreviations: ABEP, *Associação Brasileira de Empresas de Pesquisa*; PROERD, *Programa Educacional de Resistência à Drogas e Violência*; RB, racial bullying; SES, socioeconomic status.
[a] Statistical significance ($P < 0.05$).
[b] Socioeconomic status according to the Brazilian Association of Research Companies: Category A refers to the wealthiest status and D-E to the poorest one.
[c] Assessed at follow-up for the fifth grade.
[d] Educational Program for Resistance to Drugs and Violence, a Brazilian school-based program delivered by police officers to prevent drug use and violence.

from our group[10] showed a higher prevalence of alcohol use in girls than in boys, especially among Black ones. Racial discrimination[11-13] and racial bullying[4,10] have been linked to alcohol and tobacco use among adolescents. Thus, the unique way that Black girls experience gendered racial bullying could explain why RB predicted the initiation of both alcohol and tobacco use among them. The exposure to differential external pressures and expectations may drive them to use alcohol and tobacco as self-medication to alleviate negative emotions or as a strategy to cope with stress.[53] Furthermore, besides harming adolescents' health, with negative consequences even in their adulthood,[15,16,18] alcohol use has been associated with poor academic performance, involvement with the criminal system, and incarceration,[19] problems that disproportionately affect racial/ethnic minorities.

Fifth graders showed a higher risk of initiating alcohol use if they belonged to the "others" racial group. During data collection, we found that some of these "others" were non-White students who could not classify themselves as belonging to a specific racial

Table 2. Association between racial bullying and initiation of alcohol and tobacco use, among students who reported no lifetime use at baseline, over a 9-month follow-up, Brazil, 2019.

Subgroup	Risk (cumulative incidence)	% (incidence percentage)	Unadjusted RR (95% CI)	Adjusted[a] RR (95% CI)	Sensitivity analysis[b] RR (95% CI)
Fifth grade[c]					
Alcohol initiation					
RB	29/155	18.7	1.32 (0.88-1.91)	1.35 (0.91-1.95)	1.35 (0.91-1.95)
No RB	132/931	14.2	Referent	Referent	Referent
Tobacco initiation					
RB	11/209	5.3	2.72 (1.17-5.95)[d]	2.31 (0.86-5.73)	2.30 (0.85-5.74)
No RB	21/1087	1.9	Referent	Referent	Referent
Seventh grade[e]					
Alcohol initiation					
RB	44/104	42.3	1.43 (1.12-1.81)[d]	1.36 (1.07-1.70)[d]	1.36 (1.07-1.71)[d]
No RB	286/969	29.5	Referent	Referent	Referent
Tobacco initiation					
RB	22/168	13.1	1.95 (1.24-2.95)[d]	1.81 (1.14-2.76)[d]	1.81 (1.15-2.76)[d]
No RB	95/1415	6.7	Referent	Referent	Referent

Abbreviations: RB, racial bullying; RR, risk ratio; SES, socioeconomic status.
[a] Model adjusted for sex/gender, age, race/skin color, and SES.
[b] Model adjusted for age, race/skin color, SES, and intervention groups (sensitivity analysis for intervention assumptions).
[c] Fifth-grade students who, at baseline, reported no lifetime use of alcohol, $n = 1097$, and tobacco, $n = 1311$.
[d] Statistical significance ($P < 0.05$).
[e] Seventh-grade students who, at baseline, reported no lifetime use of alcohol, $n = 1122$, and tobacco, $n = 1668$.

Table 3. Comparison of associations between racial bullying and initiation of alcohol use, among students who reported no lifetime use at baseline, over a 9-month follow-up among seventh-grade boys and girls ($n = 1122$), Brazil, 2019.

Subgroup and interaction measure	Risk (cumulative incidence)	% (incidence percentage)	Unadjusted RR (95% CI)	Adjusted[a] RR (95% CI)	Sensitivity analysis[b] RR (95% CI)
Sex and RB[c]					
Male and RB	14/47	29.8	1.19 (0.72-1.84)[d]	1.16 (0.71-1.81)[d]	1.16 (0.71-1.80)[e]
Female and no RB	157/455	34.6	1.37 (1.17-1.61)[d,f]	1.39 (1.18-1.63)[d,f]	1.39 (1.18-1.63)[e,f]
Female and RB	30/57	52.6	2.10 (1.69-2.58)[d,f]	2.06 (1.64-2.55)[d,f]	2.06 (1.64-2.56)[e,f]
Male and no RB	129/514	25.1	Referent	Referent	Referent
Female sex					
RB	30/57	52.6	1.53 (1.27-1.82)[f]	1.43 (1.17-1.74)[f]	1.43 (1.17-1.74)[f]
No RB	157/455	34.6	Referent	Referent	Referent
RERI[g]			0.54 (−0.45 to 1.52)	0.50 (−0.46 to 1.47)	0.51 (−0.45 to 1.47)
RRR[h]			1.29 (0.84-1.99)	1.27 (0.82-2.00)	1.28 (0.64-1.91)

Abbreviations: RB, racial bullying; RERI, relative excess risk due to interaction; RR, risk ratio; RRR, ratio of relative risks; SES, socioeconomic status.
[a]Model adjusted for age, race/skin color, and SES.
[b]Model adjusted for age, race/skin color, SES, and intervention groups (sensitivity analysis for intervention assumptions).
[c]Joint exposition of sex/gender and RB.
[d]Wald test for the term: $P < 0.001$.
[e]Wald test for the term: $P = 0.001$.
[f]Statistical significance ($P < 0.05$).
[g]Additive interaction measure.
[h]Multiplicative interaction measure (girls vs boys).

group or, who when an observer could undoubtedly identify them as Black people, avoided such self-identification. For example, a Black girl (with a very dark skin tone) said "I've been told that a Black girl can't be pretty, but I'm not Black ...." We can expect that this age group may struggle with racial self-identification and may even change their racial classification over time,[54,55] which reinforces the social dimension of race. However, families contribute substantially to the formation of the racial identity of children and adolescents.[56,57] Thus, this lack of knowledge regarding racial self-classification may be due to poor family

relationships. Both families[58] and racial identities play a role in adolescents' substance use. Racial identity elements, such as feelings on how others view their racial group (positively or negatively), may affect the relationship between the racial discrimination racial/ethnic-minority groups suffer and the substances they use.[59-63]

RB failed to predict fifth graders' initiation of alcohol or tobacco use at our 9-month follow-up, but it did so for seventh graders. Although the small number of cases of alcohol and tobacco use initiation may have limited our findings for fifth graders, these
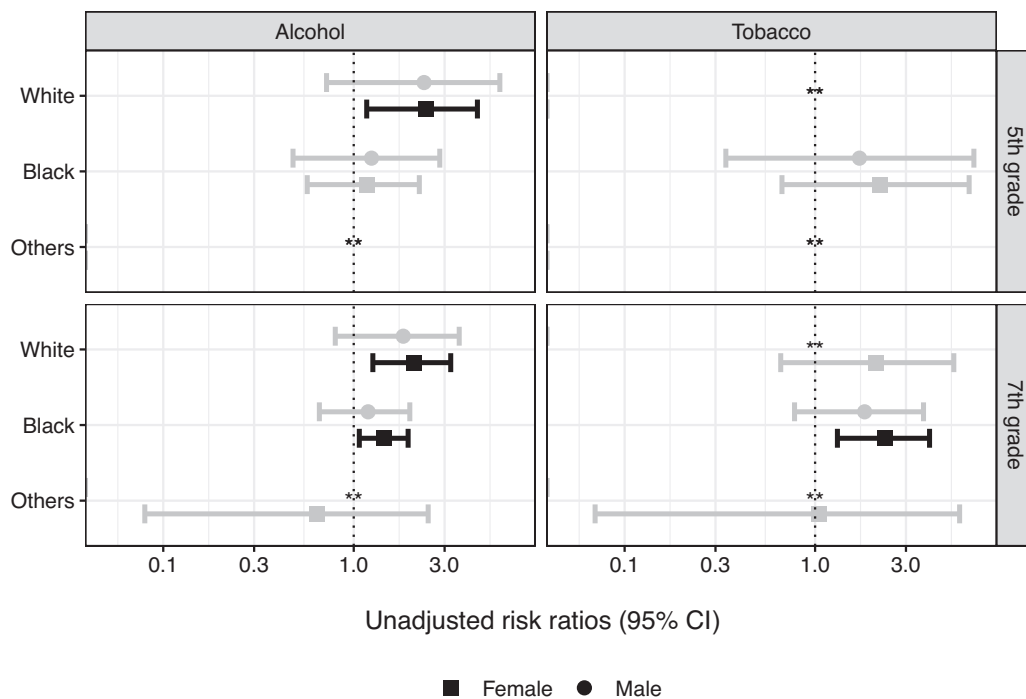

Figure 2. Association of racial bullying (RB) with the initiation of alcohol and tobacco use over a 9-month follow-up within the intersection of race/skin color and sex/gender, Brazil, 2019. RB: Student a target of racial bullying at baseline. Data was restricted to students who, at baseline, reported no lifetime use of alcohol (fifth graders: $n = 1097$; seventh graders: $n = 1122$) and tobacco (fifth graders: $n = 1311$; seventh graders: $n = 1668$); ** indicates zero cases of substance use initiation in the RB group or less than 5 cases in both groups (non-RB and RB). Numerical details are found in Table S7. Bold line range means statistical significance ($P < 0.05$).

results (ie, the null association for fifth graders and the positive ones for seventh ones) suggest that the relationship between RB and alcohol and tobacco use may worsen over time. For example, among fifth-grade students, exposure to RB is more likely to lead to symptoms of anxiety and depression than alcohol and tobacco use, due to limited access to these substances in this age group. Therefore, school-based actions to prevent RB could more effectively prevent negative discrimination-related outcomes in racial/ethnic-minority students if applied from the initial stages of elementary school onward.

Bullying requires a comprehensive approach,[2,3] with interventions for individuals (eg, improving students' sense of self-worth and self-reflection), families (eg, strengthening family support and open communication), schools/communities (eg, establishing trust connections between students, community, and school so students feel supported by them), and society (eg, policies and programs that examine and intervene in systemic risk factors).

According to Earnshaw et al,[2] at school level, multiple-component interventions addressing distinct elements (eg, school climate; positive behavioral, social, and emotional support; violence prevention) and actors (eg, students, teachers, parents, and community members) have the greatest potential to reduce bullying. Indeed, evidence suggests that general approaches may be ineffective in preventing bullying motivated by prejudice, such as RB.[3] Therefore, we stress the suggestions in Earnshaw et al[2]: The anti-bullying interventions should directly address factors related to racism, sexism, prejudice, diversity issues, and intergroup relationships, or how students who suffer bullying because of their devalued social characteristics perceive the school environment. Furthermore, in middle-income countries such as Brazil, studies on the feasibility of cultural adaptation must precede the implementation of nondomestic programs.

Limitations and strengths

This study included adolescents who attend public schools in the most vulnerable neighborhoods of São Paulo. Therefore, caution is required in generalizing our results to both adolescents who are out of school and those in more socioeconomically privileged locations. In addition to that, the secondary analysis of the cRCT data imposed some limitations on our measures. For example: (1) The study did not include any gender measures; (2) we interpreted the results as "sex/gender" but it was asked as sex-binary, failing to separate biological sex from gender identity; (3) the alcohol measure could include only a sip, and we cannot specify whether it occurred in a familiar context or among peers; (4) and RB was dichotomized because of small frequencies. Assessing the influence of multiple devalued identities, online interactions, and the school environment on bullying could shed light on other facets of the problem.[64] Furthermore, we assume that RB leads to initiation of alcohol and tobacco use through self-medication or stress coping strategies, and other factors (eg, motives for drinking, families and school environment, etc[53]) may play a role in this relationship. Future longitudinal studies may help to address these issues.

Most extant studies on this topic are cross-sectional and seldom conducted outside the United States or United Kingdom,[4] gaps that we have addressed here. Our study longitudinally assessed the association between RB and initiation of alcohol and tobacco use among fifth and seventh graders from socioeconomically vulnerable neighborhoods in a middle-income country, being able to identify the exposure as occurring before the outcome. Furthermore, we employed a sex/gender-based analysis,[65] a key step in addressing inequalities in health.

Conclusions

The association between RB and initiation of alcohol and tobacco use differed according to gender, race/skin color, and grade. Among seventh graders, being previously subjected to racial bullying predicted initiation of alcohol use (for White and Black girls) and tobacco use (for Black girls) at our 9-month follow-up. Our results corroborate literature findings on how exposure to racial discrimination contributes to health-harming outcomes. Interventions to reduce RB episodes in the early grades of school may delay the initiation of alcohol and tobacco use among non-White students, especially among Black girls. If the RB prevention fails, its occurrence should be treated as a risk factor for substance use secondary prevention strategies should be provided.

Supplementary material

Supplementary material is available at *American Journal of Epidemiology* online.

Conflict of interest

The authors declare no conflicts of interest.

Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request. Due to the sensitive nature of the questions asked in this study, survey respondents were assured raw data would remain confidential and would not be shared.

References

1. Gladden RM, Vivolo-Kantor AM, Hamburger ME, et al. *Bullying Surveillance Among Youths: Uniform Definitions for Public Health and Recommended Data Elements*, version 1.0. National Center for Injury Prevention and Control, Centers for Disease Control and Prevention and the United States Department of Education; 2014. Accessed January 11, 2023. https://www.cdc.gov/violenceprevention/pdf/bullying-definitions-final-a.pdf

2. Earnshaw VA, Reisner SL, Menino DD, et al. Stigma-based bullying interventions: a systematic review. *Developmental Review*. 2018;48:178–200. https://doi.org/10.1016/j.dr.2018.02.001

3. Xu M, Macrynikola N, Waseem M, et al. Racial and ethnic differences in bullying: review and implications for intervention. *Aggress Violent Behav*. 2020;50(Jan-Feb 2020):101340. https://doi.org/10.1016/j.avb.2019.101340

4. Sapouna M, de Amicis L, Vezzali L. Bullying victimization due to racial, ethnic, citizenship and/or religious status: a

systematic review. *Adolesc Res Rev*. 2022;8(3):261-296. https://doi.org/10.1007/s40894-022-00197-2

5. Mulvey KL, Hoffman AJ, Gönültaş S, et al. Understanding experiences with bullying and bias-based bullying: what matters and for whom? *Psychol Violence*. 2018;8(6):702-711. https://doi.org/10.1037/vio0000206

6. Krieger N. Embodiment: a conceptual glossary for epidemiology. *J Epidemiol Community Health (1978)*. 2005;59(5):350-355. https://doi.org/10.1136/jech.2004.024562

7. Krieger N. Theories for social epidemiology in the 21st century: an ecosocial perspective. *Int J Epidemiol*. 2001;30(4):668-677. https://doi.org/10.1093/ije/30.4.668

8. Bauer GR. Incorporating intersectionality theory into population health research methodology: challenges and the potential to advance health equity. *Soc Sci Med*. 2014;110:10-17. https://doi.org/10.1016/j.socscimed.2014.03.022

9. Williams DR, Lawrence JA, Davis BA, et al. Understanding how discrimination can affect health. *Health Serv Res*. 2019;54(S2):1374-1388. https://doi.org/10.1111/1475-6773.13222

10. Menezes AAS, Ramos DO, Sanchez ZM, et al. Racial-based bullying and substance use: a Brazilian national cross-sectional survey among students. *J Racial Ethn Health Disparities*. 2022;10(3):1441-1454. https://doi.org/10.1007/s40615-022-01330-6

11. Cave L, Cooper MN, Zubrick SR, et al. Racial discrimination and child and adolescent health in longitudinal studies: a systematic review. *Soc Sci Med*. 2020;250:112864. https://doi.org/10.1016/j.socscimed.2020.112864

12. Poole R, Carver H, Anagnostou D, et al. Tobacco use, smoking identities and pathways into and out of smoking among young adults: a meta-ethnography. *Subst Abuse Treat Prev Policy*. 2022;17(1):24. https://doi.org/10.1186/s13011-022-00451-9

13. Benner AD, Wang Y, Shen Y, et al. Racial/ethnic discrimination and well-being during adolescence: a meta-analytic review. *Am Psychol*. 2018;73(7):855-883. https://doi.org/10.1037/amp0000204

14. Amaro H, Sanchez M, Bautista T, et al. Social vulnerabilities for substance use: stressors, socially toxic environments, and discrimination and racism. *Neuropharmacology*. 2021;188:108518. https://doi.org/10.1016/j.neuropharm.2021.108518

15. Sicher AR, Duerr A, Starnes WD, et al. Adolescent alcohol and stress exposure rewires key cortical neurocircuitry. *Front Neurosci*. 2022;16:896880. https://doi.org/10.3389/fnins.2022.896880

16. de Goede J, van der Mark-Reeuwijk KG, Braun KP, et al. Alcohol and brain development in adolescents and young adults: a systematic review of the literature and advisory report of the health Council of the Netherlands. *Advances in Nutrition*. 2021;12(4):1379-1410. https://doi.org/10.1093/advances/nmaa170

17. IBGE. 2019 National Survey of School Health. 2021. Accessed November 26, 2021. https://biblioteca.ibge.gov.br/visualizacao/livros/liv101852.pdf

18. Ahun MN, Lauzon B, Sylvestre M-P, et al. A systematic review of cigarette smoking trajectories in adolescents. *Int J Drug Policy*. 2020;83:102838. https://doi.org/10.1016/j.drugpo.2020.102838

19. Prins SJ, Kajeepeta S, Hatzenbuehler ML, et al. School health predictors of the school-to-prison pipeline: substance use and developmental risk and resilience factors. *J Adolesc Health*. 2022;70(3):463-469. https://doi.org/10.1016/j.jadohealth.2021.09.032

20. Santana V, Almeida-Filho N, Roberts R, et al. Skin colour, perception of racism and depression among adolescents in urban Brazil. *Child Adolesc Ment Health*. 2007;12(3):125-131. https://doi.org/10.1111/j.1475-3588.2007.00447.x

21. Gilbert PA, Zemore SE. Discrimination and drinking: a systematic review of the evidence. *Soc Sci Med*. 2016;161(10):178-194. https://doi.org/10.1016/j.socscimed.2016.06.009

22. Gibbons FX, Fleischli ME, Gerrard M, et al. Reports of perceived racial discrimination among African American children predict negative affect and smoking behavior in adulthood: a sensitive period hypothesis. *Dev Psychopathol*. 2018;30(5):1629-1647. https://doi.org/10.1017/S0954579418001244

23. Desalu JM, Goodhines PA, Park A. Racial discrimination and alcohol use and negative drinking consequences among Black Americans: a meta-analytical review. *Addiction*. 2019;114(6):957-967. https://doi.org/10.1111/add.14578

24. Sanchez ZM, Valente JY, Gusmões JDP, et al. Effectiveness of a school-based substance use prevention program taught by police officers in Brazil: two cluster randomized controlled trials of the PROERD. *Int J Drug Policy*. 2021;98:103413. https://doi.org/10.1016/j.drugpo.2021.103413

25. Ferreira-Junior V, Coutinho-Lourenco F, Menezes AAS, et al. Psychometric validation of the audio-guided rBVQ instrument for bullying evaluation among students. *Psico-USF*. 2022;27(2):381-392. https://doi.org/10.1590/1413-82712022270214

26. Osorio RG. *Texto para Discussão 2657: a Desigualdade racial no Brasil nas três últimas décadas*. Instituto de Pesquisa Econômica Aplicada; 2021. Accessed February 8, 2023. https://doi.org/10.38116/td2657

27. Salata A. Race class and income inequality in Brazil: a social trajectory analysis. *Dados*. 2020;63(3):1-40. https://doi.org/10.1590/dados.2020.63.3.213

28. IBGE. *Desigualdades Sociais Por Cor Ou Raça No Brasil [Social Inequalities by Color or Race in Brazil]*. 1st ed. Instituto Brasileiro de Geografia e Estatística. 2019. Accessed November 20, 2022. https://biblioteca.ibge.gov.br/visualizacao/livros/liv101681_informativo.pdf

29. IBGE. Síntese de indicadores sociais: uma análise das condições de vida da população brasileira [Synthesis of social indicators: an analysis of the living conditions of the Brazilian population]. Instituto Brasileiro de Geografia e Estatística. 2019. Accessed July 27, 2023. https://biblioteca.ibge.gov.br/visualizacao/livros/liv101678.pdf

30. IPEA. Atlas da Violência 2019. Instituto de Pesquisa Econômica Aplicada; 2019. Accessed April 10, 2022. https://www.ipea.gov.br/atlasviolencia/download/19/atlas-da-violencia-2019

31. Domingues P. Movimento negro brasileiro: alguns apontamentos históricos. *Tempo*. 2007;12(23):100-122. https://doi.org/10.1590/S1413-77042007000200007

32. Associação Brasileira de Empresas de Pesquisa. Critério de classificação econômica Brasil. 2018. Accessed February 17, 2022. https://www.abep.org/criterioBr/01_cceb_2018.pdf

33. Kamakura W, Mazzon JA. Socioeconomic stratification criteria and classification tools in Brazil. *Revista de Administração de Empresas*. 2016;56(1):55-70. https://doi.org/10.1590/S0034-759020160106

34. Greenland S, Pearl J, Robins JM. Causal diagrams for epidemiologic research. *Epidemiology*. 1999;10:37-48.

35. Attia J, Holliday E, Oldmeadow C. A proposal for capturing interaction and effect modification using DAGs. *Int J Epidemiol*. 2022;51(4):1047-1053. https://doi.org/10.1093/ije/dyac126

36. Tennant PWG, Murray EJ, Arnold KF, et al. Use of directed acyclic graphs (DAGs) to identify confounders in applied health research: review and recommendations. *Int J Epidemiol*. 2021;50(2):620-632. https://doi.org/10.1093/ije/dyaa213

37. Howe CJ, Bailey ZD, Raifman JR, et al. Recommendations for using causal diagrams to study racial health disparities. *Am J Epidemiol*. 2022;191(12):1981-1989. https://doi.org/10.1093/aje/kwac140

38. Domingues PJ. Negros de almas brancas? A ideologia do branqueamento no interior da comunidade negra em São Paulo, 1915-1930. *Estudos Afro-Asiáticos*. 2002;24(3):563-600. https://doi.org/10.1590/S0101-546X2002000300006

39. Domingues P. Ações afirmativas Para negros no Brasil: o início de uma reparação histórica. *Revista Brasileira de Educação*. 2005;29:164-176. https://doi.org/10.1590/S1413-24782005000200013

40. Silvério VR. Ação afirmativa e o combate ao racismo institucional no Brasil. *Cadernos de Pesquisa*. 2002;117(117):219-246. https://doi.org/10.1590/S0100-15742002000300012

41. Schisterman EF, Cole SR, Platf RW. Overadjustment bias and unnecessary adjustment in epidemiologic studies. *Epidemiology*. 2009;20(4):488-495. https://doi.org/10.1097/EDE.0b013e3181a819a1

42. Fokkema M, Smits N, Zeileis A, et al. Detecting treatment-subgroup interactions in clustered data with generalized linear mixed-effects model trees. *Behav Res Methods*. 2018;50(5):2016-2034. https://doi.org/10.3758/s13428-017-0971-x

43. VanderWeele TJ, Knol MJ. A tutorial on interaction. *Epidemiol Methods*. 2014;3(1):33-72. https://doi.org/10.1515/em-2013-0005

44. Sjölander A. Estimation of causal effect measures with the R-package stdReg. *Eur J Epidemiol*. 2018;33(9):847-858. https://doi.org/10.1007/s10654-018-0375-y

45. Kågesten A, Gibbs S, Blum RW, et al. Understanding factors that shape gender attitudes in early adolescence globally: a mixed-methods systematic review. *PloS One*. 2016;11(6):e0157805. https://doi.org/10.1371/journal.pone.0157805

46. Ghavami N, Peplau LA. Urban middle school students' stereotypes at the intersection of sexual orientation, ethnicity, and gender. *Child Dev*. 2018;89(3):881-896. https://doi.org/10.1111/cdev.12763

47. Ghavami N, Kogachi K, Graham S. How racial/ethnic diversity in urban schools shapes intergroup relations and well-being: unpacking intersectionality and multiple identities perspectives. *Front Psychol*. 2020;11:503846. https://doi.org/10.3389/fpsyg.2020.503846

48. Crenshaw K, Ocen P, Nanda J. *Black Girls Matter: Pushed Out, Overpoliced and Underprotected*. 2014. Accessed December 4, 2021. https://www.aapf.org/_files/ugd/b77e03_e92d6e80f7034f30bf843ea7068f52d6.pdf

49. Gadson CA, Lewis JA. Devalued, overdisciplined, and stereotyped: an exploration of gendered racial microaggressions among black adolescent girls. *J Couns Psychol*. 2022;69(1):14-26. https://doi.org/10.1037/cou0000571

50. Annamma SA, Anyon Y, Joseph NM, et al. Black girls and school discipline: the complexities of being overrepresented and understudied. *Urban Educ*. 2019;54(2):211-242. https://doi.org/10.1177/0042085916646610

51. Joseph NM, Viesca KM, Bianco M. Black female adolescents and racism in schools: experiences in a colorblind society. *The High School Journal*. 2016;100(1):4-25. https://doi.org/10.1353/hsj.2016.0018

52. Cruz TM. School space interacting and prejudice: meanings of gender and race among children. *Educação em Revista*. 2014;30(1):157-188. https://doi.org/10.1590/S0102-46982014000100007

53. Maniglio R. Bullying and other forms of peer victimization in adolescence and alcohol use. *Trauma Violence Abuse*. 2017;18(4):457-473. https://doi.org/10.1177/1524838016631127

54. Booth MZ, Gerard JM, Deom GM, et al. Deconstructing adolescent ethnicity: a longitudinal analysis of ethnic-racial identity development and self-categorization. *J Adolesc*. 2022;94(3):366-379. https://doi.org/10.1002/jad.12028

55. Hitlin S, Scott Brown J, Elder GH. Racial self-categorization in adolescence: multiracial development and social pathways. *Child Dev*. 2006;77(5):1298-1308. https://doi.org/10.1111/j.1467-8624.2006.00935.x

56. Bratter J, Heard HE. Mother's, father's, or both? Parental gender and parent-child interactions in the racial classification of adolescents. *Sociological Forum*. 2009;24(3):658-688. https://doi.org/10.1111/j.1573-7861.2009.01124.x

57. Huguley JP, Wang M-T, Vasquez AC, et al. Parental ethnic–racial socialization practices and the construction of children of color's ethnic–racial identity: a research synthesis and meta-analysis. *Psychol Bull*. 2019;145(5):437-458. https://doi.org/10.1037/bul0000187

58. Stewart SA, Copeland AL, Cherry KE. Risk factors for substance use across the lifespan. *J Genet Psychol*. 2023;184(2):145-162. https://doi.org/10.1080/00221325.2022.2130025

59. Fuller-Rowell TE, Cogburn CD, Brodish AB, et al. Racial discrimination and substance use: longitudinal associations and identity moderators. *J Behav Med*. 2012;35(6):581-590. https://doi.org/10.1007/s10865-011-9388-7

60. Caldwell CH, Sellers RM, Bernat DH, et al. Racial identity, parental support, and alcohol use in a sample of academically at-risk African American high school students. *Am J Community Psychol*. 2004;34(1-2):71-82. https://doi.org/10.1023/b:ajcp.0000040147.69287.f7

61. Clifton RL, Rowe AT, Banks DE, et al. Examining the effects of implicit and explicit racial identity on psychological distress and substance use among Black young adults. *Exp Clin Psychopharmacol*. 2021;29(5):479-486. https://doi.org/10.1037/pha0000489

62. Stock ML, Gibbons FX, Walsh LA, et al. Racial identification, racial discrimination, and substance use vulnerability among African American young adults. *Pers Soc Psychol Bull*. 2011;37(10):1349-1361. https://doi.org/10.1177/0146167211410574

63. Zapolski TCB, Fisher S, Banks DE, et al. Examining the protective effect of ethnic identity on drug attitudes and use among a diverse youth population. *J Youth Adolesc*. 2016;46(8):1702-1715. https://doi.org/10.1007/s10964-016-0605-0

64. Graham S. Exploration of identity-based bullying by race/ethnicity and other marginalized identities among adolescents. *JAMA Netw Open*. 2021;4(7):e2117827-e2117827. https://doi.org/10.1001/jamanetworkopen.2021.17827

65. Johnson JL, Greaves L, Repta R. Better science with sex and gender: facilitating the use of a sex and gender-based analysis in health research. *Int J Equity Health*. 2009;8(1):14-11. https://doi.org/10.1186/1475-9276-8-14