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Association Between Discrimination Stress and Suicidality in Preadolescent Children

Stirling T. Argabright, MSc,

Children's Hospital of Philadelphia, Pennsylvania; Lifespan Brain Institute of Children's Hospital of Philadelphia and Penn Medicine, Pennsylvania

Elina Visoki, MSc,

Children's Hospital of Philadelphia, Pennsylvania; Lifespan Brain Institute of Children's Hospital of Philadelphia and Penn Medicine, Pennsylvania

Tyler M. Moore, PhD,

Lifespan Brain Institute of Children's Hospital of Philadelphia and Penn Medicine, Pennsylvania; Perelman School of Medicine, University of Pennsylvania, Philadelphia

Dallas T. Ryan [BA candidate],

Lifespan Brain Institute of Children's Hospital of Philadelphia and Penn Medicine, Pennsylvania

Grace E. DiDomenico, BA,

Children's Hospital of Philadelphia, Pennsylvania; Lifespan Brain Institute of Children's Hospital of Philadelphia and Penn Medicine, Pennsylvania

Wanjikū F.M. Njoroge, MD,

Children's Hospital of Philadelphia, Pennsylvania; Lifespan Brain Institute of Children's Hospital of Philadelphia and Penn Medicine, Pennsylvania

Jerome H. Taylor, MD,

Children's Hospital of Philadelphia, Pennsylvania; Lifespan Brain Institute of Children's Hospital of Philadelphia and Penn Medicine, Pennsylvania; Perelman School of Medicine, University of Pennsylvania, Philadelphia

Sinan Guloksuz, MD, PhD,

School for Mental Health and Neuroscience, Maastricht University Medical Centre, the Netherlands, and Yale University School of Medicine, New Haven, Connecticut

Correspondence to Ran Barzilay, MD, PhD, 10th floor, Gates Pavilion, Hospital of the University of Pennsylvania, 34th and Spruce Street, Philadelphia, PA 19104; ran.barzilay@pennmedicine.upenn.edu.

Author Contributions

Conceptualization: Argabright, Ryan, Njoroge, Taylor, Guloksuz, R. C. Gur, R. E. Gur, Benton, Barzilay

Data curation: Visoki, DiDomenico

Formal analysis: Visoki, Moore, Barzilay

Funding acquisition: R. C. Gur, R. E. Gur, Barzilay

Investigation: Ryan, Barzilay

Methodology: Moore

Project administration: DiDomenico

Supervision: Moore, Barzilay

Visualization: Barzilay

Writing – original draft: Argabright, Barzilay

Writing – review and editing: Moore, Njoroge, Taylor, Guloksuz, R. C. Gur, R. E. Gur, Benton, Barzilay

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Ruben C. Gur, PhD,

Lifespan Brain Institute of Children's Hospital of Philadelphia and Penn Medicine, Pennsylvania; Perelman School of Medicine, University of Pennsylvania, Philadelphia

Raquel E. Gur, MD, PhD,

Children's Hospital of Philadelphia, Pennsylvania; Lifespan Brain Institute of Children's Hospital of Philadelphia and Penn Medicine, Pennsylvania; Perelman School of Medicine, University of Pennsylvania, Philadelphia

Tami D. Benton, MD,

Lifespan Brain Institute of Children's Hospital of Philadelphia and Penn Medicine, Pennsylvania; Perelman School of Medicine, University of Pennsylvania, Philadelphia

Ran Barzilay, MD, PhD

Children's Hospital of Philadelphia, Pennsylvania; Lifespan Brain Institute of Children's Hospital of Philadelphia and Penn Medicine, Pennsylvania; Perelman School of Medicine, University of Pennsylvania, Philadelphia

Abstract

Objective: Youth suicide rates in the United States have been increasing in recent years, especially in Black Americans, the reasons for which are unclear. Environmental adversity is key in youth suicidality; hence there is a need to study stressors that have a disproportionate impact on Black youths. We aimed to disentangle the unique contribution of racial/ethnic discrimination from other adversities associated with childhood suicidal ideation and attempts (suicidality).

Method: We analyzed data from the Adolescent Brain Cognitive Development (ABCD) Study, which included a large, diverse sample of US children (N = 11,235, mean age 10.9 years, 20.2% Black), assessed for multiple environmental adversities including discrimination. Multivariate regression models tested the association of self-reported racial/ethnic discrimination with suicidality, covarying for multiple confounders including other discrimination types (toward non-US-born individuals, sexual orientation-based, and weight-based). Matched analyses contrasted effects of racial/ethnic discrimination and racial identity on suicidality.

Results: Black youths reported more discrimination and higher suicidality rates than non-Black youths. High racial/ethnic discrimination was positively and significantly associated with suicidality, adjusting for other discrimination types (odds ratio = 2.6, 95% CI = 2.1–3.2). Findings remained significant after adjusting for multiple suicidality risk factors. Once experienced, racial/ethnic discrimination was similarly associated with suicidality in White, Black, and Hispanic youths. Matched analyses revealed that racial/ethnic discrimination was associated with suicidality (relative risk = 2.7, 95% CI = 2–3.5), whereas Black race was not (relative risk = 0.9, 95% CI = 0.7–1.2).

Conclusion: Racial/ethnic discrimination is disproportionately experienced by Black children, and is associated with preadolescent suicidality, over and above other adversities. Findings highlight the need to address discrimination as part of suicide prevention strategies. Cross-sectional design hampers causal inferences.

Keywords

discrimination; suicide; race; exposome; child psychiatry

Suicide rates have seen an upward trend among youths in recent years, roughly doubling between 2007 and 2017.¹⁻³ In 2019, suicide was the second leading cause of death among American adolescents aged 13-18, and the fifth leading cause of death in preadolescents aged 6 to 12 years.⁴ Black American children are disproportionately affected in the younger age group, dying by suicide at a rate roughly double that of their White counterparts, with many potential contributors, including disproportionate exposure to violence, earlier onset of puberty, and diminished access to mental healthcare.⁵⁻⁷ To understand this racial imbalance in suicide deaths, there is a need to study specific stressors that have a disproportionate impact on Black American preadolescents in the United States, such as the experience of racial/ethnic discrimination.

Racial/ethnic discrimination—poor and unfair treatment due to one's race (groups of people with shared physical characteristics often associated with customs/origin) or ethnicity (groups of people with shared customs/origin)⁸—is a social product of racism that can be experienced in multiple facets of life and may underlie the significant racial health disparities across the lifespan for many minority groups.^{7,9,10} It is known that Black Americans experience significant amounts of racial/ethnic discrimination across the lifespan,^{11,12} which has consistently been shown to associate with poor health outcomes.¹³⁻¹⁷ Preliminary research has extended this work to mental health and suicidal ideation,¹⁸⁻²⁰ with similar effects observed across minority groups.²¹ However, the specific role of racial/ethnic discrimination on suicidal ideation or attempts (ie, suicidality) in children, especially preadolescents, has yet to be established strongly and independently of other environmental adversities.

Determining the unique contribution of racial/ethnic discrimination to suicidality in youths is difficult for many reasons. First, racial/ethnic discrimination is highly correlated with other environmental adversities that have negative impacts on mental health, such as poverty, trauma, family conflict, and other hardships.^{9,22-26} This web of intertwined environmental exposures, both specific (ie, childhood trauma) and general (ie, neighborhood environment), composes the *exposome*, which has major implications for both mental and physical health.²⁷⁻²⁹ Second, racial/ethnic discrimination may be associated with other forms of discrimination related to xenophobia,³⁰ sexual orientation,³¹ and weight,³² complicating the ability to tease apart the effect of racial/ethnic discrimination on suicidality from that of other discrimination types. Finally, racial/ethnic discrimination is associated with other (non-suicide-specific) psychopathology, including depression, anxiety, posttraumatic stress, and substance use disorders,^{19,33} which are risk factors for childhood suicidality.³⁴ Hence, identifying the specific effects of racial/ethnic discrimination on childhood suicidality requires multiple measures that include deep phenotyping of children's environment and psychopathology.

Here we sought to disentangle the specific association of racial/ethnic discrimination from other environmental adversities with childhood suicidality in a large, diverse sample of US

children from the Adolescent Brain and Cognitive Development (ABCD) Study.³⁵ Our aims were 3-fold: (1) to assess the prevalence of self-reported racial/ethnic discrimination in children in the ABCD Study; and (2) to assess the association of racial/ethnic discrimination with suicidality over and above other forms of discrimination (toward non-US-born individuals; sexual orientation-based; weight-based) and other adverse exposome factors; and (3) to assess whether and how the association between racial/ethnic discrimination and suicidality varies among children of different races or ethnicities. We hypothesized that racial/ethnic minority groups experience a disproportionate amount of racial/ethnic discrimination, and that this experience contributes to childhood suicidality.

METHOD

Participants

The ABCD Study sample includes 11,878 children aged 9 to 10 years at baseline, who were recruited through school systems.³⁶ Participants were enrolled at 21 sites, with the catchment area encompassing over 20% of the entire US population in this age group. We included data from ABCD Study data release 3.0 (<https://abcdstudy.org/>). In the current analysis, we used data collected at the 1-year follow-up assessment (N = 11,235, mean age 10.9 years, 52.3% male, 20.2% Black), which included a tool to assess discrimination. In some cases, variables were available only from baseline assessment, either because measures were deemed non-longitudinal (as with race) or because the ABCD data collection schedule did not include these items at the 1-year follow-up (Table S1, available online, provides details on all ABCD measures used in the current study). All participants gave assent, and parents/caregivers provided signed informed consent. The ABCD Study protocol was approved by the University of California, San Diego Institutional Review Board, and the current analysis protocol was exempted from a full review by the University of Pennsylvania Institutional Review Board.

Exposures

The ABCD Study assessment included an instrument that evaluated youths' experiences of discrimination.³⁷ The instrument was composed of 4 yes/no questions regarding subjective feelings of discrimination over the past 12 months in 4 domains: racial/ethnic/color; toward non-US-born individuals (ie, "child or their family are from another [non-US] country"); sexual orientation-based; and weight-based. Thereafter, participants were administered 7 questions rating lifetime experiences of discrimination (each question on a 5-point Likert scale, from almost never [1] to very often [5]). The discrimination instrument and frequency of endorsed items are described by Nagata *et al.*³⁸ and displayed in Table S2, available online.

The main exposure variable used in the current study was a binary measure of high/low discrimination. To generate this measure, we used the mean response of the 7 questions (for participants with at least 4 responses, variable `dim_y_ss_mean` in the ABCD Study) and determined high discrimination for each child as reporting at or above the 90th percentile. The 7-item discrimination measure was preferred to the binary measure assessing racial/ethnic/color discrimination mainly because of its capture rate; only 4.2% of participants

responded to the binary measure versus 11.7% who scored high on the 7-item measure. In addition, this 7-item measure has a Cronbach's alpha of 0.761, supporting its reliability. It was dichotomized because of a skewed distribution of responses toward low scores; to most accurately capture significant experiences of discrimination, we thought it best to take the top decile of scores (Figure S1, available online, shows the distribution among participants for this variable).

To our knowledge, this was the first ABCD-based study to use this discrimination tool, providing no precedent as to how to treat discrimination-related measures in analysis. Although the 7-item discrimination measure does not explicitly use the word *race*, it does use the concept of ethnicity, defined by ABCD as "groups of people who have the same customs, or origin." In addition, this item follows the binary item that intertwines the concept of ethnicity with that of race and color ("Have you felt discriminated against: because of your race, ethnicity, or color?"). Finally, racial distribution of responses of both measures (the 7-item discrimination measure and the single binary racial/ethnic discrimination item) are similar, with Black participants reporting roughly 3-fold prevalence of discrimination (21.1% Black vs 8.6% non-Black report high discrimination based on 7-item measure; 10.4% Black vs 3.1% non-Black report discrimination based on binary item). Therefore, we refer to our main self-reported discrimination measure as racial/ethnic discrimination throughout the rest of the paper.

Outcome measures

The Kiddie-Structured Assessment for Affective Disorders and Schizophrenia for *DSM-5* (KSADS-5)³⁹ assessed suicidal ideation and attempt (past or current).³⁴ Items relating to self-injurious behavior without suicidal intent (NSSI) were not included. As the proportion of suicidal attempts was low, and to avoid multiple testing to mitigate risk of type I error, we grouped together suicidal ideation and attempt, in line with previous analyses.³⁴ Thus, suicidal outcomes were collapsed into a single binary measure termed "suicidality." Previous work in the ABCD Study and other youth samples showed poor agreement between youth and caregiver on suicidality^{24,40}; therefore we referred only to youth report, which has been demonstrated to be more reliable.⁴⁰

Covariates

All models included age, sex, race (White, Black, and non-Black minority racial groups [Asian, American Indian, Native Hawaiian, and self-identified "other" race]), Hispanic ethnicity, and parental education. In this manuscript, we refer to race categories as "White" and "Black" to be consistent with the wording used by the ABCD Study, in which parents were asked which race they considered their child to be: White, or Black/African American. To address confounding effects of other types of discrimination previously associated with suicidality,³⁰⁻³² we included the 3 nonracial/ethnic discrimination variables (past 12-months discrimination toward non-US-born individuals, sexual orientation-based, and weight-based; all binary variables), and the identities against which the above discriminations are experienced (ie, non-US born, lesbian, gay, bisexual, transgender [LGBT], and obese/underweight [BMI>95th percentile/<5th percentile according to the Centers for Disease Control and Prevention]).⁴¹ To address confounding effects of environmental adversity,

several environmental measures, including household and neighborhood poverty, family conflict, and negative life events, were included as covariates. To address confounding effects of psychiatric diagnoses, KSADS-5–based diagnoses of both internalizing and externalizing disorders were included as covariates, as well as a prodromal psychosis score. More information about covariates used in this study’s models are provided in Supplement 1, available online.

Statistical Analyses

We used the SPSS 26.0 statistical package, R 3.6.1, and Mplus 8.4 for our data analysis. Mean (SD) and frequency (%) were reported for descriptive purposes. Univariate comparisons were made using *t* tests for continuous measures and χ^2 tests for categorical variables, with false discovery rate correction for multiple testing when appropriate. We used listwise deletion for participants with missing data. Rates of missing values for all variables included in the current study were lower than 3.3%, with the exception of discrimination measures that were higher: racial/ethnic (7.4%), sexual orientation–based (6.7%), and weight-based (4.3%). We used 2-tailed tests for all models. Data analysis was conducted between November 2020 and January 2021. Data preprocessing and analyses are detailed at https://github.com/barzilab1/abcd_discrimination.

Main Analysis.—To determine the association of racial/ethnic discrimination with suicidality, we conducted a binary logistic regression model with high/low racial/ethnic discrimination as the independent variable, and suicidality (binary) as the dependent variable, covarying for age, sex, race (Black, White, non-Black minority racial groups), Hispanic ethnicity, and parental education. To address the study’s main question of the unique effect of racial/ethnic discrimination on suicidality over and above other types of discrimination, we added to the model the 3 other discrimination variables (toward non-US-born individuals, sexual orientation–based, and weight-based) and their associated identities (ie, non-US-born, LGBT, and obese/underweight). This model is referred to below as the “main model.” Thereafter, we ran 3 additional models to address the specificity of the findings, given that discrimination was associated with other environmental adversities and with other nonsuicide psychopathology (Figure S3, available online, provides a correlation matrix among discrimination, exposome, and psychopathology). The first addressed the specificity of racial/ethnic discrimination’s effect on suicidality controlling for multiple other (nondiscrimination) environmental adversities (poverty, negative life events, family conflict, and neighborhood deprivation). The second assessed the direct association between racial/ethnic discrimination and suicidality over and above other (nonsuicide) psychopathology through inclusion of variables representing different domains of psychopathology (externalizing and internalizing disorders and psychosis spectrum). The third assessed the specificity of racial/ethnic discrimination to suicidality considering both environment and psychopathology measures together.

To explore potential differences among races or ethnicities in the magnitude of association between racial/ethnic discrimination and suicidality, we ran the main model stratifying the population to non-Hispanic White, non-Hispanic Black, and Hispanic youths.

Sensitivity Analyses.—We conducted several sensitivity analyses on the main model. To evaluate the potential effect of the method that we chose to determine the main exposure (ie, high racial/ethnic discrimination), we ran the main model substituting the high/low discrimination variable with the continuous measure averaging all 7 items included in the racial/ethnic discrimination scale. To evaluate the effect of the past 12 months' experience of racial/ethnic discrimination, we ran the main model substituting the high/low discrimination variable with the binary yes/no question on the past 12 months' experience of racial/ethnic/color discrimination. To account for potential effects of family relatedness, we ran 3 models. The first analyzed data including only 1 participant (the oldest) from each family, whereas the second excluded families with multiple children entirely. Finally, we estimated a multilevel logistic regression using the Mplus robust maximum likelihood (MLR) estimator⁴² to account for family relatedness.

Finally, we conducted 2 sets of matched comparisons that allowed us to contrast the effect of racial/ethnic discrimination with the effect of race on suicidality. In the first matched comparison, we matched high racial/ethnic discrimination to low racial/ethnic discrimination participants on all measures of the main model, including race. In the second comparison, we matched Black participants to White participants on all measures of the main model, including racial/ethnic discrimination. In both comparisons, we used relative risk of suicidality as the outcome variable.

RESULTS

Experiences of Discrimination and Suicidality Across Races and Ethnicity

We first compared the rates of self-reported discrimination in the past 12 months between Black and non-Black participants (Figure 1A). Black participants reported over 3-fold more racial/ethnic discrimination compared to non-Black participants (10.4% vs 3.1%, respectively). In addition, Black participants reported more of the other discrimination types: toward non-US-born individuals (2.6% vs 1.4%), sexual orientation-based (5.8% vs 3.4%), and weight-based (9.8% vs 5.1%). Comparison between Hispanic and non-Hispanic participants (Figure 1B) revealed similar rates of racial/ethnic discrimination (5.5% vs 4.4%, respectively) and sexual orientation-based discrimination (3.7% vs 4%), with higher rates of discrimination toward non-US-born individuals (3.9% vs 1.1%) and based on weight (7.6% vs 5.7%) experienced by Hispanic participants. Statistics for all above comparisons are presented in Table S3, available online.

Suicidality rates also showed differences across race, as Black participants reported more suicidal ideation and suicide attempts, with 9.7% of Black participants endorsing suicidality compared to 7.8% of non-Black participants ($\chi^2[1, n = 11,077] = 8.399, p = .004$) (Figure 1C and Table S3, available online). No difference in suicidality was found between Hispanic (7.8%) and non-Hispanic (8.3%) participants in suicidality ($\chi^2[1, n = 10,940] = 0.522, p = .470$) (Figure 1D and Table S3, available online).

Comparison of Youths Reporting High Versus Low Racial/Ethnic Discrimination

We next compared participants who reported high levels (90th percentile) of racial/ethnic discrimination to those who reported low levels (<90th percentile) of racial/ethnic discrimination. Youths endorsing high racial/ethnic discrimination were significantly different from those endorsing low racial/ethnic discrimination on multiple demographic measures including higher prevalence of male sex (62% vs 51%), Black race (38.7% vs 17.4%), and lower parental education. Furthermore, when compared to low racial/ethnic discrimination youths, high racial/ethnic discrimination youths reported more discrimination of other types and were generally more likely to experience multiple other adversities, including family poverty, negative life events, family conflict, and neighborhood poverty. Finally, high racial/ethnic discrimination youths had more psychopathology compared to low racial/ethnic discrimination youths in all diagnostic domains including externalizing and internalizing diagnoses as well as higher psychosis spectrum symptoms and suicidality (19.4% vs 6.6%, respectively). Full statistics of univariate comparisons are presented in Table 1.

Multivariable Modeling

We next sought to delineate the association between high racial/ethnic discrimination and suicidality. High racial/ethnic discrimination was strongly associated with suicidality (odds ratio [OR] = 3.5, 95% CI = 2.95–4.16, model covaried for age, sex, race, ethnicity, and parental education). Our main model revealed that high racial/ethnic discrimination was strongly associated with suicidality (OR = 2.6, 95% CI = 2.1–3.21), even after covarying for the other types of discrimination and for the factors based on which this discrimination is experienced (non-US-born, identifying as LGBT, and being obese/underweight). The association between high racial/ethnic discrimination and suicidality was robust (OR = 1.8, 95% CI = 1.43–2.26) to adding multiple environmental adversities to the main model, including poverty, negative life events, family conflict, and neighborhood deprivation. Furthermore, the association was also robust to addition of multiple indicators of psychopathology, such as externalizing and internalizing disorders and psychotic symptoms, to the main model (OR = 1.55, 95% CI = 1.22–1.96). When covarying for environmental and psychopathology measures together in a combined model, however, results became nonsignificant ($p = .091$). Statistics of the full models are detailed in Table 2.

Race/Ethnicity Stratified Analysis

We next explored whether the specific association of high racial/ethnic discrimination (over and above other discrimination types) with suicidality differed among races and ethnicities (Table 3). We ran the main model controlling for other discrimination types, and found that high racial/ethnic discrimination had similarly deleterious associations with suicidality in non-Hispanic White (OR = 2.96, 95% CI = 2.21–3.97), non-Hispanic Black (OR = 2.46, 95% CI = 1.67–3.61), and Hispanic (OR = 2.41, 95% CI = 1.52–3.83) youths. Effects of high discrimination on suicidality were similar in direction for Asian (OR = 1.71, $p = .334$) and American Indian (OR = 1.87, $p = .226$) youths, albeit nonsignificant. The Native Hawaiian sample in ABCD ($n = 70$) was underpowered to handle the number of variables used to test the study's questions in a stratified analysis (Table S4, available online).

Sensitivity Analyses

To address the possibility that our choice of variables influenced the results, we ran the main model using different definitions of racial/ethnic discrimination. Directionality and significance of findings persisted when we used a continuous (rather than our dichotomous high/low) score of the racial/ethnic discrimination scale (Table S5, available online). Findings remained similar, albeit nonsignificant, when covarying for other discrimination types, when we used the variable of past 12 months' racial/ethnic/color discrimination instead of using the 7-item discrimination measure (Table S6, available online). Sensitivity analyses addressing within-family effects yielded similar directionality and significance as well (Tables S7–S9, available online).

Matched Comparisons

High discrimination was associated with increased risk of suicidality (relative risk [RR] = 2.65, 95% CI = 2.02–3.47) (Table 4) when comparing high racial/ethnic discrimination youths to low racial/ethnic discrimination youths matched on multiple measures including age, sex, race, and other discrimination types (n = 954 in each group; characteristics of matched sample are provided in Table S10, available online). In contrast, Black race was not associated with suicidality (RR = 0.94, 95% CI = 0.74–1.19) when comparing Black to White youths matched on levels of racial/ethnic discrimination, age, sex, and other discrimination types (n = 1,399 in each group) (Table S10, available online).

DISCUSSION

In this study, we investigated the association of racial/ethnic discrimination with preadolescent suicidality. In line with recent literature, we observed that Black American youths in the ABCD Study report higher levels of racial/ethnic discrimination and display more suicidality than other racial groups.^{9,11} Notably, we found that Black children experience disproportionate amounts of *all* studied forms of discrimination (toward non-US-born individuals, sexual orientation-based, and weight-based) compared to non-Black children—a finding that, to the best of our knowledge, has not yet been documented in a large sample of American children. Multivariate analyses revealed that racial/ethnic discrimination is a unique contributor to suicidality in American youths, independent of other known environmental risk factors for suicidality, including negative life events,²³ family conflict,³⁴ other discrimination types (ie, sexual orientation-based),³¹ and psychopathology.^{25,43} Furthermore, although racial/ethnic discrimination is disproportionately experienced by Black children, its association with suicidality is similar in non-Black children. This association became nonsignificant when Asian, American Indian, and Native Hawaiian participants were examined independently, although this is likely due to insufficient power because of their smaller sample size among the ABCD Study's participants. These findings suggest that racial/ethnic discrimination is a major stressor uniquely associated with preadolescent suicidality.

The assessment of discrimination in the ABCD Study included items related to 4 different domains: racial/ethnic; toward non-US-born individuals; sexual orientation-based; and weight-based. Our main analysis examined the association of racial/ethnic discrimination

with suicidality, controlling for key demographic factors as well as other forms of discrimination and their associated identities (ie, non-US-born, LGBT, obese/underweight). We found that racial/ethnic discrimination imposes a unique psychological stress that is significantly associated with childhood suicidality with a magnitude of effect similar to well-established risk factors such as sexual orientation-based discrimination³¹ and weight-based discrimination.³² Notably, the data analyzed in the current study were collected in 2018, two years before the COVID-19 pandemic, post-election furor, and the prominent racial justice protests of 2020 to 2021; therefore, our findings may have been even more pronounced had the data been collected more recently, in 2021.

A fundamental challenge of studying environmental effects on health outcomes is that they are often colinear, and it is difficult to disentangle the unique effect of any specific stressor. The exposome framework embraces the inherent complexity of the environmental network rather than focusing on a single adversity (eg, trauma), examining environmental exposures within dynamic interactive domains.^{28,29} The large sample size and deep phenotyping of the ABCD Study cohort provides an opportunity to dissect the specific components of the exposome and their interactions with race. Such has been extensively studied by Assari *et al.*, who have highlighted racial discrepancies in the effects of environmental protective factors.^{44,45} Similarly, we sought to test the association of racial/ethnic discrimination on suicidality within the scope of the exposome. Discrimination was significantly correlated with adverse exposome and psychopathology measures, both of which are documented risk factors that may inflate its effect size on suicidality. However, racial/ethnic discrimination remained strongly associated with suicidality even when accounting for environmental adversity-poverty, low socioeconomic status, negative life events, family conflict^{9,22,24,26} and non-suicide psychopathology, represented by diagnoses of both internalizing and externalizing domains.^{25,43} It is important to note that items related to NSSI were not included. Although NSSI and suicidality are highly related, there is evidence that they have distinct etiologies, and the relationship between the them is complex and beyond the scope of this analysis.⁴⁶ Regardless, results highlight the burden that racial/ethnic discrimination has on mental health in childhood, demonstrating its effect over and above other environmental exposures.

A major finding that we report here is that once racial/ethnic discrimination is experienced, it seems to retain its deleterious association with suicidality across races and ethnicities (ie, in both White and Black children, and in both Hispanic and non-Hispanic children). Our matched analyses allowed us to inspect the role of discrimination versus that of race in association with suicidality. When high discrimination participants were matched to low discrimination participants at every other variable, we found that high racial/ethnic discrimination was robustly associated with elevated levels of suicidality. However, when Black participants were matched to White participants at every other variable, there was no significant association between Black race and suicidality. Our findings resonate with a recent study by Matheson *et al.*, which found consistency in the effect of discrimination on mental health in various groups that have been historically marginalized, including Indigenous peoples, Black individuals, Jewish individuals, and women.²¹

Our findings have some immediate implications for clinicians and suicide researchers. We demonstrate that experiences of racial/ethnic discrimination are significant stressors whose magnitude of association with increased suicidality is similar to that of well-established risk factors such as sexual orientation–based discrimination³¹ or history of depression.⁴³ Therefore, clinicians should be mindful of this unique stressor and consider this as a potential contributor to suicide risk. Notably, if a clinician decides that it is worthwhile to bring up racial/ethnic discrimination in a clinical evaluation, it should not be limited to Black children or children of other minority groups; the results attest that non-Black children who feel racially/ethnically discriminated against also have a higher chance of endorsing suicidality compared to their counterparts who do not feel discriminated against. It is important, however, that any discussion regarding race/ethnicity be done with care to avoid further mental anguish, as racial issues can be mentally burdensome, potentially traumatic topics for affected children if not handled with sensitivity.^{12,47}

The current findings should be interpreted in the context of several limitations. First and foremost, it is important to address the limitations with the measures used to assess racial/ethnic discrimination. In the 7-item discrimination measure used in main analyses, only the first 4 items refer specifically to ethnicity (defined by ABCD as “groups of people who have the same customs, or origin”), whereas the latter 3 items focus on feelings of marginalization/ostracization. This is in contrast to the binary variable assessing past 12-months’ experiences of racial/ethnic/color discrimination. However, although these concepts are nuanced and not perfectly equivalent, they are heavily entangled, and it is reasonable to assume that they were perceived by the study participants as strongly associated. This is reflected in the similar distributions of Black versus non-Black participants endorsing high racial/ethnic discrimination based on the 7-item measure (21.1% vs 8.6%) and racial/ethnic/color discrimination in the past 12 months (10.4% vs 3.1%). In addition, because racial/ethnic discrimination was measured using a 7-item matrix whereas other forms of discrimination were measured using a binary question regarding the past 12 months, the effect of racial/ethnic discrimination may be inflated over other discrimination types. Similarly, covariate identities based on assessed discrimination types were not exactly aligned. For example, the identity associated with discrimination toward non-US-born individuals was based only on whether or not the child was US-born, excluding first-generation Americans who may experience this same form of discrimination, and the identity associated with LGB included transgender individuals. Still, we show significant associations of multiple discrimination types with suicidality. We also demonstrate that racial/ethnic discrimination retains its robust association with suicidality even when accounting for many confounders in sensitivity analyses, suggesting that despite the limitations above, our findings add a timely and important perspective on the factors contributing to the growing problem of preadolescent suicidality.

Another concern is the personal characteristics of the high racial/ethnic discrimination sample. One may argue that the observed association between discrimination and suicidality may be inflated by poor self-esteem, low socioeconomic status, family neglect, or negative outlook, which may cause a participant to feel more highly discriminated against. We believe that this concern is greatly mitigated by the fact that the discrimination–suicidality association remained significant even after rigorous covariation for demographic and

socioeconomic factors, as well as environmental adversity. The association was also significant in models that accounted for prodromal psychosis symptoms, depression, and anxiety, mitigating the concern that underlying psychopathology explains this discrimination–suicidality association. When other discrimination, environmental adversity, and psychopathology factors were covaried for in the same model, however, findings were nonsignificant ($p = .091$). This suggests that there is some non-overlapping shared variance between these domains that warrants further investigation in future longitudinal studies. In addition, heterogeneity within assessed groups, especially “White” participants, may skew findings and limit generalizability. For example, self-identified “White” race often includes minority groups (eg, Middle Eastern–descent, Muslim, and orthodox Jewish individuals), which may inflate instances of self-reported discrimination.^{21,48} Moreover, participants are recruited from sites across the United States, where amount and type of discrimination may vary based on demographic composition of the area and associated study population. The study’s cross-sectional design also limits causal inferences between self-reported discrimination and suicidality. Nonetheless, the rigorous inclusion of confounders often associated with racial/ethnic discrimination and the matched analyses underscoring its unique effect support the directionality of the association from discrimination to suicidality. Future longitudinal studies are needed to clarify causal pathways in this cohort and others.

In conclusion, we report that the subjective experience of racial/ethnic discrimination is robustly and independently associated with suicidality in children, regardless of race or ethnicity. Findings suggest that race itself is not associated with suicidality but, rather, the experience of discrimination associated with belonging to a minority racial/ethnic group in the United States is the factor that contributes to suicidality. Black American children, however, are disproportionately exposed to racial/ethnic discrimination and therefore bear a disproportionate psychological burden. These findings may imply that care providers should be aware of discrimination’s detrimental effect on childhood mental health. Finally, although we focus on a US sample, such discrimination is likely present in other countries with multiracial/multiethnic populations, which merits further investigation globally.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Disclosure:

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and/or provided data but did not necessarily participate in analysis or writing of this report. This manuscript reflects the views of the authors and may not reflect the opinions or views of the NIH or ABCD consortium investigators.

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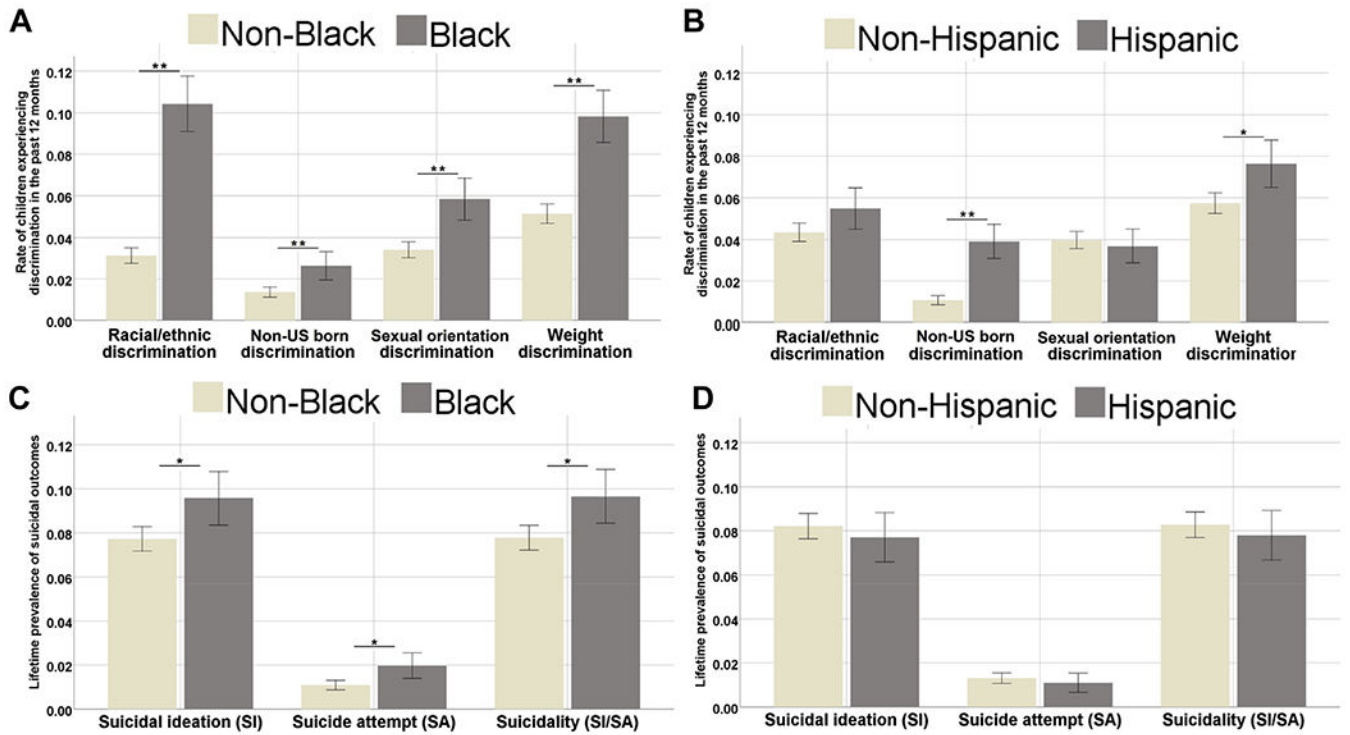


FIGURE 1. Experiences of Discrimination and Suicidality Across Race/Ethnicity

Note: Rates of endorsed discrimination and suicidality (proportion 0–1) are displayed across race/ethnicity. (A) Black participants were compared to non-Black participants in experiences of 4 types of discrimination: racial/ethnic, toward non-US-born individuals, sexual orientation-based, and weight-based. Black participants experienced significantly higher rates of all 4 types (for all comparisons, false discovery rate (FDR)-corrected $p < .001$). (B) Hispanic participants were compared to non-Hispanic participants in experiences of 4 types of discrimination: racial/ethnic, toward non-US-born individuals, sexual orientation-based, and weight-based. Hispanic participants experienced significantly higher rates of discrimination toward non-US-born individuals (FDR-corrected $p < .001$) and weight-based discrimination (FDR-corrected $p = .004$). (C) Black participants were compared to non-Black participants in experiences of suicidal ideation, suicide attempt, and overall suicidality. Black participants experienced significantly higher rates of all suicidality markers (all FDR-corrected $p < .005$). (D) Hispanic participants were compared to non-Hispanic participants in experiences of suicidal ideation, suicide attempt, and overall suicidality. No significant differences were found (all FDR-corrected $p = .548$). Please note color figures are available online.

* $p < .005$; ** $p < .001$.

TABLE 1

Comparison of Youths Reporting High Versus Low Racial/Ethnic Discrimination

	Total sample		Low racial/ethnic discrimination		High racial/ethnic discrimination		F(df)/χ ² (df)	p
	Mean/n	SD/%	Mean/n	SD/%	Mean/n	SD/%		
	N = 11,235		n = 9,623		n = 1,243			
Demographics								
Age, y	10.93	0.64	10.93	0.64	10.89	0.63	2.36 (10,864)	.018
Male sex	5,879	52.3	4,894	50.9	771	62.0	55.04 (1)	<.001
Parental education, y	16.51	2.63	16.68	2.56	15.54	2.72	14.66 (10,864)	<.001
White	8,453	75.2	7,513	78.1	704	56.6	274.38 (1)	<.001
Black	2,269	20.2	1,677	17.4	481	38.7	312.9 (1)	<.001
Asian	723	6.4	643	6.7	62	5.0	5.21 (1)	.023
American Indian	386	3.4	308	3.2	59	4.7	8.06 (1)	.005
Native Hawaiian	70	0.6	56	0.6	10	0.8	0.9 (1)	.342
Hispanic	2,226	20.1	1,824	19.2	316	25.7	29.21 (1)	<.001
Other discrimination and related factors								
Experienced discrimination toward non-US-born individuals	177	1.6	71	0.7	95	8.2	373.75 (1)	<.001
Experienced sexual orientation-based discrimination	408	3.9	232	2.5	164	14.7	396.51 (1)	<.001
Experienced weight-based discrimination	654	6.1	405	4.3	220	19.1	400.1 (1)	<.001
Non-US born	323	2.9	266	2.8	51	4.1	7.02 (1)	.01
LGBT	145	1.3	116	1.2	24	1.9	4.57 (1)	.045
Obese	1,871	17.0	1,544	16.3	256	21.4	19.42 (1)	<.001
Exposome adversities								
Family poverty experiences	0.45	1.1	0.4	1.02	0.81	1.44	12.59 (10,850)	<.001
Family conflict scale	1.92	1.88	1.75	1.79	2.96	2.11	22.02 (10,864)	<.001
Neighborhood SES scale	92.57	24.78	91.46	24.98	99.15	22.63	9.98 (10,265)	<.001
Negative life events count	2.44	2.29	2.28	2.13	3.77	2.86	1.49 (10,864)	<.001
Psychopathology								
Prodromal psychosis scale	4.61	9.39	3.46	7.43	12.79	15.91	9.33 (10,862)	<.001
Any externalizing KSADS Dx	3,438	31.1	2,796	29.4	510	41.8	77.54 (1)	<.001
Depression Dx	562	5.0	401	4.2	137	11.1	111.04 (1)	<.001

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	Total sample		Low racial/ethnic discrimination		High racial/ethnic discrimination		<i>t</i> (df)/ χ^2 (df)	<i>p</i>
	Mean/n	SD/%	Mean/n	SD/%	Mean/n	SD/%		
Anxiety Dx	363	3.2	255	2.7	93	7.6	83.71 (1)	<.001
Suicidality								
Suicidal ideation	897	8.1	623	6.5	236	19.3	239.49 (1)	<.001
Suicide attempt	140	1.3	79	0.8	49	4.0	92.87 (1)	<.001
Suicidality (ideation/attempt)	904	8.2	626	6.6	238	19.4	243.18 (1)	<.001

Note: When compared across multiple demographic, discrimination-related, environmental exposures, psychopathology, and suicidal behavior, youths experiencing high racial/ethnic discrimination were significantly different from those experiencing low racial/ethnic discrimination. df = Degrees of freedom; Dx = diagnosis; KSADS = Kiddie-Structured Assessment for Affective Disorders and Schizophrenia for DSM-5; LGBT = lesbian, gay, bisexual, transgender; SES = socioeconomic status.

TABLE 2
Multivariable Modeling of Association of Racial/Ethnic Discrimination With Suicidality

	Basic model			Main model (includes other discriminations)			Exposome model			Psychopathology model			Full model		
	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Discrimination															
High racial/ethnic discrimination	3.50	2.95–4.16	<.001	2.60	2.11–3.21	<.001	1.80	1.43–2.27	<.001	1.55	1.23–1.96	<.001	1.24	0.97–1.59	.091
Past 12-months' discrimination toward non-US-born individuals				0.76	0.42–1.38	.371	0.85	0.46–1.58	.606	0.62	0.34–1.16	.136	0.78	0.41–1.47	.434
Past 12-months' sexual orientation-based discrimination				3.07	2.31–4.07	<.001	2.62	1.94–3.52	<.001	2.07	1.53–2.82	<.001	2.00	1.45–2.74	<.001
Past 12-months' weight-based discrimination				2.61	2.01–3.39	<.001	1.96	1.48–2.58	<.001	1.90	1.43–2.52	<.001	1.59	1.18–2.14	.002
Exposome															
Family poverty experiences							1.07	1.00–1.15	.058				1.08	1.01–1.17	.038
Family conflict scale							1.21	1.17–1.26	<.001				1.17	1.12–1.22	<.001
Negative life events count							1.18	1.15–1.22	<.001				1.12	1.08–1.16	<.001
Neighborhood SES scale							1.00	0.99–1.00	.350				1.00	0.99–1.00	.085
Psychopathology															
Psychosis scale										1.06	1.05–1.06	<.001	1.05	1.04–1.06	<.001
Any externalizing Dx										1.50	1.26–1.78	<.001	1.31	1.09–1.57	.004
Depression Dx										1.74	1.30–2.33	<.001	1.72	1.27–2.32	<.001
Anxiety Dx										1.75	1.23–2.47	<.001	1.77	1.24–2.53	.002
Nagelkerke R ²	0.043			0.084			0.142			0.166			0.196		

Note: Five binary logistic regression models were run to disentangle the role of racial/ethnic discrimination (Independent variable) from other notable stressors in association with suicidality (dependent variable). Model 1 covaries for age, sex, race (Black, White, non-Black minority racial groups), Hispanic ethnicity, and parental education. Model 2 (referred to as “main model” in the text) builds on model 1 by adding the other 3 types of discrimination and their associated identities (non-US-born, identifying as LGBT, being obese/underweight). Model 3 builds on model 2 by adding exposome adversities including poverty, neighborhood SES, family conflict, and negative life events. Model 4 builds on model 2 but covaries for psychopathology (prodromal psychosis scale, any externalizing Dx, depression Dx, and anxiety Dx). Model 5 combines models 3 and 4 by covarying for both exposome adversity and psychopathology. Dx = diagnosis; LGBT = lesbian, gay, bisexual, transgender; OR = odds ratio; SES = socioeconomic status.

TABLE 3
Race/Ethnicity-Stratified Analysis of the Main Model Controlling for Other Types of Discrimination (Non-Racial/Ethnic)

Exposure	Non-Hispanic White (n = 6,829)			Non-Hispanic Black (n = 2,056)			Hispanic (n = 2,226)		
	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
High racial/ethnic discrimination	2.97	2.22–3.98	<.001	2.46	1.67–3.61	<.001	2.4	1.51–3.82	<.001
Past 12 months' discrimination toward non-US-born individuals	0.18	0.02–1.42	.103	1.62	0.58–4.54	.357	0.85	0.36–2.03	.713
Past 12 months' sexual orientation–based discrimination	3.16	2.19–4.58	<.001	2.77	1.58–4.86	<.001	2.65	1.30–5.42	.007
Past 12 months' weight-based discrimination	2.78	1.97–3.94	<.001	1.84	1.06–3.20	.03	2.96	1.68–5.22	<.001

Note: Binary logistic regression model with racial/ethnic discrimination as independent variable and suicidality as dependent variable, covarying for age, sex, parental education, and the other discrimination types and their associated identities (non-US born, identifying as LGBT, being obese/underweight). Model was run separately on non-Hispanic White, non-Hispanic Black, and Hispanic youths. LGBT = lesbian, gay, bisexual, transgender; OR = odds ratio.

TABLE 4

Matched Analyses

	Matched analysis 1				Matched analysis 2									
	Low racial/ethnic discrimination (n = 954)		High racial/ethnic discrimination (n = 954)		White (n = 1,399)		Black (n = 1,399)		RR	95% CI	P			
	n	%	n	%	n	%	n	%						
Suicidality	65	6.90	172	18.30	130	9.40	122	8.80	2.65	2.02–3.47	<.001	0.94	0.74–1.19	.528

Note: In matched analysis 1, participants reporting high racial/ethnic discrimination were matched with participants reporting low racial/ethnic discrimination on multiple measures including age, sex, race, and all other discrimination types to participants. In matched analysis 2, Black American participants were matched to White American participants on levels of racial/ethnic discrimination, age, sex, and other discrimination types. RR = relative risk.