



Family Income May Better Protect White Than Black American Youth Against Suicidality

Shervin Assari^{1,2,3*}, Babak Najand³, Cleopatra Caldwell^{4,5}, Ronald Mincy^{6,7}

¹Department of Family Medicine, Charles R. Drew University of Medicine and Science, Los Angeles, CA, USA

²Department of Urban Public Health, Charles R. Drew University of Medicine and Science, Los Angeles, CA, USA

³Marginalization-Related Diminished Returns (MDRs) Research Center, Los Angeles, CA, USA

⁵Center for Research on Fathers, Children, and Family Well-Being, Columbia University, New York, NY 10027-5927, USA

⁴Center for Research on Ethnicity, Culture, and Health (CRECH), School of Public Health, University of Michigan, Ann Arbor, MI 48104, USA

³Department of Health Behavior and Health Education, School of Public Health, University of Michigan, Ann Arbor, MI 48104, USA

⁶Columbia Population Research Center (CPRC), Columbia University, New York, NY 10027-5927, USA

⁷Columbia University School of Social Work, Columbia University, New York, NY 10027-5927, USA

***Corresponding Author:** Shervin Assari, M.D., M.P.H., Associate Professor, Department of Family Medicine, Charles R. Drew University of Medicine and Science, Los Angeles, CA, USA. Tel: +1-7343632678 Email: assari@umich.edu

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Abstract

Background: High income is a protective factor against suicidality for children, youth, and adults, however, recent research has documented weaker health effects of high income for Black than White individuals, a pattern also called marginalization-related diminished returns (MDRs).

Objectives: In this study, we tested racial variation in the association between high income and suicidality in a national sample of 9-10-year-old Black and White American children.

Methods: This cross-sectional study used data from the Adolescent Brain Cognitive Development (ABCD) study, which included 7298 White or Black children between the ages of 9 and 10. Of all the participants, 5652 were White and 1646 were Black. The predictor variable was family income, treated as a continuous measure. Race was the moderator. The outcome variable was suicidality, treated as a dummy variable, reflecting any positive suicidal thoughts or behaviors endorsed over the life-course. Covariates included sex, age, family structure (parental marital status), parental education, trauma, history of depression, neighborhood poverty, and family conflict. Logistic regression was used for data analysis.

Results: Overall, family income was inversely associated with children's suicidality, net of all covariates. A statistically significant interaction was found between race and family income, suggesting that the inverse association between family income and suicidality is weaker in Black than White children.

Conclusion: The observed weaker association between income and suicidality in Black than White children suggests that family income does not provide the same protection against suicidality for Black as White children. Due to racism, income and some other socioeconomic status indicators show weaker than expected health effects on Black families in the US.

Keywords: Perceived Discrimination, Race, Suicidality, Suicide, Children

1. Background

A wide range of social and economic factors alter the risk of undesired mental health outcomes such as suicidality.¹ Poverty,² economic difficulty,³ stressful life events,⁴ perceived stress,⁵ trauma,⁶ adverse childhood experiences,⁷ family conflict,^{8,9} and discrimination^{10,11} all deteriorate the mental health of children and increase the risk of psychopathology, which contributes to suicidality.¹² However, not all of these social influences are equal across children from various social backgrounds.^{13,14} Given that socioeconomic status (SES) indicators such as family income have strong effects on children's mental health, it is essential to understand whether the effects of family income, one of the main SES indicators, on youth suicidality vary by race/ethnicity. Such a study should

control for a wide range of other social influences such as general stress and trauma that may confound the link between family income and suicidality.¹⁵

Very little knowledge exists about racial variation in high family income as a protective factor against suicidality among children. The dearth of studies examining whether race moderates associations between family-related factors and suicidality partly accounts for this research gap. Traditionally, suicidality is seen as a White, not a Black, public health problem.^{16,17} Most research shows that White children, youth, and adults are more likely to commit suicide than their Black peers.¹⁸⁻²⁰ Studies have attributed low acceptability of suicidality in Black families^{21,22} to high resilience,²³⁻²⁵ religiosity,²¹ and supportive social relations²⁶⁻²⁸ in Black communities.

Some²⁹⁻³¹ have described this pattern as the Black mental health paradox, suggesting that Black people flourish in the presence of adversities; while Whites have low preparedness to handle stress as a function of their relative social privilege.

In recent years, the historic racial suicide advantage enjoyed by Black children has rapidly disappeared. Instead, an alarming increase in suicidality among Black children, particularly boys, has occurred.³² By labeling this trend a national crisis, the National Institutes of Health has suggested an urgent need to understand the various risk factors that may be responsible. Research has documented the role of a wide range of factors such as sex, age, SES, academic success, substance use, depression, and stress as risk factors of children's and youth suicidality.³³ A recent study using the Adolescent Brain Cognitive Development (ABCD) data showed that stress related to family is one of the most important risk factors of suicidality in 9-10 year old American children.³⁴ However, the study did not test the effects of family income or nor did it test whether the effects of various stressors on child suicide vary across racial groups.³⁴

Past research has shown that suicidality may have different risk factors for White and Black children, youth, and adults.^{35,36} In a sample of young adults, intrapersonal, followed by interpersonal, factors triggered suicidal ideation. However, Whites were less likely to report interpersonal factors as a main trigger or precipitator of suicidality than racial and ethnic minorities.³⁷ Other studies showed that family income may differently predict health outcomes of Black and White children.^{38,39}

Research shows that various types of stressors may differently correlate with mental health outcomes of Black and White individuals. We know that chronic stressors are more common in the lives of Black than White individuals.⁴⁰ Some observers argue that frequent exposure to common stressors may prepare Black families to adjust and cope with any new stressors. Other observers argue that stress does not become normal, but instead takes a toll. Thus, past stress may increase Black people's vulnerability to additional stressors.⁴¹ Prior studies also reach mixed conclusions about whether the association between stress and depressive disorders is stronger for Whites than Blacks.²³

Most of these studies use adult samples, so there is a dearth of knowledge about children. Considering that sensitivity or resilience to stress develops over the life course,⁴² findings for adults may not hold for children. Consequently, findings regarding racial differentials in the association between stress and suicidality may not hold for children. Thus, there is a need to study if there are racial differences in the association between family income and mental health outcomes, and particularly suicidality in childhood. As for children, all types of stressors are more common for Blacks than Whites,⁴³ so it is likely that Black and White children differ in the correlation between stressors such as family income and mental health

outcomes such as suicidality.⁴⁴

Knowledge regarding racial variation in the correlation between SES indicators such as family income and suicidality may have clinical and public health implications. Such knowledge could potentially improve clinicians', researchers', and public health experts' ability to screen, prevent, diagnose, and treat suicidality in diverse group of children.⁴⁵ We need such knowledge if wish to more effectively prevent suicide in racial minority children. While knowledge is key to design effective policies, practices, and interventions, what is relevant to Whites communities may not be equally relevant to communities of color. Race and ethnic differences in exposures, vulnerabilities, and historical experiences may alter the relevance of a risk or protective factor on suicidality in White communities and communities of color.⁴⁶ Thus, knowledge about racial variation in social determinants of suicidality is also essential to tailor suicide prevention programs across diverse populations.³⁷ Still, we know almost nothing about racial differences in social determinants of childhood and youth suicidality.⁴⁷

2. Objectives

To extend what we know about racial variation in the inverse association between family income and suicidality among American children, we compared Black and White children for the association between family income and childhood suicidality in a national sample of 9/10-year-old American children. We controlled for a wide range of confounders including age, sex, MDD history, trauma, family structure, and family conflict that may confound the link between SES and suicidality.⁴⁸

3. Methods

3.1. Design and Setting

This cross-sectional study was a secondary analysis of the ABCD study baseline data.^{49,50} The analysis only used wave 1 (baseline) data collected between 2016 and 2018.

3.2. Sample

The ABCD study has included 9-10-year-old children. The ABCD children have been enrolled from multiple cities across 15 US states. Children were mainly recruited through US school systems.⁵¹ In the current study, we only included Whites and Blacks, however, children could be Latino or non-Latino, US-born or immigrant. We excluded other racial and ethnic groups such as Asian American, Native American, mixed-race, or unknown (missing) race.

3.3. Outcome

The children's suicidality (at baseline) was treated as a binary outcome. This variable was a 0 – 1 variable calculated based on participants' responses to the items on various aspects of suicidal thoughts and behaviors that included past and present ([Supplementary file 1](#)).^{52,53} We have previously published using this variable.⁵⁴⁻⁵⁶

3.4. Moderator

For race, Blacks were coded as 1, and Whites were coded as 0. As such, the interaction term was indicative of change of income for Black compared to White families.

3.5. Predictor

The predictor variable was family income, treated as a continuous score with a higher score indicating higher family income. Household income varied between 1 to 10, as bellow: 1=Less than \$5000; 2=\$5000; 3=\$12,000; 4=\$16,000; 5=\$25,000; 6=\$35,000; 7=\$50,000; 8=\$75,000; 9=\$100,000; 10=\$200,000.

3.6. Covariates

Covariates included ethnicity, nativity, age, sex, parental education, family structure, parental employment, family conflict, neighborhood poverty, and trauma. For sex, males were coded as 1, and females were coded as 0. Age was recorded in months. Parental education was a continuous measure ranging from 1 to 23, with a higher score indicating more schooling years. Codes of parental education were as below: 0=Never attended/Kindergarten only; 1=1st grade; 2=2nd grade; 3=3rd grade; 4=4th grade 4; 5=5th grade; 6=6th grade 6; 7=7th grade 7; 8=8th grade; 9=9th grade; 10=10th grade 10; 11=11th grade; 12=12th grade; 13=high school graduate; 14=GED or equivalent diploma; 15=some college; 16=associate degree: occupational; 17=associate degree: academic program; 18=bachelor’s degree (ex. BA); 19=master’s degree (ex. MA); 20=professional school degree (ex. MD); 21=doctoral degree. Nativity was 1 for immigrant and 0 for US-born children. For ethnicity, Hispanic/Latino was 1 and non-Hispanic/Non-Latino was 0. Parental employment was a dichotomous variable: 1 for employed parents and 0 for unemployed parent. Family conflict was measured using 9 items. Neighborhood poverty was a continuous measure defined as percentage of population below 138% of the poverty threshold). Trauma was a dichotomous variable that reflected any or no stressful life events in the life of the child. Items used to measure stress are shown in [Supplementary file 1](#).

3.7. Data Analysis

SPSS 23.0 was used to analyze the data. The ABCD data was downloaded from the National Institute for Health (NIH) National Data Archive (NDA) website. Mean, standard deviation (SD), frequency, and relative frequency (%) were described overall and by race. We used independent samples t-test and chi-square test to compare study variables between White and Black children. For multivariable modeling, we ran Logistic regression models. As our calculation showed intra-class correlation of less than 0.05, we did not apply mixed-effect regression models that includes random effects. The main predictor variable was family income. The moderator was race. The outcome variable was children’s suicidality, treated as a binary variable, reflecting any positive history of suicidal thoughts or behaviors over the lifetime. Covariates included sex,

age, family marital status, neighborhood poverty, parental education, parental employment, trauma, and family conflict. First two logistic regression models were fitted to the pooled sample in the absence and presence of a family income by race interaction term. Interaction term was multiplicative effect of race (Black – 1 and White=0) and family income (range from 1 to 10). Before we estimate our models, we ruled out multi-collinearity between study variables. A p-value of less than or equal to 0.05 was significant. We reported odds ratio (OR) 95% confidence intervals (CI), and P values.

4. Results

4.1. Descriptive Data Overall

This study included 7298 White or Black 9-10 year-old children. Of all participants, 5652 were Whites, and 1646 were Blacks. From all children, 622 had positive suicidality history ([Table 1](#)).

Table 1. Descriptive Data Overall and by Race

	All		White		Black	
	No.	%	No.	%	No.	%
Race						
White	5652	77.45	5652	100	0	0
Black	1646	22.55	0	0	1646	100
Ethnicity**						
Non-Latino	6147	84.23	4650	82.27	1497	90.95
Latino	1151	15.77	1002	17.73	149	9.05
Immigration status						
US-Born	7126	97.64	5518	97.63	1608	97.69
Immigrant	172	2.36	134	2.37	38	2.31
Sex						
Female	3500	47.96	2680	47.42	820	49.82
Male	3798	52.04	2972	52.58	826	50.18
Married family**						
Not married	2245	30.76	1153	20.40	1092	66.34
Married	5053	69.24	4499	79.60	554	33.66
Trauma/Stress (any) **						
No	4514	61.85	3615	63.96	899	54.62
Yes	2589	35.48	1869	33.07	720	43.74
Missing	195	2.67	168	2.97	27	1.64
MDD (past) **						
No	7141	97.85	5549	98.18	1592	96.72
Yes	157	2.15	103	1.82	54	3.28
Suicidality (any) **						
No	6676	91.48	5198	91.97	1478	89.79
Yes	622	8.52	454	8.03	168	10.21
	Mean	SD	Mean	SD	Mean	SD
Age (month)	9.46	0.51	9.47	0.50	9.46	0.51
Parental education (1-24)	16.83	2.53	17.23	2.38	15.47	2.54
Neighborhood poverty*	20.54	15.91	16.82	12.68	33.32	18.95
Family conflict**	0.76	1.04	0.71	1.00	0.95	1.14
Household income (1-10)**	7.25	2.41	7.83	1.98	5.25	2.68

Abbreviations: OR, odds ratio; MDD: major depressive disorder.
 *Neighborhood Poverty: Percentage of population below 138% of the poverty threshold.
 **P<0.05

4.2. Descriptive Data by Race

As shown in Table 1, Black and White children did not differ in age and sex but highly varied in stress, SES, family marital status, and neighborhood SES. Suicidality was also higher in Black than White children.

4.3. Pooled Sample Models

In the pooled sample and the absence of any interaction, family income was inversely associated with children's suicidality (Model 1). There was an interaction between race and family income in Model 2. This interaction was suggestive of a weaker association between family income and suicidality in Black than White children (Table 2).

4.4. Race-Specific Models

We found that high family income was associated with lower suicidality for White but not Black children (Table 3).

5. Discussion

We explored racial variation in the effects of family income on suicidality in US children. In a national sample of children, race and family income showed interdependent (interactive) rather than additive effects on suicidality.

The protective effect of high family income against children's suicidality seems to be stronger for White than Black children. The observation that family income has more salient role for reducing suicidality of White than Black children is in line with the MDRs framework. Marginalization-related diminished returns or minorities' diminished returns (MDRs)⁵⁷⁻⁵⁹ suggesting that individual-level social determinants particularly SES indicators have health effects that may be weaker for Black than White individuals. MDRs emerge because of racism, segregation, and social stratifications: physical and mental health outcomes of Black families show deterioration due to the

Table 2. Association Between Suicidality in American Children In the Pooled Sample

	Model 1				Model 2			
	OR	95% CI		P Value	OR	95% CI		P Value
Race (Black)	1.10	0.87	1.39	0.438	0.48	0.27	0.84	0.011
Ethnicity (Latino)	0.90	0.70	1.17	0.442	0.82	0.63	1.07	0.145
Immigrant	0.66	0.33	1.32	0.242	0.64	0.32	1.27	0.198
Male	1.28	1.08	1.52	0.005	1.28	1.07	1.52	0.006
Married household	0.95	0.76	1.20	0.685	0.95	0.76	1.19	0.680
Age (month)	0.96	0.81	1.13	0.596	0.96	0.81	1.13	0.607
Parental education (1-24)	1.03	0.98	1.08	0.211	1.03	0.99	1.08	0.179
Neighborhood poverty *	1.00	0.99	1.00	0.443	1.00	0.99	1.00	0.588
Family conflict	1.15	1.06	1.24	0.000	1.16	1.07	1.25	0.000
Trauma/Stress (Any)	1.25	1.05	1.49	0.014	1.21	1.02	1.45	0.031
MDD (past)	7.82	5.57	10.99	0.000	7.71	5.48	10.83	0.000
Family income (1-10)	0.95	0.90	1.00	0.048	0.90	0.85	0.96	0.001
Race (Black) x Family Income (1-10)					1.14	1.05	1.24	0.001

Abbreviations: OR, odds ratio; MDD: major depressive disorder.

*Neighborhood Poverty: Percentage of population below 138% of the poverty threshold.

Table 3. Association Between Family Income and Suicidality in American Children by Race

	White				Black			
	OR	95% CI		P Value	OR	95% CI		P Value
Ethnicity (Latino)	0.84	0.63	1.13	0.250	0.75	0.40	1.41	0.376
Immigrant	0.56	0.24	1.30	0.178	0.84	0.25	2.81	0.772
Male	1.23	1.00	1.51	0.045	1.39	0.99	1.94	0.054
Married household	0.86	0.66	1.12	0.273	1.20	0.80	1.80	0.372
Age (month)	0.95	0.78	1.16	0.600	1.02	0.74	1.40	0.925
Parental education (1-24)	1.03	0.98	1.09	0.227	1.03	0.94	1.11	0.549
Neighborhood poverty*	1.00	0.99	1.01	0.459	1.00	0.99	1.01	0.933
Family conflict	1.07	0.97	1.18	0.157	1.35	1.18	1.55	0.000
Stress (any)	1.20	0.97	1.48	0.088	1.28	0.92	1.78	0.148
MDD (past)	9.72	6.43	14.71	0.000	4.83	2.62	8.92	0.000
Family income (1-10)	0.90	0.84	0.96	0.003	1.03	0.94	1.13	0.501

Abbreviations: OR, odds ratio; MDD: major depressive disorder.

*Neighborhood Poverty: Percentage of population below 138% of the poverty threshold.

influence of contextual factors that may reduce choices and individual-level variations. Our past work on the MDRs phenomenon has provided strong evidence of MDRs for middle-class Black youth in the ABCD data.^{56,60-}

⁶⁶ As a result of MDRs, changes in predictors result in smaller changes in developmental and health outcomes in Black than White communities. Racism, stratification, and segregation reduce how much SES can do to protect Black communities health.⁶⁷⁻⁷⁰

We also found stress, sex, and other SES indicators were linked to children suicide. These observations are in line with the literature on the effects of SES and stress on undesired mental health outcomes such as suicidality.⁷¹⁻⁷³

Overall stress and⁷⁴ specific types of stress⁷⁵ correlate with suicidality in children and adults. These findings are shown across age groups.^{75,76}

This study established differential effects of family income on suicidality of Black and White children. Previous studies have shown differences between White and Blacks in risk and protective factors that correlate with suicidality,^{77,78} depression,⁷⁹ anxiety,^{80,81} and stress.⁴³ In a study, parental educational attainment showed a larger protective effect for Whites than Blacks.⁸² In another study, high SES Black youth showed highest rather than lowest depression.⁷⁹

In line with MDRs, family SES including household income lose some of their strength in the presence of residential segregation, social stratification, and structural racism.⁵⁷ Under racism, Black families continue to experience high levels of stress, regardless of their SES. For White families, however, high SES means low stress across domains.⁵⁹ In another study, health needs of Blacks and Whites with suicidality were highly different.⁸³ As a result, needs for suicide prevention is not low for middle-class Black communities. This invites us to take an intersectionality framework for our research, practice, and program planning.⁸⁴

Research-based knowledge that informs us on how Black and White children differ in the risk and protective factors of suicidality may have implications for prevention, detection, diagnosis, and treatment of suicidality through tailored public health or clinical efforts for racially diverse groups of children. Researchers, clinicians, and practitioners should be aware that one size never fits all. Policy practices should also consider these heterogeneities.

Our findings suggest that family income may be more relevant to Whites' than Blacks' suicidality in children. It is essential to tailor our interventions, programs, and services for racial and ethnic groups, simply because racial differences exist in correlates of suicidality in children.⁸⁴ Joe's review has shown that almost no evidence-based suicidality prevention or treatment program exist for racial groups such as Blacks.⁸⁵

One of the many reasons our results are important is the recent upward trend increased in suicidality among Black children and youth.⁸⁶ Our observation that suicidality is higher in Black than White youth and remains high

in middle-class Black youth suggests that to prevent suicidality in Black communities, we need to go beyond family income and other SES indicators. There is a need to study structural factors that increase suicidality in Black children and youth across class lines. With a large diverse sample size, ABCD provides an opportunity to investigate intersectional differences in risk and protective factors of suicidality in US children.

The recent increase in Black children's suicidality is a real national concern.⁸⁷ While suicidality was traditionally and historically higher in Whites than Blacks, Black children including middle-class and high-income Black children need suicide prevention as well. The ABCD data also shows higher suicidality of Black than White children.⁵⁵ The ABCD study is a unique opportunity to study how social and biological factors and processes contribute to suicidality in diverse group of children.^{55,78,88}

5.1. Study Limitations

Current study has some methodological and conceptual limitations. First limitation is the cross-sectional design which does not allow any causal inferences. Second is lack of controlling for physical disability, learning disability, sexual orientation, gender identity, religiosity, and parental mental health. Other factors such as history of depression treatment or history of alcohol and drug use problems in parents and perinatal issues may also correlate with both SES and suicidality. However, we carefully controlled our covariates to avoid over adjustment.⁸⁹ Although the ABCD sample is national, it is not a random sample. Therefore, the results should not be generalized to the US children. Finally, this analysis was limited to Black and White children. There is a need for future studies on other racial and ethnic minorities. Future research should also consider within-race heterogeneity in Latino and Black Americans.

6. Conclusion

While high-income White children are protected against suicidality, high-income Black children remain at risk of suicidality. This is after we controlled for other stressors, MDD, family structure, and neighborhood SES. This

Research Highlights

What Is Already Known?

Family SES is among the strongest social determinants of suicide in youth. High family income is associated with lower odds of suicidality in youth.

What Does This Study Add?

The protective effect of family income against youth suicidality is weaker for Black than White families. Although high family income is associated with lower youth suicidality, Black youth from high-income families remain at risk of suicidality. Diminished protective effects of SES for Black families reflect structural racism in the US.

paradox may reflect racism in the US.

Authors' Contributions

Conceptual design: CC, SA, BN, RM; data analysis: SA; draft: BN; revision: CC, SA, BN, RM. All authors approval of the final draft.

Conflict of Interest Disclosures

The authors declare that they have no conflict of interests.

Ethical Approval

The ABCD study protocol received an Institutional Review Board (IRB) approval from several institutions, including but not limited to the University of California, San Diego (UCSD). All participating children provided assent. All participating parents signed an informed consent ⁹². Our study was exempt from a full IRB review (IRB Number=1761826-1).

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Supplementary files

Supplementary file 1. The ABCD's Suicide, Trauma, and Discrimination Measure.

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