

Research Article

Race, Ethnicity, Socioeconomic Status and Stressful Life Events during Childhood

Boyce S², Assari S^{1*}, Bazargan M^{1,3} and Caldwell CH^{4,5}

¹Department of Family Medicine, Charles R Drew University of Medicine and Science, Los Angeles, CA 90059, USA

²Department of Pediatrics, Charles R Drew University of Medicine and Science, Los Angeles, CA 90059, USA

³Department of Family Medicine, University of California Los Angeles, Los Angeles, CA 90095, USA

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

⁵Department of Health Behavior and Health Education, School of Public Health, University of Michigan, Ann Arbor, MI 48104, USA

*Corresponding author: Shervin Assari, Department of Family Medicine, Charles R Drew University of Medicine and Science, Los Angeles, CA 90059, USA

Received: January 14, 2022; Accepted: February 17, 2022; Published: February 24, 2022

Abstract

Background: Children are exposed to a wide range of stressful life events (SLEs) in the family and the community. Exposure to stress in the community as well as the family may depend on socioeconomic status (SES) and race/ethnicity. Currently, there is limited data that explores different types of SLEs experienced by racial and ethnic groups of children.

Aim: To compare the different types of SLEs experienced by a racially and ethnically diverse group of children, with a major emphasis on family and community context.

Methods: This cross-sectional study included 5066 adolescents 9-10 years of age from the Adolescent Brain Cognitive Development (ABCD) study. Race and ethnicity were the independent variables. The main outcomes were exposure to eight types of SLEs measured during an interview with the parent. Age and gender were the confounders. Parental marital status, parental education, parental employment, financial difficulties, and neighborhood income were the mediators. Logistic regression was used to analyze the data.

Results: In the absence of SES in the model, Black but not Latino children experienced higher levels of SLEs in some but not all domains. SES explained some of the effects of race on SLEs, however, race remained significant in some domains, when the effects of SES indicators were controlled. While we found the same pattern for family and neighborhood SLEs, the observations showed some degrees of heterogeneities based on the specific type of SLE. There were also domains of SLEs that did not correlate with race. However, all types of SLEs were associated with SES.

Conclusions: Our study showed that Black race, but not Latino ethnicity, is associated with disproportionately higher levels of experiencing family and neighborhood SLEs. The effects of race on some but not all types of SLEs are due to the racial gap in SES. Racial health quality requires the elimination of racial inequalities in exposure to stressful life events.

Keywords: Race; Ethnicity; Stress; Family; Neighborhood

Introduction

Stressful life events (SLEs) occur in various domains and settings including neighborhood and family [1-4]. One common type of SLE is exposure to violence, which may occur in the community or family [5]. Given the high prevalence, childhood exposure to SLEs is a public health concern in the United States [5].

Some research has shown that SLEs are predictive of poor outcomes regardless of their domains and settings [6,7]. Some other research suggests that SLEs that occur in the family may be more detrimental because family is more proximal to children, suggesting that exposure to family based SLEs may be more repeated and chronic [8,9]. It is important to note, however, that both neighborhood- and family-related SLEs have been found to be higher in children from minority (racial and ethnic) backgrounds and low socioeconomic status (SES) backgrounds [10].

In 2009, among children ages 12-17 years, over 70% of which were Black, Hispanic or came from low-income households, more

than half of them had been victims of assault and one third either witnessed the victimization of another person or were exposed indirectly to victimization, such as through knowing someone close who had been murdered even if they had not directly witnessed the murder [5,11]. Children in urban environments have exposure to high levels of community violence with 80% reporting that they witnessed community violence and 70% reporting being victims of violence [5,12]. In particular, Black adolescents are at greatest risk compared to other racial/ethnic adolescents such as Latinos regarding exposure to community violence [13,14]. Of note, chronic exposure to community violence has been closely linked to posttraumatic stress disorder (PTSD) in children as well as other mental health problems such as anxiety and depression [12].

Community SLEs are also linked to Major Depressive Disorder [15], obesity [16,17], and increased mortality for Black children [18]. Black children who perceive their communities as unsafe developed symptoms of major depressive disorder at higher rates [15]. This risk may be due to the economic and social challenges uniquely faced by

this group including being educated in schools with limited resources, differential pay, unemployment, limited employment opportunities, and police brutality that persist from childhood to adulthood [15]. Furthermore, perceived community violence has been shown to increase all-cause mortality for Blacks compared to Whites [18]. Community SLEs may differently affect the health of Black children [18].

Urban communities, that continues to have a high Black population, lack economic and social resources and are highly predisposed to disorder, both physical and social, made worse by low levels of informal social control [2]. Additionally, there tend to be low trust levels by individuals in the community, resulting in limited creation of local networks that may collaborate against crime and disorder [2]. This creates stress on individuals in the community who may also perceive the neighborhood to be dangerous leading to increased psychological distress [2]. Furthermore, Black children experience racial discrimination not just at individual/interpersonal levels but at societal (neighborhood) and institutional levels as well [19]. This is even more prevalent in the current society with children being exposed to acts of discrimination through videos of race-based violence, such as the numerous acts of police brutality occurring against members of the children's racial community [20]. The frequency of watching such acts creates significant psychological distress particularly as children develop and transition into adulthood. Beyond the visuals on social media of race-based violence, are the harmful forms of physical violence that Black adolescents and adults experience such as physical fights with injuries, aggravated assault and homicide, the actual experience of police brutality and the harmful transgenerational effects on Blacks [21-23].

Family SLEs, due in large part to poverty, causes parental strain, increased family dysfunction, and an environment where children in the household are exposed to adverse events [24]. Exposure to violence and other childhood traumas are a major concern in children given what is known in the literature about the impact of SLEs in childhood. SLEs in childhood also known as adverse childhood events (ACEs) include being a victim of abuse (physical, emotional, and sexual abuse); experiencing neglect (physical and emotional); witnessing domestic violence within the household; experiencing parental separation or divorce; and having family members affected by mental illness, substance abuse and who have been/or are incarcerated [25]. The medical impacts on children exposed to SLEs include increased risk of respiratory, heart, and metabolic diseases, anxiety, as well as substance use [26-28], drug use [29], PTSD [30], depression, suicide [31,32] and mortality [31-36]. In a recent study that looked at the impact of family income and parental educational attainment on childhood trauma exposure for non-Hispanic Black compared to non-Hispanic Whites, it was found that non-Hispanic Black children experience higher than expected exposures to SLEs [37].

For low SES individuals and racial and ethnic minorities, family operates both as a source of support, as well as the cause of SLEs. As shown by the Family Stress Model [38], higher perceived parental stressful events were associated with worse psychological adjustment for Black children. Mcloyd (1998, 1990) has done extensive empirical and theoretical work on family stressful event processes for economically disadvantaged families and suggests that exposure to poverty associated stressful events function similarly across race/

ethnic groups [24]. This is in part because both low SES individuals and racial and ethnic minorities face large degrees of SLEs such as economic stress [24]. Interestingly, despite the significant positive effect of family support, when the combined effects of support and stressful events are tested, it is the negative effect of family stressful events, not the positive effect of family support that stays consistent with the family stress model [39-42]. This supports observations by Bauermesiter et al., in 2001, that bad (stressful events) is stronger than good (support) [39].

Contributory to the high violence exposure risk in Black children are SES, community context, and SLEs. Among various SES indicators, family income has been shown to be one of the most influential social determinants of children's development, behaviors, and health [43-46]. High-income parents report greater parental involvement, which has positive outcomes across several domains of childhood development [47-50]. However, recent literature has shown that compared to Whites, Black children are experiencing poorer outcomes in various domains such as school performance [51], Body Mass Index [52], chronic disease, tobacco use [51], alcohol use, and aggression [14], across all SES levels.

It will be important to determine the different types of SLEs experienced by children across different domains and racial, ethnic, and SES groups. Currently, there is limited data that explores this topic, and more attention needs to be given to explore and elucidate this area.

Aims

To compare different types of SLEs experienced by racially, ethnically, and socioeconomically diverse groups of children across different domains including family and neighborhood domains.

Methods

Design and settings

This was a cross-sectional, secondary analysis of the Adolescent Brain Cognitive Development (ABCD) study [53-57]. The ABCD study is the largest, national study of brain development in children. The ABCD data set provides several advantages including (a) publicly available data set (b) national sample, (c) large sample size, (d) large sample of blacks, and (e) substantial behavioral and variables. Please see references for further information about ABCD's purpose, methodology, and measurement [53,58].

Participants and sampling

Selection of participants of the ABCD study occurred across multiple cities and 15 different states in the US. Recruitment of the sample was mostly through school systems. The recruitment catchment area of the ABCD study, which composed of 21 participating locations, encompassed more than 20% of the United States populace 9-10-years of age. The ABCD study applied a carefully designed sampling and recruitment process across various sites [53,58], to ensure that the sample is random and representative. Such efforts of local randomization yielded a final overall ABCD sample that is a close approximation of the US national sociodemographic factors. These sociodemographic factors include race and ethnicity, age, gender, SES, and urbanicity. The SES target in the ABCD has two sources: 1) the American Community Survey (ACS) and 2) annual

Table 1: SLE items and their domains.

Item	Item
SLE 1	A car accident in which your child or another person in the car was hurt bad enough to require medical attention
SLE 2	Another significant accident for which your child needed specialized and intensive medical treatment
SLE 3	Witnessed or caught in a fire that caused significant property damage or personal injury
SLE 4	Witnessed or caught in a natural disaster that caused significant property damage or personal injury
SLE 5	Witnessed someone shot or stabbed in the community
SLE 6	Witness the grownups in the home push, shove or hit one another
SLE 7	A peer forced your child to do something sexually
SLE 8	Learned about the sudden unexpected death of a loved one

3rd and 4th-grade school enrollment. A detailed description of the ABCD sample and sampling are available here [59]. The first data are from an annual survey by the U.S Census Bureau completed by approximately 3.5 million households. The second data are kept by the National Center for Education Statistics (NCES) in affiliation with the US Department of Education.

Study variables

The study variables included demographic factors, SES indicators, neighborhood factors, and life stressors.

Outcome

Stressful life events: Parents were interviewed on the subject of the eight types of SLE experienced by their child. SLEs were measured using the Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS) [56-58]. The K-SADS is a semi-structured interview aimed at early identification of high-risk children. The items are shown in Table 1. The responses for each item were coded as 0 (no) or 1 (yes).

Moderator

Race: Race was self-identified in the ABCD study, and reported as a categorical variable, coded as Blacks = 1 and Whites = 0 (reference category).

Ethnicity: Parents self-reported if they were of Hispanic ethnic background. This variable was coded as Hispanic = 1 and non-Hispanic = 0.

Mediator variables

Family income: Reported as a continuous measure from 1 to 10, a higher score was indicative of a higher income. Family income was determined based on the answer to the following question, "What is your total combined family income for the past 12 months? Income refers to salary made before taxes and deductions and from all sources such as wages, social security, disability, and veteran's benefits, rent from properties, unemployment benefits and workman salary. Responses included 1 = Less than \$5k; 2 = \$5k; 3 = \$12k; 4 = \$16k; 5 = \$25k; 6 = \$35k; 7 = \$50k; 8 = \$75k; 9 = \$100k; 10 = \$200k.

Parental educational attainment: Parental Educational attainment was determined based on the answer to the following question, "What is the highest grade or level of school you have completed or the highest degree you have received?" Responses were coded as follows, Never attended/Kindergarten only= 0; 1st grade = 1; 2nd grade = 2 ; 3rd grade = 3; 4th grade = 4; 5th grade = 5; 6th grade = 6; 7th grade = 7; 8th grade = 8; 9th grade = 9; 10th grade = 10; 11th grade = 11; 12th grade = 12; High school graduate = 13; GED or equivalent

Diploma = 14; Some college = 15; Associate degree: Occupational = 16; Associate degree: Academic Program = 17; Bachelor's degree (ex. BA) = 18; Master's degree (ex. MA) = 19; Professional School degree (ex. MD) = 20; Doctoral degree = 21. This variable was reported as an interval measure ranging between 1 and 21. A higher score was indicative of higher educational attainment.

Financial difficulty: Financial difficulties were measured by the following seven items: "In the past 12 months, has there been a time when you and your immediate family experienced any of the following:" (1) "Needed food but could not afford to buy it or could not afford to go out to get it?"; (2) "Were without telephone service because you could not afford it?"; (3) "Did not pay the full amount of the rent or mortgage because you could not afford it?"; (4) "Were evicted from your home for not paying the rent or mortgage?"; (5) "Had services turned off by the gas or electric company, or the oil company would not deliver oil because payments were not made?"; (6) "Had someone who needed to see a doctor or go to the hospital but did not go because you could not afford it?"; and (7) "Had someone who needed a dentist but could not go because you could not afford it?". Responses to each item were either 0 or 1. We calculated a mean score with a potential range between 0 and 1 with a higher score indicating higher financial difficulty.

Confounders: The confounder variables were age, gender and parental marital status. Parents reported the age of the children, calculated as the difference between the dates of birth to the date of enrolment in the study. Age was a continuous measure in years. Gender was reported as a dichotomous variable: 1 = males and 0 = females. Parental marital status was self-reported by the interviewed parent and reported as a dichotomous variable: married = 1 and other = 0.

Statistical analysis

Using SPSS, first, we described our sample. Then we ran two series of logistic regression for each type of stress. The first model only controlled for race, ethnicity, age, and gender. The next model also controlled for HH size, parental marital status, parental employment, parental education, financial difficulty, family income, and neighborhood median income. In all models one specific type of stress was the outcome, as such, we ran 16 models, eight of them without SES, and eight of them with SES.

Results

Table 2 shows a summary of the descriptive statistics. Overall, 5066 children entered our analysis. From this number, 25.3% were

Table 2: Descriptive data.

	Mean	SD
Age	9.44	0.5
Household size	4.73	1.54
Married household	0.68	0.47
Parents employed	0.71	0.46
Parent education (years)	16.8	2.5
Financial difficulty	0.07	0.16
Family income (USD)	7.18	2.46
Median neighborhood income (USD 100000)	0.76	0.36
	n	SD
Race		
White	3782	74.7
Black	1284	25.3
Ethnicity		
Non-Hispanic	4276	84.4
Hispanic	790	15.6
Gender		
Female	2431	48
Male	2635	52
Marital Status		
Unmarried	1609	31.8
Married	3457	68.2
Parental employment		
Unemployed	1484	29.3
Employed	3582	70.7
SLE 1 (Car accident)		
No	4861	96
Yes	205	4
SLE 2 (Other significant accident)		
No	4858	95.9
Yes	208	4.1
SLE 3 (Witnessed or caught in fire)		
No	4941	97.5
Yes	125	2.5
SLE 4 (Witnessed or caught in natural disaster)		
No	4920	97.1
Yes	146	2.9
SLE 5 (Witnessed someone shot or stabbed)		
No	5003	98.8
Yes	63	1.2
SLE 6 (Witnessed domestic violence)		
No	4636	91.5
Yes	430	8.5
SLE 7 (Sexual related peer-pressure)		
No	5005	98.8

Yes	61	1.2
SLE 8 (Unexpected death of a loved one)		
No	3823	75.5
Yes	1243	24.5

SLE: Stressful Life Event.

Black and 74.7% were White. The mean age of the participants was 9.44 years.

This table also shows the frequency of eight types of SLEs. Eight domains are not displayed because the frequency of SLEs was less than 1%. Correlation between the SLE domains was positive and significant ranging from 0.1 to 0.5.

Table 3 presents the outcomes of two series of logistic regressions. Model 1 only included race, ethnicity, age, and gender. Model 2 also added parental marital status, parental education, parental employment, financial difficulties, and neighborhood income. In the absence of SES in the model, Black but not Latino children experienced SLEs. While we found the same pattern for family and neighborhood SLEs, the observations showed some degrees of heterogeneities based on the specific type of SLEs. There were domains of SLEs with which race did not correlate. Finally, SES explained some of the effects of race on SLEs, however, race remained significant in a few domains, while SES was controlled.

Discussion

There were several findings from this research. Each of the SLEs assessed in our study were impacted by SES, this was not the case for race. This indicates that SES is a stronger predictor of SLEs than race. A potential reason for this is the presence of concentrated poverty in minority communities. A recent study in 2017 showed that living in neighborhoods with concentrated poverty was associated with an increased risk of experiencing SLEs [60,61]. High poverty neighborhoods negatively impact the relationships between residents. Weaker interactions between neighbors and poor collective efficacy (safeguards) in such neighborhoods occur due to few economic and social resources [60]. Additionally, there are downstream effects on family dynamics. Low social support due to neighborhood poverty together with financial pressures in the form of inability to provide for material needs, inability to afford bills, and cutting back on necessary expenses such as medical care influence family disruptive behaviors and exposure to SLEs [24,62,63].

Another finding is that race is positively correlated with SLE in both community and family settings. After controlling for SES, the effects of race on SLE diminish or disappear for some but not all domains, indicating that low SES is the major reason that race is linked to SLE. This correlation was not seen with ethnicity. In many of the SLE items, Hispanic ethnicity was not a risk factor.

The literature shows that Black children are 45% more likely to be exposed to SLEs or adverse childhood events compared to white children [64]. One possible cause for the higher rates of SLEs in Black children is racial discrimination [64]. Black children are exposed to racial discrimination within the criminal justice system. A study by Badolato et al. showed that during the 16-year study period (2003-2018), firearm mortality rates due to legal intervention was highest among non-Hispanic Black children compared to non-Hispanic

Table 3: Association between race and ethnicity with various types of stressful life events in American children.

	Model 1				Model 2			
	OR	95% CI		p	OR	95% CI		p
SLE 1 (Car accident)								
Race	1.94	1.45	2.6	0	1.28	0.89	1.85	0.179
Ethnicity	1.25	0.86	1.83	0.241	1.11	0.75	1.65	0.605
Gender (Male)	0.98	0.74	1.29	0.875	0.97	0.73	1.29	0.851
Age	1.09	0.83	1.43	0.548	1.1	0.83	1.45	0.499
HH Size					1	0.91	1.09	0.996
Married household					0.54	0.37	0.78	0.001
Parents employed					0.93	0.67	1.29	0.665
Parent education (0-21)					1	0.93	1.08	0.95
Financial difficulty					2.43	1.14	5.19	0.022
Family income (USD)					1.06	0.97	1.16	0.197
Neighborhood Median Income (Median Family Income USD100000)					0.6	0.35	1.03	0.065
Constant	0.02			0.002	0.02			0.009
SLE 2 (Other significant accident)								
Race	0.68	0.48	0.96	0.03	0.53	0.35	0.81	0.003
Ethnicity	0.73	0.48	1.11	0.136	0.71	0.46	1.1	0.126
Gender (Male)	1.12	0.85	1.48	0.436	1.12	0.85	1.49	0.416
Age	0.8	0.61	1.07	0.129	0.81	0.61	1.08	0.151
HH Size					0.96	0.87	1.07	0.476
Married household					0.63	0.43	0.92	0.018
Parents employed					0.83	0.6	1.14	0.253
Parent education (0-21)					1.1	1.01	1.19	0.02
Financial difficulty					2.38	1	5.69	0.05
Family income (USD)					1	0.91	1.1	0.967
Neighborhood Median Income (Median Family Income USD100000)					0.83	0.51	1.35	0.454
Constant	0.36			0.446	0.14			0.195
SLE 3 (Witnessed or caught in fire)								
Race	1.38	0.94	2.03	0.095	0.94	0.58	1.54	0.808
Ethnicity	0.54	0.29	1	0.051	0.41	0.21	0.8	0.008
Gender (Male)	0.82	0.58	1.17	0.281	0.81	0.57	1.16	0.247
Age	0.75	0.52	1.08	0.119	0.74	0.52	1.06	0.105
HH Size					1.13	1.01	1.25	0.028
Married household					1.13	0.68	1.87	0.639
Parents employed					1.34	0.88	2.04	0.175
Parent education (0-21)					0.92	0.84	1	0.06
Financial difficulty					2.65	1.01	6.93	0.047
Family income (USD)					0.96	0.86	1.08	0.487
Neighborhood Median Income (Median Family Income USD100000)					0.9	0.46	1.75	0.745
Constant	0.41			0.606	1.2			0.925
SLE 4 (Witnessed or caught in natural disaster)								
Race	1.07	0.73	1.56	0.726	1.06	0.67	1.67	0.808
Ethnicity	1.35	0.89	2.06	0.156	1.34	0.86	2.07	0.192
Gender (Male)	0.76	0.55	1.06	0.105	0.75	0.54	1.04	0.086

Age	0.88	0.64	1.23	0.464	0.89	0.64	1.24	0.505
HH Size					0.97	0.87	1.09	0.626
Married household					1.37	0.85	2.21	0.197
Parents employed					0.72	0.5	1.05	0.085
Parent education (0-21)					1.02	0.94	1.11	0.658
Financial difficulty					3.08	1.18	8.02	0.021
Family income (USD)					1.04	0.93	1.17	0.451
Neighborhood Median Income (Median Family Income USD100000)					0.6	0.32	1.12	0.111
Constant	0.1			0.149	0.07			0.142
SLE 5 (Witnessed someone shot or stabbed)								
Race	6.28	3.68	10.71	0	2.05	1.03	4.07	0.04
Ethnicity	2.31	1.24	4.28	0.008	1.82	0.91	3.64	0.091
Gender (Male)	1.46	0.87	2.43	0.148	1.46	0.87	2.45	0.154
Age	1.45	0.89	2.36	0.135	1.51	0.93	2.47	0.098
HH Size					1.03	0.9	1.18	0.64
Married household					0.67	0.34	1.35	0.265
Parents employed					0.67	0.38	1.16	0.15
Parent education (0-21)					0.99	0.89	1.11	0.906
Financial difficulty					3.8	1.35	10.68	0.011
Family income (USD)					0.88	0.77	1.02	0.086
Neighborhood Median Income (Median Family Income USD100000)					0.15	0.04	0.58	0.006
Constant	0			0	0			0.007
SLE 6 (Witnessed domestic violence)								
Race	2.5	2.03	3.08	0	1.05	0.81	1.37	0.706
Ethnicity	2.05	1.61	2.62	0	1.66	1.27	2.17	0
Gender (Male)	1.11	0.91	1.35	0.321	1.1	0.9	1.36	0.355
Age	1.01	0.83	1.23	0.94	1.02	0.83	1.26	0.825
HH Size					1.07	1	1.14	0.035
Married household					0.33	0.25	0.43	0
Parents employed					0.81	0.64	1.02	0.074
Parent education (0-21)					1.02	0.97	1.07	0.456
Financial difficulty					11.01	6.74	17.97	0
Family income (USD)					1	0.94	1.07	0.942
Neighborhood Median Income (Median Family Income USD100000)					0.72	0.48	1.07	0.106
Constant	0.05			0.002	0.07			0.013
SLE 7 (Sexual related peer-pressure)								
Race	1.05	0.59	1.88	0.861	0.59	0.29	1.21	0.154
Ethnicity	1.1	0.55	2.18	0.791	0.96	0.46	1.98	0.902
Gender (Male)	1.53	0.91	2.57	0.112	1.52	0.9	2.56	0.12
Age	1.5	0.91	2.46	0.109	1.5	0.91	2.48	0.112
HH Size					0.89	0.74	1.06	0.193
Married household					1	0.5	2.01	0.994
Parents employed					0.66	0.37	1.15	0.144
Parent education (0-21)					1.13	0.98	1.29	0.092
Financial difficulty					13	4.13	40.93	0
Family income (USD)					0.92	0.78	1.08	0.299

Neighborhood Median Income (Median Family Income USD100000)					0.7	0.27	1.86	0.48
Constant	0			0	0			0.001
SLE 8 Unexpected death of a loved one								
Race	1.77	1.54	2.04	0	1.27	1.06	1.51	0.008
Ethnicity	1	0.83	1.19	0.966	0.86	0.71	1.04	0.131
Gender (Male)	0.92	0.81	1.04	0.188	0.91	0.8	1.04	0.163
Age	1.04	0.91	1.18	0.556	1.04	0.91	1.18	0.545
HH Size					1	0.96	1.04	0.99
Married household					0.84	0.7	1	0.051
Parents employed					1.06	0.91	1.23	0.461
Parent education (0-21)					0.97	0.94	1	0.075
Financial difficulty					2.99	2	4.48	0
Family income (USD)					1.01	0.97	1.05	0.619
Neighborhood Median Income (Median Family Income USD100000)					0.74	0.58	0.93	0.012
Constant	0.2			0.009	0.43			0.22

White children [65]. Additionally, black children are more likely to watch caregivers subjected to racial profiling and unwarranted attention by police officers and police brutality [64,66]. The experience of watching caregivers receive this treatment alone is sufficient to increase the chances that these Black children will suffer from toxic stress [66]. The schools are other locations in which Black children experience racial discrimination [64]. Studies have shown that for similar infractions, Black children compared to White children are suspended from school more often, for longer periods, and receive greater punishments [67,68]. Additionally, schools with an increased disproportion of Black students tend to criminalize student behavior rather than assessing if these students' behaviors are symptoms of medical conditions that interfere with learning and enrolling then in services provided by the Individuals with Disabilities Act and Section 504 of the 1973 Rehabilitation Act. Lack of such services increases Black children's risk of suffering from toxic stress [64].

Another possible cause for the higher rate of SLEs in Black children is that they tend to live in segregated neighborhoods with less resources, compared to White children [60,69]. This is likely due in part to historical practices of redlining that are still felt today [70]. The literature indicates that the SES level of the neighborhoods where residents reside and go to school affects their quality of life and life chances [71]. According to Peterson and Krivo, differences in neighborhood disadvantage can explain the racial gap in exposure to violence seen [71]. Furthermore, the spatial separation of affluent and poor neighborhoods produces a mismatch that contributes to the increased difficulty Black families experience in terms of having greater difficulty accessing quality health care, public transportation, quality schools, and employment opportunities [64,72]. However, it is important to highlight that Black children who live in affluent neighborhoods are less likely to benefit from being in an advantaged neighborhood, compared to White children, because they do not belong to the majority race and may be treated as outsiders [60]. The environment created in both scenarios is particularly stressful for adults who are not able to provide a supportive environment to buffer their children from the toxic stressful events experienced [64].

Policy Implications

An implication of this study is the consideration of interventions to reduce SLEs that must be focused on the family and community contexts. The domains assessed in the research were highly specific and different from each other such that targeted interventions towards these family and community domains will appropriately address the SLEs experienced by Black children.

Additionally, it is important to implement programs and policies that address racial and SES factors, which increase exposure to SLEs. These programs and policies must not only ensure equal access to resources, a problem experienced by low and high SES groups in the Black community as seen with previous Minority Diminished Returns data, but must also address the societal and structural processes that place Black children at higher risk for experiencing SLEs [52,73-76]. These programs must address several issues including policing and police brutality, discriminatory practices in the labor market, and discriminatory practices in the real estate market. Furthermore, investments must be targeted towards educational programs that guarantee equal access to a high-quality education, a supportive school environment with improved disciplinary practices, and adequate resources for Black and other minority children [77].

It is important to recognize that beyond the suggested programs and policies mentioned above, which alone may not be sufficient, addressing SLEs in childhood may also require more research into emerging interventions such as trauma-informed care within medical institutions, trauma-informed curriculums within schools, and community-oriented collaborations and response strategies involving partnerships with agencies like the police department, schools, and social welfare and justice departments [78]. In all cases, identification of the potential for an SLE occurrence and early intervention to prevent or mitigate the impact will be key.

Limitations

There are a few methodological limitations in this study. The main limitation of this study is that it uses a cross-sectional design, which limits any inferences to be made about causal associations between

race, SES, and exposure to SLEs. More studies need to be conducted on other sub-groups within society, including various marginalized groups beyond race. Of note, the Oaxaca Decomposition methodology could have been alternatively used to assess racial disparities in SLEs [79].

Conclusions

In summary, compared to White children, Black children have increased exposure to SLEs in both family and community domains. Low SES may be why race influences the exposure to stressful life events at least in some domains. When considering interventions to reduce SLEs both family and community contexts must be involved.

Declaration

Author Contributions: The study was conceptualized, and the first draft of the paper was prepared by S.B. Contributions towards the conceptualization of the study and revisions to the paper were made by S.A. and M.B. Analysis of the data was done by S.A. who had full access to the data, and who was responsible for the data's integrity and accuracy of the analysis. Contributions to the conceptual model results, interpretation, drafts, and revisions to the paper were done by C.H.C. The final draft was approved by all authors.

Funding: Shanika Boyce was supported by the National Institutes on Minority Health and Health Disparities (NIMHD) and National Institute of Health (NIH) CRECD grant, Award Number G008070. Shervin Assari and Mohsen Bazargan are also supported by 5S21MD000103, 54MD008149, R25 MD007610, 2U54MD007598, and U54 TR00167. The authors are solely responsible for the content of the paper and it does not represent or reflect the views of the NIMHD and NIH.

Acknowledgments: The funders did not contribute to the design or conduct of the study; they did not affect how the data was collected, managed, analyzed or interpreted; did not provide input during the process of preparing, reviewing or approval of the manuscript; and were not involved in the decision to submit the manuscript for publication.

References

1. Steptoe A and PJ Feldman. Neighborhood problems as sources of chronic stress: Development of a measure of neighborhood problems, and associations with socioeconomic status and health. *Annals of Behavioral Medicine*. 2001; 23: 177-185.
2. Stockdale SE, et al. The importance of social context: neighborhood stressors, stress-buffering mechanisms, and alcohol, drug, and mental health disorders. *Social science & medicine* (1982). 2007; 65: 1867-1881.
3. Munoz E, et al. The Role of Neighborhood Stress on Cognitive Function: A Coordinated Analysis. *Innovation in Aging*. 2018; 2: 68-68.
4. Lucas-Thompson RG and WA Goldberg. Chapter 7 - Family Relationships and Children's Stress Responses, in *Advances in Child Development and Behavior*. JB Benson, Editor. 2011, JAI. 243-299.
5. Stoddard SA, et al. Predicting violent behavior: The role of violence exposure and future educational aspirations during adolescence. *Journal of adolescence*. 2015; 44: 191-203.
6. Assari S, et al. Inconsistent Condom Use among Iranian Male Drug Injectors. *Front Psychiatry*. 2013; 4: 181.
7. Thoits PA. Stress and Health: Major Findings and Policy Implications. *Journal of Health and Social Behavior*. 2010; 51: S41-S53.
8. Tubbs C. Cascading Effects of Parental Stress.
9. Valdez CR, T Chavez and J Woulfe. Emerging adults' lived experience of formative family stress: the family's lasting influence. *Qualitative health research*. 2013; 23: 1089-1102.
10. National Research Council Panel on Race E and L Health in Later, The National Academies Collection: Reports funded by National Institutes of Health, in *Understanding Racial and Ethnic Differences in Health in Late Life: A Research Agenda* RA Bulatao and NB Anderson, Editors. 2004, National Academies Press (US). Copyright © 2004, National Academies. Washington (DC).
11. Finkelhor D, et al. Violence, abuse, and crime exposure in a national sample of children and youth. *Pediatrics*. 2009; 124: 1411-1423.
12. Cooley-Strickland M, et al. Community violence and youth: affect, behavior, substance use, and academics. *Clinical child and family psychology review*. 2009; 12: 127-156.
13. Assari S, et al. Violence Victimization Predicts Body Mass Index One Decade Later among an Urban Sample of African American Young Adults: Sex as a Moderator and Dehydroepiandrosterone as a Mediator. *J Urban Health*. 2019.
14. Thomas A, et al. You do what you see: How witnessing physical violence is linked to violent behavior among male African American adolescents. *The Journal of Men's Studies*. 2016; 24: 185-207.
15. Assari S and CH Caldwell. Neighborhood Safety and Major Depressive Disorder in a National Sample of Black Youth; Gender by Ethnic Differences. *Children (Basel, Switzerland)*. 2017; 4: 14.
16. Assari S, et al. Fear of Neighborhood Violence During Adolescence Predicts Development of Obesity a Decade Later: Gender Differences Among African Americans. *Archives of trauma research*. 2016; 5: e31475-e31475.
17. Assari S, et al. Violence Victimization Predicts Body Mass Index One Decade Later among an Urban Sample of African American Young Adults: Sex as a Moderator and Dehydroepiandrosterone as a Mediator. *J Urban Health*. 2019; 96: 632-643.
18. Assari S. Perceived Neighborhood Safety Better Predicts Risk of Mortality for Whites than Blacks. *Journal of racial and ethnic health disparities*. 2016.
19. Jee-Lyn García J and MZ Sharif. Black Lives Matter: A Commentary on Racism and Public Health. *American journal of public health*. 2015; 105: e27-e30.
20. Brenneman R and J Miller. Study: Exposure to videos of race-based violence can lead to mental health issues; A new USC study finds that viewing violent videos of police shootings may be harmful to the mental health of adolescents of color.
21. Sheats KJ, et al. Violence-Related Disparities Experienced by Black Youth and Young Adults: Opportunities for Prevention. *American journal of preventive medicine*. 2018; 55: 462-469.
22. Alang S, et al. Police Brutality and Black Health: Setting the Agenda for Public Health Scholars. *American journal of public health*. 2017; 107: 662-665.
23. Smith JR. Unequal burdens of loss: examining the frequency and timing of homicide deaths experienced by young Black men across the life course. *American journal of public health*. 2015; 105: S483-S490.
24. Conger RD, et al. Economic pressure in African American families: A replication and extension of the family stress model. *Developmental Psychology*. 2002; 38: 179-193.
25. Elmore AL and E Crouch. The Association of Adverse Childhood Experiences With Anxiety and Depression for Children and Youth, 8 to 17 Years of Age. *Acad Pediatr*. 2020.
26. Melka A, et al. Adverse childhood experiences and electronic cigarette use among young Australian women. *Preventive Medicine*. 2019; 126: 105759.
27. Forster M, et al. Adverse Childhood Experiences, Ethnicity, and Substance Use among College Students: Findings from a Two-State Sample. *Subst Use Misuse*. 2019; 54: 2368-2379.

28. Mwachofi A, S Imai and RA Bell. Adverse childhood experiences and mental health in adulthood: Evidence from North Carolina. *J Affect Disord*. 2020; 267: 251-257.
29. Giano Z, et al. Adverse childhood experiences and MSM marijuana use. *Drug Alcohol Depend*. 2019; 198: 76-79.
30. Frewen P, J Zhu and R Lanius. Lifetime traumatic stressors and adverse childhood experiences uniquely predict concurrent PTSD, complex PTSD, and dissociative subtype of PTSD symptoms whereas recent adult non-traumatic stressors do not: results from an online survey study. *Eur J Psychotraumatol*. 2019; 10: 1606625.
31. Felitti VJ, et al. REPRINT OF: Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med*. 2019; 56: 774-786.
32. Felitti VJ, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med*. 1998; 14: 245-258.
33. Assari S and J Haidar. History of Non-Fatal Physical Assault Is Associated with Premature Mortality for Whites but Not Blacks. *J Multidisciplinary Scientific Journal*. 2018; 1: 81-93.
34. Campbell JA, RJ Walker and LE Egede. Associations between Adverse Childhood Experiences, High-Risk Behaviors, and Morbidity in Adulthood. *Am J Prev Med*. 2016; 50: 344-352.
35. Kelly-Irving M, et al. Adverse childhood experiences and premature all-cause mortality. *Eur J Epidemiol*, 2013; 28: 721-734.
36. Anda RF, et al. The relationship of adverse childhood experiences to a history of premature death of family members. *BMC Public Health*. 2009; 9: 106.
37. Assari S. Family Socioeconomic Status and Exposure to Childhood Trauma: Racial Differences. *Children (Basel)*. 2020; 7.
38. Goosby BJ, et al. Ethnic Differences in Family Stress Processes Among African-Americans and Black Caribbeans. *Journal of African American studies (New Brunswick, N.J.)*. 2012; 16: 406-422.
39. Baumeister RF, et al. Bad is Stronger than Good. *Review of General Psychology*. 2001; 5: 323-370.
40. Eby L, et al. Are bad experiences stronger than good ones in mentoring relationships? Evidence from the protégé and mentor perspective. *Journal of Vocational Behavior*. 2010; 77: 81-92.
41. Carlson BE, et al. Intimate Partner Abuse and Mental Health: The Role of Social Support and Other Protective Factors. *Violence Against Women*. 2002; 8: 720-745.
42. Formoso D, NA Gonzales and LS Aiken. Family Conflict and Children's Internalizing and Externalizing Behavior: Protective Factors. *American Journal of Community Psychology*. 2000; 28: 175-199.
43. Barreto SM, RC de Figueiredo and L Giatti. Socioeconomic inequalities in youth smoking in Brazil. *BMJ Open*. 2013; 3: e003538.
44. Alvarado SE. The impact of childhood neighborhood disadvantage on adult joblessness and income. *Soc Sci Res*. 2018; 70: 1-17.
45. Hemovich V, A Lac and WD Crano. Understanding early-onset drug and alcohol outcomes among youth: the role of family structure, social factors, and interpersonal perceptions of use. *Psychology, health & medicine*. 2011; 16: 249-267.
46. Schreier HM and E Chen. Socioeconomic status and the health of youth: a multilevel, multidomain approach to conceptualizing pathways. *Psychol Bull*. 2013; 139: 606-654.
47. Poh BK, et al. Low socioeconomic status and severe obesity are linked to poor cognitive performance in Malaysian children. *BMC Public Health*. 2019; 19: 541.
48. Karlsson O, JW De Neve and SV Subramanian. Weakening association of parental education: analysis of child health outcomes in 43 low- and middle-income countries. *Int J Epidemiol*. 2019; 48: 83-97.
49. Bouthoorn SH, et al. Development of socioeconomic inequalities in obesity among Dutch pre-school and school-aged children. *Obesity (Silver Spring)*. 2014; 22: 2230-2237.
50. Christensen DL, et al. Socioeconomic status, child enrichment factors, and cognitive performance among preschool-age children: results from the Follow-Up of Growth and Development Experiences study. *Res Dev Disabil*. 2014; 35: 1789-1801.
51. Assari S, CH Caldwell and M Bazargan. Association Between Parental Educational Attainment and Youth Outcomes and Role of Race/Ethnicity. *JAMA Network Open*. 2019; 2: e1916018-e1916018.
52. Assari S, et al. Blacks' Diminished Health Return of Family Structure and Socioeconomic Status; 15 Years of Follow-up of a National Urban Sample of Youth. *J Urban Health*. 2018; 95: 21-35.
53. Alcohol Research: Current Reviews Editorial, S., NIH's Adolescent Brain Cognitive Development (ABCD) Study. *Alcohol Res*. 2018; 39: 97.
54. Casey BJ, et al. The Adolescent Brain Cognitive Development (ABCD) study: Imaging acquisition across 21 sites. *Dev Cogn Neurosci*. 2018; 32: 43-54.
55. Karcher NR, et al. Resting-State Functional Connectivity and Psychotic-like Experiences in Childhood: Results from the Adolescent Brain Cognitive Development Study. *Biol Psychiatry*. 2019; 86: 7-15.
56. Lisdahl KM, et al. Adolescent brain cognitive development (ABCD) study: Overview of substance use assessment methods. *Dev Cogn Neurosci*. 2018; 32: 80-96.
57. Luciana M, et al. Adolescent neurocognitive development and impacts of substance use: Overview of the adolescent brain cognitive development (ABCD) baseline neurocognition battery. *Dev Cogn Neurosci*. 2018; 32: 67-79.
58. Aughter AM, et al. A description of the ABCD organizational structure and communication framework. *Dev Cogn Neurosci*. 2018; 32: 8-15.
59. Garavan H, et al. Recruiting the ABCD sample: Design considerations and procedures. *Dev Cogn Neurosci*. 2018; 32: 16-22.
60. Wang X, et al. Racial Differences in the Relationship between Neighborhood Disorder, Adverse Childhood Experiences, and Child Behavioral Health. *J Abnorm Child Psychol*. 2020; 48: 315-329.
61. Baglivio MT, et al. Predicting Adverse Childhood Experiences: The Importance of Neighborhood Context in Youth Trauma among Delinquent Youth. *Crime & Delinquency*. 2015; 63: 166-188.
62. Invalid Citation. 33.
63. Wang D, J-K Choi and J Shin. Long-term Neighborhood Effects on Adolescent Outcomes: Mediated through Adverse Childhood Experiences and Parenting Stress. *Journal of Youth and Adolescence*. 2020; 49: 2160-2173.
64. Morsy L and R Rothstein. Toxic Stress and Children's outcomes; African American Children growing up poor are at greater risk of disrupted physiological functioning and depressed academic achievement. 2019.
65. Badolato GM, et al. Racial and Ethnic Disparities in Firearm-Related Pediatric Deaths Related to Legal Intervention. *Pediatrics*. 2020; 146: e2020015917.
66. Boyd RW, AM Ellison and IB Horn. Police, Equity, and Child Health. *Pediatrics*. 2016; 137: e20152711.
67. Nance JP. Over-Disciplining Students, Racial Bias, and the School-to-Prison Pipeline. 2016.
68. Skiba RJ, et al. Race Is Not Neutral: A National Investigation of African American and Latino Disproportionality in School Discipline. *School Psychology Review*. 2011; 40: 85-107.
69. Hipp J and D Yates. Ghettos, thresholds, and crime: Does concentrated poverty really have an accelerating increasing effect on crime? *Criminology*. 2011; 49: 955-990.
70. Kenton W. Redlining. 2019.
71. Quillian L. Segregation and Poverty Concentration: The Role of Three Segregations. *Am Sociol Rev*. 2012; 77: 354-379.

72. Hahn R. Racial and Ethnic Residential Segregation as a Root Social Determinant of Public Health and Health Inequity: A Persistent Public Health Challenge in the United States. *Poverty and Race*. 2017; 26.
73. Assari S. Unequal Gain of Equal Resources across Racial Groups. *Int J Health Policy Manag*. 2017; 7: 1-9.
74. Assari S. Health Disparities due to Diminished Return among Black Americans: Public Policy Solutions. *Social Issues and Policy Review*. 2018; 12: 112-145.
75. Assari S, CH Caldwell and R Mincy. Family Socioeconomic Status at Birth and Youth Impulsivity at Age 15; Blacks' Diminished Return. *Children (Basel)*. 2018; 5.
76. Assari S, CH Caldwell and RB Mincy. Maternal Educational Attainment at Birth Promotes Future Self-Rated Health of White but Not Black Youth: A 15-Year Cohort of a National Sample. *J Clin Med*. 2018; 7.
77. Monroe CR. Understanding the discipline gap through a cultural lens: implications for the education of African American students. *Intercultural Education*. 2005; 16: 317-330.
78. Ford DE. The Community and Public Well-being Model: A New Framework and Graduate Curriculum for Addressing Adverse Childhood Experiences. *Academic Pediatrics*. 2017; 17: S9-S11.
79. Hlavac M. Oaxaca: Blinder-Oaxaca Decomposition in R. R package version 0.1.4. 2018.