Journal of Economics and Public Finance
ISSN 2377-1038 (Print) ISSN 2377-1046 (Online)
Vol. 6, No. 4, 2020
www.scholink.org/ojs/index.php/jepf

Original Paper

Youth Social, Emotional, and Behavioral Problems in the ABCD Study: Minorities' Diminished Returns of Family Income

Shervin Assari[1,2*]

[1] Department of Urban Public Health, Charles R Drew University of Medicine and Science, Los Angeles, CA 90059, USA

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

[*] Shervin Assari, E-mail: assari@umich.edu

Received: September 23, 2020 Accepted: October 6, 2020 Online Published: October 10, 2020

doi:10.22158/jepf.v6n4p1 URL: http://dx.doi.org/10.22158/jepf.v6n4p1

Abstract

Background: *To investigate ethnic differences in the protective effects of family income against youth social, emotional, and behavioral problems in the US. As proposed by the Marginalization-related Diminished Returns (MDRs), family income may generate fewer tangible outcomes for ethnic minority compared to NHW families. Our existing knowledge is minimal about diminished returns of family income on parental reports of youth social, emotional, and behavioral outcomes.*

Aim: *To compare ethnic groups for the effects of family income on parental reports of youth social, emotional, and behavioral problems.*

Materials and methods: *In this cross-sectional study, data from wave 1 of the Adolescent Brain Cognitive Development (ABCD) study were included. The ABCD, an ongoing national cohort of American youth brain development, included 10,762 American youth between ages 8 and 11 years old. The independent variable was family income. The primary outcomes were 1) anxious and depressed mood, 2) withdrawn and depressed affect, 3) somatic complaints, 4) social and interpersonal problems, 5) thought problems, 6) rule-breaking behaviors, 7) attention problems, and 8) violent and aggressive behaviors. These outcomes were generated based on parent-reported behavioral problems measured using the Child Behavior Checklist (CBCL).*

Results: *Overall, high family income was associated with lower levels of parental reports of youth social, emotional, and behavioral problems across all domains ($p < 0.05$ for all beta coefficients across multivariable regression models). Ethnicity showed statistically significant interactions with family income on youth fewer social, emotional, and behavioral problems (all domains), net of all confounders*

(p <0.05 for all beta coefficients that reflected interaction terms across multivariable regression models), indicating smaller tangible gains from their family income for NHB and HW compared to NHW youth.

Conclusion: *The protective effects of family income against behavioral problems are systematically diminished for HW and NHB youth compared to NHW youth. To minimize the ethnic gap in youth social, behavioral, and emotional problems, diminished returns of family income should be addressed. There is a need for programs and interventions that equalize not only SES but also the marginal returns of SES for ethnic groups. Such efforts require addressing structural and societal barriers that hinder HW and NHB families from translating their SES resources into tangible outcomes. There is a need for studies that can minimize MDRs for NHB and HW families. Thus, SES can similarly secure tangible outcomes in the presence of SES resources.*

Keywords

Race, ethnicity, socioeconomic status, youth, emotion regulation, anxiety, depression

1. Background

Ethnic minority youth are at an increased risk of social, emotional, and behavioral problems (McLaughlin, Hilt, & Nolen-Hoeksema, 2007). Relative to non-Hispanic White (NHW) youth, Hispanic White (HW) and non-Hispanic Black (NHB) youth report more externalizing and internalizing symptoms (McLaughlin et al., 2007). Some examples include ethnic differences in substance use (Wallace et al., 2009), aggressive behaviors (McLaughlin et al., 2007), conduct disorders (McLaughlin et al., 2007), anxiety (McLaughlin et al., 2007), depression (McLaughlin et al., 2007), and academic achievement (Bumpus, Umeh, & Harris). Many of these problems can operate as a gateway to future economic and health problems later in life (Burchinal et al., 2011; Cohen & Sherman, 2005; Gorey, 2009; Hair, Hanson, Wolfe, & Pollak, 2015). Thus, to be able to eliminate subsequent inequalities later in life, it is imperative to understand and address youth inequalities (Burchinal et al., 2011; Cohen & Sherman, 2005; Gorey, 2009; Hair et al., 2015).

Closely associated with ethnicity is socioeconomic status (SES) which impacts youth outcomes (Ahmad, Zulaily, Shahril, Syed Abdullah, & Ahmed, 2018; Merz, Tottenham, & Noble, 2018; Valencia, Tran, Lim, Choi, & Oh, 2019). Among various SES indicators are family income, shown as one of the most influential social determinants of youth development, behaviors, and health (Alvarado, 2018; Barreto, de Figueiredo, & Giatti, 2013; Hemovich, Lac, & Crano, 2011; Schreier & Chen, 2013). High-income parents report higher levels of parental involvement, which has positive consequences across several domains of youth development (Bouthoorn et al., 2014; Christensen, Schieve, Devine, & Drews-Botsch, 2014; Karlsson, De Neve, & Subramanian, 2018; Madhushanthi, Wimalasekera, Goonewardena, Amarasekara, & Lenora, 2018; Poh et al., 2019). Some recent evidence, however, suggests that relative to NHWs, NHB and HW youth show weaker effects of family income and other SES indicators such as parental education and marital status on tangible youth outcomes, also known as Minorities' Diminished Returns (MDRs) (Assari, 2017; Assari, 2018a).

Family income is a predictor of a wide range of positive developmental and health outcomes of youth across domains (Alvarado, 2018; Barreto et al., 2013; Hemovich et al., 2011; Schreier & Chen, 2013). Studies have shown that youth from high-income families are less likely to experience economic adversities, stress, behavioral problems, and poor health (Harnett et al., 2019; Schulz et al., 2012; Yelin, Trupin, Bunde, & Yazdany, 2019). Additionally, other studies have shown that some of the ethnic gaps in youth outcomes are attributed to lower family income of ethnic minority families such as NHBs and HWs (Bell, Sacks, Thomas Tobin, & Thorpe, 2020; Fuentes, Hart-Johnson, & Green, 2007; Kaufman, Cooper, & McGee, 1997; Samuel, Roth, Schwartz, Thorpe, & Glass, 2018). As such, enhancing family income through income redistribution policies and empowering ethnic minorities to secure more income is regarded as the primary strategy for closing ethnic inequalities that children and youth are experiencing (Williams, 1999; Williams, Costa, Odunlami, & Mohammed, 2008).

As shown by the MDR literature, various SES indicators such as income and education of their own (Assari, Farokhnia, & Mistry, 2019) and their parents (Assari, 2018e; Assari, 2018b; Assari, 2018f) may generate unequal outcomes for the members of diverse ethnic groups. Ethnic minority groups may differ in their ability to navigate resource systems for their resources to secure tangible outcomes in the presence of high educational attainment (Assari, 2017, 2018a, 2018f; Assari, Caldwell, & Mincy, 2018a; Assari, Caldwell, & Zimmerman, 2018; Assari & Hani, 2018). For example, NHB and HW youth show weaker effects of family income and parental educational attainment on various outcomes relative to their non-HW counterparts (Assari, 2017; Assari, 2018a; Assari, Caldwell, & Mincy, 2018a; Assari, Caldwell, & Mincy, 2018b; Assari, Thomas, Caldwell, & Mincy, 2018).

1.1 Aims

To extend the existing knowledge on the MDRs literature to parents' report of youth behavioral outcomes using CBCL, one of the most widely used measures of youth behavioral problems, we compared ethnic groups of youth for the effects of family income on youth social, emotional, and behavioral problems. Family income was expected to show weaker association with youth outcomes for NHB and HW than NHW youth. While several previous studies have shown MDRs for self-reported outcomes in youth, this paper will be one of the firsts to test MDRs for parental report of youth behaviors.

2. Methods

2.1 Design and Settings

This was a secondary analysis of the Adolescent Brain Cognitive Development (ABCD) study (Alcohol Research: Current Reviews Editorial, 2018; Casey et al., 2018; Karcher, O'Brien, Kandala, & Barch, 2019; Lisdahl et al., 2018; Luciana et al., 2018). This was a cross-sectional analysis of the ABCD data. ABCD is a national state-of-the-art brain imaging study of youth brain development. The advantages of using the ABCD data set were (a) national sample, (b) large sample size, (c) large sample of NHBs and HWs, (d) publicly available data, and (e) considerable SES and behavioral variables. More information

about ABCD's purpose, methodology, and measurement is available elsewhere (Alcohol Research: Current Reviews Editorial, 2018; Auchter et al., 2018).

2.2 Participants and Sampling

Participants of the ABCD study were selected across multiple cities across various states in the US. This sample was mostly recruited through school systems. The recruitment catchment area of the ABCD, which composed of 21 participating sites, encompasses over 20% of the entire United States population of 9-10-year-old youth. The ABCD applied a carefully designed sampling and recruitment process across various sites, described somewhere (Alcohol Research: Current Reviews Editorial, 2018; Auchter et al., 2018), 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 3rd and 4th-grade school enrollment. A detailed description of the ABCD sample and sampling s available here (Garavan et al., 2018). The first is a large-scale survey of approximately 3.5 million households conducted annually by the US Census Bureau. The second data are maintained by the National Center for Education Statistics (NCES), affiliated with the US Department of Education.

2.3 Study Variables

The study variables included demographic factors, SES indicators, as well as Child Behavior Checklist (CBCL).

2.3.1 Outcome

Using the CBCL, also known as the Achenbach System of Empirically Based Assessment, the study had the following eight outcomes: 1) anxious and depressed mood, 2) withdrawn and depressed affect, 3) social and interpersonal problems, 4) somatic complaints, 5) thought problems, 6) attention problems, 7) violent and aggressive behaviors, and 8) rule-breaking behaviors (Association, 2013). These CBCL sub-scores closely correlate with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) based diagnoses (Thomas M Achenbach & Rescorla, 2001). The CBCL instrument uses parental reports form to screen for social, behavioral, and emotional problems. The CBCL is commonly used across settings including but not limited to schools, medical settings, mental health facilities, child and family services, Health Management Organizations, public health agencies (TM., 2020). It has been used by thousands of published scholarly articles (Achenbach & Ruffle, 2000; Al-Khotani et al., 2018; Albrecht, Veerman, Damen, & Kroes, 2001; Allison Bender, Auciello, Morrison, MacAllister, & Zaroff, 2008; Bordin et al., 2013; TM., 2020).

2.3.2 Moderator

Ethnicity. In the ABCD study, ethnicity, a self-identified variable, was a categorical variable: NHBs, HWs, and NHWs (reference category).

2.3.3 Independent Variable

Family income. Family income was a continuous measure ranging from 1 to 10, with a higher score indicating higher income. The exact question was, "What is your total combined family income for the past 12 months? This should include income (before taxes and deductions) from all sources, wages, rent from properties, social security, disability and veteran's benefits, unemployment benefits, workman". Responses included 1 = Less than $5; 2 = $5; 3 = $12; 4 = $16; 5 = $25; 6 = $35; 7 = $50; 8 = $75; 9 = $100; 10 = $200.

2.3.4 Confounders

Age, Gender, Parental Marital Status, and Parental education were the confounders. Parental Educational Attainment was asked using this item: "What is the highest grade or level of school you have completed or the highest degree you have received?" Responses ranged from 0 to 21, with a higher score indicating higher educational attainment. Parents reported the age of the youth. Age was calculated as the difference between the date of birth to the date of the enrolment to the study. Age was a continuous measure in years. Gender was a dichotomous variable: males = 1 and females = 0. Parental marital status, a dichotomous variable, was self-reported by the interviewed parent: married = 1 and other = 0.

2.4 Data Analysis

The SPSS statistical package 23.0 (IBM Corporation, Armonk, NY, USA) was used for our data analysis. Mean (standard deviation [SD]) and frequency (%) were reported for descriptive purposes. To perform multivariable analyses, two multiple multivariable regressions were performed for each outcome. First, we ruled out collinearity between our independent variables. We also tested the error terms of our regression model. We did not find any evidence against the assumptions of the multivariable regression model. All our models were performed in the pooled sample. These models controlled for age, gender, and marital status. *Model 1* was performed without the interaction terms. *Model 2* also included two interaction terms between ethnicity and family income. In each model, one CBCL domain was the outcome. Unstandardized regression coefficient (b), p-value, and sample size were reported for each model. We performed a sensitivity analysis by treating income as a categorical variable (quartiles). As the result did not change, we only reported the result of our main analysis, where family income was treated as a continuous measure. Data were not imputed because they were missing in less than 5%.

2.5 Ethical Aspect

The ABCD study protocol is approved by the University of California, San Diego (UCSD) Institutional Review Board (IRB). All participants gave assent. Parents signed informed consent. More detailed information on the ABCD study ethical aspect is available elsewhere (Auchter et al., 2018). As fully de-identified data were used, the study was exempted from a full review.

3. Results

3.1 Descriptives

Table 1 presents descriptive statistics of the pooled sample. The current analysis was performed on 10,762, 8-11 years old youth who were either White (n = 8257; 76.7%), Black (n = 2,506; 23.3%), non-Hispanic (n = 9006; 83.7%) or Hispanic (n =1757; 16.3%). From all, 52.3% were females and 47.7% were male. In 68%, youth were from married families. Mean age of the participants was 9.48 $\pm$ 0.51 years.

Table 1. Socio-demographic and Child Behavior Checklist Data (CBCL) Data Overall (*n* = 10,762)

	n	**%**
Ethnicity		
Whites	8257	76.7
Blacks	2506	23.3
Ethnicity		
No-Hispanics	9006	83.7
Hispanics	1757	16.3
Gender		
Male	5137	47.7
Female	5626	52.3
Family Marital Status		
Other	3442	32.0
Married	7321	68.0
	Mean	**SD**
Age (Year)	9.48	0.51
Parental Education (0-21)	16.74	2.60
Family Income (1-10)	7.22	2.42
Anxious and depressed mood	2.71	3.17
A withdrawn and depressed affect	1.05	1.72
Somatic complaints	1.48	1.94
Social and interpersonal problems	1.61	2.28
Thought problems	1.65	2.23
Rule-breaking behaviors	1.23	1.89
Attention problems	5.49	5.47
Violent and aggressive behaviors	3.45	4.55

SD= Standard Deviation

Table 1 also shows the descriptive statistics of the CBCL data overall. The highest CBCL score was for the attention problems (5.49 ± 5.47), followed by violent and aggressive behaviors (3.45 ± 4.55). The lowest CBCL score was for the withdrawn and depressed affect (1.05 ± 1.72), followed by rule-breaking behaviors (1.23 ± 1.89).

3.2 Multivariate Analysis

Table 2 shows the results of various linear regression models in the overall (pooled) sample. *Model 1* (Main Effect Model) showed protective effects of family income on all CBCL domains. *Model 2* (Interaction Model) showed interactions between ethnicity and family income on almost all CBCL domains (only one domain as the exception), suggesting that the protective effects of family income against high scores across CBCL domains are weaker for HW and NHB youth relative to their NHW counterparts (Table 2).

Table 2. Summary of Linear Regressions Overall (*n* = 10,762).

	Model 1 (Main Effects)				Model 2 (M1 + Interactions)			
	b	95% CI		p	b	95% CI		p
Anxious and depressed mood								
Black	-0.63	-0.80	-0.45	<.001	-1.75	-2.21	-1.29	<.001
Hispanic	-0.02	-0.20	0.16	.838	-0.76	-1.32	-0.21	.007
Gender (Male)	0.11	-0.01	0.24	.077	0.11	-0.02	0.23	.085
Age	-0.08	-0.20	0.05	.226	-0.08	-0.20	0.05	.225
Marital Status (Married)	-0.23	-0.40	-0.06	.008	-0.22	-0.39	-0.05	.010
Parental Educational Attainment	0.04	0.01	0.08	.009	0.04	0.01	0.07	.010
Family Income	-0.13	-0.17	-0.09	<.001	-0.21	-0.26	-0.16	<.001
Family Income × Black	-	-	-	-	0.17	0.10	0.23	<.001
Family Income × Hispanic	-	-	-	-	0.09	0.02	0.17	.015
Intercept	3.91	2.64	5.17	<.001	4.59	3.30	5.88	<.001
A withdrawn and depressed affect								
Black	-0.17	-0.26	-0.08	<.001	-0.59	-0.83	-0.34	<.001
Hispanic	0.00	-0.09	0.10	.928	-0.25	-0.55	0.04	.093
Gender (Male)	0.19	0.12	0.25	<.001	0.19	0.12	0.25	<.001
Age	0.09	0.02	0.15	.010	0.09	0.02	0.15	.010
Marital Status (Married)	-0.11	-0.20	-0.02	.013	-0.11	-0.20	-0.02	.016
Parental Educational Attainment	-0.01	-0.03	0.00	.162	-0.01	-0.03	0.00	.156
Family Income	-0.10	-0.12	-0.08	<.001	-0.13	-0.16	-0.11	<.001
Family Income × Black	-	-	-	-	0.06	0.03	0.10	<.001

Family Income × Hispanic	-	-	-	-	0.03	-0.01	0.07	.118
Intercept	1.20	0.53	1.88	<.001	1.45	0.76	2.14	<.001
Somatic complaints								
Black	-0.22	-0.33	-0.11	<.001	-0.86	-1.14	-0.58	<.001
Hispanic	0.02	-0.09	0.13	.699	-0.02	-0.36	0.31	.894
Gender (Male)	-0.14	-0.22	-0.07	<.001	-0.15	-0.22	-0.07	<.001
Age	0.04	-0.04	0.11	.324	0.04	-0.04	0.11	.324
Marital Status (Married)	-0.18	-0.28	-0.08	<.001	-0.18	-0.28	-0.08	.001
Parental Educational Attainment	0.00	-0.02	0.02	.719	0.01	-0.01	0.02	.616
Family Income	-0.07	-0.09	-0.05	<.001	-0.11	-0.14	-0.08	<.001
Family Income × Black	-	-	-	-	0.10	0.06	0.14	<.001
Family Income × Hispanic	-	-	-	-	0.00	-0.05	0.04	.904
Intercept	1.81	1.04	2.58	<.001	2.10	1.31	2.89	<.001
Social and interpersonal problems								
Black	-0.03	-0.15	0.09	.623	-0.71	-1.03	-0.39	<.001
Hispanic	-0.06	-0.19	0.06	.321	-0.65	-1.04	-0.26	.001
Gender (Male)	0.25	0.16	0.33	<.001	0.24	0.16	0.33	<.001
Age	-0.13	-0.21	-0.04	.004	-0.13	-0.21	-0.04	.004
Marital Status (Married)	-0.23	-0.34	-0.11	<.001	-0.22	-0.34	-0.10	<.001
Parental Educational Attainment	-0.03	-0.05	0.00	.021	-0.03	-0.05	-0.01	.016
Family Income	-0.14	-0.17	-0.11	<.001	-0.19	-0.23	-0.16	<.001
Family Income × Black	-	-	-	-	0.10	0.06	0.15	<.001
Family Income × Hispanic	-	-	-	-	0.08	0.02	0.13	.004
Intercept	4.33	3.44	5.22	<.001	4.78	3.87	5.69	<.001
Thought problems								
Black	-0.35	-0.47	-0.22	<.001	-0.83	-1.15	-0.52	<.001
Hispanic	-0.28	-0.41	-0.16	<.001	-1.18	-1.56	-0.79	<.001
Gender (Male)	0.45	0.37	0.54	<.001	0.45	0.36	0.54	<.001
Age	-0.07	-0.15	0.02	.120	-0.07	-0.15	0.02	.119
Marital Status (Married)	-0.11	-0.22	0.01	.077	-0.10	-0.21	0.02	.101
Parental Educational Attainment	-0.02	-0.04	0.00	.106	-0.02	-0.04	0.00	.059
Family Income	-0.10	-0.12	-0.07	<.001	-0.15	-0.18	-0.11	<.001
Family Income × Black	-	-	-	-	0.07	0.02	0.11	.004
Family Income × Hispanic	-	-	-	-	0.13	0.07	0.18	<.001
Intercept	3.27	2.39	4.15	<.001	3.73	2.83	4.62	<.001

Rule-breaking behaviors								
Black	0.11	0.01	0.21	.033	-0.29	-0.55	-0.03	.029
Hispanic	-0.23	-0.33	-0.13	<.001	-0.87	-1.18	-0.56	<.001
Gender (Male)	0.43	0.36	0.50	<.001	0.43	0.36	0.50	<.001
Age	-0.07	-0.14	0.00	.061	-0.07	-0.14	0.00	.061
Marital Status (Married)	-0.30	-0.39	-0.20	<.001	-0.29	-0.39	-0.20	<.001
Parental Educational Attainment	-0.04	-0.06	-0.02	<.001	-0.04	-0.06	-0.03	<.001
Family Income	-0.12	-0.14	-0.09	<.001	-0.15	-0.18	-0.13	<.001
Family Income × Black	-	-	-	-	0.06	0.02	0.09	.003
Family Income × Hispanic	-	-	-	-	0.09	0.05	0.13	<.001
Intercept	3.40	2.68	4.12	<.001	3.75	3.01	4.48	<.001
Attention problems								
Black	-0.44	-0.73	-0.14	.004	-2.46	-3.22	-1.69	<.001
Hispanic	-0.22	-0.52	0.08	.157	-2.15	-3.07	-1.22	<.001
Gender (Male)	1.77	1.56	1.98	<.001	1.77	1.56	1.98	<.001
Age	-0.39	-0.60	-0.19	<.001	-0.39	-0.60	-0.19	<.001
Marital Status (Married)	-0.78	-1.06	-0.50	<.001	-0.76	-1.04	-0.48	<.001
Parental Educational Attainment	-0.02	-0.08	0.03	.421	-0.03	-0.08	0.03	.337
Family Income	-0.27	-0.34	-0.21	<.001	-0.43	-0.52	-0.35	<.001
Family Income × Black	-	-	-	-	0.30	0.19	0.41	<.001
Family Income × Hispanic	-	-	-	-	0.26	0.13	0.39	<.001
Intercept	11.31	9.19	13.42	<.001	12.71	10.55	14.87	<.001
Violent and aggressive behaviors								
Black	-0.45	-0.70	-0.20	<.001	-1.58	-2.22	-0.94	<.001
Hispanic	0.95	0.77	1.12	<.001	-2.12	-2.90	-1.35	<.001
Gender (Male)	-0.23	-0.40	-0.05	.010	0.94	0.77	1.12	<.001
Age	-0.49	-0.73	-0.26	<.001	-0.23	-0.40	-0.05	.010
Marital Status (Married)	-0.01	-0.06	0.03	.633	-0.48	-0.71	-0.24	<.001
Parental Educational Attainment	-0.32	-0.37	-0.27	<.001	-0.02	-0.06	0.03	.479
Family Income	8.11	6.34	9.88	<.001	-0.43	-0.50	-0.36	<.001
Family Income × Black	-	-	-	-	0.16	0.07	0.25	.001
Family Income × Hispanic	-	-	-	-	0.23	0.13	0.34	<.001
Intercept	-0.45	-0.70	-0.20	<.001	9.06	7.25	10.87	<.001

b= Unstandardized Regression Coefficient; CI= Confidence Interval; SE= Standard Error

4. Discussion

Our finding, diminished returns of family income on youth outcomes, was similar to what the literature has already shown regarding the MDRs of SES indicators, including family income, parental education, and family structure for NHB and HW families compared to their NHW counterparts (Assari, 2018a, 2018c; Assari, 2019a; Assari et al., 2019). MDRs are well documented within individuals and families. Thus, they contribute to the trans-generational transition of inequalities. MDRs are repeatedly shown for almost all SES resources, age groups, outcomes, and marginalization types (Assari, 2017; Assari, 2018a). Our results are similar to multiple studies on MDRs. A recent JAMA paper showed that behavioral and health effects of parental educational attainment are systematically weaker for NHB and HW youth compared to NHW youth (Assari, Caldwell, & Bazargan, 2019). In that cross-sectional study, the Population Assessment of Tobacco and Health (PATH) data were used. Participants included 10619 youth aged 12 to 17 years. The dependent variables included youth tobacco dependence, aggression, school performance, psychological distress, and chronic medical conditions. Parental educational attainment showed stronger effects on all outcomes for NHWs than HW and NHB youth. The results were generalizable as the study had used a nationally representative sample (Assari et al., 2019). In a number of additional studies using the Fragile Families and Child Wellbeing Study (FFCWS) data, parental education and family income at birth showed stronger effects on a wide range of youth outcomes at age 15 (Assari, 2019b; Assari & Caldwell, 2019a; Assari, Caldwell, & Mincy, 2018a; Assari, Caldwell, & Mincy, 2018b; Assari, Mardani, Maleki, & Bazargan, 2019; Assari et al., 2018). The FFCWS is not a nationally representative sample but is a 15-year longitudinal study of economically fragile urban families from the birth of their children to age 15. These FFCWS studies have shown that family SES at baseline better promotes various aspects of the health of NHWs than NHBs (Assari, 2019b; Assari & Caldwell, 2019a; Assari, Caldwell, & Mincy, 2018a; Assari, Caldwell, & Mincy, 2018b; Assari et al., 2019; Assari, Thomas, et al., 2018). Furthermore, other studies have shown that parental education and family income generate better boost school performance of NHW than NHB youth (Assari & Caldwell, 2019b; Assari, Caldwell, et al., 2019), a pattern that can also be in young adults on college campuses (Assari, 2019). Finally, a few studies have shown that high SES may even operate as a risk factor for depression in NHB youth (Assari, Gibbons, & Simons, 2018a; Assari, Gibbons, & Simons, 2018b).

There are multiple explanations for our findings. At all income levels, NHB and HW families face disproportionately more stress in their daily lives than NHW families. Such increased stress may reduce how much parents and youth can engage, thus limiting how much youth can gain from their parental education. High-income NHB and HW families may experience more, not less, discrimination on a daily basis (Assari, 2018b; Assari, Gibbons, et al., 2018a; Assari, Gibbons, et al., 2018b; Assari, Lankarani, & Caldwell, 2018; Assari & Moghani Lankarani, 2018). High income NHB and HWs may also be more, not less, vulnerable to interpersonal discrimination (Assari, Preiser, Lankarani, & Caldwell, 2018). This is in part because highly educated NHB and HW families are more likely to be surrounded by NHW families and attend predominantly NHW schools and work in predominantly NHW workplaces, all

increasing their exposure to discrimination (Assari, Gibbons, et al., 2018a; Assari, Gibbons, et al., 2018b). High levels of discrimination reduce the expected gains of SES (Assari & Caldwell, 2018; Assari, Lankarani, et al., 2018; Assari, Preiser, et al., 2018). Combination of discrimination as a health risk factor and as a process that reduces the gains of SES on health (Assari, 2018b; Assari, Lankarani, et al., 2018; Hudson, Bullard, et al., 2012) with the observations that high SES means increased exposure (Assari, 2018b; Assari, Gibbons, et al., 2018a; Assari, Gibbons, et al., 2018b; Assari & Moghani Lankarani, 2018) and vulnerability (Assari, Preiser, et al., 2018; Hudson, Bullard, et al., 2012) to discrimination explains why high SES NHB youth remain at social, emotional, and behavioral risk.

Environmental and contextual factors such as residential segregation affect school options for youth from high SES NHB and HW families. As a result, children of high-income NHB and HW families continue to attend high-risk highly-segregated schools. This pattern is different from high SES NHW youth who receive education at predominantly NHW schools that receive more funding, are safer, and have higher-quality teachers (Jefferson et al., 2011).

As suggested by the MDRs (Assari, 2017; Assari, 2018a), equal SES resources result in unequal outcomes, with marginalized and stigmatized social groups experiencing a relative disadvantage in comparison to the socially privileged groups. MDRs seem to be robust across age groups, SES resources, and outcomes. More than other SES indicators, however, educational attainment has shown differential effects across racial and ethnic groups, with HWs and NHBs benefitting less than NHWs. This occurs not only with household income (Assari, Caldwell, & Mincy, 2018a) but also educational attainment (Assari, Farokhnia, et al., 2019), employment (Assari, 2018d), and marital status (Assari, Caldwell, & Zimmerman, 2018). Family SES results in more gain for NHW than NHB youth (Assari, Caldwell, & Mincy, 2018a; Assari, Caldwell, & Mincy, 2018b; Assari, Thomas, et al., 2018), adults (Assari, 2018a), and older adults (Assari & Lankarani, 2016). Also, MDRs not only apply to NHBs (Assari, Thomas, et al., 2018) or HWs (Assari, 2018g; Shervin Assari, 2019; Assari, Farokhnia, et al., 2019; Shervin & Ritesh, 2019), they also hold for Asian American (Assari, Boyce, Bazargan, & Caldwell, 2020), Native American (Assari & Bazargan, 2019b), and lesbian, gay, bisexual, and transgender (LGBTQ) (Assari, 2019a) people.

The current study did not explore societal and contextual processes that could explain intergenerational MDRs of household income for racial and ethnic minorities. MDRs may be due to institutional and structural racism (Assari, 2018a; Assari, 2018h). Marginal returns of income may also be smaller for families with a history of childhood poverty (Bartik & Hershbein, 2018). Racial prejudice and discrimination may interfere with the benefits that are expected to follow education (Hudson, Sacks, Irani, & Asher, 2020; Hudson, Bullard, et al., 2012; Hudson, Neighbors, Geronimus, & Jackson, 2012). Thus, multilevel economic, psychological, and societal mechanisms may be involved in explaining racial and ethnic gaps in the returns of household income (Assari, 2018a; Assari, 2018h).

NHB and HW individuals are likely to stay in poor neighborhoods despite high SES. As a result, youth from high SES NHB and HW families may remain at risk of environmental exposures. Similarly, youth

from highly educated NHB and HW families are likely to remain at high risk of interacting with high-risk peers who are involved in behavioral problems (Assari et al., 2020; Assari, Caldwell, et al., 2019).

The society and social structure may be critical conduits through which MDRs are developed and sustained. As a result, additional attention should be paid to various societal processes that may interfere with the returns of household income. According to the social reproduction theory, intergenerational effects of human capital may vary across groups (Bowden, Bartkowski, Xu, & Lewis Jr, 2017). Chetty showed that the intersection of race and gender alters the likelihood of upward social mobility in the US (Chetty, Hendren, Kline, & Saez, 2014).

4.1 Limitations

No study is without methodological limitations. The main limitation of this study includes the cross-sectional design. Similar to most of the literature on MDRs, this study focused exclusively on NHBs, HWs, and NHWs. We still need more studies on other ethnic groups such as Asian Americans and Native Americans, as well as other marginalizing groups based on social identities beyond race and ethnicity. Not only race and ethnicity, but all marginalizing identities potentially reduce the gains that follow family income (Assari, 2018g; Assari, 2019a; Assari, 2019; Assari & Bazargan, 2019a). Similarly, this study only investigated the MDRs of income. Other research may study other SES indicators such as wealth, and higher-level SES indicators such as neighborhood SES and income or racial segregation. Future research may study structural and contextual factors that explain the MDRs of family SES.

4.2 Conclusion

Compared to NHWs, HW and NHB youth from high-income families remain at risk of social, emotional, and behavioral problems. Factors such as racism, segregation, stratification, and discrimination may be responsible for the reduced health effects of income for NHB and HW than NHW families.

ABCD Funding: The ABCD Study is supported by the National Institutes of Health and additional federal partners under award numbers U01DA041022, U01DA041028, U01DA041048, U01DA041089, U01DA041106, U01DA041117, U01DA041120, U01DA041134, U01DA041148, U01DA041156, U01DA041174, U24DA041123, U24DA041147, U01DA041093, and U01DA041025. A full list of supporters is available at https://abcdstudy.org/federal-partners.html. A listing of participating sites and a complete listing of the study investigators can be found at https://abcdstudy.org/Consortium_Members.pdf. ABCD consortium investigators designed and implemented the study 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. The ABCD data repository grows and changes over time. The current paper used the Curated Annual Release 2.0, also defined in NDA Study 634 (https://doi.org/10.15154/1503209).

Authors' Funding: Shervin Assari is supported by the National Institutes of Health (NIH) grants D084526-03, CA201415 02, DA035811-05, U54MD008149, U54MD007598, and U54CA229974.

Conflicts of Interest: The author declares no conflict of interest.

References

Achenbach, T. M., & Rescorla, L. (2001). *Manual for the ASEBA school-age forms & profiles: An integrated system of multi-informant assessment*. Aseba Burlington, VT

Achenbach, T. M., & Ruffle, T. M. (2000). The Child Behavior Checklist and related forms for assessing behavioral/emotional problems and competencies. *Pediatr Rev*, *21*(8), 265-271. https://doi.org/10.1542/pir.21-8-265

Ahmad, A., Zulaily, N., Shahril, M. R., Syed Abdullah, E. F. H., & Ahmed, A. (2018). Association between socioeconomic status and obesity among 12-year-old Malaysian adolescents. *PLoS One*, *13*(7), e0200577. https://doi.org/10.1371/journal.pone.0200577

Albrecht, G., Veerman, J. W., Damen, H., & Kroes, G. (2001). The Child Behavior Checklist for group care workers: A study regarding the factor structure. *J Abnorm Child Psychol*, *29*(1), 83-89. https://doi.org/10.1023/a:1005255614039

Alcohol Research: Current Reviews Editorial, S. (2018). NIH's Adolescent Brain Cognitive Development (ABCD) Study. *Alcohol Res*, *39*(1), 97.

Al-Khotani, A., Gjelset, M., Naimi-Akbar, A., Hedenberg-Magnusson, B., Ernberg, M., & Christidis, N. (2018). Using the child behavior checklist to determine associations between psychosocial aspects and TMD-related pain in children and adolescents. *J Headache Pain*, *19*(1), 88. https://doi.org/10.1186/s10194-018-0915-6

Allison Bender, H., Auciello, D., Morrison, C. E., MacAllister, W. S., & Zaroff, C. M. (2008). Comparing the convergent validity and clinical utility of the Behavior Assessment System for Children-Parent Rating Scales and Child Behavior Checklist in children with epilepsy. *Epilepsy Behav*, *13*(1), 237-242. https://doi.org/10.1016/j.yebeh.2008.03.007

Alvarado, S. E. (2018). The impact of childhood neighborhood disadvantage on adult joblessness and income. *Soc Sci Res*, *70*, 1-17. https://doi.org/10.1016/j.ssresearch.2017.10.004

Assari S. (2019). Parental Educational Attainment and Academic Performance of American College Students; Blacks' Diminished Returns. *Journal of Health Economics and Development*, *1*(1), 21-31.

Assari, S. (2017). Unequal Gain of Equal Resources across Racial Groups. *Int J Health Policy Manag*, *7*(1), 1-9. https://doi.org/10.15171/ijhpm.2017.90

Assari, S. (2018a). Blacks' Diminished Return of Education Attainment on Subjective Health; Mediating Effect of Income. *Brain Sci*, *8*(9). https://doi.org/10.3390/brainsci8090176

Assari, S. (2018a). Health Disparities due to Diminished Return among Black Americans: Public Policy Solutions. *Social Issues and Policy Review*, *12*(1), 112-145. https://doi.org/10.1111/sipr.12042

Assari, S. (2018b). Does School Racial Composition Explain Why High Income Black Youth Perceive More Discrimination? A Gender Analysis. *Brain Sci*, *8*(8). https://doi.org/10.3390/brainsci8080140

Assari, S. (2018b). Parental Education Better Helps White than Black Families Escape Poverty: National Survey of Children's Health. *Economies*, *6*(2), 30.

Assari, S. (2018c). Family Income Reduces Risk of Obesity for White but Not Black Children. *Children (Basel)*, *5*(6). https://doi.org/10.3390/children5060073

Assari, S. (2018d). Life Expectancy Gain Due to Employment Status Depends on Race, Gender, Education, and Their Intersections. *J Racial Ethn Health Disparities*, *5*(2), 375-386. https://doi.org/10.1007/s40615-017-0381-x

Assari, S. (2018e). Parental Education Attainment and Educational Upward Mobility; Role of Race and Gender. *Behav Sci (Basel)*, *8*(11). https://doi.org/10.3390/bs8110107

Assari, S. (2018f). Parental Educational Attainment and Mental Well-Being of College Students; Diminished Returns of Blacks. *Brain Sci*, *8*(11). https://doi.org/10.3390/brainsci8110193

Assari, S. (2018g). Socioeconomic Status and Self-Rated Oral Health; Diminished Return among Hispanic Whites. *Dent J (Basel)*, *6*(2). https://doi.org/10.3390/dj6020011

Assari, S. (2018h). Unequal Gain of Equal Resources across Racial Groups. *Int J Health Policy Manag*, *7*(1), 1-9. https://doi.org/10.15171/ijhpm.2017.90

Assari, S. (2019). Socioeconomic Determinants of Systolic Blood Pressure; Minorities' Diminished Returns. *Journal of Health Economics and Development*, *1*(1), 1-11.

Assari, S. (2019a). Education Attainment and ObesityDifferential Returns Based on Sexual Orientation. *Behav Sci (Basel)*, *9*(2). https://doi.org/10.3390/bs9020016

Assari, S. (2019b). Family Socioeconomic Position at Birth and School Bonding at Age 15; Blacks' Diminished Returns. *Behav Sci (Basel)*, *9*(3). https://doi.org/10.3390/bs9030026

Assari, S., & Bazargan, M. (2019a). Educational Attainment and Subjective Health and Well-Being; Diminished Returns of Lesbian, Gay, and Bisexual Individuals. *Behavioral Sciences*, *9*(9), 90. https://doi.org/10.3390/bs9090090

Assari, S., & Bazargan, M. (2019b). Protective Effects of Educational Attainment Against Cigarette Smoking; Diminished Returns of American Indians and Alaska Natives in the National Health Interview Survey. *International Journal of Travel Medicine and Global Health*. https://doi.org/10.15171/ijtmgh.2019.22

Assari, S., & Caldwell, C. H. (2018). Social Determinants of Perceived Discrimination among Black Youth: Intersection of Ethnicity and Gender. *Children (Basel)*, *5*(2). https://doi.org/10.3390/children5020024

Assari, S., & Caldwell, C. H. (2019a). Family Income at Birth and Risk of Attention Deficit Hyperactivity Disorder at Age 15: Racial Differences. *Children (Basel)*, *6*(1). https://doi.org/10.3390/children6010010

Assari, S., & Caldwell, C. H. (2019b). Parental Educational Attainment Differentially Boosts School Performance of American Adolescents: Minorities' Diminished Returns. *J Family Reprod Health*, *13*(1), 7-13. https://doi.org/10.18502/jfrh.v13i1.1607

Assari, S., & Hani, N. (2018). Household Income and Children's Unmet Dental Care Need; Blacks' Diminished Return. *Dent J (Basel)*, *6*(2). https://doi.org/10.3390/dj6020017

Assari, S., & Lankarani, M. M. (2016). Education and Alcohol Consumption among Older Americans; Black-White Differences. *Front Public Health*, *4*, 67. https://doi.org/10.3389/fpubh.2016.00067

Assari, S., & Moghani Lankarani, M. (2018). Workplace Racial Composition Explains High Perceived Discrimination of High Socioeconomic Status African American Men. *Brain Sci*, *8*(8). https://doi.org/10.3390/brainsci8080139

Assari, S., Boyce, S., Bazargan, M., & Caldwell, C. H. (2020). Mathematical Performance of American Youth: Diminished Returns of Educational Attainment of Asian-American Parents. *Education Sciences*, *10*(2), 32. https://doi.org/10.3390/educsci10020032

Assari, S., Caldwell, C. H., & Bazargan, M. (2019). Association Between Parental Educational Attainment and Youth Outcomes and Role of Race/Ethnicity. *JAMA Netw Open*, *2*(11), e1916018. https://doi.org/10.1001/jamanetworkopen.2019.16018

Assari, S., Caldwell, C. H., & Mincy, R. (2018a). Family Socioeconomic Status at Birth and Youth Impulsivity at Age 15; Blacks' Diminished Return. *Children (Basel)*, *5*(5). https://doi.org/10.3390/children5050058

Assari, S., Caldwell, C. H., & Mincy, R. B. (2018b). 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*, *7*(5). https://doi.org/10.3390/jcm7050093

Assari, S., Caldwell, C. H., & Zimmerman, M. A. (2018). Family Structure and Subsequent Anxiety Symptoms; Minorities' Diminished Return. *Brain Sci*, *8*(6). https://doi.org/10.3390/brainsci8060097

Assari, S., Farokhnia, M., & Mistry, R. (2019). Education Attainment and Alcohol Binge Drinking: Diminished Returns of Hispanics in Los Angeles. *Behav Sci (Basel)*, *9*(1). https://doi.org/10.3390/bs9010009

Assari, S., Gibbons, F. X., & Simons, R. (2018a). Depression among Black Youth; Interaction of Class and Place. *Brain Sci*, *8*(6). https://doi.org/10.3390/brainsci8060108

Assari, S., Gibbons, F. X., & Simons, R. L. (2018b). Perceived Discrimination among Black Youth: An 18-Year Longitudinal Study. *Behav Sci (Basel)*, *8*(5). https://doi.org/10.3390/bs8050044

Assari, S., Lankarani, M. M., & Caldwell, C. H. (2018). Does Discrimination Explain High Risk of Depression among High-Income African American Men? *Behav Sci (Basel)*, *8*(4). https://doi.org/10.3390/bs8040040

Assari, S., Mardani, A., Maleki, M., & Bazargan, M. (2019). Black-White Differences in the Association between Maternal Age at Childbirth and Income. *Women's Health Bulletin*, *6*(4), 36-42.

Assari, S., Preiser, B., Lankarani, M. M., & Caldwell, C. H. (2018). Subjective Socioeconomic Status Moderates the Association between Discrimination and Depression in African American Youth. *Brain Sci*, *8*(4). https://doi.org/10.3390/brainsci8040071

Assari, S., Thomas, A., Caldwell, C. H., & Mincy, R. B. (2018). 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, 95*(1), 21-35. https://doi.org/10.1007/s11524-017-0217-3

Association, A. P. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.

Auchter, A. M., Hernandez Mejia, M., Heyser, C. J., Shilling, P. D., Jernigan, T. L., Brown, S. A., ... Dowling, G. J. (2018). A description of the ABCD organizational structure and communication framework. *Dev Cogn Neurosci, 32*, 8-15. https://doi.org/10.1016/j.dcn.2018.04.003

Barreto, S. M., de Figueiredo, R. C., & Giatti, L. (2013). Socioeconomic inequalities in youth smoking in Brazil. *BMJ Open, 3*(12), e003538. https://doi.org/10.1136/bmjopen-2013-003538

Bartik, T. J., & Hershbein, B. (2018). *Degrees of poverty: The relationship between family income background and the returns to education*.

Bell, C. N., Sacks, T. K., Thomas Tobin, C. S., & Thorpe, R. J., Jr. (2020). Racial Non-equivalence of Socioeconomic Status and Self-rated Health among African Americans and Whites. *SSM Popul Health, 10*, 100561. https://doi.org/10.1016/j.ssmph.2020.100561

Bordin, I. A., Rocha, M. M., Paula, C. S., Teixeira, M. C., Achenbach, T. M., Rescorla, L. A., & Silvares, E. F. (2013). Child Behavior Checklist (CBCL),Youth Self-Report (YSR) and Teacher's Report Form(TRF): an overview of the development of the original and Brazilian versions. *Cad Saude Publica, 29*(1), 13-28. https://doi.org/10.1590/s0102-311x2013000100004

Bouthoorn, S. H., Wijtzes, A. I., Jaddoe, V. W., Hofman, A., Raat, H., & van Lenthe, F. J. (2014). Development of socioeconomic inequalities in obesity among Dutch pre-school and school-aged children. *Obesity (Silver Spring), 22*(10), 2230-2237. https://doi.org/10.1002/oby.20843

Casey, B. J., Cannonier, T., Conley, M. I., Cohen, A. O., Barch, D. M., Heitzeg, M. M., ... Workgroup, A. I. A. (2018). The Adolescent Brain Cognitive Development (ABCD) study: Imaging acquisition across 21 sites. *Dev Cogn Neurosci, 32*, 43-54. https://doi.org/10.1016/j.dcn.2018.03.001

Chetty, R., Hendren, N., Kline, P., & Saez, E. (2014). Where is the land of opportunity? The geography of intergenerational mobility in the United States. *The Quarterly Journal of Economics, 129*(4), 1553-1623.

Christensen, D. L., Schieve, L. A., Devine, O., & Drews-Botsch, C. (2014). 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, 35*(7), 1789-1801. https://doi.org/10.1016/j.ridd.2014.02.003

Cohen, G. L., & Sherman, D. K. (2005). Stereotype threat and the social and scientific contexts of the race achievement gap. *Am Psychol, 60*(3), 270-271; discussion 271-272. https://doi.org/10.1037/0003-066X.60.3.270

Fuentes, M., Hart-Johnson, T., & Green, C. R. (2007). The association among neighborhood socioeconomic status, race and chronic pain in black and white older adults. *J Natl Med Assoc*, *99*(10), 1160-1169.

Garavan, H., Bartsch, H., Conway, K., Decastro, A., Goldstein, R. Z., Heeringa, S., ... Zahs, D. (2018). Recruiting the ABCD sample: Design considerations and procedures. *Dev Cogn Neurosci*, *32*, 16-22. https://doi.org/10.1016/j.dcn.2018.04.004

Gorey, K. M. (2009). Comprehensive School Reform: Meta-Analytic Evidence of Black-White Achievement Gap Narrowing. *Educ Policy Anal Arch*, *17*(25), 1-17. https://doi.org/10.14507/epaa.v17n25.2009

Hair, N. L., Hanson, J. L., Wolfe, B. L., & Pollak, S. D. (2015). Association of Child Poverty, Brain Development, and Academic Achievement. *JAMA Pediatr*, *169*(9), 822-829. https://doi.org/10.1001/jamapediatrics.2015.1475

Harnett, N. G., Wheelock, M. D., Wood, K. H., Goodman, A. M., Mrug, S., Elliott, M. N., ... Knight, D. C. (2019). Negative life experiences contribute to racial differences in the neural response to threat. *Neuroimage*, *202*, 116086. https://doi.org/10.1016/j.neuroimage.2019.116086

Hemovich, V., Lac, A., & Crano, W. D. (2011). Understanding early-onset drug and alcohol outcomes among youth: The role of family structure, social factors, and interpersonal perceptions of use. *Psychol Health Med*, *16*(3), 249-267. https://doi.org/10.1080/13548506.2010.532560

Hudson, D. L., Bullard, K. M., Neighbors, H. W., Geronimus, A. T., Yang, J., & Jackson, J. S. (2012). Are benefits conferred with greater socioeconomic position undermined by racial discrimination among African American men? *J Mens Health*, *9*(2), 127-136. https://doi.org/10.1016/j.jomh.2012.03.006

Hudson, D. L., Neighbors, H. W., Geronimus, A. T., & Jackson, J. S. (2012). The relationship between socioeconomic position and depression among a US nationally representative sample of African Americans. *Soc Psychiatry Psychiatr Epidemiol*, *47*(3), 373-381. https://doi.org/10.1007/s00127-011-0348-x

Hudson, D., Sacks, T., Irani, K., & Asher, A. (2020). The Price of the Ticket: Health Costs of Upward Mobility among African Americans. *Int J Environ Res Public Health*, *17*(4). https://doi.org/10.3390/ijerph17041179

Jefferson, A. L., Gibbons, L. E., Rentz, D. M., Carvalho, J. O., Manly, J., Bennett, D. A., & Jones, R. N. (2011). A life course model of cognitive activities, socioeconomic status, education, reading ability, and cognition. *J Am Geriatr Soc*, *59*(8), 1403-1411. https://doi.org/10.1111/j.1532-5415.2011.03499.x

Karcher, N. R., O'Brien, K. J., Kandala, S., & Barch, D. M. (2019). Resting-State Functional Connectivity and Psychotic-like Experiences in Childhood: Results From the Adolescent Brain Cognitive Development Study. *Biol Psychiatry*, *86*(1), 7-15. https://doi.org/10.1016/j.biopsych.2019.01.013

Karlsson, O., De Neve, J. W., & Subramanian, S. V. (2018). Weakening association of parental education: analysis of child health outcomes in 43 low- and middle-income countries. *Int J Epidemiol*. https://doi.org/10.1093/ije/dyy158

Kaufman, J. S., Cooper, R. S., & McGee, D. L. (1997). Socioeconomic status and health in blacks and whites: The problem of residual confounding and the resiliency of race. *Epidemiology*, 621-628. https://doi.org/10.1097/00001648-199710000-00002

Lisdahl, K. M., Sher, K. J., Conway, K. P., Gonzalez, R., Feldstein Ewing, S. W., Nixon, S. J., . . . Heitzeg, M. (2018). Adolescent brain cognitive development (ABCD) study: Overview of substance use assessment methods. *Dev Cogn Neurosci*, *32*, 80-96. https://doi.org/10.1016/j.dcn.2018.02.007

Luciana, M., Bjork, J. M., Nagel, B. J., Barch, D. M., Gonzalez, R., Nixon, S. J., & Banich, M. T. (2018). Adolescent neurocognitive development and impacts of substance use: Overview of the adolescent brain cognitive development (ABCD) baseline neurocognition battery. *Dev Cogn Neurosci*, *32*, 67-79. https://doi.org/10.1016/j.dcn.2018.02.006

Madhushanthi, H. J., Wimalasekera, S. W., Goonewardena, C. S. E., Amarasekara, A., & Lenora, J. (2018). Socioeconomic status is a predictor of neurocognitive performance of early female adolescents. *Int J Adolesc Med Health*. https://doi.org/10.1515/ijamh-2018-0024

McLaughlin, K. A., Hilt, L. M., & Nolen-Hoeksema, S. (2007). Racial/ethnic differences in internalizing and externalizing symptoms in adolescents. *J Abnorm Child Psychol*, *35*(5), 801-816. https://doi.org/10.1007/s10802-007-9128-1

Merz, E. C., Tottenham, N., & Noble, K. G. (2018). Socioeconomic Status, Amygdala Volume, and Internalizing Symptoms in Children and Adolescents. *J Clin Child Adolesc Psychol*, *47*(2), 312-323. https://doi.org/10.1080/15374416.2017.1326122

Poh, B. K., Lee, S. T., Yeo, G. S., Tang, K. C., Noor Afifah, A. R., Siti Hanisa, A., ... Group, S. S. (2019). Low socioeconomic status and severe obesity are linked to poor cognitive performance in Malaysian children. *BMC Public Health*, *19*(Suppl 4), 541. https://doi.org/10.1186/s12889-019-6856-4

Samuel, L. J., Roth, D. L., Schwartz, B. S., Thorpe, R. J., & Glass, T. A. (2018). Socioeconomic Status, Race/Ethnicity, and Diurnal Cortisol Trajectories in Middle-Aged and Older Adults. *J Gerontol B Psychol Sci Soc Sci*, *73*(3), 468-476. https://doi.org/10.1093/geronb/gbw080

Schreier, H. M., & Chen, E. (2013). Socioeconomic status and the health of youth: A multilevel, multidomain approach to conceptualizing pathways. *Psychol Bull*, *139*(3), 606-654. https://doi.org/10.1037/a0029416

Schulz, A. J., Mentz, G., Lachance, L., Johnson, J., Gaines, C., & Israel, B. A. (2012). Associations between socioeconomic status and allostatic load: Effects of neighborhood poverty and tests of mediating pathways. *Am J Public Health*, *102*(9), 1706-1714. https://doi.org/10.2105/AJPH.2011.300412

Shervin, A., & Ritesh, M. (2019). Diminished Return of Employment on Ever Smoking Among Hispanic Whites in Los Angeles. *Health Equity*, *3*(1), 138-144. https://doi.org/10.1089/heq.2018.0070

TM., c. (2020). *ASEBA® Web-Link™ ASEBA Overview*.

Valencia, M. L. C., Tran, B. T., Lim, M. K., Choi, K. S., & Oh, J. K. (2019). Association Between Socioeconomic Status and Early Initiation of Smoking, Alcohol Drinking, and Sexual Behavior Among Korean Adolescents. *Asia Pac J Public Health*, *31*(5), 443-453. https://doi.org/10.1177/1010539519860732

Wallace, J. M., Jr., Vaughn, M. G., Bachman, J. G., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (2009). Race/ethnicity, socioeconomic factors, and smoking among early adolescent girls in the United States. *Drug Alcohol Depend*, *104 Suppl 1*, S42-49. https://doi.org/10.1016/j.drugalcdep.2009.06.007

Williams, D. R. (1999). *Race, socioeconomic status, and health the added effects of racism and discrimination*.

Williams, D. R., Costa, M. V., Odunlami, A. O., & Mohammed, S. A. (2008). Moving upstream: How interventions that address the social determinants of health can improve health and reduce disparities. *J Public Health Manag Pract*, *14 Suppl*, S8-17. https://doi.org/10.1097/01.PHH.0000338382.36695.42

Yelin, E., Trupin, L., Bunde, J., & Yazdany, J. (2019). Poverty, Neighborhoods, Persistent Stress, and Systemic Lupus Erythematosus Outcomes: A Qualitative Study of the Patients' Perspective. *Arthritis Care Res (Hoboken)*, *71*(3), 398-405. https://doi.org/10.1002/acr.23599