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Parental Human Capital and Adolescents' Executive Function: Immigrants' Diminished Returns

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Abstract

Racial minorities, particularly non-Hispanic Blacks in the US, experience weaker effects of family socioeconomic position (SEP) on tangible outcomes, a pattern called Minorities' Diminished Returns (MDRs). These MDRs are frequently shown for the effects of family SEP on immigrant adolescents' school performance. As a result of these MDRs, immigrant adolescents from high SEP families show worse than expected cognitive outcomes, including but not limited to poor school performance. However, the existing knowledge is minimal about the role of executive function in explaining diminished returns of family SEP on adolescents' outcomes. To investigate racial differences in the effects of parental human capital on adolescents' executive function, we compared non-Hispanic White non-immigrant and immigrant adolescents for the effect of parental human capital on adolescents' executive function. This was a cross-sectional analysis that included 2,723 non-twin non-Hispanic White adolescents from the Adolescent Brain Cognitive Development (ABCD) study. The independent variable was parental human capital (parental educational attainment), treated as a continuous measure with a higher score reflecting higher subjective socioeconomic status. The primary outcome was adolescents' executive function measured by the stop-signal task (SST). Age, sex, parental marital status, parental employment, family income, and financial difficulties. Immigration status was the effect modifier. Overall, high parental human capital was associated with higher task-based executive function. Immigration status showed statistically significant interactions with parental human capital on adolescents' executive function outcomes. This interaction term suggested that high parental human capital has a smaller effect on increasing immigrants' executive function compared to non-immigrant adolescents. The boosting effect of parental human capital on executive function is diminished for immigrants compared to non-immigrant adolescents. To minimize the inequalities in executive function-related outcomes such as school performance, we need to address the diminishing returns

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of existing resources for immigrants. Not only should we equalize groups based on their SEP but also equalize the marginal returns of their existing SEP. Such efforts require public policies that aim for equal processes. As such, social policies should address structural and societal barriers such as xenophobia, segregation, racism, and discrimination that hinder immigrant families' ability to effectively utilize their resources. In a fair society, immigrant and non-immigrant families should be equally able to leverage their SEP resources and turn them into tangible outcomes.

Keywords

Immigration; Immigrants; socioeconomic status; adolescents; cognition; brain; executive function; health equity; health equality

Background

Adolescents from marginalized families, including Hispanics, Blacks, and immigrants, are at an increased risk of school dropout and poor academic achievement¹⁻⁶. As academic success in the earlier stages of life is a gateway to future economic and health outcomes later in life⁷⁻¹⁰, it is imperative to close such adolescents' inequalities if we wish to eliminate subsequent inequalities later in life⁷⁻¹⁰.

Closely associated with social marginalization is family socioeconomic position (SEP) and parental human capital¹¹⁻¹³. Social marginalization, immigration status, SEP, and parental human capital have all separate, combined, and multiplicative effects on adolescents' developmental outcomes¹¹⁻¹³. This is mainly because both low parental human capital, SEP, and marginalized social identities are commonly associated with economic adversities, stress, trauma, stigma, prejudice, and financial difficulties¹⁴⁻¹⁷.

Among the strongest social determinants of adolescents' outcomes is parental human capital, which is a unique family SEP indicator¹⁸⁻²¹. High parental human capital, commonly measured by parental educational attainment, is linked to a wide range of family SEP indicators such as employment, wealth, and marital status, all of which have influences on the positive developmental and health outcomes of adolescents across domains¹⁸⁻²¹. Regardless of the domain, many studies have documented a link between low parental human capital and associated poverty and financial distress as major risk factors of experiencing behavioral problems and poor health²²⁻²⁴. Parents with high human capital and high-SEP have higher investment and involvement in the life of their adolescents²⁵⁻²⁷. Adolescents from high SEP families are also sent to better schools with more abundant resources²⁸⁻³⁰. High SEP adolescents also have access to a wide range of educational and stimulating resources in their home³¹. Finally, high SEP adolescents are being raised in families with lower stress³²⁻³⁶. All these factors have strong positive effects on adolescents' developmental outcomes³⁷⁻⁴¹.

There are two approaches that researchers have taken to study the effects of social marginalization on adolescents' outcomes. The first approach, a more traditional one, has tried to explain the gap in adolescents' outcomes between the marginalized and non-

marginalized groups to lower parental human capital and family SEP of socially marginalized families such as immigrants^{42–45}. In this view, parental human capital and other family SEP indicators are believed to mediate the effects of social marginalization on adolescents' outcomes^{46–48}. As such, the belief is that enhancing family SEP and closing the gap in SEP would be the primary strategy for closing the existing adolescents inequalities^{49,50}.

The second strategy, however, proposes that SEP has differential effects on adolescents' outcomes across social groups. Minorities' Diminished Returns (MDRs)^{51,52} are defined as weaker effects of family SEP on tangible outcomes for members of marginalized groups (e.g. immigrants) relative to socially privileged groups (non-immigrants). This view is supported by recent evidence suggesting that family SEP indicators such as parental education⁵³, family income^{54,55}, and marital status⁵⁶ generate more desired outcomes for adolescents which are from non-Hispanic White families than Hispanic, Asian American, or Black families.

As shown by the MDR literature, human capital of parents^{57–59} generate unequal outcomes for various social groups. Immigrants may differ from non-immigrants in their opportunities to mobilize resources, navigate systems, and secure tangible outcomes in the presence of SEP resources^{52,54,58,60–62}. As a result of these MDRs, compared to their non-immigrant counterparts, immigrants may show worse than expected outcomes, despite their family SEP^{51,52,54,55,63}. This is, however, shown for racial and ethnic minorities but not immigrants.

Aims

To extend the existing knowledge on how social marginalization, particularly immigration impacts adolescents' outcomes, and built on the MDRs literature^{64–68}, we compared immigrant and non-immigrant families for the effects of parental human capital, one of the major family SEP indicators, on adolescents' executive function. We expected a positive association between parental educational attainment and youth executive function, however, we also expected a weaker effect of parental human capital, as one of the main family SEP indicators, on adolescents' executive function, which is a main predictor of school and cognitive performance^{35,69,70}, for immigrant than non-immigrant adolescents.

Methods

Design and settings.

We performed a secondary analysis of wave 1 data from the Adolescent Brain Cognitive Development (ABCD) study^{71–75}. The ABCD is a landmark adolescents brain development study in the United States. Detailed information on the details of the ABCD study is available elsewhere^{71,76}.

Participants and Sampling

The ABCD data collection for the study baseline data (wave 1) was performed between 9/1/2016 and 11/1/2018. Participants of the ABCD study were adolescents at age 9–10

years. The ABCD study recruited adolescents from multiple cities across states. Overall, 21 sites recruited adolescents to the ABCD study. The recruitment of the ABCD sample was mainly done through school systems. A detailed description of the ABCD sampling is available here⁷⁷. Four thousand one hundred eighty-eight participants entered our analysis. Eligibility for our analysis included having valid data on immigration status, and the outcome *tfmri_sst_all_beh_crgo_rt* (i.e. task-based executive function), non-twin status, and being non-Hispanic White. The ABCD study sample is generalizable to the broader US adolescent population.

Study Variables

The study variables included immigration status, demographic factors (age, sex), family marital status, parental employment, parental human capital (parental education), household income, financial difficulties, and task-based adolescents' executive function.

Confounders

Age.—Parents were asked to report the age of their adolescents. Age was a continuous measure in months. Age was also a dichotomous variable: 9 or 10.

Sex.—Sex was a dichotomous variable: male = 1, female = 0.

Parental marital status.—Parental marital status was a dichotomous variable. This variable was self-reported by the parent who was interviewed. This variable was coded as married = 1 vs. other = 0.

Parental employment.—Parental employment was a dichotomous variable. This variable was self-reported by the parent who was interviewed. This variable was coded as at least one parent employed in the household = 1 vs. no employed parent in the household = 0.

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 \$5,000; 2 = \$5,000; 3 = \$12,000; 4 = \$16,000; 5 = \$25,000; 6 = \$35,000; 7 = \$50,000; 8 = \$75,000; 9 = \$100,000; 10 = \$200,000.

Financial difficulties.—This study measured parental human capital using the following seven items. Participants were asked “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 couldn’t afford to buy it or couldn’t afford to go out to get it?”, 2) “Were without telephone service because you could not afford it?”, 3) “Didn’t 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 wouldn’t deliver oil because payments were not made?”, 6) “Had someone who needed to see a doctor or go to the hospital but didn’t go because you could not afford it?”

and 7) “Had someone who needed a dentist but couldn’t go because you could not afford it?” Responses were 0 or 1. We calculated a sum score (a continuous measure), which ranged between 0 and 1 with a higher score indicating higher financial difficulties. Financial difficulty is an accepted SEP indicator, as it reflects some aspects of the SEP which are not captured by objective SEP indicators such as education and income^{78–84}. Financial difficulties may have some health effects that are not seen by objective SEP^{78,80,81,85–87}.

Primary Outcome

Adolescents’ executive function.—The study also used the stop-signal task (SST)⁸⁸ to measure executive function. The SST applied two runs of 180 trials showing images of a black arrow pointing either right or left are displayed on the screen participants’ view while in the scanner. They were instructed to click the appropriate button corresponding to the arrow direction as quickly as they can after seeing the image using their dominant hand. Thirty of the 180 trials display neither option, signaling the participant to inhibit answering with either option and are randomly dispersed throughout the trials. Executive function in this study was measured using the variable *tfMRI_sst_all_beh_crgo_rt*, which referred to the rate of correct “Go” trials. Thus, executive function was measured as the total number of correct “Go” trials in a run. This variable was continuous with a higher score indicating a higher level of executive function^{89–92}. The stop-signal task is a commonly used indicator of adolescents’ executive function. SST is reliable and valid^{93–95} and commonly used to measure executive function^{96–98}.

Independent Variable

Parental human capital.—Parental educational attainment or parental human capital was an interval variable ranging from 1 to 21. This variable was treated as a continuous measure.

Moderator

Immigration status.—Nativity, also called as immigration status, was self-identified by the parents. Immigration was calculated based on the country of birth of the adolescent. This variable was treated as a categorical variable. It was coded 1 for immigrants and 0 for non-immigrants (reference category).

Data Analysis

We used the statistical package SPSS to perform our data analysis. Mean (standard deviation [SD]) and frequency (%) were described depending on the variable type. We also performed a Spearman bivariate test to explore bivariate associations between all the study variables. For our multivariable modeling, we fitted four multiple linear regression models. Our first two models were performed in the overall sample. Our last two models were performed across groups defined based on immigration. *Model 1* was performed without the immigration by parental human capital interaction term. *Model 2* added the interaction term between immigration status and parental human capital (parental educational attainment). *Model 3* was performed in non-immigrant and *Model 4* was performed in immigrant participants. Our models used age, sex, parental marital status, parental employment, family income, and financial difficulties as the covariates. Unstandardized regression coefficient

(b), and p-value were reported for each model. p-values equal to or less than 0.05 were significant.

Ethical Aspect

The ABCD study received an Institutional Review Board (IRB) approval from the University of California, San Diego (UCSD). Each adolescent participant provided assent. Each parent signed an informed consent⁷⁶. As this analysis was performed on fully de-identified data, our analysis was exempt from a full IRB review.

Results

Descriptives

As shown in Table 1, 2,723, 9–10 years, old adolescents entered to this analysis. From this number, most were non-immigrants (98.4%), and the rest were immigrants (1.6%). Table 1 presents a description of the sample overall and based on immigration status.

Bivariates

Table 2 shows a summary of the Spearman correlation matrix between all the study variables in the overall sample. Immigrant status was associated with a lower SEP and lower executive function. Task-based executive function was positively correlated. Family SEP was positively correlated with task-based executive function.

Multivariate Analysis (Pooled Sample)

Table 3 shows the results of two linear regression models in the overall (total) sample. *Model 1* (Main Effect Model) showed the protective effect of high family SEP on executive function. *Model 2* (Interaction Model) showed a statistically significant interaction between immigration status and parental human capital on adolescents' executive function, suggesting that the boosting effect of high parental human capital on adolescents' executive function is weaker for immigrant relative to non-immigrant adolescents (Table 3).

Multivariate Analysis (Group-stratified models)

Table 4 shows the results of two linear regressions by immigration status. *Model 3* showed the protective effect of high parental human capital on the executive function of non-immigrant adolescents. *Model 4*, however, did not show any effect of high parental human capital on adolescents' executive function for immigrants.

Discussion

Overall, high parental human capital was associated with a higher task-based executive function of adolescents. However, the boosting effect of high parental human capital on adolescents' executive function is diminished for immigrant than non-immigrant families. The magnitude of the difference is significant.

The observed diminished return of the human capital of the parents on the executive function for immigrant than non-immigrant adolescents is similar to what the previous research on

MDRs^{60,65,99,100}. MDRs are well established within individuals, with families, and within generations. These MDRs hold across SEP resources, age groups, outcomes, and marginalizing identities^{51,52}. Recent research has documented MDRs based on immigration⁵⁵. That means, if an individual or a family is immigrant, their SEP indicators in general and high human capital, in particular, will generate fewer outcomes, when compared to the same process in non-immigrants⁵⁵.

MDRs are mainly shown for ethnicity and race not immigration. MDRs are shown for immigrants⁵⁵, Hispanics^{65,101–103}, Asian Americans¹⁰⁴, Native Americans¹⁰⁵, and LGBTQs⁹⁹. These MDRs hold for human capital of the parent^{54,55,63} as well as income⁵⁴, education⁶⁵, employment¹⁰⁶, and marital status⁶¹. Human capital and family SEP generate less health for adolescents^{54,55,63}, adults⁶⁰, and older adults¹⁰⁷.

Various mechanisms may be involved in explaining the MDRs of family SEP or immigrant families. Immigrant families face disproportionately higher levels of stigma, stress, trauma, and financial difficulties in their daily lives, across all SEP levels. According to the social reproduction theory, human capital differently generates outcomes in social groups¹⁰⁸. In the US, upward social mobility is not similarly easy for all social groups¹⁰⁹.

Increased exposure to stress is believed to reduce adolescents' ability to gain from their available family SEP resources such as parental education and income. It is shown that an increase in SEP for immigrant families means an increase in experiences of^{110–114} and vulnerabilities to⁸¹ discrimination. This might be because high SEP immigrant families are more likely to be surrounded by non-immigrant families, which means a higher level of exposure to discrimination^{110,111}. Needless to say, high levels of discrimination means undesired outcomes and reduced gains of SEP^{81,113,115}.

Many immigrants live in ethnic enclaves. Residential segregation results in diminished returns of human capital in immigrant communities. Due to segregation, school options are limited for high SEP immigrant families. As a result, children of high SEP immigrant families attend highly segregated schools with low resources^{116–118}. That means the differential effect of SEP on education and schooling of non-immigrants and immigrants. While high SEP non-immigrant adolescents attend schools in suburban areas with more funding and higher-quality teachers, immigrants may need to attend schools that are of lesser quality²⁹.

Immigration did not have the main effect on adolescents' executive function. They even had higher human capita but lower-income and more financial difficulties. These are all indicators of structural inequalities, which are a less-commonly discussed. Most of the existing discussion on inequalities is focused on another class of disadvantage, which is the low SEP of the marginalized group^{51,52}. However, this study shows that not all inequalities are due to the gap across the groups in terms of SEP resources. Due to MDRs, adolescents show worse than expected outcomes despite their access to SEP.

We argue that given MDRs exist, researchers and policymakers should not only address inequality in SEP, but they should also address inequality in the returns of SEP. Immigrants are at a relative disadvantage because their SEP shows low levels of return, their increasing

SEP resources would generate in less than expected effects for them^{51,119}. This should not discourage us from investing in them. Instead of merely focusing on SEP, we should focus on inequalities that have emerged across all SEP levels.

Multilevel economic, psychological, and societal mechanisms may be involved in explaining racial and ethnic gaps in the returns of parental education^{51,119}. MDRs may be due to racism across multiple societal institutions and social structures^{51,119}. Xenophobia, racism, prejudice, and discrimination interferes with the processes that are needed to gain benefits from available SEP resources^{120–122}. MDRs of family SEP may be in part due to a history of childhood poverty¹²³.

Marginalized families (e.g. immigrants) are more likely to stay in poor neighborhoods despite attaining high SEP. Marginalized families are more likely to stay poor than non-immigrants^{59,124}. Similarly, immigrant families from high SEP backgrounds may remain at risk of environmental exposures than non-immigrants with similar SEP^{110,111,113,125–129}. Similarly, adolescents from high SEP but still marginalized families are more likely to spend time with peers with higher risk and behavioral problems. This risk is not high for high SEP families that are not marginalized^{53,104}.

Implications of the current findings on the existing MDRs are that societal inequalities are not merely a result of unequal access to SEP, but also unequal processes that alter the degree to which the same SEP can result in differential outcomes for groups. As a result, the unfair processes of society should be addressed to achieve equality and equity. Interventions should target the very societal, social, environmental, and structural processes that cause MDRs for the marginalized people. We argue that the solution to the inequalities is both enhancing SEP and also eliminating MDRs-related disparities. It is important to develop, design, implement, and evaluate policies that belong to each class. At the same time, the solution to disparities due to the gap in SEP is to increase immigrants' access to SEP resources, the remedy to MDRs-related inequalities is to empower immigrants so they can more efficiently translate their SEP to outcomes. The latter solution requires policies and programs that go beyond access and address structural and environmental factors. For the latter, there is a need to equalize the life conditions of immigrants and non-immigrants.

Limitations

As our data were cross-sectional, we cannot draw causal links between immigration status, parental human capital (SEP), and adolescents' executive function. This study only tested the MDRs of parental human capital. Other SEP indicators such as income, wealth, employment, and neighborhood SEP may also show MDRs. Finally, this study only described the existing MDRs without exploring the contextual mechanisms and factors that explain the observed MDRs.

Conclusion

Compared to non-immigrant adolescents, immigrant adolescents show lower task-based executive function across all parental human capital levels. This is mainly because their high parental education does not enhance their executive function. As such, immigrant

adolescents' executive function remains low even when they have high parental human capital. This weaker association between parental human capital and adolescents' executive function in immigrants than non-immigrants is systematically ignored in the political discussion that is needed to achieve health and economic equity. As a result of this relative disadvantage, immigrant adolescents show poor educational outcomes despite their high SEP families. It is still unknown why high-SEP immigrant adolescents remain at risk. There is a need to conduct more research on this topic.

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References

1. Bumpus JP, Umeh Z, Harris AL. Social Class and Educational Attainment: Do Blacks Benefit Less from Increases in Parents' Social Class Status? *Sociology of Race and Ethnicity*.0(0):2332649219854465.
2. Bohlin G, Janols LO. Behavioural problems and psychiatric symptoms in 5–13 year-old Swedish children—a comparison of parent ratings on the FTF (Five to Fifteen) with the ratings on CBCL (Child Behavior Checklist). *Eur Child Adolesc Psychiatry*. 2004;13 Suppl 3:14–22. [PubMed: 15692875]
3. Silberholz EA, Brodie N, Spector ND, Pattishall AE. Disparities in access to care in marginalized populations. *Curr Opin Pediatr*. 2017;29(6):718–727. [PubMed: 28922319]
4. Schwartz SJ, Zamboanga BL, Jarvis LH. Ethnic identity and acculturation in Hispanic early adolescents: mediated relationships to academic grades, prosocial behaviors, and externalizing symptoms. *Cultur Divers Ethnic Minor Psychol*. 2007;13(4):364–373. [PubMed: 17967105]
5. Fortuna LR, Porche MV, Alegria M. Political violence, psychosocial trauma, and the context of mental health services use among immigrant Latinos in the United States. *Ethn Health*. 2008;13(5):435–463. [PubMed: 18850369]
6. Abe-Kim J, Takeuchi DT, Hong S, et al. Use of mental health-related services among immigrant and US-born Asian Americans: results from the National Latino and Asian American Study. *Am J Public Health*. 2007;97(1):91–98. [PubMed: 17138905]
7. Cohen GL, Sherman DK. Stereotype threat and the social and scientific contexts of the race achievement gap. *Am Psychol*. 2005;60(3):270–271; discussion 271–272. [PubMed: 15796692]
8. Burchinal M, McCartney K, Steinberg L, et al. Examining the Black-White achievement gap among low-income children using the NICHD study of early child care and youth development. *Child Dev*. 2011;82(5):1404–1420. [PubMed: 21790543]
9. Gorey KM. Comprehensive School Reform: Meta-Analytic Evidence of Black-White Achievement Gap Narrowing. *Educ Policy Anal Arch*. 2009;17(25):1–17. [PubMed: 27453681]
10. Hair NL, Hanson JL, Wolfe BL, Pollak SD. Association of Child Poverty, Brain Development, and Academic Achievement. *JAMA Pediatr*. 2015;169(9):822–829. [PubMed: 26192216]

11. Valencia MLC, Tran BT, Lim MK, Choi KS, Oh JK. Association Between Socioeconomic Status and Early Initiation of Smoking, Alcohol Drinking, and Sexual Behavior Among Korean Adolescents. *Asia Pac J Public Health*. 2019;31(5):443–453. [PubMed: 31431057]
12. Ahmad A, Zulaily N, Shahril MR, Syed Abdullah EFH, Ahmed A. Association between socioeconomic status and obesity among 12-year-old Malaysian adolescents. *PLoS One*. 2018;13(7):e0200577. [PubMed: 30044842]
13. Merz EC, Tottenham N, Noble KG. Socioeconomic Status, Amygdala Volume, and Internalizing Symptoms in Children and Adolescents. *J Clin Child Adolesc Psychol*. 2018;47(2):312–323. [PubMed: 28574722]
14. Dismukes A, Shirtcliff E, Jones CW, Zeanah C, Theall K, Drury S. The development of the cortisol response to dyadic stressors in Black and White infants. *Dev Psychopathol*. 2018;30(5):1995–2008. [PubMed: 30328402]
15. Hanson JL, Nacewicz BM, Sutterer MJ, et al. Behavioral problems after early life stress: contributions of the hippocampus and amygdala. *Biol Psychiatry*. 2015;77(4):314–323. [PubMed: 24993057]
16. Miller B, Taylor J. Racial and socioeconomic status differences in depressive symptoms among black and white youth: an examination of the mediating effects of family structure, stress and support. *J Youth Adolesc*. 2012;41(4):426–437. [PubMed: 21614536]
17. DeSantis AS, Adam EK, Doane LD, Mineka S, Zinbarg RE, Craske MG. Racial/ethnic differences in cortisol diurnal rhythms in a community sample of adolescents. *J Adolesc Health*. 2007;41(1):3–13. [PubMed: 17577528]
18. Alvarado SE. The impact of childhood neighborhood disadvantage on adult joblessness and income. *Soc Sci Res*. 2018;70:1–17. [PubMed: 29455736]
19. Barreto SM, de Figueiredo RC, Giatti L. Socioeconomic inequalities in youth smoking in Brazil. *BMJ Open*. 2013;3(12):e003538.
20. Schreier HM, Chen E. Socioeconomic status and the health of youth: a multilevel, multidomain approach to conceptualizing pathways. *Psychol Bull*. 2013;139(3):606–654. [PubMed: 22845752]
21. Hemovich V, Lac A, Crano WD. Understanding early-onset drug and alcohol outcomes among youth: the role of family structure, social factors, and interpersonal perceptions of use. *Psychol Health Med*. 2011;16(3):249–267. [PubMed: 21491334]
22. Yelin E, Trupin L, Bunde J, Yazdany J. Poverty, Neighborhoods, Persistent Stress, and Systemic Lupus Erythematosus Outcomes: A Qualitative Study of the Patients' Perspective. *Arthritis Care Res (Hoboken)*. 2019;71(3):398–405. [PubMed: 29781579]
23. Harnett NG, Wheelock MD, Wood KH, et al. Negative life experiences contribute to racial differences in the neural response to threat. *Neuroimage*. 2019;202:116086. [PubMed: 31401241]
24. Schulz AJ, Mentz G, Lachance L, Johnson J, Gaines C, Israel BA. Associations between socioeconomic status and allostatic load: effects of neighborhood poverty and tests of mediating pathways. *Am J Public Health*. 2012;102(9):1706–1714. [PubMed: 22873478]
25. Cummings JR. Contextual socioeconomic status and mental health counseling use among US adolescents with depression. *J Youth Adolesc*. 2014;43(7):1151–1162. [PubMed: 24114588]
26. Takada M, Kondo N, Hashimoto H, Committee JSDM. Japanese study on stratification, health, income, and neighborhood: study protocol and profiles of participants. *J Epidemiol*. 2014;24(4):334–344. [PubMed: 24814507]
27. Nogueira GJ, Castro A, Naveira L, et al. [Evaluation of the higher brain functions in 1st and 7th grade schoolchildren belonging to two different socioeconomic groups]. *Rev Neurol*. 2005;40(7):397–406. [PubMed: 15849672]
28. Richards M, James SN, Sizer A, et al. Identifying the lifetime cognitive and socioeconomic antecedents of cognitive state: seven decades of follow-up in a British birth cohort study. *BMJ Open*. 2019;9(4):e024404.
29. Jefferson AL, Gibbons LE, Rentz DM, et al. A life course model of cognitive activities, socioeconomic status, education, reading ability, and cognition. *J Am Geriatr Soc*. 2011;59(8):1403–1411. [PubMed: 21797830]

30. Manly JJ, Jacobs DM, Touradji P, Small SA, Stern Y. Reading level attenuates differences in neuropsychological test performance between African American and White elders. *J Int Neuropsychol Soc.* 2002;8(3):341–348. [PubMed: 11939693]
31. Larson K, Russ SA, Nelson BB, Olson LM, Halfon N. Cognitive ability at kindergarten entry and socioeconomic status. *Pediatrics.* 2015;135(2):e440–448. [PubMed: 25601983]
32. Vargas T, Rakhshan Rouhakhtar PJ, Schiffman J, Zou DS, Rydland KJ, Mittal VA. Neighborhood crime, socioeconomic status, and suspiciousness in adolescents and young adults at Clinical High Risk (CHR) for psychosis. *Schizophr Res.* 2020;215:74–80. [PubMed: 31759810]
33. Gerra G, Benedetti E, Resce G, Potente R, Cutilli A, Molinaro S. Socioeconomic Status, Parental Education, School Connectedness and Individual Socio-Cultural Resources in Vulnerability for Drug Use among Students. *Int J Environ Res Public Health.* 2020;17(4).
34. Rodriguez JM, Karlamangla AS, Gruenewald TL, Miller-Martinez D, Merkin SS, Seeman TE. Social stratification and allostatic load: shapes of health differences in the MIDUS study in the United States. *J Biosoc Sci.* 2019:1–18.
35. Schibli K, Wong K, Hedayati N, D'Angiulli A. Attending, learning, and socioeconomic disadvantage: developmental cognitive and social neuroscience of resilience and vulnerability. *Ann N Y Acad Sci.* 2017;1396(1):19–38. [PubMed: 28548461]
36. Kelishadi R, Jari M, Qorbani M, et al. Does the socioeconomic status affect the prevalence of psychiatric distress and violent behaviors in children and adolescents? The CASPIAN-IV study. *Minerva Pediatr.* 2017;69(4):264–273. [PubMed: 26329658]
37. Poh BK, Lee ST, Yeo GS, et al. Low socioeconomic status and severe obesity are linked to poor cognitive performance in Malaysian children. *BMC Public Health.* 2019;19(Suppl 4):541. [PubMed: 31196019]
38. Karlsson O, De Neve JW, Subramanian SV. Weakening association of parental education: analysis of child health outcomes in 43 low- and middle-income countries. *Int J Epidemiol.* 2018.
39. Madhushanthi HJ, Wimalasekera SW, Goonewardena CSE, Amarasekara A, Lenora J. Socioeconomic status is a predictor of neurocognitive performance of early female adolescents. *Int J Adolesc Med Health.* 2018.
40. Christensen DL, Schieve LA, Devine O, Drews-Botsch C. 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(7):1789–1801. [PubMed: 24679548]
41. Bouthoorn SH, Wijtzes AI, Jaddoe VW, Hofman A, Raat H, van Lenthe FJ. Development of socioeconomic inequalities in obesity among Dutch pre-school and school-aged children. *Obesity (Silver Spring).* 2014;22(10):2230–2237. [PubMed: 25044908]
42. Kaufman JS, Cooper RS, McGee DL. Socioeconomic status and health in blacks and whites: the problem of residual confounding and the resiliency of race. *Epidemiology.* 1997:621–628. [PubMed: 9345660]
43. Bell CN, Sacks TK, Thomas Tobin CS, Thorpe RJ Jr. Racial Non-equivalence of Socioeconomic Status and Self-rated Health among African Americans and Whites. *SSM Popul Health.* 2020;10:100561. [PubMed: 32140544]
44. Samuel LJ, Roth DL, Schwartz BS, Thorpe RJ, Glass TA. Socioeconomic Status, Race/Ethnicity, and Diurnal Cortisol Trajectories in Middle-Aged and Older Adults. *J Gerontol B Psychol Sci Soc Sci.* 2018;73(3):468–476. [PubMed: 27440916]
45. Fuentes M, Hart-Johnson T, Green CR. The association among neighborhood socioeconomic status, race and chronic pain in black and white older adults. *J Natl Med Assoc.* 2007;99(10):1160–1169. [PubMed: 17987920]
46. Assari S, Khoshpouri P, Chalian H. Combined Effects of Race and Socioeconomic Status on Cancer Beliefs, Cognitions, and Emotions. *Healthcare (Basel).* 2019;7(1).
47. Assari S. Number of Chronic Medical Conditions Fully Mediates the Effects of Race on Mortality; 25-Year Follow-Up of a Nationally Representative Sample of Americans. *J Racial Ethn Health Disparities.* 2017;4(4):623–631. [PubMed: 27440120]
48. Assari S. Distal, intermediate, and proximal mediators of racial disparities in renal disease mortality in the United States. *J Nephropathol.* 2016;5(1):51–59. [PubMed: 27047811]

49. Williams DR, Costa MV, Odunlami AO, Mohammed SA. Moving upstream: how interventions that address the social determinants of health can improve health and reduce disparities. *J Public Health Manag Pract.* 2008;14 Suppl:S8–17. [PubMed: 18843244]
50. Williams DR. Race, socioeconomic status, and health the added effects of racism and discrimination. 1999.
51. Assari S. Health Disparities due to Diminished Return among Black Americans: Public Policy Solutions. *Social Issues and Policy Review.* 2018;12(1):112–145.
52. Assari S. Unequal Gain of Equal Resources across Racial Groups. *Int J Health Policy Manag.* 2017;7(1):1–9.
53. Assari S, Caldwell CH, Bazargan M. Association Between Parental Educational Attainment and Youth Outcomes and Role of Race/Ethnicity. *JAMA Netw Open.* 2019;2(11):e1916018. [PubMed: 31755951]
54. Assari S, Caldwell CH, Mincy R. Family Socioeconomic Status at Birth and Youth Impulsivity at Age 15; Blacks' Diminished Return. *Children (Basel).* 2018;5(5).
55. Assari S, Thomas A, Caldwell CH, Mincy RB. 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(1):21–35. [PubMed: 29230628]
56. Assari S, Bazargan M. Being Married Increases Life Expectancy of White but Not Black Americans. *J Family Reprod Health.* 2019;13(3):132–140. [PubMed: 32201487]
57. Assari S. Parental Education Attainment and Educational Upward Mobility; Role of Race and Gender. *Behav Sci (Basel).* 2018;8(11).
58. Assari S. Parental Educational Attainment and Mental Well-Being of College Students; Diminished Returns of Blacks. *Brain Sci.* 2018;8(11).
59. Assari S. Parental Education Better Helps White than Black Families Escape Poverty: National Survey of Children's Health. *Economies.* 2018;6(2):30.
60. Assari S. Blacks' Diminished Return of Education Attainment on Subjective Health; Mediating Effect of Income. *Brain Sci.* 2018;8(9).
61. Assari S, Caldwell CH, Zimmerman MA. Family Structure and Subsequent Anxiety Symptoms; Minorities' Diminished Return. *Brain Sci.* 2018;8(6).
62. Assari S, Hani N. Household Income and Children's Unmet Dental Care Need; Blacks' Diminished Return. *Dent J (Basel).* 2018;6(2).
63. Assari S, Caldwell CH, Mincy RB. 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(5).
64. Assari S. Combined Effects of Ethnicity and Education on Burden of Depressive Symptoms over 24 Years in Middle-Aged and Older Adults in the United States. *Brain Sci.* 2020;10(4).
65. Assari S, Farokhnia M, Mistry R. Education Attainment and Alcohol Binge Drinking: Diminished Returns of Hispanics in Los Angeles. *Behav Sci (Basel).* 2019;9(1).
66. Assari S. Income and Mental Well-Being of Middle-Aged and Older Americans: Immigrants' Diminished Returns. *International Journal of Travel Medicine and Global Health.* 2020;8(1):37–43. [PubMed: 32266301]
67. Assari S, Bazargan M, Caldwell C. Parental Educational Attainment and Chronic Medical Conditions among American Youth; Minorities' Diminished Returns. *Children (Basel).* 2019;6(9).
68. Assari S, Boyce S, Bazargan M, Caldwell CH, Zimmerman MA. Place-Based Diminished Returns of Parental Educational Attainment on School Performance of Non-Hispanic White Youth. *Frontiers in Education.* 2020;5(30).
69. Jacques T, Seitz AR. Moderating effects of visual attention and action video game play on perceptual learning with the texture discrimination task. *Vision Res.* 2020.
70. King J, Markant J. Individual differences in selective attention and scanning dynamics influence children's learning from relevant non-targets in a visual search task. *J Exp Child Psychol.* 2020;193:104797. [PubMed: 31991262]
71. Alcohol Research: Current Reviews Editorial S. NIH's Adolescent Brain Cognitive Development (ABCD) Study. *Alcohol Res.* 2018;39(1):97. [PubMed: 30557152]

72. Casey BJ, Cannonier T, Conley MI, et al. The Adolescent Brain Cognitive Development (ABCD) study: Imaging acquisition across 21 sites. *Dev Cogn Neurosci*. 2018;32:43–54. [PubMed: 29567376]
73. Karcher NR, O'Brien KJ, Kandala S, Barch DM. Resting-State Functional Connectivity and Psychotic-like Experiences in Childhood: Results From the Adolescent Brain Cognitive Development Study. *Biol Psychiatry*. 2019;86(1):7–15. [PubMed: 30850130]
74. Lisdahl KM, Sher KJ, Conway KP, et al. Adolescent brain cognitive development (ABCD) study: Overview of substance use assessment methods. *Dev Cogn Neurosci*. 2018;32:80–96. [PubMed: 29559216]
75. Luciana M, Bjork JM, Nagel BJ, 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. [PubMed: 29525452]
76. Auchter AM, Hernandez Mejia M, Heyser CJ, et al. A description of the ABCD organizational structure and communication framework. *Dev Cogn Neurosci*. 2018;32:8–15. [PubMed: 29706313]
77. Garavan H, Bartsch H, Conway K, et al. Recruiting the ABCD sample: Design considerations and procedures. *Dev Cogn Neurosci*. 2018;32:16–22. [PubMed: 29703560]
78. Assari S, Smith J, Mistry R, Farokhnia M, Bazargan M. Substance Use among Economically Disadvantaged African American Older Adults; Objective and Subjective Socioeconomic Status. *Int J Environ Res Public Health*. 2019;16(10).
79. Chen E, Paterson LQ. Neighborhood, family, and subjective socioeconomic status: How do they relate to adolescent health? *Health Psychol*. 2006;25(6):704–714. [PubMed: 17100499]
80. Moon C. Subjective economic status, sex role attitudes, fertility, and mother's work. *Ingu Pogon Nonjip*. 1987;7(1):177–196. [PubMed: 12280803]
81. Assari S, Preiser B, Lankarani MM, Caldwell CH. Subjective Socioeconomic Status Moderates the Association between Discrimination and Depression in African American Youth. *Brain Sci*. 2018;8(4).
82. Boe T, Petrie KJ, Sivertsen B, Hysing M. Interplay of subjective and objective economic well-being on the mental health of Norwegian adolescents. *SSM Popul Health*. 2019;9:100471. [PubMed: 31720359]
83. Wright CE, Steptoe A. Subjective socioeconomic position, gender and cortisol responses to waking in an elderly population. *Psychoneuroendocrinology*. 2005;30(6):582–590. [PubMed: 15808928]
84. Ye Z, Wen M, Wang W, Lin D. Subjective family socio-economic status, school social capital, and positive youth development among young adolescents in China: A multiple mediation model. *Int J Psychol*. 2020;55(2):173–181. [PubMed: 31066032]
85. Ursache A, Noble KG, Blair C. Socioeconomic Status, Subjective Social Status, and Perceived Stress: Associations with Stress Physiology and Executive Functioning. *Behav Med*. 2015;41(3):145–154. [PubMed: 26332932]
86. Senn TE, Walsh JL, Carey MP. The mediating roles of perceived stress and health behaviors in the relation between objective, subjective, and neighborhood socioeconomic status and perceived health. *Ann Behav Med*. 2014;48(2):215–224. [PubMed: 24648016]
87. Manuck SB, Phillips JE, Gianaros PJ, Flory JD, Muldoon MF. Subjective socioeconomic status and presence of the metabolic syndrome in midlife community volunteers. *Psychosom Med*. 2010;72(1):35–45. [PubMed: 19933505]
88. Logan GD. On the ability to inhibit thought and action: A users' guide to the stop signal paradigm. 1994.
89. Clark SV, King TZ, Turner JA. Cerebellar Contributions to Proactive and Reactive Control in the Stop Signal Task: A Systematic Review and Meta-Analysis of Functional Magnetic Resonance Imaging Studies. *Neuropsychol Rev*. 2020.
90. Dupuis A, Indralingam M, Chevrier A, et al. Response Time Adjustment in the Stop Signal Task: Development in Children and Adolescents. *Child Dev*. 2019;90(2):e263–e272. [PubMed: 29603204]

91. Hiraoka K, Kinoshita A, Kunimura H, Matsuoka M. Effect of variability of sequence length of go trials preceding a stop trial on ability of response inhibition in stop-signal task. *Somatosens Mot Res.* 2018;35(2):95–102. [PubMed: 29848189]
92. Carver AC, Livesey DJ, Charles M. Age related changes in inhibitory control as measured by stop signal task performance. *Int J Neurosci.* 2001;107(1–2):43–61. [PubMed: 11328681]
93. Congdon E, Mumford JA, Cohen JR, Galvan A, Canli T, Poldrack RA. Measurement and reliability of response inhibition. *Frontiers in psychology.* 2012;3:37. [PubMed: 22363308]
94. Weafer J, Baggott MJ, de Wit H. Test–retest reliability of behavioral measures of impulsive choice, impulsive action, and inattention. *Experimental and Clinical Psychopharmacology.* 2013;21(6):475. [PubMed: 24099351]
95. Soreni N, Crosbie J, Ickowicz A, Schachar R. Stop signal and conners' continuous performance tasks: Test—retest reliability of two inhibition measures in adhd children. *Journal of Attention Disorders.* 2009;13(2):137–143. [PubMed: 19429883]
96. Quay HC. Inhibition and attention deficit hyperactivity disorder. *Journal of abnormal child psychology.* 1997;25(1):7–13. [PubMed: 9093895]
97. Bari A, Robbins T. Noradrenergic versus dopaminergic modulation of impulsivity, attention and monitoring behaviour in rats performing the stop-signal task. *Psychopharmacology.* 2013;230(1):89–111. [PubMed: 23681165]
98. Schachar R, Logan GD, Robaey P, Chen S, Ickowicz A, Barr C. Restraint and cancellation: multiple inhibition deficits in attention deficit hyperactivity disorder. *Journal of abnormal child psychology.* 2007;35(2):229–238. [PubMed: 17351752]
99. Assari S. Education Attainment and Obesity Differential Returns Based on Sexual Orientation. *Behav Sci (Basel).* 2019;9(2).
100. Assari S. Family Income Reduces Risk of Obesity for White but Not Black Children. *Children (Basel).* 2018;5(6).
101. Shervin A, Ritesh M. Diminished Return of Employment on Ever Smoking Among Hispanic Whites in Los Angeles. *Health Equity.* 2019;3(1):138–144. [PubMed: 31289772]
102. Assari S. Socioeconomic Determinants of Systolic Blood Pressure; Minorities' Diminished Returns. *Journal of Health Economics and Development.* 2019;1(1):1–11.
103. Assari S. Socioeconomic Status and Self-Rated Oral Health; Diminished Return among Hispanic Whites. *Dent J (Basel).* 2018;6(2).
104. Assari S, Boyce S, Bazargan M, Caldwell CH. Mathematical Performance of American Youth: Diminished Returns of Educational Attainment of Asian-American Parents. *Education Sciences.* 2020;10(2):32. [PubMed: 32201681]
105. Assari S, Bazargan M. 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.* 2019.
106. Assari S. Life Expectancy Gain Due to Employment Status Depends on Race, Gender, Education, and Their Intersections. *J Racial Ethn Health Disparities.* 2018;5(2):375–386. [PubMed: 28634876]
107. Assari S, Lankarani MM. Education and Alcohol Consumption among Older Americans; Black-White Differences. *Front Public Health.* 2016;4:67. [PubMed: 27148514]
108. Bowden M, Bartkowski J, Xu X, Lewis R Jr. Parental occupation and the gender math gap: Examining the social reproduction of academic advantage among elementary and middle school students. *Social Sciences.* 2017;7(1):6.
109. Chetty R, Hendren N, Kline P, Saez E. Where is the land of opportunity? The geography of intergenerational mobility in the United States. *The Quarterly Journal of Economics.* 2014;129(4):1553–1623.
110. Assari S, Gibbons FX, Simons R. Depression among Black Youth; Interaction of Class and Place. *Brain Sci.* 2018;8(6).
111. Assari S, Gibbons FX, Simons RL. Perceived Discrimination among Black Youth: An 18-Year Longitudinal Study. *Behav Sci (Basel).* 2018;8(5).
112. Assari S. Does School Racial Composition Explain Why High Income Black Youth Perceive More Discrimination? A Gender Analysis. *Brain Sci.* 2018;8(8).

113. Assari S, Lankarani MM, Caldwell CH. Does Discrimination Explain High Risk of Depression among High-Income African American Men? *Behav Sci (Basel)*. 2018;8(4).
114. Assari S, Moghani Lankarani M. Workplace Racial Composition Explains High Perceived Discrimination of High Socioeconomic Status African American Men. *Brain Sci*. 2018;8(8).
115. Assari S, Caldwell CH. Social Determinants of Perceived Discrimination among Black Youth: Intersection of Ethnicity and Gender. *Children (Basel)*. 2018;5(2).
116. Assari S. Parental Educational Attainment and Academic Performance of American College Students; Blacks' Diminished Returns. *Journal of Health Economics and Development*. 2019;1(1):21–31. [PubMed: 31372601]
117. Assari S, Caldwell CH. Parental Educational Attainment Differentially Boosts School Performance of American Adolescents: Minorities' Diminished Returns. *J Family Reprod Health*. 2019;13(1):7–13. [PubMed: 31850092]
118. Assari S. Parental Educational Attainment and Academic Performance of American College Students; Blacks' Diminished Returns. *J Health Econ Dev*. 2019;1(1):21–31. [PubMed: 31372601]
119. Assari S. Unequal Gain of Equal Resources across Racial Groups. *Int J Health Policy Manag*. 2018;7(1):1–9. [PubMed: 29325397]
120. Hudson DL, Bullard KM, Neighbors HW, Geronimus AT, Yang J, Jackson JS. Are benefits conferred with greater socioeconomic position undermined by racial discrimination among African American men? *J Mens Health*. 2012;9(2):127–136. [PubMed: 22707995]
121. Hudson DL, Neighbors HW, Geronimus AT, Jackson JS. The relationship between socioeconomic position and depression among a US nationally representative sample of African Americans. *Soc Psychiatry Psychiatr Epidemiol*. 2012;47(3):373–381. [PubMed: 21293845]
122. Hudson D, Sacks T, Irani K, Asher A. The Price of the Ticket: Health Costs of Upward Mobility among African Americans. *Int J Environ Res Public Health*. 2020;17(4).
123. Bartik TJ, Hershbein B. Degrees of poverty: The relationship between family income background and the returns to education. 2018.
124. Assari S, Preiser B, Kelly M. Education and Income Predict Future Emotional Well-Being of Whites but Not Blacks: A Ten-Year Cohort. *Brain Sci*. 2018;8(7).
125. Assari S B M. Second-hand exposure home Second-Hand Smoke Exposure at Home in the United States; Minorities' Diminished Returns.. *Int J Travel Med Glob Health*. 2019;7(3).
126. Assari S, Bazargan M. Unequal Effects of Educational Attainment on Workplace Exposure to Second-Hand Smoke by Race and Ethnicity; Minorities' Diminished Returns in the National Health Interview Survey (NHIS). *J Med Res Innov*. 2019;3(2).
127. Assari S B M. Unequal Effects of Educational Attainment on Workplace Exposure to Second-Hand Smoke by Race and Ethnicity; Minorities' Diminished Returns in the National Health Interview Survey (NHIS).. *J Med Res Innov* 3(2):e000179. [PubMed: 31404444]
128. Assari S. Race, Intergenerational Social Mobility and Stressful Life Events. *Behav Sci (Basel)*. 2018;8(10).
129. Assari S, Bazargan M. Unequal Associations between Educational Attainment and Occupational Stress across Racial and Ethnic Groups. *International Journal of Environmental Research and Public Health*. 2019;16(19):3539.

Table 1.Data overall and by immigration status ($n = 2,723$).

	All		Non-Immigrant		Immigrant	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Immigrant						
No	2679	98.4	2679	100.0	-	-
Yes	44	1.6	-	-	44	100.0
Sex						
Male	1302	47.8	1278	47.7	24	54.5
Female	1421	52.2	1401	52.3	20	45.5
Age						
9	1526	56.0	1502	56.1	24	55.8
10	1189	43.7	1170	43.7	19	44.2
Parents Employed*						
No	765	28.1	746	27.8	19	43.2
Yes	1958	71.9	1933	72.2	25	56.8
Marital Status						
Not Married	454	16.7	450	16.8	4	9.1
Married	2269	83.3	2229	83.2	40	90.9
	Mean	SD	Mean	SD	Mean	SD
Age (Months)	118.30	7.55	118.30	7.54	118.14	7.94
Household Income	8.20	1.68	8.19	1.68	8.45	1.88
Financial Difficulties*	0.27	0.83	0.27	0.83	0.32	0.86
Parental Human Capital (Parental Education)*	17.55	2.02	17.54	2.02	18.16	1.94
Executive function- Task (0–1)	0.82	0.14	0.82	0.14	0.83	0.14

SD= Standard Deviation

* $p < 0.05$ for comparison of immigrants and non- immigrants

Table 2.Correlations between study variables ($n = 2,723$).

	1	2	3	4	5	6	7	8	9	10
Immigration status	1.00	-0.02	0.00	-0.01	0.03	-0.04*	0.04	0.00	0.05**	0.01
Sex (male)		1.00	0.03	0.04*	0.00	-0.00	-0.01	0.02	-0.02	-0.01
Age (10)			1.00	0.85**	-0.03	0.01	-0.01	0.01	-0.06**	0.19**
Age (months)				1.00	-0.03	0.02	-0.00	0.03	-0.05**	0.20**
Parents married					1.00	-0.03	0.37**	-0.26**	0.21**	0.07**
Parents employed						1.00	0.20**	-0.10**	0.25**	0.01
Household income							1.00	-0.39**	0.48**	0.12**
Financial difficulties (n)								1.00	-0.31**	-0.08**
Parental human capital (education)									1.00	0.12**
Executive function (tfmri_sst_all_beh_crgo_rt)										1.00

*
p<0.05;**
p<0.01

Table 3.Summary of linear regressions overall ($n = 4,188$).

	Model 1 Main Effects					Model 2 Interaction Effects						
	B	SE	95% CI	t	p	B	SE	95% CI	t	p		
Immigrants	0.01	0.02	-0.03	0.05	0.48	.633	0.40	0.20	0.00	0.79	1.94	.053
Sex (Male)	0.00	0.01	-0.01	0.01	0.02	.988	0.00	0.01	-0.01	0.01	0.02	.981
Age (Months)	0.00	0.00	0.00	0.00	8.50	<.001	0.00	0.00	0.00	0.00	8.50	<.001
Married household	0.00	0.01	-0.02	0.02	0.12	.902	0.00	0.01	-0.02	0.02	0.08	.935
Employed Parents	-0.01	0.01	-0.02	0.00	-1.89	.059	-0.01	0.01	-0.02	0.00	-1.92	.055
Household Income	0.01	0.00	0.00	0.01	2.81	.005	0.01	0.00	0.00	0.01	2.82	.005
Financial Difficulties	-0.01	0.00	-0.01	0.00	-1.42	.156	-0.01	0.00	-0.01	0.00	-1.49	.137
Human Capital (High)	0.01	0.00	0.00	0.01	3.81	<.001	0.01	0.00	0.00	0.01	3.98	<.001
Human capital (High) × Immigrants	-	-	-	-	-	-	-0.02	0.01	-0.04	0.00	-1.90	.058

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

Table 4.Summary of linear regressions by immigration status ($n = 4,188$).

	Model 3 Non-immigrants					Model 4 Immigrants				
	B	SE	95% CI	t	p	B	SE	95% CI	t	p
Sex (Male)	0.00	0.01	-0.01 0.01	0.05	.961	0.00	0.04	-0.08 0.08	-0.02	.988
Age (Months)	0.00	0.00	0.00 0.00	8.33	<.001	0.00	0.00	0.00 0.01	1.84	.074
Married household	0.00	0.01	-0.02 0.02	0.11	.916	-0.04	0.07	-0.19 0.11	-0.57	.569
Employed Parents	-0.01	0.01	-0.02 0.00	-1.90	.057	-0.01	0.04	-0.09 0.08	-0.13	.900
Household Income	0.01	0.00	0.00 0.01	2.87	.004	-0.01	0.02	-0.04 0.03	-0.37	.715
Financial Difficulties	-0.01	0.00	-0.01 0.00	-1.44	.149	-0.03	0.03	-0.10 0.04	-0.92	.365
Human Capital (High)	0.01	0.00	0.00 0.01	3.91	<.001	-0.01	0.01	-0.04 0.01	-1.16	.254

b= Regression Coefficient; SE= Standard Error; CI= Confidence Interval; SEP= Socioeconomic Status

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