Supplemental Online Content

Taylor RL, Cooper SR, Jackson JJ, Barch DM. Assessment of neighborhood poverty, cognitive function, and prefrontal and hippocampal volumes in children. *JAMA Netw Open*. 2020;3(11):e2023774. doi:10.1001/jamanetworkopen.2020.23774

This supplemental material has been provided by the authors to give readers additional information about their work.

Supplemental Methods and Results

(a) Distributions of NP and household income in Black vs. White participants and model results including race/ethnicity as a covariate
(b) Sample sizes used for each the MLM analyses
(c) Missingness within the study sample and comparison of missing values among demographic and outcome variables

(d) Distribution of NP and household income in overall sample and additional information on measure of NP, PRFQ, and household income
(e) MLM results tables with ADI weighted sum as independent variable

(f) FreeSurfer QC methods

(g) ML Model 3 results using only those participants with a 0 on the artifact score

(h) NIH Toolbox-CB and Brain ROI EFA

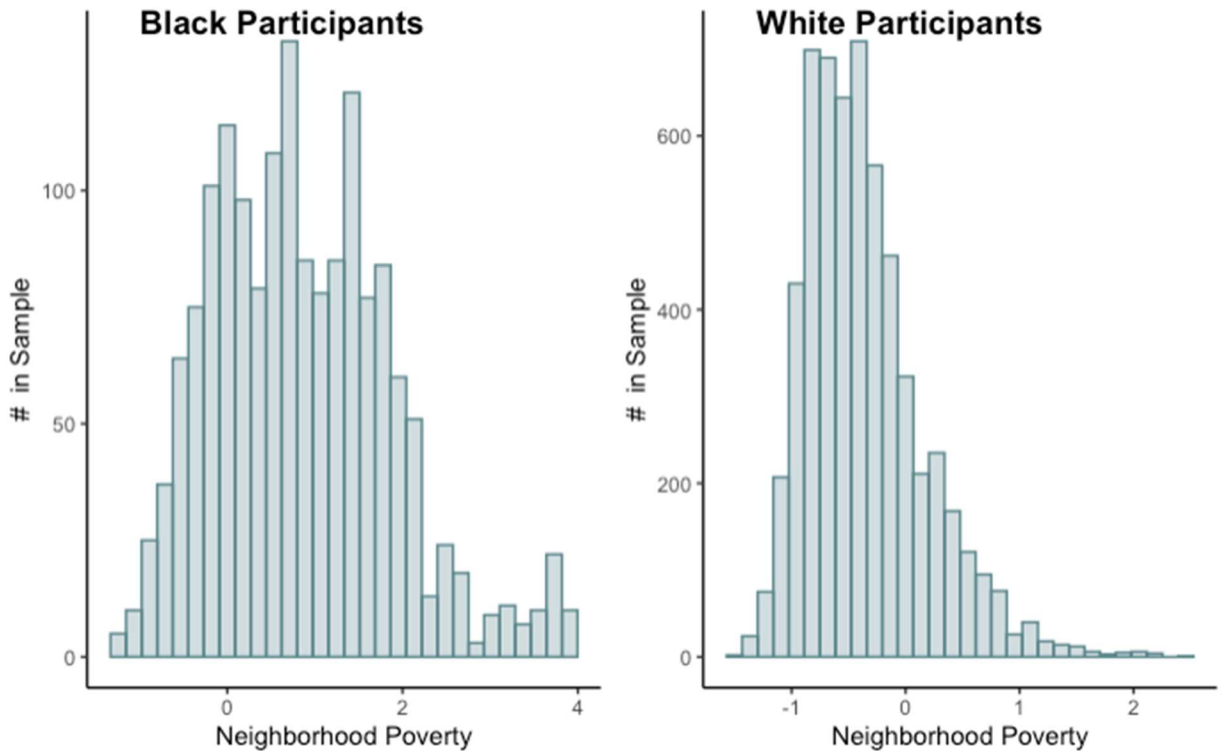
(i) MLM unstandardized results tables

(j) MLM results looking at orbital frontal regions as the outcome variable

eAppendix 1. Distributions of NP and Household Income in Black vs White Participants and Model Results Including Race/Ethnicity as a Covariate

The ABCD sampling was designed to mirror the US population. As such, race and ethnicity are highly confounded with both household income and neighborhood poverty in the ABCD sample, as they are in the US population, reflecting ongoing structural and explicit racism. As shown in eFigures 1 and 2, the distribution of both household income and neighborhood poverty are very different among black and white youth in the ABCD sample, as they are in the US. Thus, we did not include race and ethnicity as covariates in the analyses in the main text. At the request of reviewers, we conducted additional analyses with race/ethnicity as a covariate. As shown in eTables 1 and 2, all of the relations of household income and neighborhood SES in Models 1 and 2 (household and neighborhood examined separately) held when including race/ethnicity as a covariate. For the cognitive measures, as shown in eTable 1, in Model 3 (household and neighborhood SES examined simultaneously), all of the relations to household income held with race/ethnicity as a covariate, and all of the relations of neighborhood SES also held other than for Picture Sequence (a measure of episodic memory). For the brain volume measures, as shown in eTable 2, in Model 3 (household and neighborhood SES examined simultaneously), all of the relations to household income held with race/ethnicity as a covariate, and the relations of neighborhood SES to both right and left DLPFC volume held (the right hippocampus and bilateral SFG and DMPFC did not). For the structural equation models investigating evidence to support future mediation (eTable 3), all of the same results were significant other than the prefrontal factor in association with Picture Sequencing.

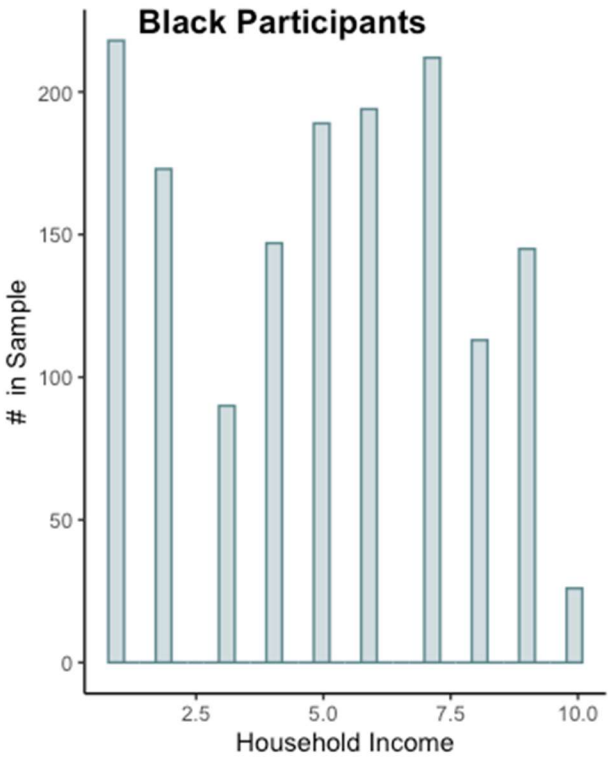
eFigure 1. Distribution of Neighborhood Poverty in Black vs. White Participants



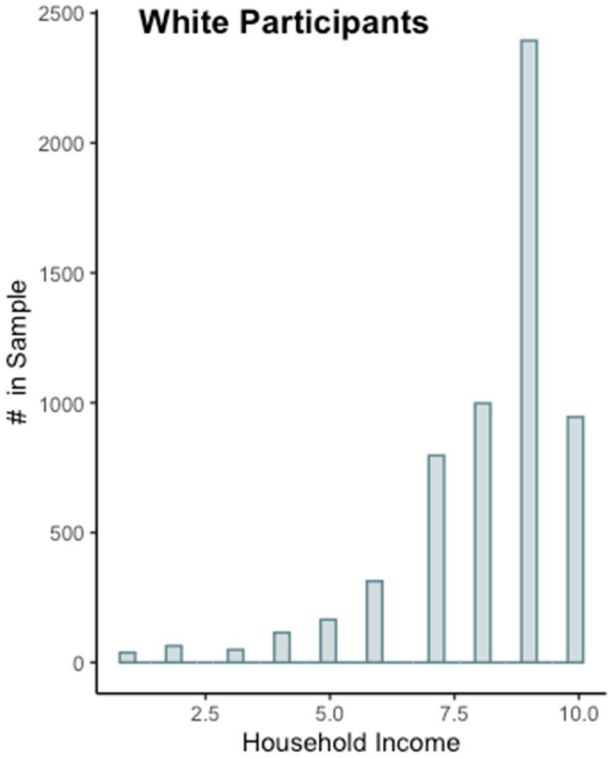
Mdn = 0.76
Range = 5.15 (min = -1.25, max = 3.9)

Mdn = -0.44
Range = 3.96 (min=-1.49, max = 2.47)

eFigure 2. Distribution of Household Income in Black vs. White Participants



Mdn = 5
Range = 9 (min = 1, max = 10)



Mdn = 9
Range = 9 (min = 1, max = 10)

eTable 1. Model Output for NIH Toolbox-CB Measures with Race/Ethnicity as a Covariate

	Neighborhood Poverty				Household Income				PRFQ			
NIH Toolbox-CB Measures	***Std. b***	**CIs**	***t***	***p***	***Std. b***	**CIs**	***t***	***p***	***Std. b***	**CIs**	***t***	***p***
Model 1[a]												
Picture Vocab.					0.25	0.23 to 0.27	22.15	<0.001	-0.03	-0.05 to -0.01	-3.2	<0.01
Oral Reading					0.24	0.21 to 0.26	19.82	<0.001	-0.03	-0.05 to -0.01	0.8	0.42
Dim. Card Sort					0.13	0.11 to 0.15	10.91	<0.001	-0.03	-0.05 to -0.01	-2.49	0.01
Flanker					0.14	0.12 to 0.17	11.87	<0.001	0	-0.02 to 0.02	0.09	0.93
List Sorting					0.22	0.2 to 0.24	18.66	<0.001	-0.01	-0.03 to 0.01	-0.85	0.4
Pattern Comp.					0.07	0.05 to 0.1	5.97	<0.001	-0.02	-0.04 to 0.01	-1.49	0.14
Picture Seq.					0.12	0.1 to 0.15	10.28	<0.001	-0.02	-0.04 to 0	-1.78	0.07
Total Composite					0.29	0.27 to 0.31	25.51	<0.001	-0.03	-0.05 to -0.01	-3.37	<0.01
Model 2[b]												
Picture Vocab.	-0.22	-0.24 to -0.2	-17.48	<0.001								
Oral Reading	-0.18	-0.2 to -0.15	-13.17	<0.001								
Dim. Card Sort	-0.15	-0.17 to -0.12	-11.06	<0.001								
Flanker	-0.15	-0.18 to -0.12	-11.25	<0.001								
List Sorting	-0.18	-0.21 to -0.16	-14	<0.001								
Pattern Comp.	-0.1	-0.12 to -0.07	-7.36	<0.001								
Picture Seq.	-0.09	-0.12 to -0.07	-6.94	<0.001								
Total Composite	-0.26	-0.28 to -0.23	-20.16	<0.001								
Model 3[c]												
Picture Vocab.	-0.08	-0.11 to -0.05	-5.56	<0.001	0.22	0.19 to 0.24	17.13	<0.001	-0.03	-0.05 to -0.01	-3.16	<0.01
Oral Reading	-0.03	-0.06 to -0.01	-2.02	0.04	0.22	0.2 to 0.25	16.73	<0.001				
Dim. Card Sort	-0.08	-0.11 to -0.05	-4.94	<0.001	0.11	0.08 to 0.13	7.75	<0.001	-0.03	-0.05 to -0.01	-2.48	0.01
Flanker	-0.08	-0.12 to -0.05	-5.21	<0.001	0.12	0.09 to 0.14	8.56	<0.001				
List Sorting	-0.08	-0.12 to -0.05	-4.87	<0.001	0.19	0.17 to 0.22	14.66	<0.001				
Pattern Comp.	-0.07	-0.1 to -0.04	-4.22	<0.001	0.05	0.03 to 0.08	3.88	<0.001				
Picture Seq.	-0.02	-0.05 to 0.01	-1.09	0.27	0.11	0.09 to 0.14	8.3	<0.001				
Total Composite	-0.1	-0.13 to -0.07	-6.74	<0.001	0.25	0.23 to 0.28	19.98	<0.001	-0.03	-0.05 to -0.01	-3.23	<0.01

Abbreviation: *Std. b* = standardized coefficient estimates; PRFQ = Parent-Reported Financial Adversity Questionnaire

[a] Model 1 included household income and PRFQ as predictors with age, sex, and race/ethnicity included as covariates.
[b] Model 2 included NP as a predictor with age, sex, and race/ethnicity included as covariates.
[c] Model 3 included household income, PRFQ, and NP as predictors with age, sex, and race/ethnicity included as covariates.

eTable 2. Model Output for Brain Regions of Interest (ROIs) with Race/Ethnicity as a Covariate

	Neighborhood Poverty				Household Income				PRFQ			
Brain ROIs	***Std. b***	**CIs**	***t***	***p***	***Std. b***	**CIs**	***t***	***p***	***Std. b***	**CIs**	***t***	***p***
Model 1[a]												
R Hippocampus					0.03	0.01 to 0.05	3.37	<0.001	-0.02	-0.03 to 0	-1.78	0.08
L Hippocampus					0.05	0.03 to 0.07	4.75	<0.001	-0.01	-0.02 to 0.01	-0.84	0.4
R SFG					0.05	0.03 to 0.07	5.43	<0.001	-0.01	-0.03 to 0.01	1.05	0.29
L SFG					0.04	0.02 to 0.06	4.53	<0.001	-0.01	-0.02 to 0.01	-1.02	0.31
R DLPFC					0.06	0.04 to 0.07	6.57	<0.001	-0.01	-0.03 to 0	-1.42	0.16
L DLPFC					0.06	0.04 to 0.07	6.79	<0.001	-0.01	-0.02 to 0.01	-1.07	0.28
R DMPFC					0.05	0.03 to 0.06	5.52	<0.001	-0.01	-0.03 to 0	-1.6	0.11
L DMPFC					0.04	0.03 to 0.06	5.51	<0.001	-0.01	-0.03 to 0	1.59	0.11
Model 2[b]												
R Hippocampus	-0.03	-0.05 to -0.01	-2.71	0.01								
L Hippocampus	-0.02	-0.05 to -0.01	-2.23	0.03								
R SFG	-0.04	-0.06 to -0.02	-3.39	<0.001								
L SFG	-0.03	-0.05 to -0.01	-3.36	<0.001								
R DLPFC	-0.07	-0.09 to -0.05	-6.85	<0.001								
L DLPFC	-0.06	-0.08 to -0.04	-6.61	<0.001								
R DMPFC	-0.04	-0.06 to -0.02	-4.47	<0.001								
L DMPFC	-0.04	-0.05 to -0.02	-4.73	<0.001								
Model 3[c]												
R Hippocampus	<-0.01	-0.03 to 0.02	-0.17	0.87	0.03	0.01 to 0.05	2.54	0.01				
L Hippocampus	-0.01	-0.02 to 0.03	0.47	0.64	0.05	0.03 to 0.07	4.34	<0.001				
R SFG	-0.01	-0.03 to 0.02	-0.54	0.59	0.05	0.03 to 0.07	5.2	<0.001				
L SFG	-0.01	-0.03 to 0.02	-0.68	0.5	0.04	0.02 to 0.06	4.43	<0.001				
R DLPFC	-0.04	-0.06 to -0.02	-3.38	<0.001	0.05	0.03 to 0.07	5.26	<0.001				
L DLPFC	-0.03	-0.05 to -0.01	-2.95	<0.01	0.05	0.03 to 0.07	5.65	<0.001				
R DMPFC	-0.02	-0.04 to 0.01	-1.43	0.15	0.05	0.03 to 0.07	5.24	<0.001				
L DMPFC	-0.02	-0.04 to 0.01	-1.41	0.16	0.04	0.03 to 0.06	5.15	<0.001				

Abbreviations: *Std. b* = standardized coefficient estimates; PRFQ = Parent-Reported Financial Adversity Questionnaire; SFG = superior frontal gyrus; DLPFC = dorsal lateral prefrontal cortex; DMPFC = dorsal medial prefrontal cortex

[a] Model 1 included household income and PRFQ as predictors with age, sex, race/ethnicity, and intracranial volume included as covariates
[b] Model 2 included NP as a predictor, with age, sex, intracranial volume, and race/ethnicity included as covariates.
[c] Model 3 included household income, PRFQ, and NP as predictors with age, sex, intracranial volume, and race/ethnicity included as covariates.

eTable 3. Model Output for SEM Analyses Investigating Evidence for Future Mediation with Race/Ethnicity as a Covariate

	Path *a* NP→ Brain Factors			**Path *b* Brain Factors →Cognitive Tasks**			***a x b* Indirect Effect**			***c'* NP→Cognitive Tasks with Brain Factors in Model**		
	Estimate *(SE)*	***z***	***p***	**Estimate *(SE)***	***z***	***p***	**Estimate *(SE)***	***z***	***p***	**Estimate *(SE)***	***z***	***p***
Picture Vocabulary												
NP										-0.08 *(0.02)*	-4.97	<0.001
Prefrontal Factor	-0.23 *(0.01)*	-21.27	<0.001	0.1 *(0.02)*	5.17	<0.001	-0.02 *(0.01)*	-5.04	<0.001			
Hippocampal Factor	-0.19 *(0.01)*	-16.15	<0.001	0.06 *(0.02)*	3.18	<0.01	-0.01*(0.004)*	-3.12	<0.01			
Oral Reading												
NP										-0.03 *(0.02)*	-1.92	0.06
Prefrontal Factor	-0.23 *(0.01)*	-21.27	<0.001	0.06 *(0.02)*	2.96	<0.01	-0.01 *(0.01)*	-2.94	<0.01			
Hippocampal Factor	-0.19 *(0.01)*	-16.15	<0.001	0.06 *(0.02)*	3.26	<0.01	-0.01 *(0.004)*	-3.524	<0.01			
Dimensional Card Sort												
NP										-0.07 *(0.02)*	-4.58	<0.001
Prefrontal Factor	-0.23 *(0.01)*	-21.27	<0.001	0.05 *(0.02)*	2.37	0.02	-0.01 *(0.01)*	-2.35	0.02			
Hippocampal Factor	-0.19 *(0.01)*	-16.15	<0.001	0.03 *(0.02)*	1.52	0.13	-0.01*(0.004)*	-1.51	0.13			
Flanker												
NP										-0.07 *(0.02)*	-4.07	<0.001
Prefrontal Factor	-0.23 *(0.01)*	-21.27	<0.001	0.05 *(0.02)*	2.35	0.02	-0.01 *(0.01)*	-2.35	0.02			
Hippocampal Factor	-0.19 *(0.01)*	-16.15	<0.001	0.03 *(0.02)*	1.68	0.09	-0.01 *(0.004)*	-1.67	0.1			
List Sorting												
NP										-0.01 *(0.02)*	-4.93	<0.001
Prefrontal Factor	-0.23 *(0.01)*	-21.27	<0.001	0.09 *(0.02)*	4.42	<0.001	-0.02 *(0.01)*	-4.35	<0.001			
Hippocampal Factor	-0.19 *(0.01)*	-16.15	<0.001	0.01 *(0.02)*	0.37	0.71	-0.001 *(0.004)*	-0.37	0.71			
Pattern Comparison												
NP										-0.05 *(0.02)*	-3.08	<0.01
Prefrontal Factor	-0.23 *(0.01)*	-21.27	<0.001	0.02 *(0.02)*	1.12	0.26	-0.01 *(0.01)*	-1.12	0.23			
Hippocampal Factor	-0.19 *(0.01)*	-16.15	<0.001	0.02 *(0.02)*	0.178	0.44	-0.004 *(0.004)*	-0.78	0.44			
Picture Sequence												
NP										-0.02 *(0.02)*	-1.19	0.23
Prefrontal Factor	-0.23 *(0.01)*	-21.27	<0.001	0.03 *(0.02)*	1.39	0.17	-0.01 *(0.01)*	-1.39	0.17			
Hippocampal Factor	-0.19 *(0.01)*	-16.15	<0.001	0.05 *(0.02)*	2.71	<0.01	-0.01 *(0.004)*	-2.68	<0.01			

[a] Covariates included: age, sex, race/ethnicity, household income, and intracranial volume.

[b] Fit indices suggest that models were a good fit for the data: Prefrontal models (CFI = 0.936, RMSEA = 0.087 , SRMR = 0.071); Hippocampal models (CFI = 0.940, RMSEA = 0.084, SRMR = 0.053).

Note: NP was modeled as the predictor with prefrontal and hippocampal factors as mediators, with separate cognitive tasks as the outcome (7 models total).

eAppendix 2. *Sample Sizes Used for Each MLM Analysis*

eTable 4. Sample Sizes Used for Each MLM Analysis

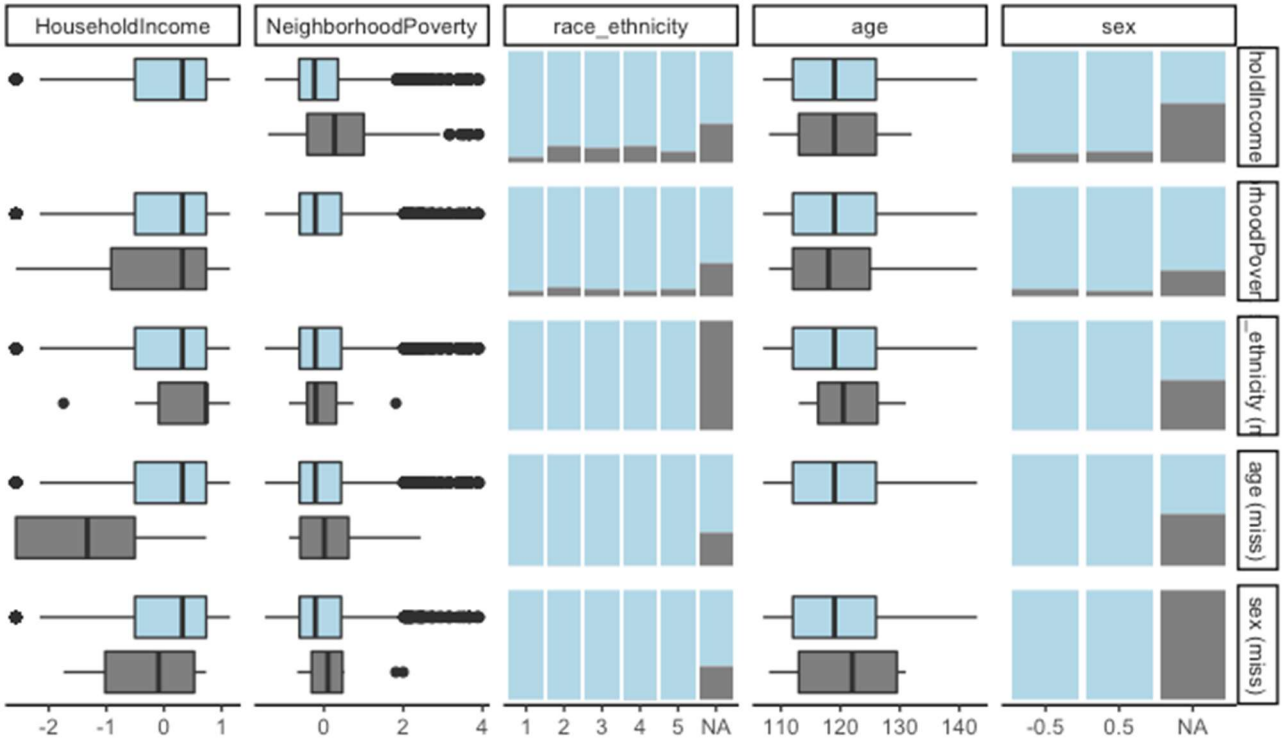
NIH Toolbox-CB Measures	*n*	Brain ROIs	*n*
Model 1[a]			
Picture Vocab.	10618	**R Hippocampus**	10455
Oral Reading	10607	**L Hippocampus**	10455
Dim. Card Sort	10614	**R SFG**	10455
Flanker	10613	**L SFG**	10455
List Sorting	10579	**R DLPFC**	10455
Pattern Comp.	10598	**L DLPFC**	10455
Picture Seq.	10608	**R DMPFC**	10455
Total Composite	10390	**L DMPFC**	10455
Model 2[b]			
Picture Vocab.	11031	**R Hippocampus**	10844
Oral Reading	11019	**L Hippocampus**	10844
Dim. Card Sort	11027	**R SFG**	10844
Flanker	11026	**L SFG**	10844
List Sorting	10991	**R DLPFC**	10844
Pattern Comp.	11010	**L DLPFC**	10844
Picture Seq.	11022	**R DMPFC**	10844
Total Composite	10789	**L DMPFC**	10844
Model 3[c]			
Picture Vocab.	10030	**R Hippocampus**	9965
Oral Reading	10020	**L Hippocampus**	9965
Dim. Card Sort	10027	**R SFG**	9965
Flanker	10026	**L SFG**	9965
List Sorting	9999	**R DLPFC**	9965
Pattern Comp.	10013	**L DLPFC**	9965
Picture Seq.	10022	**R DMPFC**	9965
Total Composite	9812	**L DMPFC**	9965

eAppendix 3. ***Missingness Within the Study Sample and Comparison of Missing Values Among Demographic and Outcome Variables***

eTable 5. Missingness of Data in Key Model Variables

Variable	*Missing Cases*
Age	12
Sex	13
Household Income	1020
Neighborhood Poverty	695
Brain ROIs (Regions of Interest)	339
Picture Vocab.	155
Oral Reading	169
Dim. Card Sort	160
Flanker	161
List Sorting	204
Pattern Comp.	179
Picture Seq.	167
Total Composite	410

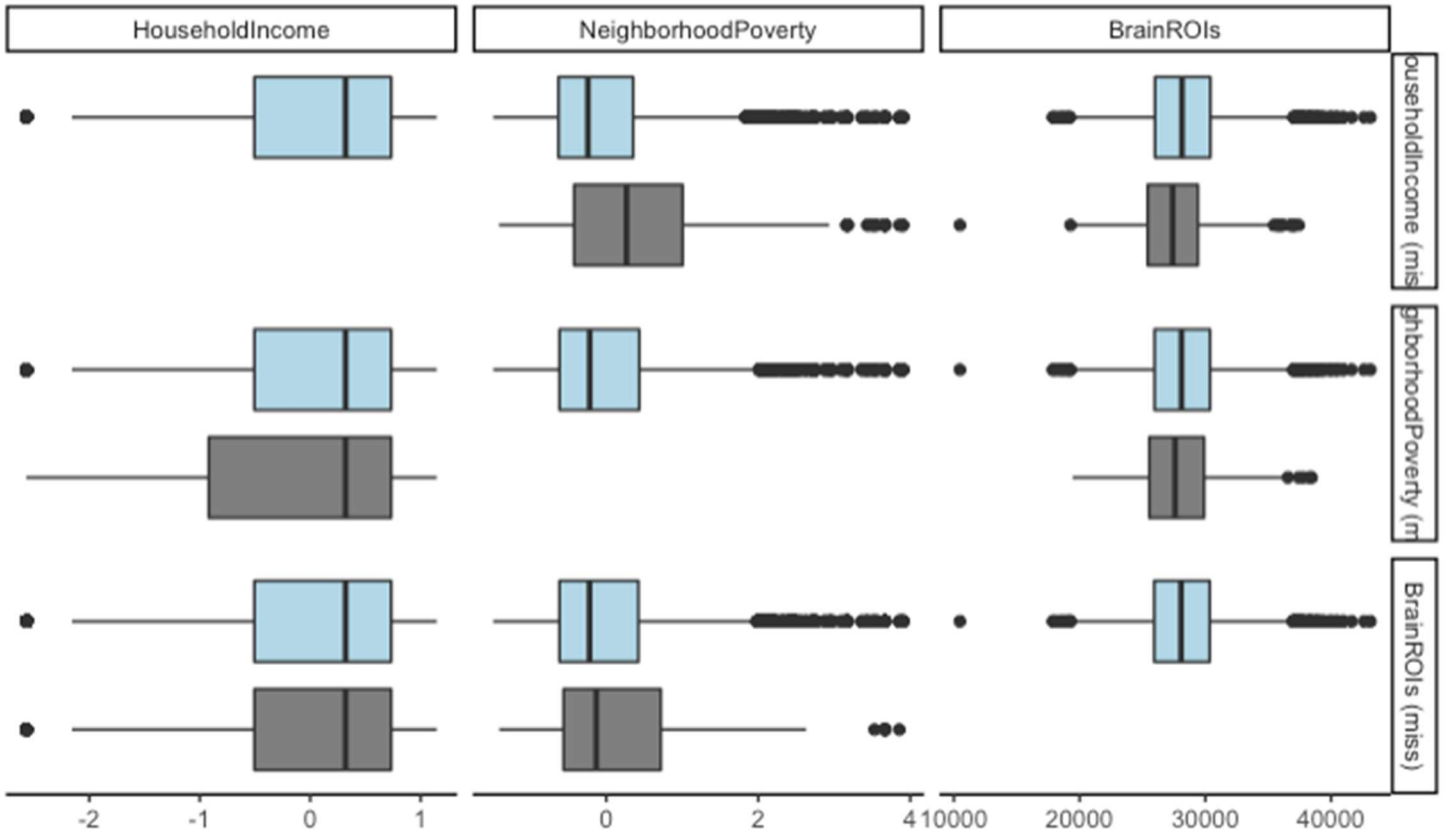
eFigure 3. Comparison of Missing Values Among Demographic Variables



The GGally() and finalfit() packages were used to determine whether missingness of key predictor variables (NP and household income) was significantly related to missingness of demographic variables and whether non-completion of demographic and outcome variables was related to certain levels of NP and household income. Missingness of key predictor variables (household income and neighborhood poverty) did suggest some association with missingness of other demographic variables (race/ethnicity/sex).

Note: Boxplots are comparing the distributions of missing data (gray) to non-missing data (blue) across variables

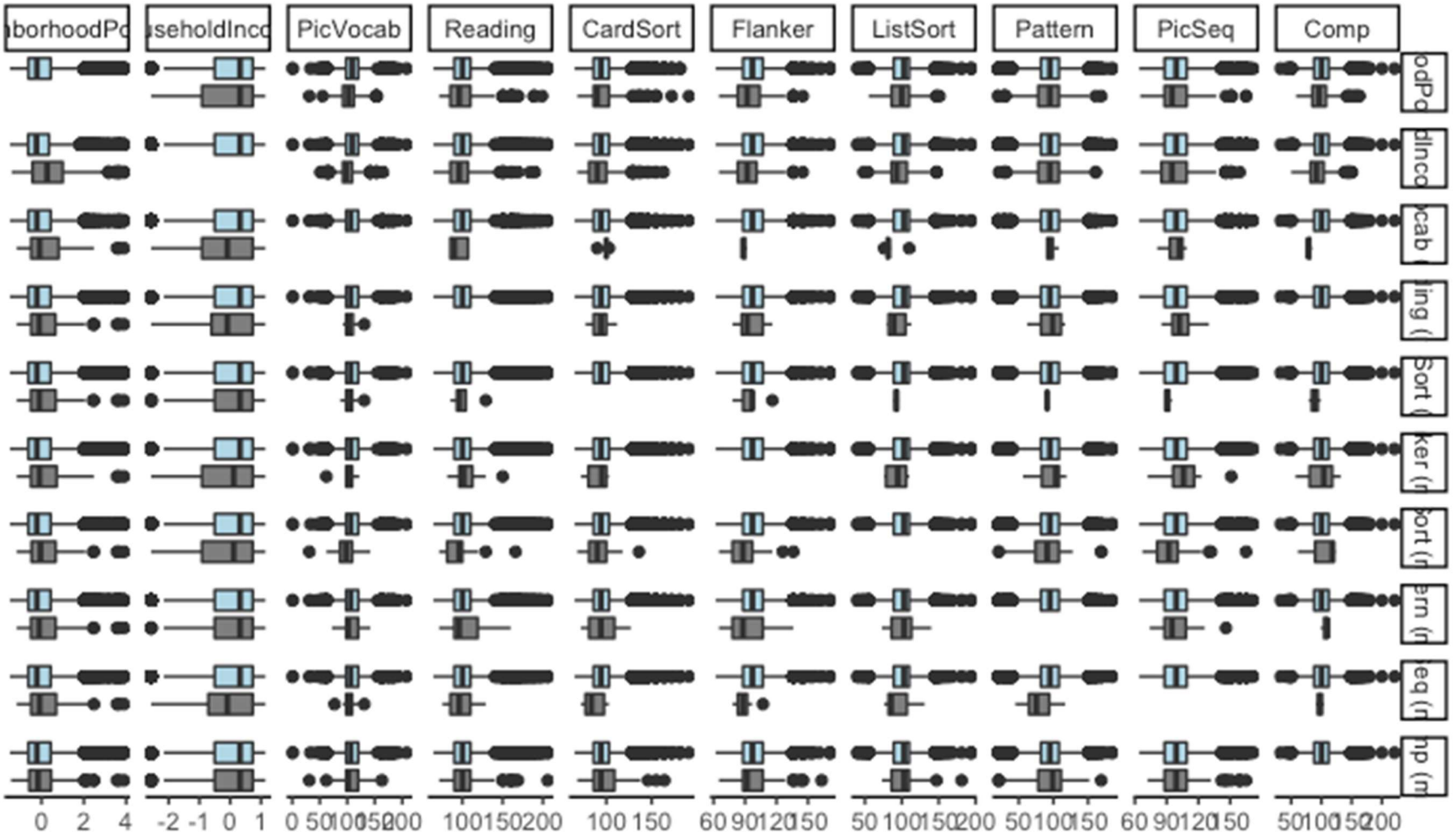
eFigure 4. Comparison of Missing Values Among Brain ROIs



The GGally and finalfit() packages in R were used to visualize and determine whether missingness of key brain regions of interest (dlPFC, dmPFC, SFG) was related to certain levels of NP and household income. The visualization does not indicate that missingness of brain variables is based on certain levels of NP and household income**.**

Note: Boxplots are comparing the distributions of missing data (gray) to non-missing data (blue) across variables

eFigure 5. Comparison of Missing Values Among Cognitive Measures



The GGally() and finalfit() packages in R were used to visualize and determine whether missingness of cognitive measures (Picture Vocabulary, Oral Reading, Dimensional Card Sort, Flanker Inhibitory Control, List Sorting Working Memory, Pattern Comparison, Picture Sequence, and Total Composite). was related to certain levels of NP and household income. The visualization does not indicate that missingness of cognitive variables is based on certain levels of NP and household income

Note: Boxplots are comparing the distributions of missing data (gray) to non-missing data (blue) across variables

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eAppendix 4. Distribution of NP and Household Income in Overall Sample and Additional Information on Measure of NP, PRFQ, and Household Income

Residential History Questionnaire and Area Deprivation Index*:* The ABCD Study uses the primary current home address provided by the parent via the Residential History Questionnaire. This address is used to generate the Area Deprivation Index (ADI) for the census tract that contains this address. The census data that is used here is from the 2010 Census and some supplementary American Community Survey information. The ADI consists of 17 census variables that use census tracts to reference different aspects of SES. The original factor analysis on the ADI yielded a single factor with the lowest loading of 0.45 (percent of occupied houses with complete plumbing)[34]. A factor analysis of these same variables in the current data set also supported a single factor, with the lowest factor loading of 0.21 for the same variable (percent of occupied houses with complete plumbing). However, the factor loadings of some of the variables were low and seemed to reflect geographical differences in cost-of-living across sites that were less indicative of objective disadvantage (e.g., median mortgage or rent costs) or less modern disadvantage indices (e.g. percentage of homes without a telephone). Thus, to create a homogenous measure of neighborhood poverty, a cutoff of 0.6 loading was used for inclusion of variables in the final measure. Nine of the 17 census variables survived this cutoff (see eTable 6 for list of all 17 variables). Each of the nine retained variables were z-scored and averaged, with items reverse-scored where appropriate (% of individuals ≥ 25 with a high school diploma, percentage of homeowners, & median family income) to ensure the same directionality for all variables. A higher score on this variable indicated greater neighborhood poverty.

PRFQ: The items included on the Parent-Reported Financial Adversity Questionnaire **(**PRFQ) questionnaire are shown in eTable 7. PRFQ indexes self-report of finances that may better account for the association of income level to area cost-of-living.

Household income: Self -report of combined income of all members of household over the past 12 months, ranging from 1 (<$5,000) to 10 ($200,000 or greater). Median in the current sample is 8 ($75,000 - $99,000). The measure of household income came from the General Social Survey (Smith et al. 2015) and is the measure recommended by the National Institute of Mental Health (Barch et al. 2016).

eTable 6. Factor Loadings of ADI Variables in ABCD Sample

Census Variable	Factor Loading
Percentage of labor force aged > 16 unemployed[a]	**0.76**
Percentage of persons aged >= 16 employed in white collar positions	-0.46
Percentage of families below poverty level	**0.95**
Percentage of population below 138% of the poverty threshold	**0.98**
Percentage of crowding	0.27
Percentage of single parent households	**0.84**
Percentage of occupied housing units without a motor vehicle	**0.73**
Percentage of population aged >/= 25 with at least a high school diploma[b]	**-0.74**
Percentage of population aged >/= 25 with < 9 years of education	0.59
Percentage of home owners	**-0.77**
Median family income	**-0.77**
Income disparity	**0.87**
Median home value	-0.54
Median monthly mortgage	0.58
Percentage of occupied units without complete plumbing	0.21
Percentage of occupied units without a telephone	0.35
Median gross rent	0.59

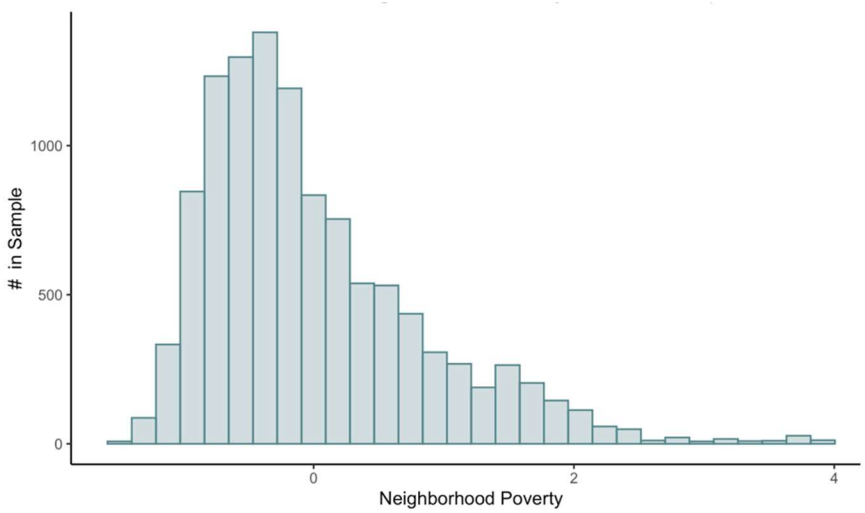
[a] Variables in bold were included in the Neighborhood Poverty measure

[b] Percentage of pop. with high school diploma, percentage of homeowners, and median family income were reverse scored.

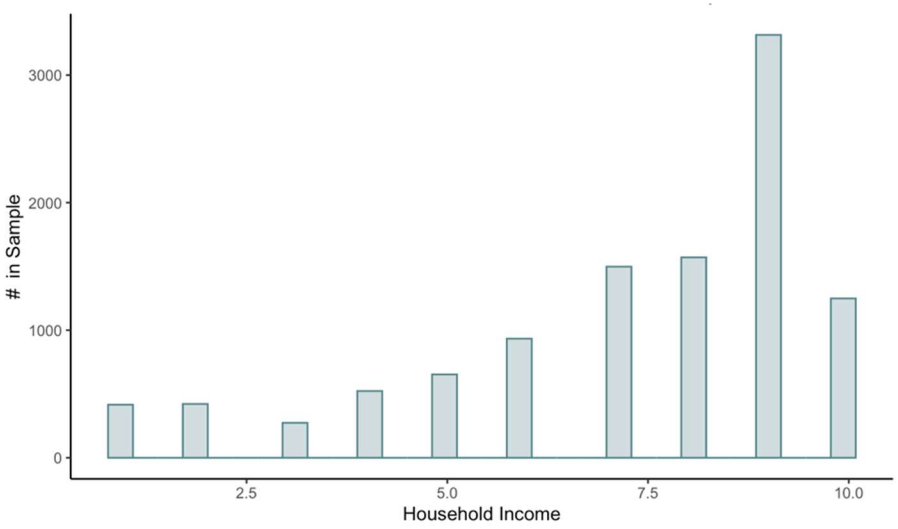
Abbreviations: ADI, Area Deprivation Index.

eTable 7. Parent-Reported Financial Adversity Questionnaire (PRFQ) Items
Needed food but couldn't afford to buy it or couldn't afford to go out to get it?
Didn't pay the full amount of the rent or mortgage because you could not afford it?
Were evicted from your home for not paying the rent or mortgage?
Were without telephone service because you could not afford it?
Had services turned off by the gas or electric company, or the oil company wouldn't deliver oil because payments were not made?
Had someone who needed to see a doctor or go to the hospital but didn't go because you could not afford it?
Had someone who needed a dentist but couldn't go because you could not afford it?

eFigure 6. Distribution of Neighborhood Poverty and Household Income in the Current Sample



Mdn = -0.22
Range = 5.4 (min = -1.49, max = 3.91)



Mdn = 8
Range = 9 (min = 1, max = 10)

eAppendix 5. MLM Results Tables With ADI Weighted Sum as Independent Variable

eTable 8. Model Output for NIH Toolbox-CB Measures with ADI weighted sum

	ADI Sum				Household Income				PRFQ			
NIH Toolbox-CB Measures	**Std. b**	**CIs**	***t***	***p***	**Std. b**	**CIs**	***t***	***p***	**Std. b**	**CIs**	***t***	***p***
Model 1[a]												
Picture Vocab.					0.36	0.34 to 0.38	34.82	<0.001	-0.04	-0.06 to -0.02	-2.63	<0.01
Oral Reading					0.28	0.26 to 0.3	25.89	<0.001	-0.04	-0.06 to -0.02	-3.52	<0.001
Dim. Card Sort					0.18	0.16 to 0.2	16.7	<0.001	-0.03	-0.06 to -0.01	-3.08	<0.01
Flanker					0.16	0.14 to 0.19	15.18	<0.001	0.00	-0.02 to 0.02	-0.2	0.84
List Sorting					0.28	0.26 to 0.31	26.73	<0.001	-0.02	-0.04 to 0	-1.62	0.11
Pattern Comp.					0.11	0.09 to 0.13	9.93	<0.001	-0.02	-0.04 to 0	-1.95	0.05
Picture Seq.					0.18	0.16 to 0.2	16.75	<0.001	-0.03	-0.05 to -0.01	-2.76	0.01
Total Composite					0.38	0.36 to 0.4	36.91	<0.001	-0.05	-0.07 to -0.03	-4.35	<0.001
Model 2[b]												
Picture Vocab.	-0.2	-0.22 to -0.19	-20.98	<0.001								
Oral Reading	-0.18	-0.2 to -0.16	-18.64	<0.001								
Dim. Card Sort	-0.12	-0.13 to -0.1	-12.34	<0.001								
Flanker	-0.11	-0.13 to -0.09	-11.5	<0.001								
List Sorting	-0.17	-0.19 to -0.15	-17.29	<0.001								
Pattern Comp.	-0.09	-0.11 to -0.07	-9.58	<0.001								
Picture Seq.	-0.09	-0.11 to -0.08	-9.74	<0.001								
Total Composite	-0.24	-0.26 to -0.22	-24.56	<0.001								
Model 3[c]												
Picture Vocab.	-0.07	-0.09 to -0.05	-7.14	<0.001	0.34	0.31 to 0.36	29.92	<0.001	-0.04	-0.06 to -0.02	-3.81	<0.01
Oral Reading	-0.09	-0.11 to -0.06	-7.89	<0.001	0.25	0.23 to 0.27	21.48	<0.001	-0.04	-0.06 to -0.01	-3.23	<0.01
Dim. Card Sort	-0.05	-0.07 to -0.03	-4.55	<0.001	0.17	0.14 to 0.19	14.11	<0.001	-0.03	-0.05 to -0.01	-2.764	0.01
Flanker	-0.06	-0.08 to -0.04	-5.5	<0.001	0.15	0.12 to 0.17	12.5	<0.001				
List Sorting	-0.07	-0.09 to -0.05	-6.76	<0.001	0.26	0.24 to 0.28	22.71	<0.001				
Pattern Comp.	-0.06	-0.08 to -0.03	-5.43	<0.001	0.09	0.07 to 0.11	7.71	<0.001				
Picture Seq.	-0.03	-0.05 to -0.01	-2.31	0.02	0.17	0.15 to 0.19	14.4	<0.001	-0.03	-0.05 to -0.01	-2.47	0.01
Total Composite	-0.11	-0.13 to -0.08	-10.2	<0.001	0.35	0.33 to 0.37	31.18	<0.001	-0.04	-0.06 to -0.02	-3.74	<0.01

[a] Model 1 included household income and PRFQ as predictors with age and sex included as covariates.
[b] Model 2 included ADI weighted sum as a predictor with age and sex included as covariates. 0.33 to 0.37
[c] Model 3 included household income, PRFQ, and ADI weighted sum as predictors with age and sex included as covariates.

eTable 9. Model Output for Brain Regions of Interest (ROIs) with ADI weighted sum

	ADI Sum				Household Income				PRFQ			
Brain ROIs	**Std. b**	**CIs**	***t***	***p***	**Std. b**	**CIs**	***t***	***p***	**Std. b**	**CIs**	***t***	***p***
Model 1[a]												
R Hippocampus					0.06	0.05 to 0.08	7.16	<0.001	-0.02	-0.04 to -0.01	-2.63	0.01
L Hippocampus					0.07	0.05 to 0.09	7.73	<0.001	-0.01	-0.03 to 0.01	-1.32	0.19
R SFG					0.1	0.08 to 0.12	11.35	<0.001	-0.02	-0.03 to 0	-1.78	0.09
L SFG					0.09	0.07 to 0.1	10.22	<0.001	-0.01	-0.03 to 0	-1.73	0.09
R DLPFC					0.12	0.1 to 0.13	14.58	<0.001	-0.02	-0.03 to 0	-2.35	0.03
L DLPFC					0.11	0.1 to 0.13	14.39	<0.001	-0.01	-0.03 to 0	-1.93	0.07
R DMPFC					0.1	0.08 to 0.12	12.56	<0.001	-0.02	-0.04 to -0.01	-2.68	0.01
L DMPFC					0.1	0.08 to 0.11	12.25	<0.001	-0.02	-0.03 to 0	-2.5	0.01
Model 2[b]												
R Hippocampus	-0.04	-0.05 to -0.02	-4.94	<0.001								
L Hippocampus	-0.03	-0.05 to -0.02	-3.9	<0.001								
R SFG	-0.06	-0.07 to -0.04	-7.21	<0.001								
L SFG	-0.05	-0.07 to -0.04	-6.86	<0.001								
R DLPFC	-0.07	-0.09 to -0.06	-10.22	<0.001								
L DLPFC	-0.06	-0.07 to -0.05	-8.89	<0.001								
R DMPFC	-0.07	-0.08 to -0.05	-9.55	<0.001								
L DMPFC	-0.05	-0.07 to -0.04	-8.28	<0.001								
Model 3[c]												
R Hippocampus	-0.02	-0.03 to 0	-1.5	0.13	0.06	0.04 to 0.08	5.83	<0.001	-0.02	-0.04 to -0.01	-2.63	0.01
L Hippocampus	-0.01	-0.02 to 0.01	-0.77	0.44	0.07	0.05 to 0.09	7.86	<0.001				
R SFG	-0.02	-0.04 to -0.01	-2.21	0.03	0.09	0.08 to 0.11	11.13	<0.001				
L SFG	-0.02	-0.04 to -0.01	-2.28	0.02	0.09	0.07 to 0.1	10.13	<0.001				
R DLPFC	-0.03	-0.05 to -0.02	-4	<0.001	0.11	0.09 to 0.12	12.37	<0.001	-0.01	-0.03 to 0	-1.8	0.07
L DLPFC	-0.02	-0.03 to -0.01	-2.64	<0.01	0.1	0.09 to 0.12	12.64	<0.001				
R DMPFC	-0.03	-0.05 to -0.02	-3.95	<0.001	0.09	0.07 to 0.11	10.72	<0.001	-0.01	-0.03 to 0	-1.75	0.08
L DMPFC	-0.02	-0.03 to -0.01	-2.61	0.01	0.09	0.08 to 0.11	7.25	<0.001	-0.01	-0.03 to 0	-1.69	0.07

[a] Model 1 included household income and PRFQ as predictors with age, sex, and intracranial volume included as covariates
[b] Model 2 included ADI weighted sum as a predictor, with age, sex, and intracranial volume included as covariates.
[c] Model 3 included household income, PRFQ, and ADI weighted sum as predictors with age, sex, and intracranial volume included as covariates.

eAppendix 6. FreeSurfer QC Methods

Quality control of the data was performed using both manual and automated processes. Trained technicians reviewed all images to check for artifacts and irregularities. The cortical reconstruction of post-processed images was double-rated on a scale from 0-3, with 3 indicating the greatest amount of artifact. Technicians gave recommendations for usability based on scores. Automated processes were used to calculate signal-to-noise-ratio (SNR) and head motion values[36]. See Hagler et al. for more information regarding preprocessing and specific QC procedures.

eAppendix 7. ML Model 3 Results Using Only Those Participants With a 0 on the Artifact Score

eTable 10. Model 3 Output for Brain Regions of Interest (ROIs) Using Participants with Zero Artifact Score												
	Neighborhood Poverty				Household Income				PRFQ			
Brain ROIs	**Std. b**	**CIs**	***t***	***p***	**Std. b**	**CIs**	***t***	***p***	**Std. b**	**CIs**	***t***	***p***
Model 3[c]												
R Hippocampus	-0.04	-0.08 to -0.01	-2.27	0.04	0.05	0.02 to 0.08	3.13	<0.010	-0.02	-0.05 to 0.01	-1.27	0.246
L Hippocampus	-0.01	-0.05 to 0.03	-0.47	0.67	0.08	0.05 to 0.12	4.96	<0.001	0	-0.03 to 0.03	-0.08	0.939
R SFG	-0.06	-0.07 to -0.01	-2.06	0.07	0.07	0.04 to 0.1	4.62	<0.001	-0.01	-0.04 to 0.01	-0.89	0.406
L SFG	-0.04	-0.07 to -0.01	-1.99	0.05	0.07	0.03 to 0.1	4.18	<0.001	-0.02	-0.05 to 0.01	-1.57	0.156
R DLPFC	-0.09	-0.11 to -0.06	-5.54	<0.001	0.07	0.05 to 0.1	5.33	<0.001	-0.01	-0.03 to 0.01	-0.96	0.389
L DLPFC	-0.07	-0.1 to -0.05	-5.07	<0.001	0.07	0.04 to 0.09	5.12	<0.001	-0.01	-0.04 to 0.01	-1.36	0.215
R DMPFC	-0.06	-0.09 to -0.03	-3.64	<0.01	0.06	0.03 to 0.09	4.36	<0.001	-0.02	-0.05 to 0	-2.00	0.065
L DMPFC	-0.04	-0.07 to -0.01	-2.93	0.01	0.06	0.03 to 0.08	4.25	<0.001	-0.02	-0.04 to 0	-2.02	0.065

[a] Model 3 included household income, PRFQ, and NP as predictors with age, sex, and intracranial volume included as covariates.

eAppendix 8. NIH Toolbox-CB and Brain ROI EFA

eTable 11. Results of EFA with NIH Toolbox-CB				
Brain ROI	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**
Card Sort	0.71		0.11	0.11
Flanker	0.66	0.10		
Pattern Comp.	0.77			
Oral Reading	0.13	0.95	0.24	
Picture Vocab	0.13	0.25	0.95	
Picture Seq.	0.15		0.10	0.98
List Sorting	0.46	0.24	0.26	0.22
SS Loadings	2.16	1.35	1.32	1.13
Proportion Var	0.27	0.17	0.17	0.14
Cumulative Var	0.27	0.44	0.60	0.75

eTable 12. Results of EFA with Brain ROIs				
Brain ROI	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**
R Hippocampus	0.28	0.87	0.15	
L Hippocampus	0.28	0.81	0.14	
R SFG	0.82	0.23	0.23	-0.16
L SFG	0.75	0.21	0.61	
R DLPFC	0.88	0.28		
L DLPFC	0.91	0.31		0.27
R DMPFC	0.92	0.29	0.16	-0.19
L DMPFC	0.87	0.31	0.29	
SS Loadings	4.62	1.86	0.59	0.15
Proportion Var	0.51	0.21	0.07	0.02
Cumulative Var	0.51	0.72	0.79	0.8

eAppendix 9. MLM Unstandardized Results Tables

eTable 13. Unstandardized Model Output for NIH Toolbox-CB Measures

	Neighborhood Poverty				Household Income				PRFQ			
NIH Toolbox-CB Measures	***b***	**CIs**	***t***	***p***	***b***	**CIs**	***t***	***p***	***b***	**CIs**	***t***	***p***
Model 1[a]												
Picture Vocab.					2.54	2.39 to 2.68	34.82	<0.001	-0.68	-1 to -0.37	-2.63	0.001
Oral Reading					2.23	2.05 to 2.38	25.89	<0.001	-0.66	-1.03 to -0.29	-3.52	<0.001
Dim. Card Sort					1.13	1 to 1.27	16.7	<0.001	-0.46	-0.76 to -0.17	-3.08	<0.01
Flanker					9.28	0.81 to 1.05	15.18	<0.001	-0.03	-0.04 to 0.02	-0.2	0.84
List Sorting					1.74	1.61 to 1.86	26.73	<0.001	-0.23	-0.51 to 0.05	-1.62	0.11
Pattern Comp.					0.99	0.79 to 1.18	9.93	<0.001	-0.43	-0.88 to 0	-1.95	0.05
Picture Seq.					1.21	1.06 to 1.35	16.75	<0.001	-0.44	-0.75 to -0.13	-2.76	0.01
Total Composite					2.84	2.69 to 2.99	36.91	<0.001	-0.74	-1.07 to -0.41	-4.35	<0.001
Model 2[b]												
Picture Vocab.	-6.77	-7.14 to -6.4	-35.85	<0.001								
Oral Reading	-5.11	-5.54 to -4.68	-23.3	<0.001								
Dim. Card Sort	-3.39	-3.72 to -3.04	-19.65	<0.001								
Flanker	-2.54	-2.84 to -2.23	-16.26	<0.001								
List Sorting	-4.36	-4.68 to -4.03	-26.11	<0.001								
Pattern Comp.	-3.19	-3.68 to -2.69	-12.71	<0.001								
Picture Seq.	-3.07	-3.43 to -2.71	-16.66	<0.001								
Total Composite	-7.41	-7.81 to -7.02	-37.05	<0.001								
Model 3[c]												
Picture Vocab.	-3.07	-3.55 to -2.58	-12.43	<0.001	1.94	1.77 to 2.12	21.98	<0.001	-0.67	-0.92 to -0.28	-3.63	0.11
Oral Reading	-1.33	-1.9 to -0.76	-4.58	<0.001	1.95	1.74 to 2.15	18.72	<0.001	-0.67	-1.05 to -0.29	-3.44	0.11
Dim. Card Sort	-1.79	-2.24 to -1.33	-7.72	<0.001	0.8	0.64 to 0.96	9.63	<0.001	-0.43	-0.73 to -0.12	-2.76	0.21
Flanker	-1.32	-1.73 to -0.91	-6.32	<0.001	0.69	0.54 to 0.83	9.19	<0.001				
List Sorting	-1.9	-2.33 to -1.47	-8.62	<0.001	1.38	1.22 to 1.53	17.4	<0.001				
Pattern Comp.	-2.08	-2.74 to -1.42	-6.16	<0.001	0.61	0.37 to 0.85	5.03	<0.001				
Picture Seq.	-1.19	-1.67 to -0.71	-4.84	<0.001	0.95	0.78 to 1.13	10.8	<0.001	-0.65	-0.71 to -0.44	-2.36	0.12
Total Composite	-3.22	-3.73 to -2.71	-12.44	<0.001	2.22	2.04 to 2.41	23.92	<0.001	-0.66	-1 to -0.31	-3.71	0.12

Abbreviation: *b* = unstandardized coefficient estimates; PRFQ = Parent-Reported Financial Adversity Questionnaire

[a] Model 1 included household income and PRFQ as predictors with age, sex, and race/ethnicity included as covariates.
[b] Model 2 included NP as a predictor with age, sex, and race/ethnicity included as covariates.
[c] Model 3 included household income, PRFQ, and NP as predictors with age, sex, and race/ethnicity included as covariates.

eTable 14. Unstandardized Model Output for Brain Regions

	Neighborhood Poverty				Household Income				PRFQ			
Brain ROIs	***b***	**CIs**	***t***	***p***	***b***	**CIs**	***t***	***p***	***b***	**CIs**	***t***	***p***
Model 1[a]												
R Hippocampus					11.28	8.19 to 14.37	7.16	<0.001	-8.95	-15.62 to -2.28	-2.63	0.01
L Hippocampus					12.71	9.49 to 15.93	7.73	<0.001	-4.71	-11.67 to 2.26	-1.32	0.19
R SFG					134.1	110.9 to 157.3	11.35	<0.001	-45.4	-95.5 to 4.66	-1.78	0.09
L SFG					117.7	95.15 to 140.3	10.22	<0.001	-43.1	-91.9 to 5.67	-1.73	0.09
R DLPFC					0.011	0.001 to 0.013	14.58	<0.001	-0.003	-0.007 to 0	-2.35	0.03
L DLPFC					0.01	0.001 to 0.011	14.39	<0.001	-0.002	-0.005 to 0	-1.93	0.07
R DMPFC					0.007	0.006 to 0.008	12.56	<0.001	-0.003	-0.005 to 0	-2.68	0.01
L DMPFC					0.006	0.005 to 0.007	12.25	<0.001	-0.003	-0.005 to -0.007	-2.5	0.01
Model 2[b]												
R Hippocampus	-33.42	-41.26 to -25.57	-8.35	<0.001								
L Hippocampus	-28.51	-36.77 to -20.26	-6.77	0.04								
R SFG	-345.8	-404.8 to -286.9	-11.5	<0.001								
L SFG	-320.8	-378.1 to -263.5	-10.97	<0.001								
R DLPFC	-0.032	-0.04 to -0.028	-17.5	<0.001								
L DLPFC	-0.03	-0.033 to -0.027	-16.75	<0.001								
R DMPFC	-0.02	-0.022 to -0.017	-14.21	<0.001								
L DMPFC	-0.019	-0.021 to -0.016	-13.98	<0.001								
Model 3[c]												
R Hippocampus	-15.36	-25.78 to -4.94	-2.89	0.01	7.89	4.16 to 11.63	2.54	0.01	-5.46	-16.11 to -2.26	-2.6	0.05
L Hippocampus	-7.19	-18.08 to 3.7	-1.29	0.21	11.07	7.16 to 14.97	4.34	<0.001				
R SFG	-169.4	-246.9 to -91.9	-4.24	<0.001	108.1	81.8 to 134.3	5.2	<0.001				
L SFG	-166.7	-242.1 to 91.2	-4.29	<0.001	93.8	68.2 to 119.4	4.43	<0.001				
R DLPFC	-0.021	-0.025 to -0.016	-8.43	<0.001	0.007	0.005 to 0.009	5.26	<0.001	-0.003	-0.006 to -0.001	-1.68	0.09
L DLPFC	-0.018	-0.023 to -0.014	-7.7	<0.001	0.007	0.005 to 0.009	5.65	<0.001				
R DMPFC	-0.011	-0.015 to -0.008	-6.08	<0.001	0.005	0.004 to 0.006	5.24	<0.001	-0.002	-0.004 to 0	-1.72	0.12
L DMPFC	-0.01	-0.014 to -0.006	-5.88	<0.001	0.005	0.003 to 0.006	5.15	<0.001	-0.002	-0.004 to 0	-1.69	0.12

Abbreviations: *b* = unstandardized coefficient estimates; PRFQ = Parent-Reported Financial Adversity Questionnaire; SFG = superior frontal gyrus; DLPFC = dorsal lateral prefrontal cortex; DMPFC = dorsal medial prefrontal cortex

[a] Model 1 included household income and PRFQ as predictors with age, sex, race/ethnicity, and intracranial volume included as covariates
[b] Model 2 included NP as a predictor, with age, sex, intracranial volume, and race/ethnicity included as covariates.
[c] Model 3 included household income, PRFQ, and NP as predictors with age, sex, intracranial volume, and race/ethnicity included as covariates.

eAppendix 10. MLM Results Looking at Orbital Frontal Regions as the Outcome Variable

eTable 15. Model Output for Orbital Frontal Cortex

	Neighborhood Poverty				Household Income				PRFQ			
Brain ROIs	**Std. b**	**CIs**	***t***	***p***	**Std. b**	**CIs**	***t***	***p***	**Std. b**	**CIs**	***t***	***p***
Model 1[a]												
R OFC					0.07	0.03 to 0.1	3.87	<0.001	-0.03	-0.06 to 0.01	-1.46	0.15
L OFC					0.07	0.04 to 0.1	6.72	<0.001	-0.03	-0.06 to 0	-1.92	0.06
Model 2[b]												
R OFC	-0.08	-0.12 to -0.05	-4.3	<0.001								
L OFC	-0.09	-0.12 to -0.05	-4.99	<0.001								
Model 3[c]												
R OFC	-0.05	-0.1 to 0	-1.92	0.06	0.06	0.02 to 0.1	3.21	<0.01				
L OFC	-0.04	-0.08 to 0	-1.89	0.06	0.06	0.03 to 0.1	3.66	<0.01				

[a] Model 1 included household income and PRFQ as predictors
[b] Model 2 included NP as a predictor, with age, sex, and intracranial volume included as covariates.
[c] Model 3 included household income, PRFQ, and NP as predictors with age, sex, and intracranial volume included as covariates.