Supplementary Online Content

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

eMethods 1. Clinical Assessment and SES Score Creation

The Philadelphia Neurodevelopmental Cohort (PNC) is a genotyped sample recruited from the Children's Hospital of Philadelphia (CHOP) pediatric network and not from psychiatric services. Enrollment criteria included: stable health; proficiency in English; physical and cognitive ability to complete interview and neurocognitive assessment; no contraindication for MRI for the randomly selected subsample (N=1601) who underwent neuroimaging.[1]

Clinical Assessment

A structured interview (GOASSESS), incorporating the Kiddie Schedule for Affective Disorders and Schizophrenia (K-SAD),[2] was administered.[3] The frequency, duration and presence of distress or impairment caused by symptoms across psychopathology domains was measured, with algorithms providing DSM-IV diagnosis.[3] Exploratory item-factor analysis extracting 4 factors (oblimin rotation) was performed on 112 clinical symptom items from the GOASSESS.[4] This analysis produced a clean theory-consistent solution (Anxious-Misery, Fear, Externalizing, Psychosis) that facilitated the building of two confirmatory models from which scores were obtained: a correlated-traits model (4 correlated scores) and a bifactor model (4 orthogonal scores plus an overall psychopathology score, also orthogonal). The former (correlated-traits) scores were used here because they are better determined[5] (Grice, 2001) than the bifactor scores, and their collinearity is not a problem because they are treated as correlated DVs in a repeated measures mixed model - in contrast to, for example, using the clinical variables simultaneously as IVs, in which case the bifactor model might have been appropriate

SES Score Creation

Due to the large number of participants in the PNC, we did not collect individual-level data targeting family-level SES (e.g. parental income, net worth, etc.). However, the census-based SES score correlates in the expected direction with SES-related variables such as parental education (Pearson r = 0.52), Caucasian race (biserial r = 0.76) and African-American race (biserial r = -0.78). Further, as shown in Moore et al. (2016), the census-based SES variable is the strongest predictor of neurocognitive performance (stronger than the effects of parent education, trauma, substance use, race, and psychopathology *combined*). For more information on the methods used here, see Moore et al. (2016).

eTable 1. Variables Included in Socioeconomic Status (SES) Score With Weights

Number	Variable	Weight
1	Percent married	0.85
2	Median family income	0.82
3	Percent with at least a high school diploma	0.74
4	Percent employed	0.68
5	Median age	0.61
6	Percent female	-0.26
7	Percent of real estate that is vacant	-0.60
8	Population density	-0.71
9	Percent in poverty	-0.86

eMethods 2. Neurocognitive Assessment, Neuroimaging, and Neuroimaging Data Processing Details

Neurocognitive Assessment

The Penn Computerized Neurocognitive Battery (CNB) was administered concomitantly with the clinical assessment. The CNB provided measures of accuracy and response time for Executive Function (attention, abstraction and mental flexibility, working memory), Episodic Memory (verbal, facial, spatial), Complex Cognition (language reasoning, spatial processing, non-verbal reasoning) and Social Cognition (emotion identification, emotion differentiation, age differentiation).[5,6] Each test provides measures of accuracy and response time. Here we measure efficiency, which provides four factor scores corresponding to these domains.[7]

Neuroimaging

MRIs were acquired on a 3T Siemens TIM Trio whole-body single scanner at the Hospital of the University of Pennsylvania.[1] Structural imaging used a magnetization-prepared, rapid acquisition gradient-echo (MPRAGE) T1-weighted image (TR 1810 ms; TE 3.51 ms; FOV 180x240 mm; matrix 192x256; 160 slices; slice thickness/gap 1/0 mm; TI 1100 ms; flip angle 9 degrees; effective voxel resolution of 0.93 x 0.93 x 1.00 mm). Image quality procedures were applied for all modalities.[8] Parameters for this study include: brain volume; gray matter density (GMD); diffusion tensor imaging (DTI)-based mean diffusivity (MD) for the whole brain and fractional anisotropy (FA) for white matter tracts; cerebral blood flow (CBF); resting state fMRI (rsfMRI) measures of regional homogeneity (ReHo) and amplitude of low frequency fluctuations (ALFF).

Neuroimaging data processing details

Structural

We evaluated volume and gray matter density utilizing the MPRAGE sequence. To parcellate the brain into anatomically-defined regions, we used an advanced multi-atlas labeling approach. Specifically, 24 young adult T1-weighted volumes from the OASIS data set[9] that were manually labeled by Neuromorphometrics, Inc. were registered to each subject's T1-weighted volume using the top-performing SyN diffeomorphic registration.[10,11] These label sets were synthesized into a final parcellation using joint label fusion.[12] Volume was determined for each lobe using the intersection between the lobe created and a prior driven gray matter cortical segmentation from the ANTs cortical thickness pipeline as described below. Density estimates were calculated within each parcel as described below. To avoid registration bias and maximize sensitivity to detect regional effects that can be impacted by registration error, a custom adolescent template and tissue priors were created using data from 140 PNC participants, balanced for age and sex. Structural images were then processed and registered to this custom template using the ANTs cortical thickness pipeline.[13] This procedure includes brain extraction, N4 bias field correction,[13] Atropos tissue segmentation,[14] and SyN diffeomorphic registration method.[10,11] Finally, gray matter density was calculated using Atropos,[14] with an iterative segmentation procedure that is initialized using 3-class K-means segmentation. This procedure produces both a discrete 3-class hard segmentation as well as a probabilistic gray matter density map (soft segmentation) for each subject. Gray matter density was calculated within the intersection of this 3-class segmentation and the subject's volumetric parcellation.[15] Images included in the final analysis passed a rigorous quality assessment procedure as previously detailed.[8]

Diffusion

Diffusion data were skull stripped by generating a brain mask for each subject by registering a binary mask of a standard image (FMRIB58_FA) to each subject's brain using FLIRT.[16] When necessary, manual adjustments were made to this mask. Next, eddy currents and movement were estimated and corrected using FSL's eddy tool.[17-19] Eddy is an improvement upon the typical eddy/motion correction used as part of FSL's Diffusion Tool Box.[20] This tool simultaneously models the effects of diffusion eddy current and head movement on DTI images in order to reduce the amount of resampling and is an improvement of the standard FSL eddy correct tool.[17,18] Next, the diffusion gradient vectors were rotated to adjust for motion using the 6-parameter motion output generated from eddy. Then, the B0 field map was estimated and distortion correction was applied to the DTI data using FSL's FUGUE.[21] Finally, the diffusion tensor was modeled and metrics (FA and MD) were estimated at each voxel using FSL's DTIFIT. Registration from native space to a template space was completed using DTI-TK.[22,23] First, DTI output files from DTIFIT were converted to DTI-TK format. Next, a template was generated from the tensor volumes using 14 representative diffusion data sets that were considered "Excellent" from the PNC sample. One individual from each of the 14 ages (age range 8-21) was randomly selected. These 14 DTI volumes were averaged together to create an initial template. Next, data from the 14 subjects were registered to this template in an iterative manner. Unlike standard intensity-based registration algorithms, this process utilizes the full tensor information in an attempt to best align the underlying white matter tracts using iterations of rigid, affine and diffeomorphic registration leading to the generation of a successively refined template. Ultimately, one high-resolution refined template was created and used for registration of the remaining diffusion datasets. All DTI maps were then registered (rigid, affine, diffeomorphic) to the high-resolution study-specific template using DTI-TK. Whole brain analysis was performed using a customized implementation of tract-based spatial statistics (TBSS).[24] FA and MD values were computed using a study specific white matter skeleton. Then, standard regions of interest (ROI; ICBM-JHU White Matter Tracts; Harvard-Oxford Atlas) were registered from MNI152 space to the study-specific template using ANTs registration.[10] Mean diffusion metrics were extracted from these ROIs using FSL's 'fslmeants'. Images included in this final analysis had passed a stringent quality assessment procedure as previously detailed.[19]

Resting State BOLD

Task-free functional images were processed using a top-performing pipeline for removal of motion-related artifact.[25] Preprocessing steps included (1) correction for distortions induced by magnetic field inhomogeneities using FSL's FUGUE utility, (2) removal of the 4 initial volumes of each acquisition, (3) realignment of all volumes to a selected reference volume using MCFLIRT[16] (4) removal of and interpolation over intensity outliers in each voxel's time series using AFNI's 3DDESPIKE utility, (5) demeaning and removal of any linear or quadratic trends, and (6) co-registration of functional data to the high-resolution structural image using boundary-based registration.[26] The artifactual variance in the data was modelled using a total of 36 parameters, including the 6 framewise estimates of motion, the mean signal extracted from eroded white matter and cerebrospinal fluid compartments, the mean signal extracted from the entire brain, the derivatives of each of these 9 parameters, and quadratic terms of each of the 9 parameters and their derivatives. Both the BOLD-weighted time series and the artifactual model time series were temporally filtered using a first-order Butterworth filter with a passband between 0.01 and 0.08 Hz.

Voxelwise regional homogeneity (ReHo[27]) is equivalent to Kendall's coefficient of concordance, was computed over the timeseries in each voxel's local neighborhood. ReHo can thus be used as an estimate of the homogeneity of each neighborhood's activation pattern. Because spatial smoothing intrinsically elevates ReHo estimates by elevating spatial autocorrelation, Kendall's W was computed only on unsmoothed data. Each voxel's neighborhood was defined to include the 26 voxels adjoining its faces, edges, and vertices. The voxelwise homogeneity map was subsequently smoothed using a Gaussian kernel with FWHM of 6mm in SUSAN to improve the signal-to-noise ratio.[28] Finally regional ReHo values were then averaged across the anatomically derived subject specific segmentation. Subjects included in this analysis had low motion as measured by mean frame wise displacement, specifically mean relative frame wise displacement less then 2.5 mm.

Functional connectivity among brain regions is primarily attributable to correlations between low-frequency fluctuations in regional activation patterns. The voxelwise amplitude of low-frequency fluctuations (ALFF[27]) was computed as the sum (discretised integral) over frequency bins in the low-frequency (0.01-0.08Hz) band of the voxelwise power spectrum, computed using a Fourier transform of the time-domain of the voxelwise signal. ALFF was calculated on data smoothed in SUSAN using a Gaussian-weighted kernel with 6mm FWHM.

Perfusion (CBF)

ASL data were pre-processed using standard tools included with FSL.[21] Following distortion correction using the B0 map with FUGUE, the first four image pairs were removed, the time series was realigned in MCFLIRT,[16] the skull was removed with BET,[29] and the image was smoothed at 6mm FWHM using SUSAN.[28] CBF was quantified from control-label pairs using ASL Toolbox.[30] As prior,[1] the T1 relaxation parameter was modeled on an age- and sex-specific basis.[31] This model accounts for the fact that T1 relaxation time differs according to age and sex, and has been shown to enhance the accuracy and reliability of results in developmental samples.[32] The CBF image was co-registered to the T1 image using boundary-based registration,[26] and regional CBF values were averaged within each parcel. Subjects included in this analysis had low motion as measured by mean framewise displacement, specifically mean relative framewise displacement less than 2.5 mm.

Age classification by brain parameters

To examine whether SES and TSEs relate to accelerated brain maturation, brains were classified as either adult (18+) or adolescent (<18). Classification models were built using extremely randomized trees[33] as implemented in sci-kit learn version 0.80.[34] Models were trained using all lobular regional parameter estimates in a normative cohort within each gender. Normative cohorts were derived from participants who were identified as having benign SES backgrounds, and reporting no TSEs. Prior to building the model, race effects were removed from the data. Finally, age was predicted on all subjects and proportions of subjects identified as adults were tested within preidentified age bins (10-11,12-13,14-15,16-17, and 18+) using z-tests for proportions.

eTable 2. Demographics for the 4 Groups Contrasted in Figures

		Male						Female					
	SES Categroy	Adverse Environment/SES			Benign Environment/SES			Adverse Environment/SES			Benign Environment/SES		
Sample	Trauma Category	0 TSE	1 TSE	2+ TSE	0 TSE	1 TSE	2+ TSE	0 TSE	1 TSE	2+ TSE	0 TSE	1 TSE	2+ TSE
Total	n	679	303	465	1954	677	480	763	412	513	1953	780	459
	Age (sd)	12.85 (3.51)	13.95 (3.62)	15.59 (3.45)	13.1 (3.48)	14.29 (3.49)	15.77 (3.4)	13.65 (3.71)	14.97 (3.54)	16.14 (3.21)	13.85 (3.64)	14.83 (3.33)	16.39 (3.13)
	% EA	0.09	0.81	0.11	0.83	0.07	0.1	0.1	0.8	0.1	0.79	0.09	0.12
	% AA	0.11	0.74	0.15	0.82	0.08	0.11	0.1	0.78	0.11	0.76	0.11	0.14
	% Other	0.06	0.83	0.12	0.78	0.12	0.1	0.05	0.84	0.12	0.72	0.14	0.14
	Parent Ed	12.84 (1.6)	12.83 (1.72)	12.84 (1.58)	15.3 (2.24)	14.99 (2.16)	14.57 (2.17)	12.92 (1.86)	12.9 (1.77)	12.75 (1.61)	15.15 (2.2)	14.74 (2.24)	14.28 (2.22)
	SES	-1.23 (0.51)	-1.2 (0.52)	-1.3 (0.52)	0.66 (0.4)	0.65 (0.41)	0.57 (0.4)	-1.24 (0.52)	-1.28 (0.53)	-1.3 (0.51)	0.66 (0.41)	0.57 (0.42)	0.54 (0.43)
Imaging	n	119	53	99	226	102	66	149	97	99	229	92	64
	Age (sd)	12.93 (3.28)	13.79 (3.49)	15.96 (3.06)	13.82 (3.51)	14.44 (3.2)	16.06 (2.99)	13.54 (3.46)	14.86 (3.19)	15.85 (2.95)	14.21 (3.84)	15.44 (2.99)	16.46 (2.56)
	% EA	0.08	0.76	0.16	0.76	0.09	0.15	0.05	0.82	0.13	0.74	0.13	0.14
	% AA	0.09	0.79	0.11	0.84	0.09	0.07	0.07	0.84	0.09	0.7	0.13	0.17
	% Other	0.01	0.86	0.13	0.74	0.18	0.08	0.02	0.9	0.08	0.75	0.2	0.05
	Parent Ed	12.61 (1.38)	12.66 (1.29)	12.8 (1.67)	15.35 (2.42)	14.86 (2.13)	15.01 (2.28)	13 (1.81)	12.7 (1.62)	12.58 (1.5)	15.1 (2.23)	14.67 (2.17)	14.44 (2.3)
	SES	-1.28 (0.52)	-1.2 (0.49)	-1.26 (0.51)	0.6 (0.42)	0.56 (0.42)	0.66 (0.41)	-1.27 (0.48)	-1.33 (0.5)	-1.35 (0.52)	0.61 (0.4)	0.57 (0.42)	0.48 (0.42)
	Motion	0.07 (0.04)	0.07 (0.04)	0.07 (0.04)	0.07 (0.04)	0.07 (0.04)	0.07 (0.04)	0.07 (0.04)	0.06 (0.04)	0.06 (0.04)	0.07 (0.04)	0.06 (0.04)	0.06 (0.04)

EA=European Ancestry; AA=African Ancestry; Ed=Education; SES=Socioeconomic status index in SD units.

eTable 3. Results of the MMRM on the Main Demographic and Trauma Factors With Symptom Domains as Dependent Measures

	Symptoms	
Factor	**F**	**P**
Age	**126.449**	**0.0000**
Sex	**9.395**	**0.0022**
SES	**44.177**	**0.0000**
TSE	**593.982**	**0.0000**
Domain	**10.335**	**0.0000**
Race	**8.007**	**0.0003**
Age*Sex	**13.830**	**0.0002**
SES*TSE	**8.590**	**0.0034**
SES*Domain	**2.678**	**0.0454**
Sex*SES	0.245	0.6206
SES*Race	1.470	0.2300
TSE*Domain	**38.610**	**0.0000**
Sex*TSE	2.832	0.0925
TSE*Race	0.523	0.5925
Sex*Domain	**74.811**	**0.0000**
Domain*Race	**3.346**	**0.0027**
Sex*Race	0.464	0.6286
SES*TSE*Domain	0.408	0.7470
Sex*SES*TSE	2.128	0.1447
SES*TSE*Race	0.785	0.4563
Sex*SES*Domain	0.863	0.4593
SES*Domain*Race	0.896	0.4966
Sex*SES*Race	0.382	0.6827
Sex*TSE*Domain	**9.036**	**0.0000**
TSE*Domain*Race	1.563	0.1535
Sex*TSE*Race	0.729	0.4825
Sex*Domain*Race	0.707	0.6444
Sex*SES*TSE*Domain	1.485	0.2164
SES*TSE*Domain*Race	0.860	0.5233
Sex*SES*TSE*Race	1.002	0.3671
Sex*SES*Domain*Race	0.470	0.8313
Sex*TSE*Domain*Race	0.572	0.7529
Sex*SES*TSE*Domain*Race	0.199	0.9772

Factors involved with SES or TSE are in red and significant effects bolded.

eTable 4. Results of Logistic Regression Analysis on the Main Demographic and Trauma Factors With Proportion of Individuals at Each Age Bracket That Has Reached Puberty According to the Pubic Hair Item of the Tanner Scale

Predictor	Beta	P
Age	**0.049**	**0.0000**
Sex	**2.568**	**0.0000**
SES	**-1.225**	**0.0000**
TSE	**0.570**	**0.0005**
Race	0.730	0.1960
Age*Sex	**-0.008**	**0.0001**
SES*TSE	0.018	0.5740
SES*Age	**0.005**	**0.0001**
TSE*Age	**-0.003**	**0.0009**
Sex*SES	0.096	0.2592
SES*Race	**0.184**	**0.0288**
Sex*TSE	-0.045	0.3415
TSE*Race	0.055	0.4114
Sex*Race	0.147	0.4149
Age*Race	-0.002	0.4193

Factors involved with SES or TSE are in red and significant effects bolded.

eTable 5. Results of the MMRM on the Main Demographic and Trauma Factors With Cognitive Domain Scores as Dependent Measures

Cognitive		
Factor	**F**	**P**
Age	2.395	0.1218
Sex	0.144	0.7049
SES	**100.006**	**0.0000**
TSE	0.180	0.6714
Domain	1.144	0.3296
Race	**42.692**	**0.0000**
Age*Sex	1.165	0.2804
SES*TSE	0.116	0.7333
SES*Domain	**29.450**	**0.0000**
Sex*SES	0.005	0.9461
SES*Race	1.198	0.3019
TSE*Domain	**7.597**	**0.0000**
Sex*TSE	0.868	0.3514
TSE*Race	0.667	0.5134
Sex*Domain	**25.121**	**0.0000**
Domain*Race	**33.310**	**0.0000**
Sex*Race	3.412	0.0330
SES*TSE*Domain	3.630	0.0123
Sex*SES*TSE	0.185	0.6667
SES*TSE*Race	0.330	0.7188
Sex*SES*Domain	0.565	0.6384
SES*Domain*Race	**5.420**	**0.0000**
Sex*SES*Race	1.481	0.2274
Sex*TSE*Domain	3.814	0.0096
TSE*Domain*Race	0.829	0.5476
Sex*TSE*Race	1.227	0.2934
Sex*Domain*Race	1.014	0.4138
Sex*SES*TSE*Domain	0.169	0.9174
SES*TSE*Domain*Race	2.150	0.0446
Sex*SES*TSE*Race	2.414	0.0896
Sex*SES*Domain*Race	0.804	0.5665
Sex*TSE*Domain*Race	2.152	0.0445
Sex*SES*TSE*Domain*Race	**3.322**	**0.0029**

Factors involved with SES or TSE are in red and significant effects bolded.

eTable 6. Mixed-Model Repeated Measures Results for Neurocognitive Performance Accuracy and Speed

	Accuracy		Speed	
Predictor	F	p-value	F	p-value
Age	3.2	0.076	0.6	0.458
Sex	21.0	< 0.0005	10.5	0.001
SES	**124.7**	**< 0.0005**	**9.5**	**0.002**
Trauma	0.5	0.490	0.6	0.425
Domain	2.9	0.054	20.8	< 0.0005
Race	25.9	< 0.0005	9.0	< 0.0005
Sex:SES	0.2	0.651	0.0	0.957
Sex:Trauma	0.9	0.335	0.2	0.625
Sex:Domain	37.6	< 0.0005	31.9	< 0.0005
Sex:Race	0.8	0.443	2.5	0.082
SES:Trauma	0.0	0.913	0.0	0.934
SES:Domain	**29.0**	**< 0.0005**	**7.5**	**< 0.0005**
SES:Race	0.4	0.664	2.0	0.133
Trauma:Domain	1.0	0.350	**4.8**	**0.008**
Trauma:Race	1.6	0.210	0.1	0.917
Domain:Race	34.9	< 0.0005	10.0	< 0.0005
Age:Sex	9.4	0.002	10.6	0.001
Sex:SES:Trauma	0.7	0.415	0.9	0.343
Sex:SES:Domain	1.0	0.358	0.8	0.440
Sex:SES:Race	0.2	0.789	1.0	0.364
Sex:Trauma:Domain	2.6	0.074	2.7	0.066
Sex:Trauma:Race	1.3	0.275	1.3	0.285
Sex:Domain:Race	0.8	0.523	0.8	0.509
SES:Trauma:Domain	0.4	0.651	3.1	0.043
SES:Trauma:Race	0.1	0.864	0.5	0.623
SES:Domain:Race	**4.6**	**0.001**	1.9	0.104
Trauma:Domain:Race	2.2	0.072	0.9	0.434
Sex:SES:Trauma:Domain	0.8	0.445	0.9	0.408
Sex:SES:Trauma:Race	1.0	0.352	1.3	0.271
Sex:SES:Domain:Race	0.5	0.757	1.6	0.171
Sex:Trauma:Domain:Race	0.7	0.599	2.0	0.087
SES:Trauma:Domain:Race	0.9	0.434	1.2	0.316
Sex:SES:Trauma:Domain:Race	0.2	0.933	**5.3**	**< 0.0005**

Note. Associations of interest are in the predicted direction - i.e. SES is associated with more accurate and faster (lower RT) performance; interaction between SES and trauma are non-significant for both models. Factors involved with SES or TSE are in red and significant effects bolded.

eTable 7. Results of the Mixed-Model Repeated Measures on the Main Demographic and Trauma Factors With Brain Parameters as Dependent Measures

	Volume		GMD		MD		CBF		ReHo		ALFF		FA Tracts	
Predictor	F	P	F	P	F	P	F	P	F	P	F	P	F	P
Age	53.366	0	364.433	0	0.7	0.4028	225.246	0	130.025	0	115.963	0	203.351	0
Sex	8.292	0.0142	0.238	0.626	0.24	0.626	40.44	0	0.46	0.626	1.477	0.3928	2.972	0.1871
SES	**7.149**	**0.0385**	**6.481**	**0.0385**	0	0.9893	0	0.9893	0.254	0.86	1.768	0.4292	0.601	0.7681
TSE	0.36	0.8506	0.035	0.8506	0.07	0.8506	1.064	0.8506	0.442	0.8506	0.374	0.8506	0.267	0.8506
Lobe	2.812	0.0251	1.925	0.1702	0.92	0.57	2.945	0.0251	0.776	0.5887	0.96	0.57	0.982	0.57
Race	33.635	0	0.561	0.5708	8.25	0.001	2.348	0.1679	3.884	0.0487	1.467	0.3236	0.702	0.5708
Age*Sex	12.696	0.0009	0.925	0.471	12.89	0.0009	42.732	0	0.149	0.8161	0	0.9956	7.456	0.0104
SES*TSE	0.023	0.8792	0.04	0.8792	0.11	0.8792	1.295	0.8792	0.045	0.8792	0.055	0.8792	3.596	0.4075
SES*Lobe	0.811	0.5777	1.039	0.4642	**2.52**	**0.0243**	**3.534**	**0.004**	**5.543**	**0.0001**	**4.324**	**0.0008**	1.768	0.0972
Sex*SES	1.855	0.3596	1.09	0.3596	1.17	0.3596	1.039	0.3596	1.798	0.3596	0.012	0.9122	2.254	0.3596
SES*Race	1.042	0.6181	0.596	0.7718	1.47	0.5379	0.252	0.7984	2.186	0.3951	0.225	0.7984	2.561	0.3951
TSE*Lobe	**7.648**	**0**	**3.84**	**0.0018**	1.23	0.2813	**4.187**	**0.0012**	**2.548**	**0.0255**	1.75	0.123	**2.391**	**0.0185**
Sex*TSE	0.304	0.9855	0.374	0.9855	0	0.9855	0.074	0.9855	0.593	0.9855	3.893	0.3414	0	0.9855
TSE*Race	0.068	0.9964	0.634	0.9964	0	0.9964	2.068	0.8877	0.447	0.9964	0.12	0.9964	0.993	0.9964
Sex*Lobe	0.656	0.7099	5.632	0	19.06	0	3.506	0.0026	6.143	0	3.218	0.0043	3.556	0.0004
Lobe*Race	2.329	0.0039	0.926	0.5194	2.72	0.0012	2.756	0.0013	3.35	0.0002	3.408	0.0002	2.367	0.0013
Sex*Race	0.554	0.575	3.143	0.3042	1.22	0.3447	1.393	0.3447	1.39	0.3447	1.351	0.3447	2.405	0.3238
SES*TSE*Lobe	0.229	0.9785	0.403	0.9785	2.7	0.0301	**5.386**	**0.0001**	2.509	0.045	2.398	0.045	1.416	0.2449
Sex*SES*TSE	0.003	0.9566	0.535	0.9566	2.04	0.5381	0.224	0.9566	0.068	0.9566	0.01	0.9566	2.655	0.5381
SES*TSE*Race	0.205	0.9383	0.998	0.9383	0.3	0.9383	1.55	0.9383	0.251	0.9383	0.064	0.9383	0.498	0.9383
Sex*SES*Lobe	0.222	0.9804	0.902	0.8614	2.59	0.048	2.67	0.048	0.363	0.9804	0.462	0.9804	1.152	0.7456
SES*Lobe*Race	0.777	0.9448	0.447	0.9448	0.7	0.9448	0.484	0.9448	0.747	0.9448	1.262	0.9448	0.796	0.9448
Sex*SES*Race	1.791	0.6503	0.83	0.7631	1.69	0.6503	0.11	0.8958	0.298	0.8658	1.068	0.7631	0.491	0.8529
Sex*TSE*Lobe	1.158	0.7167	0.691	0.7167	0.91	0.7167	0.631	0.7167	1.054	0.7167	0.617	0.7167	1.321	0.7167
TSE*Lobe*Race	1.051	0.5479	0.484	0.9253	0.98	0.5479	**3.663**	**0.0001**	1.556	0.3163	1.074	0.5479	1.369	0.3163
Sex*TSE*Race	2.336	0.34	0.995	0.4318	1.35	0.4318	1.165	0.4318	1.823	0.3781	2.503	0.34	0.384	0.6824
Sex*Lobe*Race	0.767	0.8237	0.554	0.8802	0.82	0.8237	2.087	0.1032	1.618	0.1851	1.782	0.1586	1.363	0.2447
Sex*SES*TSE*Lobe	0.931	0.5606	1.591	0.2544	0.93	0.5606	1.684	0.2544	0.637	0.7007	2.219	0.2358	1.774	0.2358
SES*TSE*Lobe*Race	0.917	0.6296	1.063	0.5798	1.68	0.1863	1.033	0.5798	0.756	0.6967	1.956	0.1694	1.129	0.5798
Sex*SES*TSE*Race	0.101	0.904	1.462	0.6516	1.28	0.6516	1.788	0.6516	0.144	0.904	0.544	0.8126	0.598	0.8126
Sex*SES*Lobe*Race	0.813	0.7655	0.932	0.7184	0.29	0.9953	1.076	0.6939	1.082	0.6939	1.053	0.6939	1.208	0.6939
Sex*TSE*Lobe*Race	1.131	0.5533	0.431	0.952	1.55	0.1987	**2.501**	**0.0197**	0.532	0.952	1.054	0.5533	1.483	0.1987
Sex*SES*TSE*Lobe*Race	1.109	0.7368	0.808	0.7368	0.82	0.7368	0.762	0.7368	0.716	0.7368	0.943	0.7368	1.172	0.7368

Factors involved with SES or TSE are in red and significant effects (FDR corrected) bolded. P values are FDR-Corrected.

eTable 8. Results of Logistic Regression Analysis on the Main Demographic and Trauma Factors With Proportion of Individuals at Each Age Bracket That Were Classified as Having Adult Brain by the Machine-Learning Classifier

Predictor	Beta	P
Age	0.06	0.0000
Sex	-9.57	0.0000
SES	-2.61	0.0551
TSEs	**1.92**	**0.0050**
Race	-2.68	0.3518
Age*Sex	0.04	0.0000
SES*TSEs	-0.06	0.5251
SES*Age	**0.01**	**0.0329**
TSE*Age	**-0.01**	**0.0012**
Sex*SES	-0.15	0.6099
SES*Race	-0.02	0.9607
Sex*TSE	0.23	0.1423
TSE*Race	0.25	0.2871
Sex*Race	-0.40	0.5004
Race*Age	0.01	0.3168

Factors involved with SES or TSE are in red and significant effects bolded.

eResults. Structural Equation Model

A structural equation model was specified such that all outcomes of interest (cognition and psychopathology) were regressed on all independent variables of interest (trauma, SES, etc.). Additionally, brain parameters acted as mediators (both IVs and DVs) whereby they were regressed on the IVs of interest and also had direct effects on all DVs. All brain parameters were allowed to inter-correlate freely. Some relationships that do not make intuitive sense (e.g. Sex -> Age) were constrained. The model was estimated using the Bayesian estimator in Mplus, where the number of Markov chains was set to 1.

Fit of the model was acceptable (Posterior Predictive P-value > 0.05), and Table SX shows the results.

eTable 9. Structural Model Results Using All Variables					
DV	Direction	IV	Std. Coefficient	p-value	
vol_Basal_Ganglia	←	**Trauma Exposure**	**-0.040**	**0.030**	
vol_Basal_Ganglia	←	**SES**	**0.126**	**< 0.0005**	*
vol_Basal_Ganglia	←	**Age (months)**	**-0.107**	**< 0.0005**	*
vol_Basal_Ganglia	←	**Female Sex**	**-0.409**	**< 0.0005**	*
vol_Basal_Ganglia	←	**Caucasian Race**	**0.177**	**< 0.0005**	*
vol_Limbic	←	**Trauma Exposure**	**-0.045**	**0.016**	*
vol_Limbic	←	**SES**	**0.118**	**< 0.0005**	*
vol_Limbic	←	**Age (months)**	**-0.158**	**< 0.0005**	*
vol_Limbic	←	**Female Sex**	**-0.405**	**< 0.0005**	*
vol_Limbic	←	**Caucasian Race**	**0.232**	**< 0.0005**	*
vol_Frontal	←	**Trauma Exposure**	**-0.031**	**0.046**	
vol_Frontal	←	**SES**	**0.084**	**0.001**	*
vol_Frontal	←	**Age (months)**	**-0.306**	**< 0.0005**	*
vol_Frontal	←	**Female Sex**	**-0.425**	**< 0.0005**	*
vol_Frontal	←	**Caucasian Race**	**0.217**	**< 0.0005**	*
vol_Temporal	←	Trauma Exposure	-0.020	0.123	
vol_Temporal	←	**SES**	**0.136**	**< 0.0005**	*
vol_Temporal	←	**Age (months)**	**-0.220**	**< 0.0005**	*
vol_Temporal	←	**Female Sex**	**-0.469**	**< 0.0005**	*
vol_Temporal	←	**Caucasian Race**	**0.284**	**< 0.0005**	*
vol_Parietal	←	Trauma Exposure	0.005	0.385	
vol_Parietal	←	**SES**	**0.128**	**< 0.0005**	*
vol_Parietal	←	**Age (months)**	**-0.335**	**< 0.0005**	*
vol_Parietal	←	**Female Sex**	**-0.426**	**< 0.0005**	*
vol_Parietal	←	**Caucasian Race**	**0.228**	**< 0.0005**	*
vol_Occipital	←	Trauma Exposure	-0.029	0.072	
vol_Occipital	←	**SES**	**0.130**	**< 0.0005**	*
vol_Occipital	←	**Age (months)**	**-0.167**	**< 0.0005**	*
vol_Occipital	←	**Female Sex**	**-0.432**	**< 0.0005**	*
vol_Occipital	←	**Caucasian Race**	**0.280**	**< 0.0005**	*
vol_Cerebellum	←	Trauma Exposure	-0.019	0.193	
vol_Cerebellum	←	**SES**	**0.071**	**0.009**	*
vol_Cerebellum	←	Age (months)	0.033	0.085	

vol_Cerebellum	←	**Female Sex**	**-0.397**	**< 0.0005**	*
vol_Cerebellum	←	**Caucasian Race**	**0.227**	**< 0.0005**	*
vol_White_Matter	←	Trauma Exposure	-0.016	0.244	
vol_White_Matter	←	**SES**	**0.124**	**< 0.0005**	*
vol_White_Matter	←	**Age (months)**	**0.195**	**< 0.0005**	*
vol_White_Matter	←	**Female Sex**	**-0.458**	**< 0.0005**	*
vol_White_Matter	←	**Caucasian Race**	**0.199**	**< 0.0005**	*
gmd_Basal_Ganglia	←	Trauma Exposure	0.026	0.112	
gmd_Basal_Ganglia	←	**SES**	**0.123**	**< 0.0005**	*
gmd_Basal_Ganglia	←	**Age (months)**	**0.209**	**< 0.0005**	*
gmd_Basal_Ganglia	←	Female Sex	-0.029	0.092	
gmd_Basal_Ganglia	←	Caucasian Race	0.050	0.069	
gmd_Limbic	←	Trauma Exposure	-0.016	0.154	
gmd_Limbic	←	SES	0.044	0.055	
gmd_Limbic	←	**Age (months)**	**0.539**	**< 0.0005**	*
gmd_Limbic	←	**Female Sex**	**0.041**	**0.002**	*
gmd_Limbic	←	Caucasian Race	0.002	0.466	
gmd_Frontal	←	Trauma Exposure	-0.004	0.401	
gmd_Frontal	←	**SES**	**0.083**	**< 0.0005**	*
gmd_Frontal	←	**Age (months)**	**0.451**	**< 0.0005**	*
gmd_Frontal	←	**Female Sex**	**0.085**	**< 0.0005**	*
gmd_Frontal	←	Caucasian Race	0.033	0.105	
gmd_Temporal	←	Trauma Exposure	-0.008	0.289	
gmd_Temporal	←	**SES**	**0.077**	**< 0.0005**	*
gmd_Temporal	←	**Age (months)**	**0.499**	**< 0.0005**	*
gmd_Temporal	←	**Female Sex**	**0.054**	**< 0.0005**	*
gmd_Temporal	←	Caucasian Race	0.014	0.291	
gmd_Parietal	←	Trauma Exposure	-0.002	0.459	
gmd_Parietal	←	**SES**	**0.090**	**< 0.0005**	*
gmd_Parietal	←	**Age (months)**	**0.490**	**< 0.0005**	*
gmd_Parietal	←	**Female Sex**	**0.057**	**< 0.0005**	*
gmd_Parietal	←	Caucasian Race	0.029	0.132	
gmd_Occipital	←	Trauma Exposure	-0.003	0.417	
gmd_Occipital	←	**SES**	**0.086**	**< 0.0005**	*
gmd_Occipital	←	**Age (months)**	**0.498**	**< 0.0005**	*
gmd_Occipital	←	**Female Sex**	**0.040**	**0.005**	*
gmd_Occipital	←	Caucasian Race	0.033	0.091	
gmd_Cerebellum	←	Trauma Exposure	0.001	0.465	
gmd_Cerebellum	←	**SES**	**0.089**	**< 0.0005**	*
gmd_Cerebellum	←	**Age (months)**	**0.442**	**< 0.0005**	*
gmd_Cerebellum	←	Female Sex	-0.007	0.347	
gmd_Cerebellum	←	**Caucasian Race**	**0.052**	**0.024**	*
cbf_Basal_Ganglia	←	Trauma Exposure	0.000	0.497	

cbf_Basal_Ganglia	←	SES	-0.050	0.070	
cbf_Basal_Ganglia	←	**Age (months)**	**-0.230**	**< 0.0005**	*
cbf_Basal_Ganglia	←	Female Sex	-0.038	0.062	
cbf_Basal_Ganglia	←	Caucasian Race	-0.052	0.051	
cbf_Limbic	←	Trauma Exposure	-0.003	0.449	
cbf_Limbic	←	SES	-0.040	0.104	
cbf_Limbic	←	**Age (months)**	**-0.241**	**< 0.0005**	*
cbf_Limbic	←	Female Sex	-0.015	0.267	
cbf_Limbic	←	**Caucasian Race**	**-0.091**	**0.001**	*
cbf_Frontal	←	Trauma Exposure	-0.020	0.197	
cbf_Frontal	←	SES	-0.013	0.345	
cbf_Frontal	←	**Age (months)**	**-0.419**	**< 0.0005**	*
cbf_Frontal	←	Female Sex	-0.001	0.487	
cbf_Frontal	←	Caucasian Race	-0.046	0.070	
cbf_Temporal	←	Trauma Exposure	-0.021	0.179	
cbf_Temporal	←	SES	0.000	0.496	
cbf_Temporal	←	**Age (months)**	**-0.405**	**< 0.0005**	*
cbf_Temporal	←	**Female Sex**	**-0.093**	**< 0.0005**	*
cbf_Temporal	←	Caucasian Race	-0.049	0.057	
cbf_Occipital	←	Trauma Exposure	-0.003	0.456	
cbf_Occipital	←	SES	-0.024	0.215	
cbf_Occipital	←	**Age (months)**	**-0.317**	**< 0.0005**	*
cbf_Occipital	←	Female Sex	0.031	0.087	
cbf_Occipital	←	**Caucasian Race**	**-0.097**	**0.001**	*
cbf_White_Matter	←	Trauma Exposure	-0.016	0.254	
cbf_White_Matter	←	**SES**	**-0.053**	**0.048**	
cbf_White_Matter	←	**Age (months)**	**-0.378**	**< 0.0005**	*
cbf_White_Matter	←	Female Sex	0.026	0.119	
cbf_White_Matter	←	**Caucasian Race**	**-0.069**	**0.012**	*
tr_Basal_Ganglia	←	Trauma Exposure	-0.033	0.111	
tr_Basal_Ganglia	←	SES	-0.009	0.407	
tr_Basal_Ganglia	←	Age (months)	0.017	0.273	
tr_Basal_Ganglia	←	**Female Sex**	**-0.069**	**0.006**	*
tr_Basal_Ganglia	←	Caucasian Race	0.047	0.120	
tr_Limbic	←	Trauma Exposure	-0.040	0.060	
tr_Limbic	←	SES	-0.020	0.298	
tr_Limbic	←	Age (months)	-0.045	0.063	
tr_Limbic	←	**Female Sex**	**0.115**	**< 0.0005**	*
tr_Limbic	←	Caucasian Race	-0.049	0.116	
tr_Frontal	←	Trauma Exposure	-0.021	0.171	
tr_Frontal	←	SES	-0.020	0.270	
tr_Frontal	←	**Age (months)**	**0.074**	**0.003**	*
tr_Frontal	←	**Female Sex**	**0.389**	**< 0.0005**	*

tr_Frontal	←	**Caucasian Race**	**-0.202**	**< 0.0005**	*****
tr_Temporal	←	Trauma Exposure	0.001	0.489	
tr_Temporal	←	**SES**	**-0.105**	**< 0.0005**	*****
tr_Temporal	←	Age (months)	0.019	0.234	
tr_Temporal	←	**Female Sex**	**0.420**	**< 0.0005**	*****
tr_Temporal	←	**Caucasian Race**	**-0.163**	**< 0.0005**	*****
tr_Parietal	←	Trauma Exposure	-0.018	0.217	
tr_Parietal	←	**SES**	**-0.071**	**0.013**	*****
tr_Parietal	←	**Age (months)**	**0.200**	**< 0.0005**	*****
tr_Parietal	←	**Female Sex**	**0.319**	**< 0.0005**	*****
tr_Parietal	←	**Caucasian Race**	**-0.150**	**< 0.0005**	*****
tr_Occipital	←	Trauma Exposure	0.008	0.372	
tr_Occipital	←	**SES**	**-0.061**	**0.040**	
tr_Occipital	←	**Age (months)**	**-0.100**	**< 0.0005**	*****
tr_Occipital	←	**Female Sex**	**0.191**	**< 0.0005**	*****
tr_Occipital	←	**Caucasian Race**	**-0.100**	**0.006**	*****
tr_Cerebellum	←	Trauma Exposure	0.017	0.246	
tr_Cerebellum	←	SES	-0.020	0.296	
tr_Cerebellum	←	**Age (months)**	**0.115**	**< 0.0005**	*****
tr_Cerebellum	←	**Female Sex**	**0.193**	**< 0.0005**	*****
tr_Cerebellum	←	Caucasian Race	-0.038	0.149	
tr_White_Matter	←	Trauma Exposure	0.008	0.377	
tr_White_Matter	←	SES	-0.032	0.180	
tr_White_Matter	←	**Age (months)**	**-0.319**	**< 0.0005**	*****
tr_White_Matter	←	**Female Sex**	**0.222**	**< 0.0005**	*****
tr_White_Matter	←	**Caucasian Race**	**-0.080**	**0.009**	*****
alff_Basal_Ganglia	←	**Trauma Exposure**	**0.069**	**0.007**	*****
alff_Basal_Ganglia	←	SES	-0.022	0.271	
alff_Basal_Ganglia	←	**Age (months)**	**-0.139**	**< 0.0005**	*****
alff_Basal_Ganglia	←	**Female Sex**	**-0.128**	**< 0.0005**	*****
alff_Basal_Ganglia	←	Caucasian Race	-0.063	0.068	
alff_Limbic	←	Trauma Exposure	0.028	0.137	
alff_Limbic	←	**SES**	**0.087**	**0.011**	*****
alff_Limbic	←	**Age (months)**	**-0.314**	**< 0.0005**	*****
alff_Limbic	←	**Female Sex**	**-0.071**	**0.009**	*****
alff_Limbic	←	Caucasian Race	-0.051	0.102	
alff_Frontal	←	Trauma Exposure	0.010	0.347	
alff_Frontal	←	**SES**	**0.091**	**0.008**	*****
alff_Frontal	←	Age (months)	-0.043	0.075	
alff_Frontal	←	**Female Sex**	**-0.112**	**0.001**	*****
alff_Frontal	←	Caucasian Race	-0.054	0.098	
alff_Temporal	←	**Trauma Exposure**	**0.052**	**0.017**	*****
alff_Temporal	←	SES	0.035	0.160	

alff_Temporal	←	**Age (months)**	**-0.349**	**< 0.0005**	*
alff_Temporal	←	**Female Sex**	**-0.185**	**< 0.0005**	*
alff_Temporal	←	**Caucasian Race**	**-0.114**	**0.001**	*
alff_Parietal	←	Trauma Exposure	0.034	0.077	
alff_Parietal	←	**SES**	**0.105**	**0.005**	*
alff_Parietal	←	**Age (months)**	**-0.319**	**< 0.0005**	*
alff_Parietal	←	**Female Sex**	**-0.178**	**< 0.0005**	*
alff_Parietal	←	**Caucasian Race**	**-0.101**	**0.003**	*
alff_Occipital	←	**Trauma Exposure**	**0.071**	**0.001**	*
alff_Occipital	←	SES	0.017	0.326	
alff_Occipital	←	**Age (months)**	**-0.319**	**< 0.0005**	*
alff_Occipital	←	**Female Sex**	**-0.235**	**< 0.0005**	*
alff_Occipital	←	**Caucasian Race**	**-0.068**	**0.032**	
alff_Cerebellum	←	Trauma Exposure	0.028	0.116	
alff_Cerebellum	←	SES	0.027	0.216	
alff_Cerebellum	←	**Age (months)**	**-0.462**	**< 0.0005**	*
alff_Cerebellum	←	**Female Sex**	**-0.224**	**< 0.0005**	*
alff_Cerebellum	←	Caucasian Race	0.045	0.106	
reho_Basal_Ganglia	←	Trauma Exposure	0.043	0.056	
reho_Basal_Ganglia	←	SES	-0.040	0.161	
reho_Basal_Ganglia	←	**Age (months)**	**-0.341**	**< 0.0005**	*
reho_Basal_Ganglia	←	**Female Sex**	**-0.056**	**0.030**	
reho_Basal_Ganglia	←	Caucasian Race	-0.029	0.229	
reho_Limbic	←	Trauma Exposure	0.003	0.450	
reho_Limbic	←	SES	0.010	0.401	
reho_Limbic	←	**Age (months)**	**-0.386**	**< 0.0005**	*
reho_Limbic	←	Female Sex	0.033	0.139	
reho_Limbic	←	Caucasian Race	-0.042	0.139	
reho_Frontal	←	Trauma Exposure	-0.039	0.094	
reho_Frontal	←	**SES**	**0.078**	**0.021**	*
reho_Frontal	←	**Age (months)**	**-0.175**	**< 0.0005**	*
reho_Frontal	←	Female Sex	-0.024	0.229	
reho_Frontal	←	Caucasian Race	-0.028	0.254	
reho_Temporal	←	Trauma Exposure	0.033	0.094	
reho_Temporal	←	SES	0.028	0.241	
reho_Temporal	←	**Age (months)**	**-0.320**	**< 0.0005**	*
reho_Temporal	←	**Female Sex**	**-0.102**	**< 0.0005**	*
reho_Temporal	←	**Caucasian Race**	**-0.119**	**< 0.0005**	*
reho_Parietal	←	Trauma Exposure	0.006	0.411	
reho_Parietal	←	**SES**	**0.104**	**0.002**	*
reho_Parietal	←	**Age (months)**	**-0.344**	**< 0.0005**	*
reho_Parietal	←	**Female Sex**	**-0.055**	**0.033**	
reho_Parietal	←	**Caucasian Race**	**-0.072**	**0.016**	*

reho_Occipital	←	**Trauma Exposure**	**0.058**	**0.017**	*
reho_Occipital	←	SES	0.021	0.290	
reho_Occipital	←	**Age (months)**	**-0.243**	**< 0.0005**	*
reho_Occipital	←	**Female Sex**	**-0.072**	**0.005**	*
reho_Occipital	←	**Caucasian Race**	**-0.084**	**0.007**	*
reho_Cerebellum	←	Trauma Exposure	0.029	0.112	
reho_Cerebellum	←	SES	-0.007	0.420	
reho_Cerebellum	←	**Age (months)**	**-0.384**	**< 0.0005**	*
reho_Cerebellum	←	**Female Sex**	**-0.126**	**< 0.0005**	*
reho_Cerebellum	←	Caucasian Race	0.000	0.496	
fa_forceps_mjor	←	Trauma Exposure	-0.028	0.160	
fa_forceps_mjor	←	SES	0.020	0.294	
fa_forceps_mjor	←	**Age (months)**	**0.117**	**< 0.0005**	*
fa_forceps_mjor	←	Female Sex	0.025	0.194	
fa_forceps_mjor	←	Caucasian Race	0.004	0.460	
fa_forceps_minor	←	Trauma Exposure	0.011	0.331	
fa_forceps_minor	←	**SES**	**-0.070**	**0.016**	*
fa_forceps_minor	←	**Age (months)**	**0.316**	**< 0.0005**	*
fa_forceps_minor	←	**Female Sex**	**-0.193**	**< 0.0005**	*
fa_forceps_minor	←	**Caucasian Race**	**0.099**	**0.001**	*
fa_atr	←	Trauma Exposure	0.034	0.072	
fa_atr	←	SES	-0.041	0.110	
fa_atr	←	**Age (months)**	**0.456**	**< 0.0005**	*
fa_atr	←	**Female Sex**	**-0.104**	**< 0.0005**	*
fa_atr	←	Caucasian Race	0.046	0.077	
fa_cst	←	Trauma Exposure	-0.023	0.194	
fa_cst	←	SES	-0.055	0.078	
fa_cst	←	**Age (months)**	**0.243**	**< 0.0005**	*
fa_cst	←	**Female Sex**	**-0.081**	**< 0.0005**	*
fa_cst	←	Caucasian Race	0.020	0.291	
fa_cgc	←	Trauma Exposure	0.010	0.341	
fa_cgc	←	SES	-0.016	0.316	
fa_cgc	←	**Age (months)**	**0.496**	**< 0.0005**	*
fa_cgc	←	**Female Sex**	**-0.132**	**< 0.0005**	*
fa_cgc	←	**Caucasian Race**	**-0.074**	**0.012**	*
fa_cgh	←	Trauma Exposure	0.001	0.493	
fa_cgh	←	**SES**	**0.059**	**0.048**	
fa_cgh	←	**Age (months)**	**0.166**	**< 0.0005**	*
fa_cgh	←	**Female Sex**	**-0.153**	**< 0.0005**	*
fa_cgh	←	**Caucasian Race**	**0.144**	**< 0.0005**	*
fa_ifo	←	Trauma Exposure	0.026	0.164	
fa_ifo	←	SES	-0.044	0.107	
fa_ifo	←	**Age (months)**	**0.322**	**< 0.0005**	*

fa_ifo	←	Female Sex	-0.024	0.188	
fa_ifo	←	**Caucasian Race**	**0.084**	**0.006**	*
fa_ilf	←	Trauma Exposure	0.010	0.351	
fa_ilf	←	**SES**	**0.083**	**0.005**	*
fa_ilf	←	**Age (months)**	**0.221**	**< 0.0005**	*
fa_ilf	←	Female Sex	-0.003	0.460	
fa_ilf	←	**Caucasian Race**	**0.172**	**< 0.0005**	*
fa_slf	←	Trauma Exposure	0.014	0.287	
fa_slf	←	SES	0.043	0.089	
fa_slf	←	**Age (months)**	**0.428**	**< 0.0005**	*
fa_slf	←	**Female Sex**	**-0.059**	**0.010**	*
fa_slf	←	**Caucasian Race**	**0.072**	**0.008**	*
fa_uf	←	**Trauma Exposure**	**0.060**	**0.016**	*
fa_uf	←	SES	-0.007	0.423	
fa_uf	←	**Age (months)**	**0.174**	**< 0.0005**	*
fa_uf	←	**Female Sex**	**-0.058**	**0.023**	*
fa_uf	←	**Caucasian Race**	**0.077**	**0.016**	*
Anxious-Misery	←	vol_Basal_Ganglia	0.046	0.153	
Anxious-Misery	←	vol_Limbic	0.055	0.184	
Anxious-Misery	←	vol_Frontal	-0.097	0.078	
Anxious-Misery	←	vol_Temporal	0.013	0.428	
Anxious-Misery	←	vol_Parietal	0.004	0.473	
Anxious-Misery	←	vol_Occipital	-0.076	0.098	
Anxious-Misery	←	**vol_Cerebellum**	**-0.078**	**0.008**	*
Anxious-Misery	←	vol_White_Matter	0.061	0.237	
Anxious-Misery	←	gmd_Basal_Ganglia	0.011	0.376	
Anxious-Misery	←	gmd_Limbic	0.104	0.125	
Anxious-Misery	←	gmd_Frontal	-0.117	0.246	
Anxious-Misery	←	gmd_Temporal	0.027	0.448	
Anxious-Misery	←	gmd_Parietal	0.080	0.342	
Anxious-Misery	←	gmd_Occipital	-0.099	0.269	
Anxious-Misery	←	gmd_Cerebellum	0.088	0.160	
Anxious-Misery	←	cbf_Basal_Ganglia	0.001	0.487	
Anxious-Misery	←	cbf_Limbic	0.064	0.160	
Anxious-Misery	←	cbf_Frontal	0.009	0.444	
Anxious-Misery	←	cbf_Temporal	-0.092	0.120	
Anxious-Misery	←	cbf_Occipital	-0.043	0.219	
Anxious-Misery	←	cbf_White_Matter	0.027	0.379	
Anxious-Misery	←	tr_Basal_Ganglia	-0.055	0.060	
Anxious-Misery	←	tr_Limbic	-0.034	0.173	
Anxious-Misery	←	tr_Frontal	0.006	0.455	
Anxious-Misery	←	tr_Temporal	0.056	0.122	
Anxious-Misery	←	tr_Parietal	-0.061	0.113	

Anxious-Misery	←	tr_Occipital	-0.003	0.472	
Anxious-Misery	←	tr_Cerebellum	0.003	0.461	
Anxious-Misery	←	tr_White_Matter	0.014	0.408	
Anxious-Misery	←	alff_Basal_Ganglia	-0.052	0.251	
Anxious-Misery	←	**alff_Limbic**	**-0.178**	**0.002**	*****
Anxious-Misery	←	alff_Frontal	0.108	0.053	
Anxious-Misery	←	**alff_Temporal**	**0.220**	**0.027**	
Anxious-Misery	←	alff_Parietal	-0.034	0.357	
Anxious-Misery	←	alff_Occipital	-0.003	0.486	
Anxious-Misery	←	alff_Cerebellum	0.001	0.493	
Anxious-Misery	←	reho_Basal_Ganglia	0.068	0.168	
Anxious-Misery	←	reho_Limbic	0.088	0.066	
Anxious-Misery	←	reho_Frontal	-0.023	0.346	
Anxious-Misery	←	**reho_Temporal**	**-0.192**	**0.022**	*****
Anxious-Misery	←	reho_Parietal	-0.024	0.389	
Anxious-Misery	←	reho_Occipital	0.043	0.262	
Anxious-Misery	←	reho_Cerebellum	-0.002	0.491	
Anxious-Misery	←	fa_forceps_mjor	-0.058	0.055	
Anxious-Misery	←	fa_forceps_minor	0.013	0.402	
Anxious-Misery	←	fa_atr	0.054	0.110	
Anxious-Misery	←	fa_cst	-0.025	0.239	
Anxious-Misery	←	**fa_cgc**	**-0.075**	**0.038**	
Anxious-Misery	←	fa_cgh	0.006	0.420	
Anxious-Misery	←	fa_ifo	-0.005	0.460	
Anxious-Misery	←	**fa_ilf**	**-0.092**	**0.016**	*****
Anxious-Misery	←	**fa_slf**	**0.111**	**0.012**	*****
Anxious-Misery	←	**fa_uf**	**-0.068**	**0.023**	*****
Psychosis	←	vol_Basal_Ganglia	-0.008	0.437	
Psychosis	←	vol_Limbic	0.056	0.171	
Psychosis	←	vol_Frontal	-0.034	0.314	
Psychosis	←	vol_Temporal	0.003	0.483	
Psychosis	←	vol_Parietal	0.036	0.299	
Psychosis	←	**vol_Occipital**	**-0.106**	**0.028**	
Psychosis	←	**vol_Cerebellum**	**-0.083**	**0.006**	*****
Psychosis	←	vol_White_Matter	0.035	0.335	
Psychosis	←	gmd_Basal_Ganglia	0.011	0.378	
Psychosis	←	gmd_Limbic	0.078	0.187	
Psychosis	←	gmd_Frontal	0.042	0.408	
Psychosis	←	gmd_Temporal	-0.097	0.322	
Psychosis	←	gmd_Parietal	-0.022	0.452	
Psychosis	←	gmd_Occipital	-0.031	0.425	
Psychosis	←	gmd_Cerebellum	0.067	0.226	
Psychosis	←	cbf_Basal_Ganglia	0.022	0.319	

Psychosis	←	cbf_Limbic	0.022	0.358	
Psychosis	←	cbf_Frontal	0.008	0.438	
Psychosis	←	cbf_Temporal	-0.081	0.150	
Psychosis	←	cbf_Occipital	-0.005	0.464	
Psychosis	←	cbf_White_Matter	-0.028	0.379	
Psychosis	←	**tr_Basal_Ganglia**	**-0.072**	**0.021**	*
Psychosis	←	tr_Limbic	-0.002	0.476	
Psychosis	←	tr_Frontal	-0.006	0.461	
Psychosis	←	tr_Temporal	0.051	0.152	
Psychosis	←	tr_Parietal	-0.051	0.142	
Psychosis	←	tr_Occipital	0.015	0.374	
Psychosis	←	tr_Cerebellum	0.001	0.488	
Psychosis	←	tr_White_Matter	-0.063	0.140	
Psychosis	←	alff_Basal_Ganglia	-0.095	0.107	
Psychosis	←	alff_Limbic	-0.073	0.124	
Psychosis	←	alff_Frontal	0.061	0.181	
Psychosis	←	**alff_Temporal**	**0.210**	**0.032**	
Psychosis	←	alff_Parietal	-0.048	0.312	
Psychosis	←	alff_Occipital	0.029	0.357	
Psychosis	←	alff_Cerebellum	-0.046	0.268	
Psychosis	←	reho_Basal_Ganglia	0.082	0.123	
Psychosis	←	reho_Limbic	0.083	0.079	
Psychosis	←	reho_Frontal	-0.070	0.114	
Psychosis	←	reho_Temporal	-0.120	0.105	
Psychosis	←	reho_Parietal	-0.050	0.288	
Psychosis	←	reho_Occipital	0.054	0.221	
Psychosis	←	reho_Cerebellum	-0.024	0.344	
Psychosis	←	**fa_forceps_mjor**	**-0.097**	**0.001**	*
Psychosis	←	fa_forceps_minor	-0.039	0.206	
Psychosis	←	fa_atr	0.050	0.130	
Psychosis	←	fa_cst	-0.022	0.265	
Psychosis	←	fa_cgc	0.021	0.309	
Psychosis	←	fa_cgh	-0.001	0.488	
Psychosis	←	fa_ifo	0.014	0.385	
Psychosis	←	**fa_ilf**	**-0.081**	**0.031**	
Psychosis	←	fa_slf	0.048	0.160	
Psychosis	←	**fa_uf**	**-0.068**	**0.020**	*
Psychosis	←	**Age (months)**	**-0.166**	**< 0.0005**	*
Psychosis	←	**Female Sex**	**-0.069**	**0.005**	*
Psychosis	←	Caucasian Race	-0.017	0.216	
Psychosis	←	**Trauma Exposure**	**0.361**	**< 0.0005**	*
Psychosis	←	**SES**	**-0.033**	**0.045**	
Externalizing	←	vol_Basal_Ganglia	-0.035	0.224	

Externalizing	←	vol_Limbic	0.013	0.415	
Externalizing	←	**vol_Frontal**	**-0.121**	**0.048**	
Externalizing	←	vol_Temporal	0.095	0.092	
Externalizing	←	vol_Parietal	0.025	0.359	
Externalizing	←	**vol_Occipital**	**-0.202**	**< 0.0005**	*
Externalizing	←	vol_Cerebellum	-0.039	0.125	
Externalizing	←	vol_White_Matter	0.082	0.179	
Externalizing	←	gmd_Basal_Ganglia	0.013	0.367	
Externalizing	←	gmd_Limbic	0.143	0.066	
Externalizing	←	gmd_Frontal	-0.099	0.287	
Externalizing	←	gmd_Temporal	0.157	0.241	
Externalizing	←	gmd_Parietal	-0.285	0.063	
Externalizing	←	gmd_Occipital	0.166	0.156	
Externalizing	←	gmd_Cerebellum	0.026	0.375	
Externalizing	←	cbf_Basal_Ganglia	0.020	0.336	
Externalizing	←	cbf_Limbic	-0.031	0.330	
Externalizing	←	cbf_Frontal	0.074	0.127	
Externalizing	←	cbf_Temporal	-0.104	0.089	
Externalizing	←	cbf_Occipital	-0.043	0.224	
Externalizing	←	cbf_White_Matter	0.084	0.183	
Externalizing	←	**tr_Basal_Ganglia**	**-0.116**	**< 0.0005**	*
Externalizing	←	tr_Limbic	-0.044	0.130	
Externalizing	←	tr_Frontal	-0.050	0.195	
Externalizing	←	**tr_Temporal**	**0.091**	**0.037**	
Externalizing	←	tr_Parietal	-0.013	0.398	
Externalizing	←	tr_Occipital	-0.070	0.076	
Externalizing	←	tr_Cerebellum	-0.024	0.264	
Externalizing	←	tr_White_Matter	0.020	0.375	
Externalizing	←	alff_Basal_Ganglia	-0.117	0.069	
Externalizing	←	alff_Limbic	-0.042	0.262	
Externalizing	←	alff_Frontal	0.083	0.111	
Externalizing	←	alff_Temporal	0.163	0.083	
Externalizing	←	alff_Parietal	0.022	0.415	
Externalizing	←	alff_Occipital	-0.071	0.197	
Externalizing	←	alff_Cerebellum	0.005	0.480	
Externalizing	←	reho_Basal_Ganglia	0.015	0.418	
Externalizing	←	**reho_Limbic**	**0.131**	**0.019**	*
Externalizing	←	reho_Frontal	-0.061	0.147	
Externalizing	←	reho_Temporal	-0.069	0.233	
Externalizing	←	reho_Parietal	-0.136	0.062	
Externalizing	←	**reho_Occipital**	**0.158**	**0.013**	*
Externalizing	←	reho_Cerebellum	-0.016	0.396	
Externalizing	←	**fa_forceps_mjor**	**-0.071**	**0.026**	

Externalizing	←	**fa_forceps_minor**	**0.085**	**0.047**	
Externalizing	←	fa_atr	0.012	0.391	
Externalizing	←	fa_cst	-0.016	0.323	
Externalizing	←	fa_cgc	-0.070	0.053	
Externalizing	←	fa_cgh	0.010	0.371	
Externalizing	←	fa_ifo	0.010	0.420	
Externalizing	←	fa_ilf	-0.046	0.169	
Externalizing	←	fa_slf	0.048	0.169	
Externalizing	←	fa_uf	-0.019	0.284	
Externalizing	←	**Age (months)**	**-0.161**	**< 0.0005**	*
Externalizing	←	**Female Sex**	**-0.173**	**< 0.0005**	*
Externalizing	←	Caucasian Race	-0.004	0.439	
Externalizing	←	**Trauma Exposure**	**0.285**	**< 0.0005**	*
Externalizing	←	**SES**	**-0.060**	**0.003**	*
Fear	←	vol_Basal_Ganglia	0.061	0.090	
Fear	←	vol_Limbic	0.059	0.171	
Fear	←	vol_Frontal	-0.036	0.309	
Fear	←	vol_Temporal	-0.111	0.070	
Fear	←	vol_Parietal	0.006	0.462	
Fear	←	vol_Occipital	-0.058	0.167	
Fear	←	**vol_Cerebellum**	**-0.071**	**0.021**	*
Fear	←	vol_White_Matter	0.035	0.344	
Fear	←	gmd_Basal_Ganglia	-0.004	0.450	
Fear	←	gmd_Limbic	0.061	0.251	
Fear	←	gmd_Frontal	0.069	0.355	
Fear	←	gmd_Temporal	-0.240	0.135	
Fear	←	gmd_Parietal	0.250	0.104	
Fear	←	gmd_Occipital	-0.169	0.159	
Fear	←	gmd_Cerebellum	0.087	0.172	
Fear	←	cbf_Basal_Ganglia	0.005	0.459	
Fear	←	cbf_Limbic	0.070	0.152	
Fear	←	cbf_Frontal	-0.051	0.214	
Fear	←	cbf_Temporal	-0.024	0.383	
Fear	←	**cbf_Occipital**	**-0.104**	**0.031**	
Fear	←	cbf_White_Matter	0.034	0.355	
Fear	←	tr_Basal_Ganglia	-0.008	0.413	
Fear	←	tr_Limbic	0.001	0.483	
Fear	←	tr_Frontal	-0.007	0.453	
Fear	←	tr_Temporal	-0.025	0.320	
Fear	←	tr_Parietal	-0.061	0.119	
Fear	←	tr_Occipital	0.056	0.119	
Fear	←	tr_Cerebellum	-0.019	0.315	
Fear	←	tr_White_Matter	-0.022	0.351	

Fear	←	alff_Basal_Ganglia	-0.061	0.227	
Fear	←	**alff_Limbic**	**-0.185**	**0.003**	*
Fear	←	alff_Frontal	0.077	0.122	
Fear	←	**alff_Temporal**	**0.259**	**0.016**	*
Fear	←	alff_Parietal	-0.046	0.332	
Fear	←	alff_Occipital	0.065	0.222	
Fear	←	alff_Cerebellum	-0.036	0.328	
Fear	←	reho_Basal_Ganglia	0.044	0.281	
Fear	←	reho_Limbic	0.068	0.128	
Fear	←	reho_Frontal	0.002	0.488	
Fear	←	**reho_Temporal**	**-0.228**	**0.013**	*
Fear	←	reho_Parietal	-0.013	0.445	
Fear	←	reho_Occipital	-0.014	0.421	
Fear	←	reho_Cerebellum	0.039	0.265	
Fear	←	fa_forceps_mjor	-0.025	0.245	
Fear	←	fa_forceps_minor	0.025	0.306	
Fear	←	**fa_atr**	**0.079**	**0.037**	
Fear	←	fa_cst	-0.044	0.116	
Fear	←	fa_cgc	-0.042	0.164	
Fear	←	fa_cgh	-0.011	0.360	
Fear	←	fa_ifo	0.022	0.334	
Fear	←	**fa_ilf**	**-0.123**	**0.002**	*
Fear	←	**fa_slf**	**0.089**	**0.047**	
Fear	←	**fa_uf**	**-0.078**	**0.014**	*
Fear	←	**Age (months)**	**-0.177**	**< 0.0005**	*
Fear	←	**Female Sex**	**0.124**	**< 0.0005**	*
Fear	←	Caucasian Race	-0.031	0.089	
Fear	←	**Trauma Exposure**	**0.242**	**< 0.0005**	*
Fear	←	**SES**	**-0.052**	**0.005**	*
Social Cognition	←	vol_Basal_Ganglia	0.003	0.475	
Social Cognition	←	vol_Limbic	-0.006	0.464	
Social Cognition	←	vol_Frontal	0.051	0.239	
Social Cognition	←	**vol_Temporal**	**0.142**	**0.035**	
Social Cognition	←	**vol_Parietal**	**-0.124**	**0.042**	
Social Cognition	←	vol_Occipital	0.097	0.061	
Social Cognition	←	vol_Cerebellum	0.031	0.200	
Social Cognition	←	vol_White_Matter	0.008	0.466	
Social Cognition	←	gmd_Basal_Ganglia	0.007	0.434	
Social Cognition	←	**gmd_Limbic**	**0.212**	**0.017**	*
Social Cognition	←	gmd_Frontal	-0.233	0.122	
Social Cognition	←	gmd_Temporal	-0.247	0.148	
Social Cognition	←	gmd_Parietal	0.129	0.266	
Social Cognition	←	gmd_Occipital	0.140	0.218	

Social Cognition	←	gmd_Cerebellum	0.109	0.131	
Social Cognition	←	cbf_Basal_Ganglia	0.027	0.298	
Social Cognition	←	cbf_Limbic	0.056	0.229	
Social Cognition	←	cbf_Frontal	-0.022	0.381	
Social Cognition	←	**cbf_Temporal**	**-0.162**	**0.037**	
Social Cognition	←	cbf_Occipital	0.006	0.463	
Social Cognition	←	cbf_White_Matter	0.021	0.422	
Social Cognition	←	**tr_Basal_Ganglia**	**-0.076**	**0.031**	
Social Cognition	←	tr_Limbic	-0.027	0.262	
Social Cognition	←	tr_Frontal	-0.009	0.438	
Social Cognition	←	tr_Temporal	0.047	0.208	
Social Cognition	←	tr_Parietal	0.026	0.327	
Social Cognition	←	tr_Occipital	-0.030	0.286	
Social Cognition	←	tr_Cerebellum	-0.051	0.096	
Social Cognition	←	tr_White_Matter	0.043	0.273	
Social Cognition	←	**alff_Basal_Ganglia**	**-0.194**	**0.011**	*****
Social Cognition	←	alff_Limbic	0.004	0.476	
Social Cognition	←	alff_Frontal	0.098	0.101	
Social Cognition	←	alff_Temporal	0.067	0.297	
Social Cognition	←	alff_Parietal	-0.092	0.210	
Social Cognition	←	alff_Occipital	0.085	0.169	
Social Cognition	←	alff_Cerebellum	0.024	0.390	
Social Cognition	←	**reho_Basal_Ganglia**	**0.195**	**0.005**	*****
Social Cognition	←	reho_Limbic	-0.050	0.231	
Social Cognition	←	reho_Frontal	-0.017	0.401	
Social Cognition	←	reho_Temporal	-0.125	0.118	
Social Cognition	←	**reho_Parietal**	**0.155**	**0.045**	
Social Cognition	←	reho_Occipital	-0.078	0.136	
Social Cognition	←	reho_Cerebellum	-0.023	0.359	
Social Cognition	←	fa_forceps_mjor	0.054	0.092	
Social Cognition	←	fa_forceps_minor	-0.090	0.051	
Social Cognition	←	fa_atr	0.064	0.110	
Social Cognition	←	fa_cst	0.051	0.097	
Social Cognition	←	fa_cgc	-0.002	0.487	
Social Cognition	←	**fa_cgh**	**0.069**	**0.030**	
Social Cognition	←	fa_ifo	-0.001	0.493	
Social Cognition	←	fa_ilf	-0.058	0.113	
Social Cognition	←	fa_slf	0.019	0.361	
Social Cognition	←	fa_uf	0.021	0.293	
Social Cognition	←	Age (months)	-0.068	0.064	
Social Cognition	←	**Female Sex**	**0.196**	**< 0.0005**	*****
Social Cognition	←	Caucasian Race	0.003	0.454	
Social Cognition	←	Trauma Exposure	0.002	0.433	

Social Cognition	←	**SES**	**0.146**	**< 0.0005**	*
Complex Reasoning	←	vol_Basal_Ganglia	0.009	0.426	
Complex Reasoning	←	vol_Limbic	0.045	0.232	
Complex Reasoning	←	vol_Frontal	0.032	0.332	
Complex Reasoning	←	vol_Temporal	0.063	0.184	
Complex Reasoning	←	vol_Parietal	-0.011	0.433	
Complex Reasoning	←	vol_Occipital	0.066	0.138	
Complex Reasoning	←	vol_Cerebellum	0.035	0.142	
Complex Reasoning	←	vol_White_Matter	0.083	0.180	
Complex Reasoning	←	gmd_Basal_Ganglia	-0.028	0.235	
Complex Reasoning	←	**gmd_Limbic**	**0.273**	**0.002**	*
Complex Reasoning	←	gmd_Frontal	-0.061	0.370	
Complex Reasoning	←	gmd_Temporal	-0.148	0.244	
Complex Reasoning	←	gmd_Parietal	0.167	0.194	
Complex Reasoning	←	gmd_Occipital	-0.192	0.127	
Complex Reasoning	←	gmd_Cerebellum	0.064	0.226	
Complex Reasoning	←	cbf_Basal_Ganglia	0.002	0.487	
Complex Reasoning	←	cbf_Limbic	-0.028	0.340	
Complex Reasoning	←	cbf_Frontal	-0.015	0.410	
Complex Reasoning	←	cbf_Temporal	-0.069	0.200	
Complex Reasoning	←	cbf_Occipital	0.032	0.296	
Complex Reasoning	←	cbf_White_Matter	0.058	0.264	
Complex Reasoning	←	**tr_Basal_Ganglia**	**-0.067**	**0.048**	
Complex Reasoning	←	tr_Limbic	-0.026	0.248	
Complex Reasoning	←	tr_Frontal	0.066	0.147	
Complex Reasoning	←	tr_Temporal	-0.003	0.481	
Complex Reasoning	←	tr_Parietal	-0.008	0.442	
Complex Reasoning	←	tr_Occipital	-0.069	0.088	
Complex Reasoning	←	tr_Cerebellum	0.029	0.226	
Complex Reasoning	←	tr_White_Matter	0.077	0.123	
Complex Reasoning	←	**alff_Basal_Ganglia**	**-0.147**	**0.031**	
Complex Reasoning	←	alff_Limbic	0.011	0.436	
Complex Reasoning	←	alff_Frontal	0.010	0.431	
Complex Reasoning	←	alff_Temporal	0.013	0.460	
Complex Reasoning	←	alff_Parietal	0.022	0.416	
Complex Reasoning	←	alff_Occipital	-0.001	0.497	
Complex Reasoning	←	alff_Cerebellum	0.098	0.098	
Complex Reasoning	←	**reho_Basal_Ganglia**	**0.139**	**0.027**	
Complex Reasoning	←	reho_Limbic	0.019	0.384	
Complex Reasoning	←	reho_Frontal	-0.026	0.340	
Complex Reasoning	←	reho_Temporal	-0.149	0.070	
Complex Reasoning	←	**reho_Parietal**	**0.169**	**0.033**	
Complex Reasoning	←	reho_Occipital	-0.033	0.309	

Complex Reasoning	←	reho_Cerebellum	-0.055	0.193	
Complex Reasoning	←	fa_forceps_mjor	0.015	0.344	
Complex Reasoning	←	fa_forceps_minor	0.028	0.301	
Complex Reasoning	←	fa_atr	0.048	0.149	
Complex Reasoning	←	fa_cst	0.004	0.458	
Complex Reasoning	←	fa_cgc	-0.058	0.104	
Complex Reasoning	←	fa_cgh	0.050	0.063	
Complex Reasoning	←	fa_ifo	0.030	0.284	
Complex Reasoning	←	fa_ilf	-0.052	0.128	
Complex Reasoning	←	fa_slf	0.016	0.383	
Complex Reasoning	←	fa_uf	0.055	0.056	
Complex Reasoning	←	Age (months)	0.050	0.128	
Complex Reasoning	←	**Female Sex**	**0.090**	**< 0.0005**	*
Complex Reasoning	←	**Caucasian Race**	**0.099**	**< 0.0005**	*
Complex Reasoning	←	**Trauma Exposure**	**-0.023**	**0.042**	
Complex Reasoning	←	**SES**	**0.214**	**< 0.0005**	*
Memory	←	vol_Basal_Ganglia	-0.033	0.266	
Memory	←	vol_Limbic	0.036	0.295	
Memory	←	vol_Frontal	-0.024	0.388	
Memory	←	vol_Temporal	-0.050	0.270	
Memory	←	vol_Parietal	-0.092	0.110	
Memory	←	vol_Occipital	0.051	0.228	
Memory	←	vol_Cerebellum	0.030	0.205	
Memory	←	vol_White_Matter	0.091	0.181	
Memory	←	gmd_Basal_Ganglia	-0.002	0.485	
Memory	←	gmd_Limbic	0.097	0.179	
Memory	←	gmd_Frontal	-0.222	0.152	
Memory	←	gmd_Temporal	0.158	0.267	
Memory	←	gmd_Parietal	0.136	0.273	
Memory	←	gmd_Occipital	-0.100	0.291	
Memory	←	gmd_Cerebellum	-0.020	0.425	
Memory	←	cbf_Basal_Ganglia	-0.025	0.335	
Memory	←	cbf_Limbic	-0.009	0.457	
Memory	←	cbf_Frontal	0.012	0.435	
Memory	←	cbf_Temporal	-0.067	0.250	
Memory	←	cbf_Occipital	-0.042	0.264	
Memory	←	cbf_White_Matter	0.073	0.257	
Memory	←	tr_Basal_Ganglia	-0.047	0.136	
Memory	←	tr_Limbic	0.012	0.399	
Memory	←	tr_Frontal	0.021	0.389	
Memory	←	tr_Temporal	-0.064	0.142	
Memory	←	tr_Parietal	-0.035	0.288	
Memory	←	tr_Occipital	-0.023	0.327	

Memory	←	tr_Cerebellum	-0.004	0.463	
Memory	←	tr_White_Matter	0.010	0.448	
Memory	←	alff_Basal_Ganglia	-0.015	0.438	
Memory	←	alff_Limbic	0.043	0.279	
Memory	←	alff_Frontal	-0.044	0.275	
Memory	←	alff_Temporal	0.100	0.215	
Memory	←	alff_Parietal	-0.064	0.287	
Memory	←	alff_Occipital	0.104	0.134	
Memory	←	alff_Cerebellum	-0.092	0.122	
Memory	←	reho_Basal_Ganglia	0.041	0.322	
Memory	←	reho_Limbic	-0.044	0.250	
Memory	←	reho_Frontal	0.058	0.181	
Memory	←	**reho_Temporal**	**-0.284**	**0.002**	*
Memory	←	reho_Parietal	0.157	0.070	
Memory	←	reho_Occipital	-0.024	0.383	
Memory	←	reho_Cerebellum	0.091	0.095	
Memory	←	fa_forceps_mjor	0.061	0.071	
Memory	←	fa_forceps_minor	-0.020	0.364	
Memory	←	fa_atr	0.039	0.226	
Memory	←	fa_cst	0.013	0.378	
Memory	←	fa_cgc	-0.025	0.321	
Memory	←	fa_cgh	0.009	0.405	
Memory	←	fa_ifo	0.039	0.254	
Memory	←	fa_ilf	-0.030	0.278	
Memory	←	fa_slf	0.046	0.207	
Memory	←	fa_uf	-0.034	0.198	
Memory	←	**Age (months)**	**-0.123**	**0.003**	*
Memory	←	**Female Sex**	**0.083**	**0.003**	*
Memory	←	Caucasian Race	-0.041	0.052	
Memory	←	**Trauma Exposure**	**0.038**	**0.005**	*
Memory	←	**SES**	**0.068**	**0.001**	*
Executive Function	←	vol_Basal_Ganglia	0.056	0.125	
Executive Function	←	vol_Limbic	0.048	0.251	
Executive Function	←	**vol_Frontal**	**-0.165**	**0.020**	*
Executive Function	←	vol_Temporal	0.030	0.347	
Executive Function	←	vol_Parietal	-0.011	0.445	
Executive Function	←	vol_Occipital	0.028	0.341	
Executive Function	←	vol_Cerebellum	-0.032	0.208	
Executive Function	←	**vol_White_Matter**	**0.191**	**0.028**	
Executive Function	←	gmd_Basal_Ganglia	0.020	0.319	
Executive Function	←	**gmd_Limbic**	**0.264**	**0.006**	*
Executive Function	←	gmd_Frontal	0.136	0.250	
Executive Function	←	gmd_Temporal	-0.284	0.125	

Executive Function	←	gmd_Parietal	0.253	0.124	
Executive Function	←	gmd_Occipital	-0.139	0.223	
Executive Function	←	gmd_Cerebellum	-0.148	0.084	
Executive Function	←	cbf_Basal_Ganglia	0.020	0.357	
Executive Function	←	cbf_Limbic	-0.057	0.229	
Executive Function	←	cbf_Frontal	-0.002	0.486	
Executive Function	←	cbf_Temporal	-0.049	0.308	
Executive Function	←	cbf_Occipital	0.070	0.146	
Executive Function	←	cbf_White_Matter	0.026	0.411	
Executive Function	←	tr_Basal_Ganglia	-0.031	0.241	
Executive Function	←	tr_Limbic	-0.014	0.352	
Executive Function	←	tr_Frontal	-0.015	0.401	
Executive Function	←	tr_Temporal	-0.063	0.146	
Executive Function	←	tr_Parietal	-0.017	0.389	
Executive Function	←	tr_Occipital	0.059	0.146	
Executive Function	←	tr_Cerebellum	-0.031	0.224	
Executive Function	←	tr_White_Matter	0.089	0.106	
Executive Function	←	alff_Basal_Ganglia	-0.105	0.122	
Executive Function	←	alff_Limbic	-0.036	0.317	
Executive Function	←	**alff_Frontal**	**0.130**	**0.045**	
Executive Function	←	alff_Temporal	-0.036	0.398	
Executive Function	←	alff_Parietal	-0.080	0.249	
Executive Function	←	alff_Occipital	0.054	0.287	
Executive Function	←	alff_Cerebellum	0.088	0.157	
Executive Function	←	reho_Basal_Ganglia	0.083	0.157	
Executive Function	←	reho_Limbic	-0.014	0.429	
Executive Function	←	reho_Frontal	-0.010	0.444	
Executive Function	←	reho_Temporal	-0.185	0.058	
Executive Function	←	**reho_Parietal**	**0.324**	**< 0.0005**	*
Executive Function	←	**reho_Occipital**	**-0.170**	**0.019**	*
Executive Function	←	reho_Cerebellum	0.012	0.433	
Executive Function	←	fa_forceps_mjor	0.059	0.078	
Executive Function	←	fa_forceps_minor	-0.013	0.404	
Executive Function	←	fa_atr	0.052	0.155	
Executive Function	←	fa_cst	0.051	0.109	
Executive Function	←	**fa_cgc**	**-0.088**	**0.049**	
Executive Function	←	fa_cgh	0.022	0.270	
Executive Function	←	fa_ifo	-0.017	0.379	
Executive Function	←	fa_ilf	-0.038	0.229	
Executive Function	←	fa_slf	0.059	0.136	
Executive Function	←	fa_uf	0.008	0.417	
Executive Function	←	Age (months)	-0.032	0.257	
Executive Function	←	**Female Sex**	**0.069**	**0.016**	*

Executive Function	←	Caucasian Race	0.023	0.193	
Executive Function	←	Trauma Exposure	0.004	0.398	
Executive Function	←	**SES**	**0.111**	**< 0.0005**	*****
Trauma Exposure	←	**Age (months)**	**0.289**	**< 0.0005**	*****
Trauma Exposure	←	**Female Sex**	**-0.038**	**< 0.0005**	*****
Trauma Exposure	←	**Caucasian Race**	**-0.174**	**< 0.0005**	*****
SES	←	**Age (months)**	**-0.023**	**0.001**	*****
SES	←	Female Sex	0.001	0.451	
SES	←	**Caucasian Race**	**0.692**	**< 0.0005**	*****
Note. SES = socioeconomic status; DV = dependent variable; IV = independent variable; FA = fractional anisotropy; CBF = cerebral blood flow; vol = volume; REHO = regional homogeneity; ALFF = amplitude of low-frequency fluctuations; GMD = gray matter density.					

eTable 10. Correlation Matrix Among the Dependent Measures

	TBV	Mean GMD	Mean TR	Mean FA	Mean CBF	Mean REHO	Mean ALFF	Soc Cog	Com Cog	Memory	Executive	Mood	Psychosis	Extern	Fear
Fear	-0.18*	0.12*	0.13*	0.01	-0.13*	-0.09*	-0.08*	-0.09*	-0.15*	-0.04*	-0.11*	0.76*	0.67*	0.53*	1*
Extern	-0.08*	0.1*	0.01	0.07*	-0.08*	-0.03	0.01	-0.11*	-0.15*	-0.03*	-0.13*	0.68*	0.69*	1*	0.53*
Psychosis	-0.11*	0.12*	0.03	0.05	-0.15*	-0.06*	-0.04	-0.1*	-0.14*	-0.03*	-0.1*	0.84*	1*	0.69*	0.67*
Mood	-0.12*	0.18*	0.08*	0.07*	-0.16*	-0.1*	-0.08*	-0.04*	-0.09*	0	-0.06*	1*	0.84*	0.68*	0.76*
Executive	0.21*	0.06*	-0.12*	0.11*	-0.06*	-0.02	-0.01	0.45*	0.55*	0.33*	1*	-0.06*	-0.1*	-0.13*	-0.11*
Memory	0.06*	0.01	-0.08*	0.1*	-0.05*	0.01	0.02	0.5*	0.4*	1*	0.33*	0	-0.03*	-0.03*	-0.04*
Com Cog	0.35*	0.08*	-0.22*	0.17*	-0.07*	0.02	0.05	0.65*	1*	0.4*	0.55*	-0.09*	-0.14*	-0.15*	-0.15*
Soc Cog	0.17*	0.04	-0.08*	0.1*	-0.08*	0.01	0.02	1*	0.65*	0.5*	0.45*	-0.04*	-0.1*	-0.11*	-0.09*
Mean ALFF	0.26*	-0.18*	-0.17*	-0.08*	0.08*	0.76*	1*	0.02	0.05	0.02	-0.01	-0.08*	-0.04	0.01	-0.08*
Mean REHO	0.11*	-0.21*	-0.08*	-0.15*	0.08*	1*	0.76*	0.01	0.02	0.01	-0.02	-0.1*	-0.06*	-0.03	-0.09*
Mean CBF	-0.02	-0.32*	0.07*	-0.27*	1*	0.08*	0.08*	-0.08*	-0.07*	-0.05*	-0.06*	-0.16*	-0.15*	-0.08*	-0.13*
Mean FA	0.33*	0.22*	-0.52*	1*	-0.27*	-0.15*	-0.08*	0.1*	0.17*	0.1*	0.11*	0.07*	0.05	0.07*	0.01
Mean TR	-0.81*	0.23*	1*	-0.52*	0.07*	-0.08*	-0.17*	-0.08*	-0.22*	-0.08*	-0.12*	0.08*	0.03	0.01	0.13*
Mean GMD	-0.06*	1*	0.23*	0.22*	-0.32*	-0.21*	-0.18*	0.04	0.08*	0.01	0.06*	0.18*	0.12*	0.1*	0.12*
TBV	1*	-0.06*	-0.81*	0.33*	-0.02	0.11*	0.26*	0.17*	0.35*	0.06*	0.21*	-0.12*	-0.11*	-0.08*	-0.18*

Pearson Correlation
1.0
0.5
0.0
-0.5
-1.0

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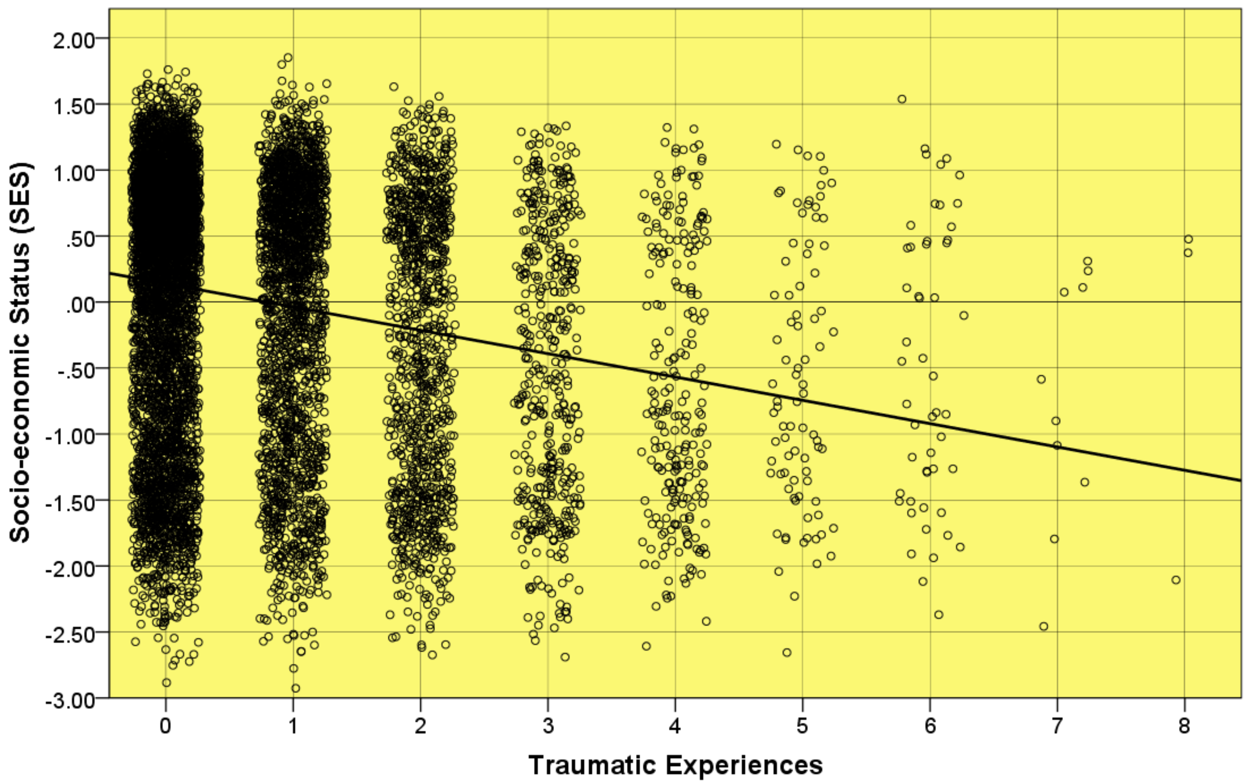
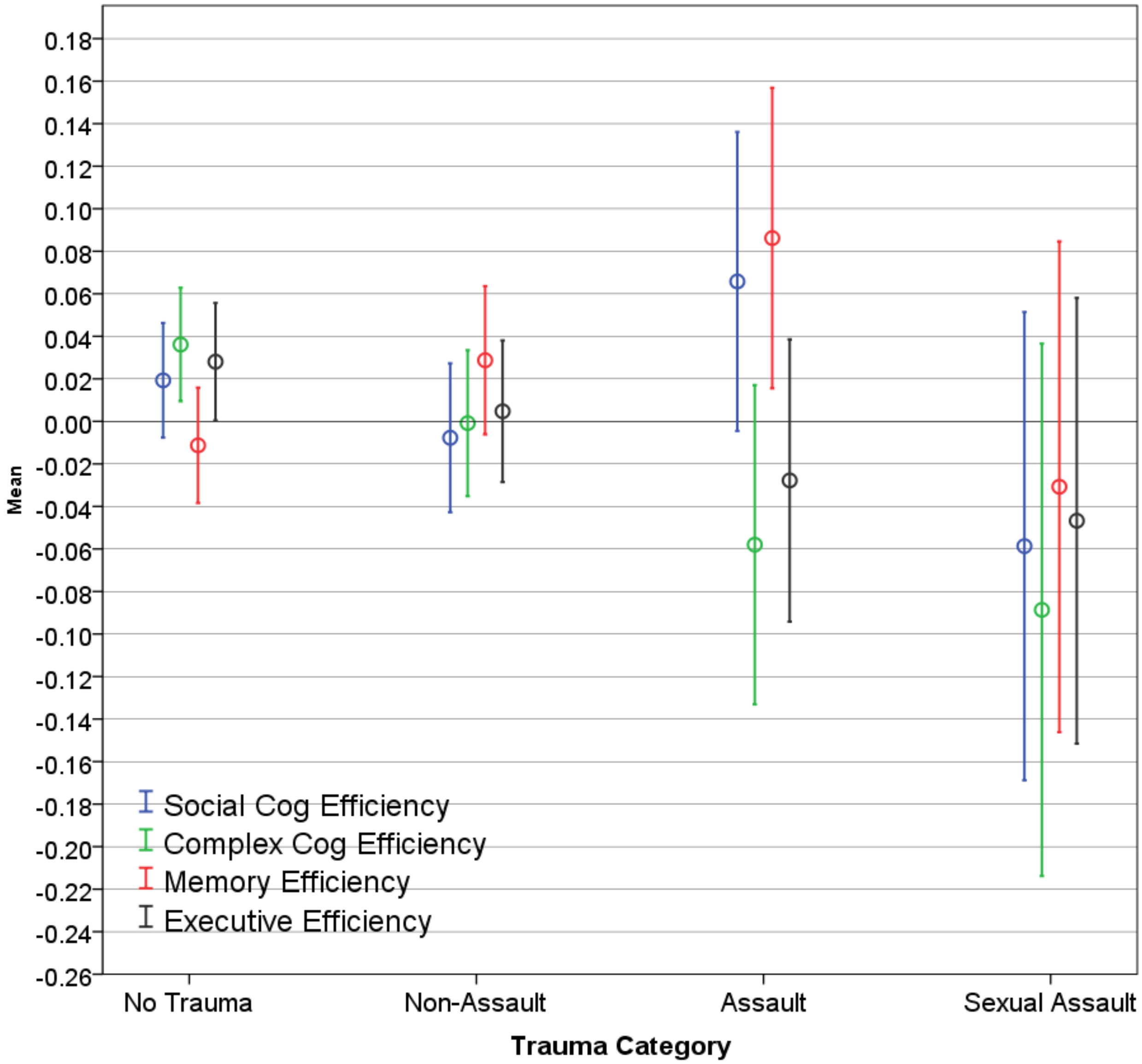
eFigure 1. **Scatterplot of Association Between Number of Traumatic Experiences and Socioeconomic Status**

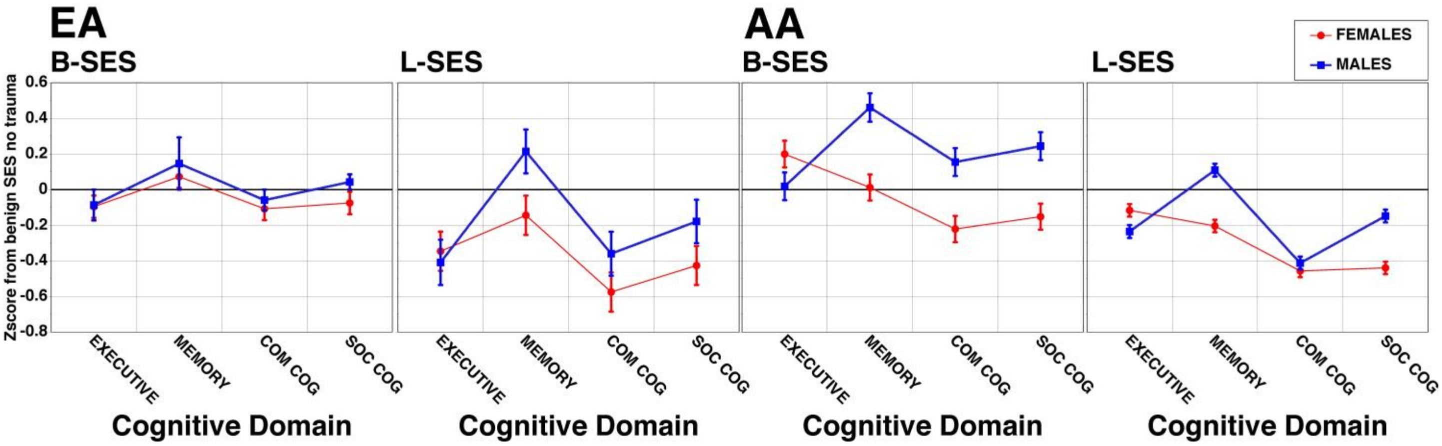


eFigure 2. **The Relation of Trauma Category to Cognitive Performance on the 4 Efficiency Domains**



eFigure 3. **The 5-Way Interaction (Sex × SES × TSE × Domain × Race)**

Values are shown for groups with trauma by race and SES status (Benign SES=B_SES; Low SES=L_SES) in z-scores compared to the group with benign SES and no trauma



eReferences

1. Satterthwaite TD, Elliott MA, Ruparel K, et al. Neuroimaging of the Philadelphia neurodevelopmental cohort. Neuroimage. 2014;86:544-553.
2. Kaufman J, Birmaher B, Brent D, et al. Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (K-SADS-PL): initial reliability and validity data. *J Am Acad Child Adolesc Psychiatry*. 1997;36(7):980-988.
3. Calkins ME, Merikangas KR, Moore TM, et al. The Philadelphia Neurodevelopmental Cohort: constructing a deep phenotyping collaborative. *J Child Psychol Psychiatry*. 2015;56(12):1356-1369.
4. Shanmugan S, Wolf DH, Calkins ME, et al. Common and dissociable mechanisms of executive system dysfunction across psychiatric disorders in youth. *Am J Psychiatry*. 2016;173(5):517-526.
5. Grice, J. W. Computing and evaluating factor scores. Psychological Methods, 2001;6(4), 430-450.
6. Gur RC, Richard J, Hughett P, Calkins ME, et al. A cognitive neuroscience-based computerized battery for efficient measurement of individual differences: standardization and initial construct validation. *J Neurosci Methods.* 2010;187(2):254-262.
7. Gur RC, Richard J, Calkins ME, et al. Age group and sex differences in performance on a computerized neurocognitive battery in children age 8-21. *Neuropsychol*. 2012;26(2):251-265.
8. Moore TM, Reise SP, Gur RE, Hakonarson H, Gur RC. Psychometric properties of the Penn Computerized Neurocognitive Battery. *Neuropsychol*. 2015;29(2):235-246.
9. Rosen A, Roalf DR, Ruparel K, et al. Quantitative assessment of structural image quality. *Neuroimage*. 2018;169:407-418.
10. Marcus DS, Wang TH, Parker J, Csernansky JG, Morris JC, Buckner RL. Open access series of imaging studies (OASIS): cross-sectional MRI data in young, middle aged, nondemented, and demented older adults. *J Cogn Neurosci*. 2007;19:1498–1507.
11. Avants BB, Tustison NJ, Song G, Cook PA, Klein A, Gee JC. A reproducible evaluation of ANTs similarity metric performance in brain image registration. *Neuroimage.* 2011a;54:2033–2044.
12. Klein A, Ghosh S, Avants B, et al. Evaluation of volume-based and surface-based brain image registration methods. *Neuroimage.* 2010;51:214–220.
13. Wang H, Suh JW, Das SR, Pluta JB, Craige C, Yushkevich PA. Multi-atlas segmentation with joint label fusion. *IEEE Trans. Pattern Anal Mach Intell*. 2013;35: 611–623.
14. Tustison NJ, Cook PA, Klein A, et al. Large-scale evaluation of ANTs and FreeSurfer cortical thickness measurements. *Neuroimage*. 2014;99:166–179.
15. Avants BB, Tustison NJ, Wu J, Cook PA, Gee JC. An open source multivariate framework for n-tissue segmentation with evaluation on public data. *Neuroinformatics*. 2011b; 9:381-400.
16. Gennatas ED, Avants BB, Wolf DH, et al. Age-related effects and sex differences in gray matter density, volume, mass, and cortical thickness from childhood to young adulthood. *J Neurosci*. 2017;37(20):5065-5073.
17. Jenkinson M, Bannister P, Brady M, Smith S. Improved optimization for the robust and accurate linear registration and motion correction of brain images. *Neuroimage*. 2002;17:825–841.

18. Andersson JLR, Sotiropoulos SN. An integrated approach to correction for off-resonance effects and subject movement in diffusion MR imaging. *Neuroimage.* 2016;125:063–1078.
19. Graham MS, Drobnjak I, Zhang H. Realistic simulation of artefacts in diffusion MRI for validating post-processing correction techniques. *Neuroimage*. 2016;125:1079–1094.
20. Roalf DR, Quarmley M, Elliott MA, et al. The impact of quality assurance assessment on diffusion tensor imaging outcomes in a large-scale population-based cohort. *Neuroimage*. 2016;125:903-919.
21. Behrens TEJ, Johansen-Berg H, Woolrich MW, et al. Non-invasive mapping of connections between human thalamus and cortex using diffusion imaging. *Nat Neurosci*. 2003; 6:750–757
22. Jenkinson, M, Beckmann CF, Behrens TE., Woolrich MW, Smith SM. FSL. *Neuroimage*. 2012; 62: 782–790.
23. Zhang H, Yushkevich PA, Alexander DC, Gee JC. Deformable registration of diffusion tensor MR images with explicit orientation optimization. *Med Image Anal*. 2006;10:764–785.
24. Zhang P, Niethammer M, Shen D, Yap P-T. Large deformation diffeomorphic registration of diffusion-weighted imaging data. *Med. Image Anal*. 2014;18:1290–1298.
25. Bach M, Laun FB, Leemans A, et al. Methodological considerations on tract-based spatial statistics (TBSS). *Neuroimage*. 2014;100: 358–369.
26. Ciric R, Wolf DH, Power JD, et al. Benchmarking of participant-level confound regression strategies for the control of motion artifact in studies of functional connectivity. *Neuroimage*. 2017;154:174-187.
27. Greve DN, Fischl B. Accurate and robust brain image alignment using boundary-based registration. *Neuroimage*. 2009;48:63–72.
28. Zang Y, Jiang T, Lu Y, He Y, Tian L. Regional homogeneity approach to fMRI data analysis. *Neuroimage*. 2004; 22:394–400.
29. Smith SM, Brady JM. SUSAN - A new approach to low level image processing. *Int J Comput Vis.*1997; 23:45–78.
30. Smith SM. Fast robust automated brain extraction. *Hum Brain Mapp*. 2002;17:143–155.
31. Wang Z, Aguirre GK, Rao H, et al. Empirical optimization of ASL data analysis using an ASL data processing toolbox: ASLtbx. *Magn Reson Imaging*. 2008;26: 261–269.
32. Wu W-C, Jain V, Li C, et al. In vivo venous blood T1 measurement using inversion recovery true-FISP in children and adults. *Magn Reson Med*. 2010;64:1140–1147.
33. Jain V, Duda J, Avants B, et al. Longitudinal reproducibility and accuracy of pseudo-continuous arterial spin-labeled perfusion MR imaging in typically developing children. *Radiology*. 2012;263:527–536.
34. Geurts P, Ernst D, Wehenkel L. Extremely randomized trees. *Mach Learn*. 2006;63:3–42.
35. Pedregosa F, Varoquaux G, Gramfort A, et al. Scikit-learn: Machine Learning in Python. *J Mach Learn Res.* 2011;12:2825−2830.