Supporting Information

Appendix S1. Imaging Procedure

For pre-processing data, the Data Analysis, Informatics, and Resources Center (DAIRC) of ABCD utilizes the Multi-Modal Processing Stream (MMPS) which consists of a toolbox of MATLAB functions; Python, sh, and csh scripts; and C++ compiled executables. In addition, MMPS incorporates several software packages, including FreeSurfer (1), AFNI (2), and FSL (3, 4). The T_1w acquisition (1 mm isotropic) was a 3D T_1w inversion prepared RF-spoiled gradient echo scan using prospective motion correction, when available (currently only on Siemens and GE scanners) (5, 6). T_1w structural images were corrected for gradient nonlinearity distortions using scanner-specific, nonlinear transformations provided by MRI scanner manufacturers (7, 8). Intensity inhomogeneity correction was performed by applying smoothly varying, estimated B_1-bias fields (9, 10). Images were rigidly registered and resampled into alignment with an averaged in-house reference brain in standard space (1.0 mm isotropic voxels, roughly aligned with the anterior commissure/posterior commissure axis), facilitating standardized viewing and analysis of brain structure.

Cortical surface reconstruction and subcortical segmentation were performed using FreeSurfer v5.3 (11, 12). To ensure high quality of derived measures, trained technicians reviewed the accuracy of cortical surface reconstruction. For each cortical surface reconstruction, reviewers examined the severity of five categories of MRI artifact or reconstruction inaccuracy, including motion, intensity inhomogeneity, white matter underestimation, pial overestimation, and magnetic susceptibility artifact. Quality values were assigned on a scale of 0–3, indicating absent, mild, moderate, or severe levels of each type of artifact, respectively. The reviewers then assigned an overall quality score which indicated whether the cortical surface reconstruction was recommended for use or for exclusion. Exclusion was recommended if any of the five categories were rated as severe.

Based on this criteria, 863 participants were excluded from the structural MRI analyses

(n=10,858).

Appendix S2. Confirmatory factor analysis
Methods

To delineate the structure of psychopathology in the current sample, three

confirmatory factor analysis (CFA) models were fit: 1) a one factor model with all indicators

loading on a single latent factor representing general psychopathology; 2) a bifactor model

with all indicators of psychopathology loading on a single factor representing general

psychopathology as well as the residual variance from three indicators representing

externalizing (attention deficit hyperactivity disorder, oppositional defiance disorder, conduct

disorder), six indicators representing internalizing (major depressive disorder, generalised

anxiety disorder, panic disorder, separation anxiety disorder, social anxiety disorder, post-

traumatic stress disorder), and four indicators representing thought disorder pathology

(hallucinations, delusions, obsessive-compulsive disorder, bipolar disorder); and 3) a higher-

order model with three lower-order factors representing externalizing, internalizing, and

thought disorder pathology (as described in the bifactor model), and a single higher order

factor representing general psychopathology that accounts for correlations among lower order

factors.

All models were estimated using a robust maximum likelihood estimator (MLR) with

numerical integration, suitable for binary indicators, as implemented in MPlus Version 8.4

(13). Models were compared based on the Bayesian Information Criterion (BIC) and the

sample size adjusted Bayesian Information Criterion (ssaBIC), with lower values indicating

better model fit (14). For the specific factors from the bifactor model, OmegaHS coefficients

were derived from the standardized factor loadings (15). OmegaHS indicates whether the

specific factors from the bifactor model reflect reliable variance that is independent from the

general psychopathology factor. The lower-order/specific factors from the higher-order and

bifactor factor models, respectively, were compared using the *H* coefficient, given recent simulations demonstrating that model fit statistics like BIC and ssaBIC tend to be biased towards selection of bifactor models (16). The *H* coefficient provides an indication of the construct replicability (i.e., reliability) of the latent factors with values ranging from 0 to 1 and estimates > .8 indicating well-defined latent variables (Rodriguez et al., 2016). Finally, the CFA models were re-run using a weighted least squares estimator (WLSMV) to generate the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and the root mean square error of approximation (RMSEA). Prior empirically derived cut-points were used to determine close fit (CFI and TLI > 0.95 and RMSEA < 0.05) (17). The confirmatory factor analysis described above was conducted before the study was preregistered (as described here: https://osf.io/qxegb).

Results

Tetrachoric correlations for all the binary indicators of psychopathology are provided in Table S1. Confirmatory factor analysis model fit statistics are presented in Table S2. The bifactor model as specified above had a Heywood case (i.e., negative residual variance) for the hallucinations indicator, indicating that the model was not valid. Inspection of the results indicated that the thought disorder factor was subsumed by the general psychopathology factor: whilst these indicators loaded highly on general psychopathology, they did not form a separate thought disorder factor independent of the general psychopathology factor. The bifactor model was then re-specified removing the thought disorder specific factor, with the fit statistics reported in Table S2 (Model B': modified bifactor model). All three models fit the data well, with both the higher-order model and the modified bifactor model outperforming the one factor model. However, the reliability of the specific factors in the modified bifactor model was low (*H* coefficient externalizing = 0.50; *H* coefficient internalizing = 0.53). Whereas reliability was higher and within the acceptable range for the

lower order factors in the higher-order model (*H* coefficient externalizing: 0.84; *H* coefficient internalizing: 0.91, *H* coefficient thought disorder: 0.74). The internalizing specific factor from the bifactor model had an OmegaHS of 0.22, while externalizing had an OmegaHS of 0.39, indicating that the specific factors provide little unique, reliable variance.

Appendix S3. Estimation of Bayesian plausible values

In order to estimate Bayesian plausible values, the SVALUES output option was included in the final best fitting model estimated using the MLR estimator. The SVALUES option generates a model command with final estimates used as starting values. The best fitting model was then re-estimated with the Bayes estimator and included the model command with final estimates as starting values from the previously estimated measurement model. The data imputation command was also included, with a total of 100 datasets imputed and saved. Each of the 100 imputations contained different plausible values for the externalizing, internalizing, thought disorder and general psychopathology dimensions. The following analysis example was highly informative as a practical guide for estimating these values: https://www.lesahoffman.com/PSYC948/948_Example11_SEM.pdf. The MPlus code for generating Bayesian plausible values, including starting values, is appended below.

DATA:

  file is C:\Users\Louise\Desktop\Plausible values\MPLUS_P.csv;

  VARIABLE:

  names are id dep gad pan sep soc hal del adhd odd cd ocd bip ptsd pho;

  missing are all (-99);

  usevar are dep gad pan sep soc hal del adhd odd cd ocd bip ptsd pho;

  categorical are dep gad pan sep soc hal del adhd odd cd ocd bip ptsd pho;

  idvariable is id;

ANALYSIS:

ESTIMATOR = bayes;

OUTPUT:

sampstat standardized SVALUES stdyx tech4;

MODEL:

ext BY adhd@1;

ext BY odd@1.32701;

ext BY cd@1.01627;

int BY dep@1;

int BY gad@1.39546;

int BY pan@1.38577;

int BY sep@1.01479;

int BY soc@0.82062;

int BY ptsd@1.26140;

int BY pho@0.53321;

thought BY hal@1;

thought BY del@0.91007;

thought BY bip@0.61733;

thought BY ocd@1.00597;

p BY ext@1;

p BY int@1.03844;

p BY thought@0.95552;

[dep$1@5.11928];

```
    [ gad$1@5.57037 ];

    [ pan$1@9.04455 ];

    [ sep$1@3.56520 ];

    [ soc$1@4.02689 ];

    [ hal$1@6.72447 ];

    [ del$1@5.05058 ];

    [ adhd$1@2.24855 ];

    [ odd$1@3.57903 ];

    [ cd$1@5.22437 ];

    [ ocd$1@3.24081 ];

    [ bip$1@3.75878 ];

    [ ptsd$1@6.27217 ];

    [ pho$1@1.22046 ];


    ext@1.74141;

    int@0.77267;

    thought@0.37240;

    p@2.79577;



DATA IMPUTATION: ! Creating plausible values for factor score

 NDATASETS = 100; ! Number of separate values to create

 SAVE = P*.sav; ! Name of separate datasets with plausible values



SAVEDATA: FILE = P.sav; ! Summary about plausibles per person

 SAVE = FSCORES (1); ! Needed to generate 100 factor scores
```

FACTORS = ext int thought p; ! Which factors to save

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Figure S1. Empirical distributions of factor scores and Bayesian plausible values.

(a)

(b)
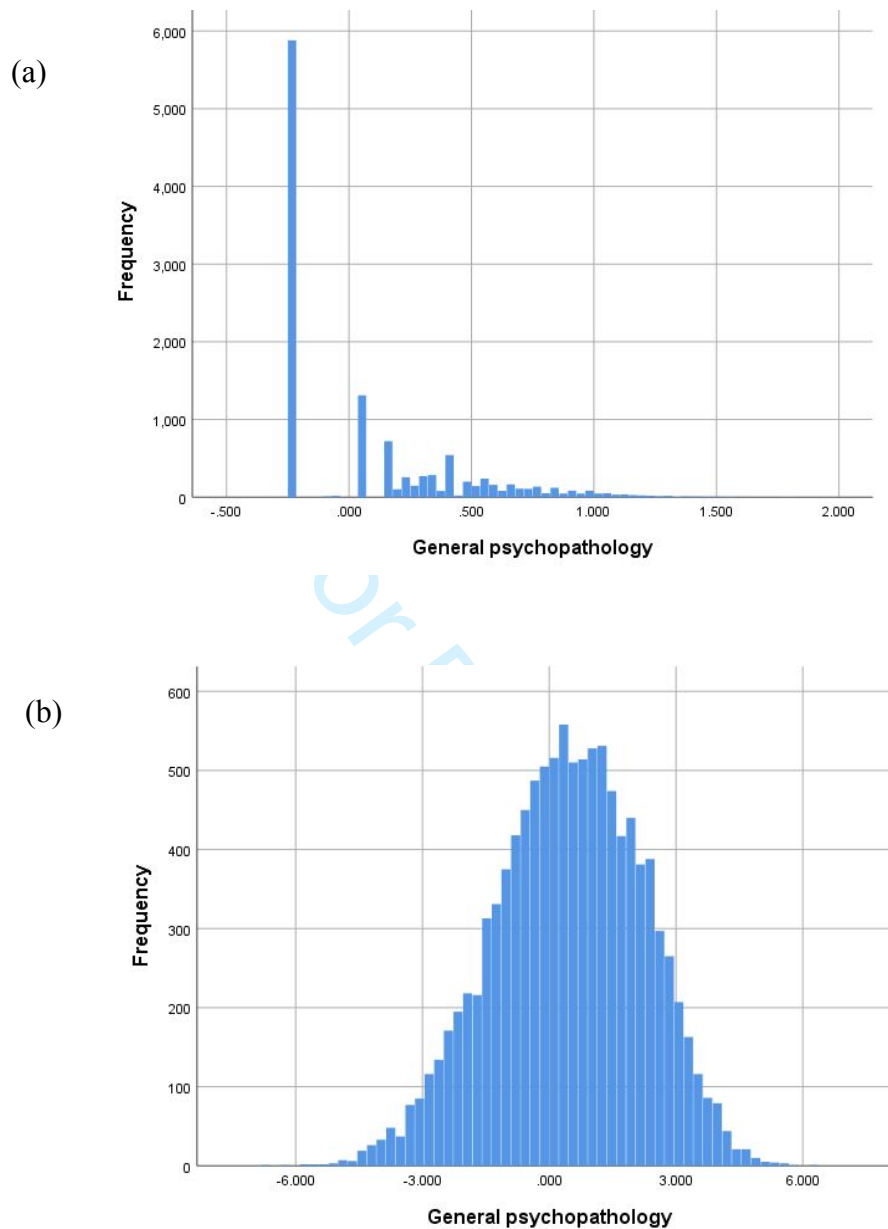
Empirical distributions of factor scores (a; using the WLSMV estimator in MPlus) and the first imputation of Bayesian plausible values (b; using the BAYES estimator in MPlus) for general psychopathology. All participants reporting zero indicators have the same factor score, resulting in a distribution that is positively skewed in general population samples. As plausible values are random draws from the participant's posterior distribution, those reporting the same pattern of indicators have a range of different plausible values, resulting in a smooth, normal distribution of general psychopathology.

Table S1. Comparison of baseline demographic and clinical characteristics of the participants included and excluded from the structural imaging analyses

	High quality structural MRI data (n=10,858)		Low quality structural MRI data (n = 863)		*p*
	Mean	SD	Mean	SD	
Total cognition score	47.8	11.2	46.4	11.6	<.001
Parental education (years)	16.63	2.7	16.29	3.1	.001
	N	%	N	%	
Male	5,665	52.2	453	52.5	.845
Race/ethnicity					
Caucasian	5732	52.8	376	43.7	<.001
Black	1581	14.6	172	20.0	
Hispanic	2187	20.1	173	20.1	
Asian	222	2.0	28	3.3	
Other	1119	10.3	111	12.9	
Lifetime disorders					
Major Depressive Disorder	301	2.8	17	2.0	.163
Generalised Anxiety Disorder	479	4.4	31	3.6	.257
Panic Disorder	29	0.3	3	0.3	.657
Separation Anxiety	965	8.9	84	9.7	.401
Social Anxiety Disorder	509	4.7	38	4.4	.704
Hallucinations	52	0.5	3	0.3	.587
Delusions	204	1.9	12	1.4	.305
Attention Deficit Hyperactivity	2192	20.2	237	27.5	<.001
Oppositional Defiant Disorder	1536	14.1	131	15.2	.374
Conduct Disorder	341	3.1	33	3.8	.261
Obsessive-Compulsive Disorder	1006	9.3	93	10.8	.131
Bipolar Disorder	389	3.6	40	4.6	.113
Post-Traumatic Stress Disorder	209	1.9	22	2.5	.197
Specific Phobia	2893	26.6	240	27.8	.408

Note: Cognition scores ascertained from fully corrected total cognition t-score from the NIH toolbox

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Table S2. Tetrachoric correlation matrix for indicators of psychopathology in the ABCD study (n=11,721)

	ADHD	ODD	CD	MDD	GAD	PAN	SEP	SOC	PTSD	PHO	HAL	DEL	OCD	BIP
ADHD	1.000	-	-	-	-	-	-	-	-		-	-	-	-
ODD	0.652	1.000	-	-	-	-	-	-	-		-	-	-	-
CD	0.558	0.618	1.000	-	-	-	-	-	-		-	-	-	-
MDD	0.360	0.380	0.323	1.000	-	-	-	-	-		-	-	-	-
GAD	0.418	0.201	0.364	0.542	1.000	-	-	-	-		-	-	-	-
PAN	0.189	0.395	0.106	0.561	0.556	1.000	-	-	-		-	-	-	-
SEP	0.329	0.429	0.293	0.461	0.574	0.526	1.000	-	-		-	-	-	-
SOC	0.341	0.341	0.135	0.425	0.538	0.452	0.493	1.000	-		-	-	-	-
PTSD	0.441	0.495	0.420	0.455	0.564	0.533	0.575	0.351	1.000		-	-	-	-
PHO	0.309	0.187	0.187	0.327	0.387	0.325	0.405	0.325	0.334	1.000				
HAL	0.317	0.199	0.257	0.250	0.334	0.257	0.315	0.078	0.367	0.205	1.000	-	-	-
DEL	0.292	0.302	0.397	0.361	0.354	0.371	0.347	0.226	0.282	0.192	0.501	1.000	-	-
OCD	0.405	0.349	0.353	0.398	0.469	0.428	0.381	0.312	0.438	0.310	0.431	0.346	1.000	-
BIP	0.352	0.288	0.276	0.228	0.194	0.085	0.189	0.119	0.273	0.179	0.162	0.200	0.288	1.000

Note: ADHD=attention deficit hyperactivity disorder, ODD=oppositional defiant disorder, CD=conduct disorder, MDD=major depressive

disorder, GAD=generalized anxiety disorder, PAN=panic disorder, SEP=separation anxiety disorder, SOC=social anxiety disorder, PTSD=post-

traumatic stress disorder, PHO=specific phobia, HAL=hallucinations, DEL=delusions, OCD=obsessive-compulsive disorder, BIP=bipolar

disorder.

Table S3. Model fit statistics for CFA

Model	RMSEA	CFI	TLI	BIC	ssaBIC
Model A – one factor model	0.028	0.947	0.937	67020.6	66931.6
Model B' – modified bifactor model	0.013	0.990	0.987	66518.4	66397.6
Model C – hierarchical model	0.014	0.987	0.984	66500.6	66402.1

Table S4. The relationship between cortical volume and psychopathology in the ABCD Study (n=10,858)

		Externalizing				Internalizing				Thought Disorder				General Psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Cortical																	
Frontal																	
Caudal anterior	L	-7.40	3.27	-2.27	**.035**	-5.99	3.40	-1.76	.091	-7.02	3.90	-1.80	.085	-7.68	4.07	-1.89	.074
cingulate	R	-11.25	3.32	-3.39	**.003**	-8.56	3.45	-2.48	**.021**	-11.03	3.95	-2.79	**.012**	-11.60	4.01	-2.89	**.010**
Caudal middle frontal	L	-15.03	8.03	-1.87	.076	-13.60	8.15	-1.67	.105	-16.28	9.23	-1.76	.091	-17.16	9.53	-1.80	.085
	R	-23.88	8.21	-2.91	**.009**	-22.53	8.66	-2.60	**.018**	-25.43	9.46	-2.69	**.015**	-27.74	9.91	-2.80	**.012**
Lateral orbitofrontal	L	-20.87	4.95	-4.21	**.002**	-16.55	5.32	-3.11	**.006**	-21.24	5.92	-3.59	**.002**	-22.46	6.23	-3.60	**.002**
	R	-22.69	5.23	-4.34	**.002**	-18.88	5.47	-3.45	**.003**	-23.03	6.19	-3.72	**.002**	-24.72	6.45	-3.83	**.002**
Medial orbitofrontal	L	-9.97	4.10	-2.43	**.024**	-9.36	4.34	-2.16	**.044**	-10.10	4.78	-2.11	**.048**	-11.16	5.08	-2.20	**.040**
	R	-11.35	3.90	-2.91	**.009**	-10.03	3.98	-2.52	**.020**	-12.05	4.51	-2.67	**.016**	-12.94	4.70	-2.75	**.013**
Paracentral	L	-9.61	3.79	-2.54	**.020**	-9.89	3.87	-2.56	**.019**	-11.09	4.44	-2.50	**.020**	-11.95	4.52	-2.64	**.016**
	R	-12.68	4.27	-2.97	**.008**	-12.26	4.52	-2.71	**.014**	-14.03	5.01	-2.80	**.012**	-15.03	5.23	-2.87	**.010**
Pars opercularis	L	-10.09	5.45	-1.85	.078	-10.77	5.55	-1.94	.068	-12.32	6.28	-1.96	.065	-13.29	6.55	-2.03	.056
	R	-12.10	4.62	-2.62	**.017**	-10.63	4.74	-2.25	**.036**	-13.40	5.29	-2.53	**.020**	-13.97	5.52	-2.53	**.020**
Pars orbitalis	L	-5.13	1.96	-2.62	**.017**	-4.66	2.03	-2.30	**.033**	-5.41	2.29	-2.37	**.028**	-5.83	2.39	-2.44	**.024**
	R	-7.40	2.44	-3.03	**.007**	-6.75	2.46	-2.75	**.013**	-8.51	2.72	-3.12	**.006**	-8.87	2.84	-3.12	**.006**
Pars triangularis	L	-10.98	4.00	-2.75	**.013**	-8.94	4.20	-2.13	**.047**	-10.54	4.80	-2.20	**.040**	-11.44	4.93	-2.32	**.031**
	R	-10.24	4.98	-2.06	.054	-8.95	5.17	-1.73	.096	-11.08	5.64	-1.97	.065	-11.62	6.00	-1.94	.068
Precentral	L	-31.01	9.50	-3.26	**.004**	-23.56	9.82	-2.40	**.026**	-28.16	11.34	-2.48	**.021**	-30.56	11.42	-2.68	**.015**
	R	-35.55	9.05	-3.93	**.002**	-31.48	9.28	-3.39	**.003**	-37.53	10.62	-3.53	**.002**	-40.04	10.97	-3.65	**.002**
Rostral anterior	L	-8.52	3.00	-2.84	**.011**	-7.41	3.14	-2.36	**.028**	-8.21	3.58	-2.29	**.033**	-9.10	3.62	-2.51	**.020**
cingulate	R	-7.95	2.71	-2.93	**.009**	-6.19	2.91	-2.13	**.047**	-8.02	3.20	-2.50	**.020**	-8.51	3.35	-2.54	**.020**
Rostral middle frontal	L	-57.34	13.20	-4.34	**.002**	-47.45	13.29	-3.57	**.002**	-57.23	15.03	-3.81	**.002**	-61.55	15.85	-3.88	**.002**
	R	-39.21	12.92	-3.04	**.007**	-27.04	13.42	-2.01	.058	-31.33	14.77	-2.12	**.047**	-35.56	15.31	-2.32	**.031**
Superior frontal	L	-61.22	15.18	-4.03	**.002**	-55.03	15.65	-3.52	**.003**	-64.27	17.59	-3.65	**.002**	-69.33	18.34	-3.78	**.002**
	R	-56.11	15.41	-3.64	**.002**	-58.29	15.80	-3.69	**.002**	-64.38	17.88	-3.60	**.002**	-69.53	18.60	-3.74	**.002**
Frontal pole	L	-1.40	0.97	-1.44	.158	-2.10	1.02	-2.06	.054	-1.99	1.16	-1.71	.099	-2.22	1.20	-1.85	.078
	R	-3.26	1.23	-2.64	**.016**	-2.57	1.32	-1.94	.068	-2.75	1.47	-1.87	.076	-3.20	1.52	-2.11	**.048**
Parietal																	
Inferior parietal	L	-46.43	11.66	-3.98	**.002**	-40.65	11.90	-3.42	**.003**	-46.71	13.17	-3.55	**.002**	-50.75	13.81	-3.67	**.002**
	R	-45.59	13.63	-3.34	**.004**	-38.39	13.44	-2.86	**.010**	-47.94	15.04	-3.19	**.005**	-49.94	15.74	-3.17	**.005**
Isthmus cingulate	L	-9.43	3.15	-2.99	**.008**	-7.04	3.32	-2.12	**.047**	-8.67	3.82	-2.27	**.035**	-9.51	3.92	-2.42	**.025**
	R	-5.21	2.91	-1.79	.087	-5.06	3.07	-1.65	.109	-6.58	3.55	-1.86	.078	-6.69	3.63	-1.84	.079
Postcentral	L	-32.52	9.00	-3.61	**.002**	-29.52	9.50	-3.11	**.006**	-33.28	10.70	-3.11	**.006**	-36.55	11.01	-3.32	**.004**
	R	-30.45	8.41	-3.62	**.002**	-26.10	9.05	-2.89	**.010**	-30.92	9.93	-3.11	**.006**	-33.47	10.38	-3.22	**.005**

		Externalizing				Internalizing				Thought Disorder				General Psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Cortical																	
Posterior cingulate	L	-12.24	3.40	-3.60	**.002**	-12.21	3.52	-3.47	**.003**	-14.23	4.00	-3.56	**.002**	-15.08	4.13	-3.65	**.002**
	R	-11.63	3.66	-3.18	**.005**	-9.31	3.91	-2.38	**.027**	-11.36	4.52	-2.51	**.020**	-12.20	4.62	-2.64	**.016**
Precuneus	L	-32.00	8.17	-3.92	**.002**	-27.38	8.20	-3.34	**.004**	-32.07	9.20	-3.49	**.003**	-34.92	9.77	-3.58	**.002**
	R	-31.01	8.39	-3.70	**.002**	-29.52	8.52	-3.47	**.003**	-32.87	9.65	-3.41	**.003**	-35.96	9.99	-3.60	**.002**
Superior parietal	L	-30.37	10.78	-2.82	**.011**	-27.87	11.03	-2.53	**.020**	-32.11	12.39	-2.59	**.018**	-34.59	12.82	-2.70	**.015**
	R	-31.12	11.04	-2.82	**.011**	-31.55	11.31	-2.79	**.012**	-35.89	12.61	-2.85	**.011**	-38.32	13.02	-2.94	**.009**
Supramarginal	L	-37.19	10.83	-3.43	**.003**	-32.90	10.91	-3.02	**.007**	-39.25	12.50	-3.14	**.006**	-41.98	13.27	-3.16	**.005**
	R	-42.66	10.02	-4.26	**.002**	-35.22	10.54	-3.34	**.004**	-43.35	12.40	-3.50	**.003**	-46.58	12.97	-3.59	**.002**
Temporal																	
Banks of superior	L	-5.39	3.26	-1.65	.109	-3.58	3.21	-1.12	.270	-3.95	3.60	-1.10	.278	-4.54	3.72	-1.22	.228
temporal sulcus	R	-4.96	2.68	-1.85	.078	-2.83	2.79	-1.02	.315	-4.43	3.13	-1.42	.164	-4.48	3.24	-1.38	.173
Entorhinal	L	-5.23	2.03	-2.57	**.018**	-5.28	2.10	-2.52	**.020**	-5.95	2.35	-2.54	**.020**	-6.31	2.44	-2.59	**.018**
	R	-4.30	2.11	-2.04	.056	-3.50	2.11	-1.66	.107	-4.29	2.48	-1.73	.096	-4.61	2.62	-1.76	.092
Fusiform	L	-27.35	8.48	-3.22	**.005**	-19.89	8.74	-2.28	**.034**	-25.17	9.85	-2.55	**.019**	-26.97	10.20	-2.64	**.016**
	R	-28.80	7.90	-3.65	**.002**	-23.21	8.06	-2.88	**.010**	-28.03	9.01	-3.11	**.006**	-29.95	9.40	-3.19	**.005**
Inferior temporal	L	-34.63	10.07	-3.44	**.003**	-27.84	10.58	-2.63	**.017**	-32.85	11.83	-2.78	**.012**	-35.81	12.23	-2.93	**.009**
	R	-35.77	9.14	-3.91	**.002**	-28.75	10.02	-2.87	**.010**	-30.08	11.40	-2.64	**.016**	-34.71	11.58	-3.00	**.008**
Middle temporal	L	-31.68	9.06	-3.50	**.003**	-27.18	9.24	-2.94	**.009**	-32.07	10.29	-3.12	**.006**	-34.20	10.59	-3.23	**.005**
	R	-37.41	9.39	-3.98	**.002**	-31.56	9.97	-3.17	**.005**	-38.52	10.51	-3.67	**.002**	-40.84	11.23	-3.64	**.002**
Parahippocampal	L	-6.38	2.32	-2.75	**.013**	-5.02	2.39	-2.10	**.049**	-6.13	2.72	-2.25	**.036**	-6.49	2.81	-2.31	**.032**
	R	-3.89	2.32	-1.67	.105	-3.14	2.27	-1.38	.173	-4.89	2.64	-1.86	.078	-4.60	2.72	-1.69	.102
Superior temporal	L	-30.48	9.07	-3.36	**.003**	-27.63	9.51	-2.90	**.009**	-31.24	10.68	-2.93	**.009**	-34.04	10.77	-3.16	**.005**
	R	-27.60	7.93	-3.48	**.003**	-25.87	8.43	-3.07	**.006**	-30.15	9.58	-3.15	**.006**	-32.38	9.80	-3.30	**.004**
Temporal pole	L	-4.90	1.94	-2.52	**.020**	-5.41	2.10	-2.58	**.018**	-6.04	2.28	-2.64	**.016**	-6.48	2.35	-2.76	**.013**
	R	-0.70	1.89	-0.37	.712	-0.77	1.99	-0.39	.700	-0.98	2.22	-0.44	.665	-0.95	2.25	-0.42	.679
Transverse temporal	L	-2.64	1.45	-1.83	.081	-2.52	1.41	-1.78	.088	-2.50	1.62	-1.54	.132	-2.92	1.71	-1.71	.099
	R	-2.41	1.13	-2.14	**.046**	-2.97	1.15	-2.58	**.018**	-3.21	1.30	-2.47	**.022**	-3.46	1.36	-2.55	**.020**
Occipital																	
Cuneus	L	-5.18	2.99	-1.73	.096	-4.83	3.09	-1.57	.126	-5.17	3.55	-1.46	.153	-5.82	3.66	-1.59	.121
	R	-6.39	3.31	-1.93	.068	-5.24	3.51	-1.49	.144	-5.49	3.99	-1.38	.174	-6.36	4.18	-1.52	.136
Lateral occipital	L	-28.60	9.15	-3.13	**.006**	-24.71	9.54	-2.59	**.018**	-29.69	10.95	-2.71	**.014**	-31.94	11.24	-2.84	**.011**
	R	-34.20	9.38	-3.64	**.002**	-28.84	9.64	-2.99	**.008**	-35.55	11.15	-3.19	**.005**	-37.33	11.49	-3.25	**.005**
Lingual	L	-10.57	6.19	-1.71	.099	-9.21	6.43	-1.43	.159	-11.66	7.31	-1.59	.120	-12.13	7.54	-1.61	.118
	R	-13.83	6.02	-2.30	**.033**	-11.32	6.22	-1.82	.082	-14.69	7.23	-2.03	.056	-15.46	7.32	-2.11	**.048**
Pericalcarine	L	-3.83	2.25	-1.70	.100	-4.43	2.33	-1.91	.071	-5.09	2.64	-1.93	.068	-5.40	2.76	-1.95	.066

		Externalizing				Internalizing				Thought Disorder				General Psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Cortical																	
	R	-4.76	2.34	-2.03	.056	-3.92	2.47	-1.59	.121	-5.38	2.75	-1.95	.066	-5.55	2.92	-1.90	.073
Insula	L	-16.23	4.10	-3.96	**.002**	-16.26	4.25	-3.83	**.002**	-18.64	4.76	-3.92	**.002**	-19.85	4.95	-4.01	**.002**
	R	-15.80	4.20	-3.76	**.002**	-15.19	4.36	-3.48	**.003**	-19.15	4.81	-3.98	**.002**	-19.53	5.12	-3.82	**.002**
Subcortical																	
Cerebellum	L	-48.51	24.06	-2.02	.100	-26.13	24.94	-1.05	.305	-45.34	28.72	-1.58	.171	-44.97	29.50	-1.52	.178
	R	-47.33	24.86	-1.90	.111	-23.79	25.53	-0.93	.352	-41.21	29.21	-1.41	.195	-41.43	29.80	-1.39	.199
Thalamus	L	-11.42	3.42	-3.34	**.016**	-8.89	3.65	-2.43	.060	-10.73	4.11	-2.61	**.047**	-11.70	4.18	-2.80	**.047**
	R	-7.82	3.26	-2.40	.060	-6.90	3.45	-2.00	.100	-8.34	3.85	-2.17	.078	-8.90	3.97	-2.24	.070
Caudate	L	-5.96	2.72	-2.19	.076	-4.05	2.83	-1.43	.191	-5.07	3.28	-1.55	.178	-5.51	3.42	-1.61	.168
	R	-6.66	2.80	-2.37	.060	-4.86	2.88	-1.69	.147	-5.65	3.29	-1.72	.142	-6.23	3.46	-1.80	.124
Putamen	L	-5.11	3.38	-1.51	.178	-4.34	3.59	-1.21	.250	-6.17	4.02	-1.54	.178	-6.15	4.20	-1.46	.184
	R	-4.69	2.97	-1.58	.171	-4.17	3.15	-1.32	.216	-5.27	3.54	-1.49	.178	-5.51	3.69	-1.49	.178
Pallidum	L	-2.17	1.26	-1.72	.142	-1.66	1.26	-1.31	.216	-1.74	1.48	-1.18	.252	-2.03	1.52	-1.33	.216
	R	-1.15	0.98	-1.18	.252	-1.02	1.01	-1.01	.317	-1.46	1.15	-1.27	.230	-1.44	1.21	-1.19	.252
Hippocampus	L	-5.98	2.06	-2.90	**.041**	-5.32	2.15	-2.48	.057	-5.90	2.47	-2.39	.060	-6.44	2.49	-2.59	**.047**
	R	-6.56	1.94	-3.37	**.016**	-7.04	2.12	-3.32	**.016**	-7.40	2.38	-3.10	**.025**	-8.04	2.44	-3.30	**.016**
Amygdala	L	-2.03	1.04	-1.96	.104	-2.27	1.11	-2.05	.097	-2.26	1.22	-1.85	.120	-2.46	1.27	-1.95	.104
	R	-2.74	1.05	-2.61	**.047**	-2.89	1.09	-2.65	**.047**	-2.90	1.25	-2.33	.064	-3.26	1.27	-2.57	**.047**
Accumbens	L	-1.47	0.55	-2.69	**.047**	-1.04	0.57	-1.83	.120	-1.19	0.65	-1.83	.120	-1.34	0.67	-1.99	.100
	R	-1.34	0.50	-2.69	**.047**	-1.14	0.50	-2.27	.068	-1.17	0.57	-2.07	.095	-1.35	0.58	-2.31	.064

Table S5. The relationship between surface area and psychopathology in the ABCD Study (n=10,858)

		Externalizing				Internalizing				Thought Disorder				General Psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Frontal																	
Caudal anterior	L	-2.25	0.88	-2.56	**.016**	-1.83	0.89	-2.07	**.048**	-2.16	1.03	-2.11	**.044**	-2.36	1.06	-2.21	**.035**
cingulate	R	-3.35	0.90	-3.73	**.001**	-2.56	0.96	-2.66	**.013**	-3.28	1.08	-3.03	**.006**	-3.47	1.11	-3.13	**.005**
Caudal middle frontal	L	-5.98	2.33	-2.57	**.016**[b]	-5.12	2.35	-2.18	**.038**	-6.06	2.68	-2.26	**.032**	-6.51	2.78	-2.34	**.027**
	R	-7.12	2.38	-2.99	**.006**	-6.66	2.55	-2.61	**.014**	-7.38	2.85	-2.59	**.015**	-8.12	2.96	-2.74	**.011**
Lateral orbitofrontal	L	-5.93	1.51	-3.94	**.001**	-4.44	1.62	-2.74	**.011**	-5.80	1.80	-3.23	**.004**	-6.14	1.88	-3.26	**.004**
	R	-6.17	1.61	-3.83	**.001**	-4.86	1.69	-2.87	**.008**	-6.06	1.92	-3.15	**.005**	-6.52	1.98	-3.29	**.003**
Medial orbitofrontal	L	-3.28	1.30	-2.53	**.017**	-2.87	1.32	-2.17	**.038**	-3.34	1.53	-2.18	**.037**	-3.62	1.59	-2.28	**.031**
	R	-3.81	1.11	-3.45	**.002**	-3.19	1.13	-2.83	**.009**	-3.90	1.31	-2.98	**.007**	-4.18	1.34	-3.12	**.005**
Paracentral	L	-2.74	1.11	-2.46	**.020**	-2.85	1.12	-2.54	**.017**	-3.21	1.29	-2.49	**.018**	-3.45	1.31	-2.62	**.014**
	R	-3.93	1.30	-3.01	**.006**	-3.66	1.36	-2.69	**.012**	-4.15	1.55	-2.68	**.013**	-4.51	1.60	-2.82	**.009**
Pars opercularis	L	-4.01	1.53	-2.62	**.014**	-3.96	1.57	-2.52	**.018**	-4.59	1.79	-2.56	**.016**	-4.97	1.84	-2.70	**.012**
	R	-4.43	1.42	-3.11	**.005**	-3.83	1.44	-2.66	**.013**	-4.88	1.62	-3.02	**.006**	-5.08	1.69	-3.01	**.006**
Pars orbitalis	L	-1.60	0.44	-3.61	**.002**	-1.28	0.46	-2.81	**.010**	-1.53	0.52	-2.95	**.007**	-1.66	0.54	-3.08	**.005**
	R	-1.85	0.56	-3.31	**.003**	-1.59	0.57	-2.77	**.010**	-1.99	0.63	-3.17	**.004**	-2.10	0.66	-3.19	**.004**
Pars triangularis	L	-3.57	1.11	-3.23	**.004**	-2.91	1.17	-2.48	**.019**	-3.60	1.33	-2.70	**.012**	-3.82	1.38	-2.77	**.010**
	R	-4.00	1.41	-2.84	**.009**	-3.29	1.45	-2.27	**.031**	-4.16	1.60	-2.60	**.015**	-4.35	1.69	-2.58	**.015**
Precentral	L	-10.41	3.00	-3.47	**.002**	-8.31	3.11	-2.68	**.013**	-9.57	3.54	-2.70	**.012**	-10.54	3.59	-2.94	**.007**
	R	-10.93	3.01	-3.63	**.002**	-9.95	3.15	-3.16	**.004**	-11.53	3.58	-3.22	**.004**	-12.45	3.71	-3.36	**.003**
Rostral anterior	L	-2.47	0.81	-3.05	**.006**	-2.15	0.85	-2.52	**.018**	-2.50	0.95	-2.62	**.014**	-2.73	0.98	-2.79	**.010**
cingulate	R	-2.47	0.71	-3.46	**.002**	-1.94	0.78	-2.49	**.019**	-2.53	0.85	-2.98	**.007**	-2.67	0.89	-2.99	**.006**
Rostral middle frontal	L	-19.03	4.04	-4.71	**<.001**	-14.25	4.28	-3.33	**.003**	-17.87	4.86	-3.67	**.002**	-19.19	5.00	-3.84	**.001**
	R	-15.79	4.19	-3.77	**.001**	-10.14	4.38	-2.32	**.028**	-12.37	4.89	-2.53	**.017**	-13.86	4.94	-2.81	**.010**
Superior frontal	L	-20.89	4.33	-4.83	**<.001**	-18.01	4.64	-3.88	**.001**	-21.49	5.20	-4.13	**.001**	-23.11	5.40	-4.28	**<.001**
	R	-19.16	4.54	-4.22	**<.001**	-18.33	4.72	-3.88	**<.001**	-20.86	5.47	-3.81	**.001**	-22.54	5.58	-4.04	**.001**
Frontal pole	L	-0.47	0.19	-2.44	**.021**	-0.49	0.20	-2.51	**.018**	-0.51	0.23	-2.24	**.033**	-0.56	0.24	-2.38	**.024**
	R	-0.70	0.26	-2.70	**.012**	-0.49	0.28	-1.75	.090	-0.54	0.30	-1.79	.083	-0.62	0.32	-1.94	.063
Parietal																	
Inferior parietal	L	-13.96	3.62	-3.86	**.001**	-11.97	3.71	-3.22	**.004**	-13.84	4.03	-3.43	**.002**	-15.09	4.27	-3.53	**.002**
	R	-14.26	4.13	-3.45	**.002**	-12.20	4.10	-2.97	**.007**	-14.83	4.57	-3.25	**.004**	-15.67	4.77	-3.29	**.003**
Isthmus cingulate	L	-3.40	1.04	-3.26	**.004**	-2.46	1.12	-2.20	**.036**	-3.17	1.27	-2.49	**.019**	-3.41	1.32	-2.59	**.015**
	R	-1.58	0.89	-1.77	.086	-1.31	0.93	-1.41	.167	-1.75	1.10	-1.59	.119	-1.80	1.11	-1.62	.115
Postcentral	L	-12.04	2.81	-4.29	**<.001**	-10.65	2.93	-3.63	**.002**	-11.93	3.35	-3.57	**.002**	-13.23	3.41	-3.88	**.001**
	R	-11.49	2.60	-4.41	**<.001**	-9.73	2.86	-3.41	**.003**	-11.36	3.18	-3.57	**.002**	-12.40	3.29	-3.76	**.001**
Posterior cingulate	L	-4.22	1.07	-3.94	**.001**	-4.09	1.10	-3.73	**.001**	-4.81	1.23	-3.90	**.001**	-5.09	1.28	-3.99	**.001**
	R	-4.09	1.17	-3.49	**.002**	-3.23	1.24	-2.61	**.015**	-4.01	1.46	-2.76	**.011**	-4.30	1.48	-2.90	**.008**
Precuneus	L	-11.56	2.58	-4.47	**<.001**	-9.57	2.65	-3.61	**.002**	-11.27	2.98	-3.77	**.001**	-12.31	3.16	-3.89	**.001**
	R	-11.24	2.81	-3.99	**.001**	-10.45	2.95	-3.54	**.002**	-12.06	3.30	-3.65	**.002**	-13.06	3.44	-3.79	**.001**
Superior parietal	L	-11.25	3.62	-3.11	**.005**	-10.00	3.72	-2.69	**.012**	-11.35	4.18	-2.71	**.012**	-12.45	4.29	-2.90	**.008**
	R	-10.64	3.61	-2.95	**.007**	-10.94	3.71	-2.95	**.007**	-12.36	4.16	-2.97	**.007**	-13.28	4.29	-3.09	**.005**

		Externalizing				Internalizing				Thought Disorder				General Psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Supramarginal	L	-12.27	3.31	-3.70	**.002**	-10.83	3.30	-3.28	**.003**	-12.69	3.80	-3.34	**.003**	-13.70	4.01	-3.42	**.002**
	R	-13.60	3.05	-4.46	**<.001**	-11.21	3.29	-3.41	**.003**	-13.46	3.86	-3.49	**.002**	-14.68	3.97	-3.69	**.002**
Temporal																	
Banks of superior	L	-1.77	1.10	-1.62	.116	-1.00	1.05	-0.95	.342	-1.43	1.20	-1.19	.239	-1.50	1.24	-1.21	.230
temporal sulcus	R	-1.89	0.85	-2.23	**.034**	-1.24	0.87	-1.42	.164	-1.77	0.98	-1.82	.080	-1.82	1.02	-1.79	.084
Entorhinal	L	-0.87	0.44	-2.00	.055	-0.71	0.45	-1.58	.123	-0.91	0.52	-1.75	.090	-0.95	0.52	-1.82	.080
	R	-0.67	0.46	-1.46	.152	-0.59	0.48	-1.24	.221	-0.71	0.54	-1.31	.198	-0.76	0.57	-1.33	.190
Fusiform	L	-7.70	2.20	-3.50	**.002**	-5.77	2.26	-2.55	**.016**	-7.15	2.58	-2.77	**.010**	-7.71	2.69	-2.86	**.008**
	R	-8.06	2.07	-3.89	**.001**	-6.32	2.14	-2.95	**.007**	-7.38	2.43	-3.04	**.006**	-8.07	2.52	-3.20	**.004**
Inferior temporal	L	-9.16	2.51	-3.65	**.002**	-7.21	2.66	-2.71	**.012**	-8.88	3.00	-2.96	**.007**	-9.54	3.09	-3.08	**.005**
	R	-10.17	2.24	-4.54	**<.001**	-8.06	2.47	-3.27	**.003**	-8.73	2.76	-3.16	**.004**	-9.93	2.87	-3.46	**.002**
Middle temporal	L	-8.58	2.19	-3.91	**.001**	-6.50	2.21	-2.94	**.007**	-8.47	2.51	-3.37	**.003**	-8.87	2.59	-3.43	**.002**
	R	-10.92	2.32	-4.70	**<.001**	-8.50	2.47	-3.44	**.002**	-10.55	2.69	-3.93	**.001**	-11.26	2.83	-3.99	**.001**
Parahippocampal	L	-1.64	0.68	-2.42	**.022**	-1.43	0.72	-1.98	.058	-1.68	0.83	-2.03	.052	-1.80	0.85	-2.11	**.044**
	R	-1.31	0.73	-1.81	.082	-1.05	0.72	-1.45	.156	-1.53	0.84	-1.82	.080	-1.50	0.87	-1.73	.093
Superior temporal	L	-10.19	2.41	-4.23	**<.001**	-8.41	2.49	-3.38	**.003**	-9.82	2.84	-3.46	**.002**	-10.73	2.93	-3.66	**.002**
	R	-9.21	2.11	-4.36	**<.001**	-7.81	2.21	-3.53	**.002**	-9.54	2.61	-3.66	**.002**	-10.19	2.66	-3.83	**.001**
Temporal pole	L	-0.96	0.32	-3.01	**.006**	-0.85	0.33	-2.59	**.015**	-0.99	0.37	-2.63	**.014**	-1.07	0.38	-2.78	**.010**
	R	-0.36	0.32	-1.13	.261	-0.40	0.34	-1.17	.246	-0.38	0.38	-1.02	.310	-0.43	0.39	-1.11	.271
Transverse temporal	L	-0.94	0.42	-2.21	**.035**	-0.75	0.42	-1.78	.085	-0.78	0.48	-1.61	.117	-0.91	0.50	-1.81	.080
	R	-0.67	0.30	-2.21	**.036**	-0.68	0.31	-2.21	**.035[b]**	-0.77	0.35	-2.20	**.036**	-0.84	0.36	-2.31	**.028**
Occipital																	
Cuneus	L	-2.54	1.08	-2.35	**.026**	-2.14	1.11	-1.93	.064	-2.56	1.28	-2.00	.055	-2.76	1.34	-2.06	**.049**
	R	-3.01	1.20	-2.51	**.018**	-2.24	1.23	-1.82	.080	-2.71	1.37	-1.97	.058	-2.97	1.45	-2.05	.050
Lateral occipital	L	-10.36	3.06	-3.38	**.003**	-8.98	3.14	-2.86	**.009**	-11.09	3.71	-2.99	**.006**	-11.82	3.79	-3.12	**.005**
	R	-11.11	3.09	-3.59	**.002**	-9.20	3.18	-2.89	**.008**	-11.32	3.77	-3.00	**.006**	-11.98	3.87	-3.10	**.005**
Lingual	L	-4.05	2.17	-1.86	.074	-3.08	2.31	-1.33	.189	-4.17	2.64	-1.58	.122	-4.29	2.73	-1.57	.123
	R	-5.46	2.08	-2.63	**.014**	-3.54	2.17	-1.63	.113	-5.27	2.56	-2.06	**.049**	-5.45	2.58	-2.11	**.044**
Pericalcarine	L	-2.25	1.22	-1.84	.077	-1.72	1.27	-1.35	.184	-2.45	1.45	-1.69	.101	-2.51	1.52	-1.65	.108
	R	-3.24	1.23	-2.62	**.014**	-2.17	1.29	-1.68	.102	-3.44	1.48	-2.32	**.028**	-3.41	1.55	-2.20	**.036**
Insula	L	-4.46	1.19	-3.76	**.001**	-4.51	1.29	-3.49	**.002**	-5.18	1.45	-3.57	**.002**	-5.50	1.50	-3.66	**.002**
	R	-4.20	1.29	-3.27	**.003**	-4.06	1.36	-2.98	**.007**	-5.23	1.52	-3.45	**.002**	-5.29	1.59	-3.32	**.003**

Table S6. The relationship between cortical thickness and psychopathology in the ABCD Study (n=10,858)

		Externalizing				Internalizing				Thought Disorder				General Psychopathology			
		B	SE	t	p	B	SE	t	p	B	SE	t	p	B	SE	t	p
Frontal																	
Caudal anterior	L	0.001	0.001	0.66	.509	0.001	0.001	0.56	.579	0.001	0.001	0.75	.452	0.001	0.002	0.68	.494
cingulate	R	0.000	0.001	-0.06	.949	0.000	0.001	-0.32	.747	0.000	0.001	-0.15	.877	0.000	0.001	-0.19	.848
Caudal middle	L	0.001	0.001	0.77	.443	0.000	0.001	0.46	.648	0.000	0.001	0.39	.700	0.000	0.001	0.51	.613
frontal																	
	R	-0.001	0.001	-0.69	.492	-0.001	0.001	-0.67	.506	-0.001	0.001	-0.79	.430	-0.001	0.001	-0.77	.441
Lateral orbitofrontal	L	0.000	0.001	-0.22	.827	0.000	0.001	-0.18	.855	0.000	0.001	-0.35	.725	0.000	0.001	-0.31	.758
	R	-0.001	0.001	-0.96	.337	-0.001	0.001	-0.97	.332	-0.001	0.001	-0.96	.339	-0.001	0.001	-0.99	.324
Medial orbitofrontal	L	0.000	0.001	0.05	.957	0.000	0.001	0.26	.796	0.000	0.001	0.41	.684	0.000	0.001	0.35	.727
	R	0.000	0.001	0.00	.998	0.000	0.001	-0.01	.990	0.000	0.001	0.04	.965	0.000	0.001	0.01	.990
Paracentral	L	0.000	0.001	-0.56	.578	-0.001	0.001	-0.67	.505	-0.001	0.001	-0.59	.554	-0.001	0.001	-0.64	.523
	R	-0.001	0.001	-0.82	.412	-0.001	0.001	-1.27	.206	-0.001	0.001	-1.16	.248	-0.001	0.001	-1.15	.251
Pars opercularis	L	0.001	0.001	0.69	.487	0.000	0.001	0.46	.644	0.000	0.001	0.38	.703	0.000	0.001	0.45	.651
	R	0.000	0.001	0.25	.800	0.000	0.001	0.59	.554	0.000	0.001	0.47	.638	0.001	0.001	0.51	.612
Pars orbitalis	L	0.001	0.001	1.14	.255	0.001	0.001	0.52	.601	0.001	0.001	0.64	.520	0.001	0.001	0.69	.493
	R	0.001	0.001	0.48	.633	0.000	0.001	0.01	.990	0.000	0.001	-0.12	.903	0.000	0.001	0.00	.997
Pars triangularis	L	0.000	0.001	0.12	.907	0.000	0.001	0.30	.767	0.000	0.001	0.32	.747	0.000	0.001	0.31	.757
	R	0.001	0.001	1.37	.172	0.001	0.001	0.68	.494	0.001	0.001	0.83	.407	0.001	0.001	0.87	.384
Precentral	L	0.000	0.001	-0.31	.755	0.000	0.001	-0.12	.906	0.000	0.001	-0.28	.778	0.000	0.001	-0.22	.825
	R	-0.001	0.001	-1.22	.222	-0.001	0.001	-1.11	.269	-0.001	0.001	-1.23	.221	-0.001	0.001	-1.19	.234
Rostral anterior	L	0.002	0.001	1.83	.067	0.002	0.001	1.72	.086	0.003	0.001	1.96	.050	0.003	0.001	1.94	.052
cingulate	R	0.001	0.001	0.93	.354	0.001	0.001	0.48	.632	0.001	0.001	0.78	.438	0.001	0.001	0.70	.485
Rostral middle	L	0.000	0.001	0.40	.688	0.000	0.001	-0.31	.758	0.000	0.001	-0.11	.909	0.000	0.001	-0.10	.923
frontal																	
	R	0.000	0.001	0.61	.541	0.000	0.001	0.11	.909	0.000	0.001	0.23	.817	0.000	0.001	0.25	.803
Superior frontal	L	0.001	0.001	1.51	.132	0.001	0.001	1.13	.257	0.001	0.001	1.28	.202	0.001	0.001	1.33	.185
	R	0.001	0.001	1.20	.231	0.001	0.001	0.83	.404	0.001	0.001	0.93	.352	0.001	0.001	0.98	.325
Frontal pole	L	0.002	0.002	1.07	.286	0.000	0.002	0.11	.910	0.001	0.002	0.26	.796	0.001	0.002	0.30	.764
	R	0.000	0.002	0.09	.927	-0.001	0.002	-0.45	.652	-0.001	0.002	-0.33	.739	-0.001	0.002	-0.37	.714
Parietal																	
Inferior parietal	L	-0.001	0.001	-0.82	.411	0.000	0.001	-0.71	.478	-0.001	0.001	-0.68	.497	-0.001	0.001	-0.71	.476
	R	0.000	0.001	0.01	.990	0.000	0.001	0.28	.777	0.000	0.001	0.11	.912	0.000	0.001	0.18	.855
Isthmus cingulate	L	0.002	0.001	1.64	.101	0.001	0.001	0.97	.332	0.001	0.001	1.24	.215	0.001	0.001	1.21	.227
	R	0.001	0.001	0.50	.618	0.000	0.001	0.05	.957	0.000	0.001	-0.05	.958	0.000	0.001	0.07	.946
Postcentral	L	0.000	0.001	-0.62	.538	-0.001	0.001	-0.80	.427	-0.001	0.001	-0.86	.390	-0.001	0.001	-0.81	.417
	R	0.000	0.001	-0.40	.688	0.000	0.001	-0.45	.654	-0.001	0.001	-0.58	.562	-0.001	0.001	-0.54	.592
Posterior cingulate	L	0.001	0.001	1.50	.133	0.001	0.001	1.35	.176	0.001	0.001	1.50	.134	0.001	0.001	1.45	.147
Posterior cingulate	R	0.000	0.001	0.35	.726	0.000	0.001	0.07	.946	0.000	0.001	0.38	.701	0.000	0.001	0.30	.766
Precuneus	L	0.000	0.001	-0.01	.994	0.000	0.001	-0.57	.569	0.000	0.001	-0.36	.717	0.000	0.001	-0.39	.695
	R	0.000	0.001	-0.06	.956	0.000	0.001	-0.29	.772	0.000	0.001	0.02	.987	0.000	0.001	-0.06	.950

		Externalizing				Internalizing				Thought Disorder				General Psychopathology			
		B	SE	t	p	B	SE	t	p	B	SE	t	p	B	SE	t	p
Superior parietal	L	0.000	0.001	-0.10	.918	0.000	0.001	-0.26	.794	0.000	0.001	-0.33	.744	0.000	0.001	-0.27	.788
	R	0.000	0.001	-0.37	.712	0.000	0.001	-0.41	.684	0.000	0.001	-0.36	.723	0.000	0.001	-0.37	.713
Supramarginal	L	0.000	0.001	-0.19	.847	0.000	0.001	-0.12	.908	0.000	0.001	-0.28	.783	0.000	0.001	-0.20	.839
	R	0.000	0.001	0.41	.683	0.000	0.001	-0.06	.953	0.000	0.001	-0.23	.820	0.000	0.001	-0.06	.956
Temporal																	
Banks of Superior	L	0.000	0.001	-0.18	.860	0.000	0.001	-0.26	.796	0.000	0.001	0.01	.990	0.000	0.001	-0.09	.927
Temporal Sulcus	R	0.000	0.001	0.18	.859	0.001	0.001	0.62	.536	0.000	0.001	0.44	.659	0.001	0.001	0.49	.627
Entorhinal	L	-0.001	0.002	-0.79	.428	-0.002	0.002	-0.96	.337	-0.002	0.002	-0.88	.382	-0.002	0.002	-0.88	.378
	R	-0.002	0.002	-0.79	.430	-0.001	0.002	-0.38	.703	-0.001	0.002	-0.42	.677	-0.001	0.002	-0.43	.664
Fusiform	L	0.000	0.001	-0.31	.754	0.000	0.001	-0.20	.840	0.000	0.001	-0.26	.795	0.000	0.001	-0.25	.801
	R	0.000	0.001	-0.50	.616	-0.001	0.001	-0.78	.434	-0.001	0.001	-0.89	.376	-0.001	0.001	-0.79	.431
Inferior temporal	L	0.000	0.001	-0.49	.626	0.000	0.001	-0.39	.699	0.000	0.001	-0.28	.783	0.000	0.001	-0.34	.737
	R	0.000	0.001	0.19	.846	0.000	0.001	0.40	.688	0.000	0.001	0.36	.716	0.000	0.001	0.38	.704
Middle temporal	L	0.000	0.001	0.34	.731	0.000	0.001	-0.23	.820	0.000	0.001	0.07	.946	0.000	0.001	0.05	.960
	R	0.001	0.001	0.77	.439	0.000	0.001	0.40	.692	0.000	0.001	0.43	.666	0.001	0.001	0.50	.616
Parahippocampal	L	-0.001	0.001	-0.78	.435	0.000	0.002	-0.22	.824	-0.001	0.002	-0.46	.646	-0.001	0.002	-0.42	.677
	R	0.000	0.001	-0.33	.741	0.000	0.001	-0.22	.826	-0.001	0.002	-0.47	.636	-0.001	0.002	-0.34	.733
Superior temporal	L	0.001	0.001	0.92	.357	0.000	0.001	0.21	.836	0.000	0.001	0.34	.731	0.000	0.001	0.40	.689
	R	0.000	0.001	0.46	.646	0.000	0.001	-0.07	.941	0.000	0.001	0.07	.945	0.000	0.001	0.09	.932
Temporal pole	L	0.000	0.002	0.15	.885	-0.001	0.002	-0.34	.736	-0.001	0.002	-0.42	.678	-0.001	0.002	-0.33	.742
	R	0.001	0.002	0.34	.734	0.001	0.002	0.40	.688	0.000	0.002	0.04	.968	0.000	0.002	0.20	.843
Transverse temporal	L	0.001	0.001	0.59	.557	0.000	0.001	0.19	.851	0.000	0.001	0.14	.887	0.000	0.001	0.21	.830
	R	-0.001	0.001	-0.80	.426	-0.002	0.001	-1.55	.121	-0.002	0.001	-1.31	.191	-0.002	0.001	-1.31	.191
Occipital																	
Cuneus	L	0.000	0.001	0.13	.896	0.000	0.001	-0.05	.963	0.000	0.001	0.18	.857	0.000	0.001	0.10	.916
	R	0.000	0.001	0.07	.945	0.000	0.001	-0.55	.580	0.000	0.001	0.01	.991	0.000	0.001	-0.16	.875
Lateral occipital	L	0.000	0.001	-0.36	.722	0.000	0.001	-0.43	.667	0.000	0.001	-0.25	.804	0.000	0.001	-0.31	.757
	R	-0.001	0.001	-0.99	.323	-0.001	0.001	-0.85	.397	-0.001	0.001	-0.87	.385	-0.001	0.001	-0.89	.374
Lingual	L	0.000	0.001	-0.68	.497	-0.001	0.001	-0.83	.406	-0.001	0.001	-0.83	.407	-0.001	0.001	-0.84	.401
	R	0.000	0.001	-0.60	.551	-0.001	0.001	-1.27	.203	-0.001	0.001	-0.97	.332	-0.001	0.001	-1.05	.294
Perical carine	L	0.000	0.001	-0.35	.728	-0.001	0.001	-1.52	.129	-0.001	0.001	-1.02	.310	-0.001	0.001	-1.11	.268
	R	0.000	0.001	0.04	.971	0.000	0.001	-0.51	.610	0.000	0.001	-0.33	.740	0.000	0.001	-0.40	.693
Insula	L	-0.001	0.001	-0.78	.437	0.000	0.001	-0.56	.578	-0.001	0.001	-0.61	.539	-0.001	0.001	-0.64	.524
	R	-0.001	0.001	-0.96	.335	-0.001	0.001	-1.10	.273	-0.001	0.001	-1.04	.297	-0.001	0.001	-1.05	.295

Note: Uncorrected p-values reported, none of the p-values passed FDR correction

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Table S7: The relationship between gray matter volume and psychopathology controlling for parental education and income in the ABCD Study (n=10,858)

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Frontal																	
Caudal anterior cingulate	L	-6.76	3.27	-2.07	**0.060**	-5.20	3.40	-1.53	0.148	-6.04	3.89	-1.55	0.143	-6.70	4.07	-1.65	0.122
	R	-10.51	3.32	-3.16	**0.009**	-7.64	3.46	-2.21	**0.045**	-9.98	3.94	-2.53	0.027	-10.52	4.02	-2.62	**0.024**
Caudal middle frontal	L	-13.04	8.00	-1.63	0.126	-11.07	8.14	-1.36	0.190	-13.17	9.20	-1.43	0.171	-14.03	9.50	-1.48	0.160
	R	-21.91	8.17	-2.68	**0.021**	-19.79	8.63	-2.29	**0.041**	-22.17	9.43	-2.35	**0.038**	-24.46	9.84	-2.48	**0.030**
Lateral orbitofrontal	L	-19.13	4.95	-3.87	**0.007**	-14.44	5.29	-2.73	**0.019**	-18.68	5.87	-3.18	**0.009**	-19.85	6.20	-3.20	**0.009**
	R	-20.94	5.21	-4.02	**0.007**	-16.83	5.43	-3.10	**0.009**	-20.47	6.12	-3.34	**0.009**	-22.13	6.39	-3.46	**0.008**
Medial orbitofrontal	L	-9.26	4.10	-2.26	**0.043**	-8.41	4.33	-1.94	0.076	-8.96	4.77	-1.88	0.084	-10.00	5.08	-1.97	0.073
	R	-10.20	3.89	-2.62	**0.024**	-8.68	3.96	-2.19	**0.047**	-10.43	4.49	-2.32	**0.039**	-11.28	4.68	-2.41	**0.034**
Paracentral	L	-8.68	3.78	-2.30	**0.041**	-8.92	3.87	-2.31	**0.041**	-9.89	4.43	-2.23	**0.044**	-10.72	4.52	-2.37	**0.036**
	R	-11.74	4.27	-2.75	**0.018**	-11.19	4.53	-2.47	**0.030**	-12.71	5.01	-2.54	**0.027**	-13.69	5.24	-2.61	**0.024**
Pars opercularis	L	-9.02	5.47	-1.65	**0.121**	-9.41	5.56	-1.69	0.113	-10.63	6.27	-1.69	0.113	-11.61	6.57	-1.77	0.102
	R	-11.03	4.61	-2.39	**0.035**	-9.35	4.75	-1.97	0.073	-11.82	5.33	-2.22	0.045	-12.37	5.55	-2.23	**0.044**
Pars orbitalis	L	-4.47	1.94	-2.30	**0.041**	-3.90	2.03	-1.93	0.077	-4.47	2.28	-1.96	0.075	-4.87	2.38	-2.04	0.063
	R	-6.76	2.42	-2.79	**0.018**	-5.93	2.44	-2.43	**0.033**	-7.52	2.71	-2.77	**0.018**	-7.87	2.83	-2.78	**0.018**
Pars triangularis	L	-10.27	3.99	-2.57	**0.025**	-8.02	4.21	-1.91	0.080	-9.39	4.80	-1.96	0.075	-10.29	4.93	-2.09	0.058
	R	-9.65	4.99	-1.93	**0.076**	-8.22	5.18	-1.59	0.134	-10.23	5.64	-1.81	0.094	-10.75	6.01	-1.79	0.099
Precentral	L	-27.74	9.46	-2.93	**0.014**	-19.52	9.77	-2.00	0.069	-23.15	11.30	-2.05	0.062	-25.52	11.38	-2.24	**0.043**
	R	-32.50	8.98	-3.62	**0.007**	-27.79	9.23	-3.01	**0.011**	-32.83	10.55	-3.11	**0.009**	-35.36	10.92	-3.24	**0.009**
Rostral anterior cingulate	L	-7.80	3.01	-2.59	**0.025**	-6.53	3.13	-2.09	0.058	-7.14	3.56	-2.01	0.068	-8.01	3.62	-2.22	**0.045**
	R	-7.49	2.72	-2.76	**0.018**	-5.69	2.92	-1.95	0.075	-7.37	3.21	-2.30	**0.041**	-7.87	3.36	-2.34	**0.038**
Rostral middle frontal	L	-52.46	13.11	-4.00	**0.007**	-41.80	13.24	-3.16	**0.009**	-50.18	14.92	-3.36	**0.009**	-54.44	15.77	-3.45	**0.008**
	R	-35.45	12.83	-2.76	**0.018**	-22.39	13.44	-1.67	0.118	-25.49	14.70	-1.73	0.108	-29.74	15.27	-1.95	0.075
Superior frontal	L	-55.89	15.11	-3.70	**0.007**	-48.47	15.60	-3.11	**0.009**	-56.15	17.47	-3.21	**0.009**	-61.17	18.26	-3.35	**0.009**
	R	-50.47	15.34	-3.29	**0.009**	-51.53	15.74	-3.27	**0.009**	-55.91	17.83	-3.14	**0.009**	-61.00	18.55	-3.29	**0.009**
Frontal pole	L	-1.21	0.98	-1.23	0.231	-1.89	1.03	-1.84	0.090	-1.71	1.17	-1.46	0.165	-1.94	1.21	-1.61	0.129
	R	-2.98	1.24	-2.41	**0.034**	-2.24	1.32	-1.69	0.113	-2.37	1.47	-1.61	0.129	-2.81	1.52	-1.85	0.090
Parietal																	
Inferior parietal	L	-43.87	11.63	-3.77	**0.007**	-37.48	11.86	-3.16	**0.009**	-42.63	13.16	-3.24	**0.009**	-46.73	13.79	-3.39	**0.009**
	R	-41.67	13.60	-3.06	**0.010**	-33.61	13.40	-2.51	**0.028**	-41.92	15.04	-2.79	**0.018**	-43.93	15.75	-2.79	**0.018**
Isthmus cingulate	L	-8.95	3.16	-2.83	**0.018**	-6.42	3.33	-1.93	0.077	-7.93	3.83	-2.07	0.060	-8.76	3.93	-2.23	**0.044**
	R	-4.88	2.92	-1.67	0.117	-4.64	3.08	-1.51	0.153	-6.05	3.55	-1.70	0.112	-6.16	3.64	-1.69	0.113
Post central	L	-29.60	9.01	-3.29	**0.009**	-26.39	9.49	-2.78	**0.018**	-29.31	10.70	-2.74	**0.019**	-32.53	11.00	-2.96	**0.013**
	R	-27.94	8.39	-3.33	**0.009**	-23.29	9.04	-2.58	**0.025**	-27.42	9.91	-2.77	**0.018**	-29.92	10.38	-2.88	**0.016**
Posterior cingulate	L	-11.35	3.39	-3.35	**0.009**	-11.16	3.52	-3.17	**0.009**	-12.92	3.99	-3.24	**0.009**	-13.76	4.13	-3.34	**0.009**
	R	-10.72	3.66	-2.93	**0.014**	-8.38	3.92	-2.14	0.052	-10.24	4.53	-2.26	**0.043**	-11.04	4.64	-2.38	**0.036**
Precuneus	L	-29.48	8.15	-3.62	**0.007**	-24.38	8.15	-2.99	**0.012**	-28.35	9.15	-3.10	**0.009**	-31.16	9.72	-3.21	**0.009**
	R	-28.39	8.36	-3.39	**0.009**	-26.41	8.49	-3.11	**0.009**	-28.94	9.62	-3.01	**0.011**	-32.02	9.94	-3.22	**0.009**

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Superior parietal	L	-27.38	10.76	-2.55	**0.027**	-24.55	11.04	-2.22	**0.044**	-28.04	12.41	-2.26	**0.043**	-30.43	12.84	-2.37	**0.036**
	R	-28.04	11.03	-2.54	**0.027**	-27.94	11.28	-2.48	**0.030**	-31.43	12.59	-2.50	**0.029**	-33.81	13.00	-2.60	**0.025**
Supramarginal	L	-33.75	10.81	-3.12	**0.009**	-28.79	10.87	-2.65	**0.023**	-34.05	12.46	-2.73	**0.019**	-36.80	13.22	-2.78	**0.018**
	R	-39.63	9.99	-3.97	**0.007**	-31.42	10.50	-2.99	**0.012**	-38.74	12.36	-3.13	**0.009**	-41.92	12.93	-3.24	**0.009**
Temporal																	
Banks of superior	L	-4.61	3.27	-1.41	0.176	-2.68	3.21	-0.84	0.413	-2.85	3.61	-0.79	0.438	-3.43	3.73	-0.92	0.367
temporal sulcus	R	-4.19	2.68	-1.56	0.141	-1.95	2.79	-0.70	0.491	-3.34	3.13	-1.07	0.296	-3.38	3.24	-1.04	0.308
Entorhinal	L	-4.74	2.03	-2.34	**0.039**	-4.69	2.11	-2.22	**0.045**	-5.21	2.36	-2.21	0.045	-5.57	2.44	-2.28	**0.041**
	R	-3.87	2.11	-1.84	0.090	-3.01	2.12	-1.42	0.172	-3.67	2.48	-1.48	0.160	-3.99	2.63	-1.51	0.151
Fusiform	L	-24.21	8.48	-2.85	**0.017**	-16.06	8.72	-1.84	0.090	-20.52	9.80	-2.09	0.058	-22.24	10.20	-2.18	**0.048**
	R	-25.57	7.94	-3.22	**0.009**	-19.37	8.05	-2.41	**0.034**	-23.27	9.00	-2.59	**0.025**	-25.14	9.39	-2.68	**0.021**
Inferior temporal	L	-31.36	10.04	-3.12	**0.009**	-23.90	10.54	-2.27	**0.042**	-27.91	11.80	-2.37	**0.037**	-30.86	12.18	-2.53	**0.027**
	R	-33.20	9.09	-3.65	**0.007**	-25.57	10.00	-2.56	**0.026**	-26.01	11.42	-2.28	**0.042**	-30.67	11.59	-2.65	**0.023**
Middle temporal	L	-28.59	9.00	-3.18	**0.009**	-23.62	9.17	-2.58	**0.025**	-27.54	10.24	-2.69	**0.021**	-29.67	10.56	-2.81	**0.018**
	R	-33.78	9.30	-3.63	**0.007**	-27.18	9.86	-2.76	**0.018**	-33.01	10.43	-3.16	**0.009**	-35.32	11.12	-3.18	**0.009**
Parahippocampal	L	-5.72	2.32	-2.47	**0.030**	-4.21	2.40	-1.76	0.104	-5.12	2.71	-1.88	0.083	-5.48	2.81	-1.95	0.075
	R	-3.16	2.32	-1.36	0.190	-2.25	2.27	-0.99	0.330	-3.77	2.64	-1.43	0.171	-3.48	2.71	-1.28	0.215
Superior temporal	L	-27.40	9.04	-3.03	**0.011**	-23.80	9.45	-2.52	**0.028**	-26.35	10.64	-2.48	**0.030**	-29.20	10.72	-2.72	**0.019**
	R	-24.10	7.90	-3.05	**0.010**	-21.72	8.40	-2.59	**0.025**	-24.96	9.51	-2.63	**0.024**	-27.17	9.73	-2.79	**0.018**
Temporal pole	L	-4.42	1.93	-2.29	**0.041**	-4.85	2.10	-2.31	**0.041**	-5.32	2.28	-2.33	**0.039**	-5.76	2.35	-2.45	**0.031**
	R	-0.44	1.89	-0.23	0.821	-0.43	1.98	-0.22	0.827	-0.52	2.21	-0.23	0.821	-0.50	2.25	-0.22	0.827
Transverse temporal	L	-2.33	1.44	-1.61	0.129	-2.13	1.42	-1.50	0.153	-2.01	1.62	-1.24	0.229	-2.43	1.71	-1.42	0.172
	R	-2.14	1.13	-1.90	0.081	-2.65	1.16	-2.30	**0.041**	-2.80	1.30	-2.15	0.051	-3.05	1.36	-2.25	**0.043**
Occipital																	
Cuneus	L	-4.42	3.00	-1.47	0.160	-3.91	3.10	-1.26	0.222	-4.09	3.57	-1.15	0.263	-4.70	3.68	-1.28	0.217
	R	-5.83	3.32	-1.76	0.104	-4.53	3.52	-1.29	0.215	-4.62	3.99	-1.16	0.259	-5.49	4.18	-1.31	0.206
Lateral occipital	L	-25.24	9.14	-2.76	**0.018**	-20.43	9.54	-2.14	0.052	-24.58	10.93	-2.25	0.043	-26.73	11.21	-2.38	**0.036**
	R	-30.83	9.38	-3.29	**0.009**	-25.06	9.62	-2.61	**0.024**	-30.99	11.12	-2.79	**0.018**	-32.66	11.45	-2.85	**0.017**
Lingual	L	-8.68	6.18	-1.41	0.176	-6.96	6.44	-1.08	0.292	-8.96	7.30	-1.23	0.232	-9.36	7.54	-1.24	0.229
	R	-12.41	6.01	-2.06	0.060	-9.52	6.23	-1.53	0.148	-12.48	7.22	-1.73	0.108	-13.23	7.33	-1.81	0.096
Perical carine	L	-3.50	2.26	-1.55	0.143	-4.00	2.34	-1.71	0.111	-4.56	2.65	-1.72	0.110	-4.86	2.77	-1.75	0.104
	R	-4.52	2.34	-1.93	0.077	-3.55	2.48	-1.43	0.171	-4.90	2.76	-1.78	0.101	-5.08	2.93	-1.73	0.108
Insula	L	-14.98	4.09	-3.66	**0.007**	-14.87	4.24	-3.51	**0.008**	-16.91	4.74	-3.57	**0.007**	-18.09	4.94	-3.66	**0.007**
	R	-14.67	4.21	-3.49	**0.008**	-13.91	4.36	-3.19	**0.009**	-17.54	4.80	-3.66	**0.007**	-17.91	5.12	-3.50	**0.008**
Subcortical																	
Cerebellum	L	-40.53	23.93	-1.69	0.189	-16.45	24.89	-0.66	0.517	-32.75	28.65	-1.14	0.345	-32.55	29.40	-1.11	0.345
	R	-39.54	24.74	-1.60	0.207	-14.27	25.53	-0.56	0.576	-28.60	29.20	-0.98	0.380	-29.11	29.78	-0.98	0.380
Thalamus	L	-10.39	3.41	-3.05	0.066	-7.70	3.64	-2.11	0.131	-9.26	4.08	-2.27	0.125	-10.21	4.16	-2.45	0.112
	R	-6.91	3.26	-2.12	0.131	-5.81	3.44	-1.69	0.189	-7.00	3.83	-1.83	0.174	-7.54	3.96	-1.91	0.152
Caudate	L	-5.22	2.70	-1.94	0.148	-3.16	2.82	-1.12	0.345	-3.92	3.27	-1.20	0.340	-4.37	3.41	-1.28	0.313

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
	R	-5.91	2.79	-2.12	0.131	-3.99	2.88	-1.39	0.271	-4.52	3.29	-1.38	0.271	-5.11	3.45	-1.48	0.240
Putamen	L	-4.03	3.38	-1.19	0.340	-3.06	3.60	-0.85	0.414	-4.65	4.02	-1.16	0.345	-4.58	4.20	-1.09	0.345
	R	-3.71	2.96	-1.25	0.320	-3.00	3.15	-0.95	0.382	-3.87	3.52	-1.10	0.345	-4.07	3.67	-1.11	0.345
Pallidum	L	-1.83	1.26	-1.45	0.246	-1.29	1.26	-1.02	0.372	-1.26	1.48	-0.85	0.414	-1.55	1.52	-1.02	0.372
	R	-0.92	0.97	-0.94	0.382	-0.75	1.01	-0.74	0.474	-1.12	1.15	-0.97	0.380	-1.09	1.21	-0.90	0.398
Hippocampus	L	-5.25	2.06	-2.55	0.112	-4.46	2.14	-2.08	0.134	-4.82	2.45	-1.97	0.147	-5.36	2.48	-2.16	0.131
	R	-5.82	1.94	-3.00	0.066	-6.20	2.12	-2.92	0.066	-6.34	2.37	-2.68	0.096	-6.98	2.43	-2.87	0.066
Amygdala	L	-1.75	1.04	-1.69	0.189	-1.94	1.11	-1.75	0.187	-1.85	1.22	-1.51	0.233	-2.05	1.27	-1.62	0.207
	R	-2.42	1.05	-2.32	0.120	-2.54	1.10	-2.32	0.120	-2.46	1.25	-1.97	0.147	-2.81	1.27	-2.21	0.131
Accumbens area	L	-1.36	0.55	-2.49	0.112	-0.91	0.57	-1.59	0.207	-1.03	0.65	-1.59	0.207	-1.17	0.67	-1.75	0.187
	R	-1.20	0.50	-2.42	0.112	-0.98	0.50	-1.96	0.147	-0.98	0.56	-1.74	0.187	-1.15	0.58	-1.98	0.147

Table S8: The relationship between surface area and psychopathology controlling for parental education and income in the ABCD Study (n=10,858)

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Frontal																	
Caudal anterior cingulate	L	-2.04	0.88	-2.32	**0.031**	-1.58	0.89	-1.79	0.090	-1.85	1.02	-1.81	0.087	-2.04	1.06	-1.92	0.071
	R	-3.14	0.90	-3.50	**0.004**	-2.30	0.96	-2.39	**0.028**	-2.98	1.08	-2.76	**0.015**	-3.16	1.11	-2.85	**0.012**
Caudal middle frontal	L	-5.38	2.32	-2.32	**0.031**	-4.39	2.35	-1.87	0.077	-5.14	2.67	-1.93	0.070	-5.58	2.77	-2.02	0.059
	R	-6.53	2.37	-2.75	**0.015**	-5.90	2.54	-2.32	**0.031**	-6.45	2.83	-2.28	**0.034**	-7.19	2.94	-2.44	**0.026**
Lateral orbitofrontal	L	-5.47	1.51	-3.62	**0.004**	-3.90	1.62	-2.41	**0.027**	-5.15	1.79	-2.87	**0.012**	-5.47	1.88	-2.91	**0.011**
	R	-5.72	1.61	-3.55	**0.004**	-4.35	1.69	-2.58	**0.020**	-5.42	1.91	-2.84	**0.012**	-5.88	1.97	-2.98	**0.009**
Medial orbitofrontal	L	-3.01	1.30	-2.31	**0.031**	-2.52	1.32	-1.91	0.072	-2.93	1.53	-1.92	**0.071**	-3.20	1.58	-2.02	0.058
	R	-3.46	1.11	-3.13	**0.007**	-2.80	1.13	-2.49	**0.024**	-3.42	1.30	-2.63	**0.019**	-3.69	1.34	-2.77	**0.015**
Paracentral	L	-2.49	1.11	-2.24	**0.036**	-2.60	1.12	-2.31	**0.031**	-2.90	1.29	-2.25	**0.035**	-3.13	1.31	-2.38	**0.028**
	R	-3.69	1.30	-2.83	**0.012**	-3.40	1.37	-2.49	**0.024**	-3.83	1.55	-2.47	**0.025**	-4.19	1.61	-2.61	**0.019**
Pars opercularis	L	-3.72	1.54	-2.42	**0.027**	-3.61	1.57	-2.29	**0.033**	-4.15	1.79	-2.32	**0.031**	-4.52	1.84	-2.45	**0.026**
	R	-4.15	1.42	-2.91	**0.011**	-3.52	1.44	-2.44	**0.026**	-4.49	1.63	-2.76	**0.015**	-4.68	1.70	-2.76	**0.015**
Pars orbitalis	L	-1.45	0.44	-3.30	**0.006**	-1.11	0.45	-2.45	**0.026**	-1.32	0.52	-2.56	**0.021**	-1.45	0.54	-2.70	**0.016**
	R	-1.69	0.56	-3.02	**0.009**	-1.38	0.57	-2.41	**0.027**	-1.73	0.62	-2.78	**0.014**	-1.84	0.66	-2.80	**0.013**
Pars triangularis	L	-3.36	1.11	-3.04	**0.008**	-2.65	1.17	-2.26	**0.035**	-3.28	1.33	-2.46	**0.026**	-3.50	1.38	-2.53	**0.022**
	R	-3.83	1.41	-2.72	**0.015**	-3.09	1.45	-2.13	**0.046**	-3.92	1.60	-2.45	**0.026**	-4.11	1.69	-2.43	**0.026**
Precentral	L	-9.47	3.00	-3.15	**0.007**	-7.19	3.10	-2.32	**0.031**	-8.16	3.53	-2.31	**0.031**	-9.13	3.58	-2.55	**0.022**
	R	-10.08	3.01	-3.35	**0.005**	-8.97	3.15	-2.85	**0.012**	-10.25	3.56	-2.88	**0.012**	-11.18	3.71	-3.02	**0.009**
Rostral anterior cingulate	L	-2.25	0.81	-2.78	**0.014**	-1.89	0.85	-2.22	**0.037**	-2.20	0.95	-2.31	**0.031**	-2.42	0.98	-2.47	**0.025**
	R	-2.30	0.71	-3.22	**0.006**	-1.76	0.78	-2.25	**0.036**	-2.31	0.85	-2.71	**0.015**	-2.44	0.90	-2.73	**0.015**
Rostral middle frontal	L	-17.60	4.03	-4.37	**0.001**	-12.59	4.28	-2.94	**0.010**	-15.81	4.84	-3.27	**0.006**	-17.10	4.99	-3.43	**0.005**
	R	-14.63	4.18	-3.50	**0.004**	-8.76	4.39	-2.00	0.061	-10.64	4.87	-2.18	**0.041**	-12.12	4.93	-2.46	**0.026**
Superior frontal	L	-19.48	4.32	-4.51	**0.001**	-16.38	4.64	-3.53	**0.004**	-19.43	5.16	-3.76	**0.004**	-21.03	5.38	-3.91	**0.002**
	R	-17.68	4.55	-3.89	**0.002**	-16.61	4.71	-3.52	**0.004**	-18.68	5.45	-3.43	**0.005**	-20.34	5.57	-3.65	**0.004**
Frontal pole	L	-0.43	0.19	-2.27	**0.034**	-0.46	0.20	-2.34	**0.031**	-0.47	0.23	-2.04	0.056	-0.52	0.24	-2.20	**0.040**
	R	-0.65	0.26	-2.50	**0.024**	-0.43	0.28	-1.53	0.142	-0.47	0.30	-1.54	0.141	-0.55	0.32	-1.69	0.108
Parietal																	
Inferior parietal	L	-13.10	3.61	-3.63	**0.004**	-10.92	3.70	-2.95	**0.010**	-12.50	4.03	-3.11	**0.007**	-13.77	4.27	-3.23	**0.006**
	R	-13.13	4.13	-3.18	**0.007**	-10.88	4.10	-2.65	**0.018**	-13.13	4.57	-2.87	**0.012**	-13.97	4.77	-2.93	**0.010**
Isthmus cingulate	L	-3.23	1.05	-3.09	**0.008**	-2.24	1.12	-2.00	0.061	-2.91	1.28	-2.28	0.034	-3.14	1.32	-2.38	**0.028**
	R	-1.45	0.89	-1.62	0.122	-1.15	0.93	-1.23	0.230	-1.55	1.10	-1.41	0.173	-1.60	1.11	-1.44	0.167
Post central	L	-11.25	2.81	-4.00	**0.002**	-9.82	2.93	-3.35	**0.005**	-10.89	3.35	-3.25	**0.006**	-12.17	3.41	-3.56	**0.004**
	R	-10.81	2.60	-4.15	**0.001**	-9.01	2.86	-3.15	**0.007**	-10.45	3.17	-3.29	**0.006**	-11.47	3.29	-3.48	**0.004**
Posterior cingulate	L	-3.95	1.07	-3.70	**0.004**	-3.76	1.10	-3.43	**0.005**	-4.40	1.23	-3.58	**0.004**	-4.69	1.27	-3.68	**0.004**
	R	-3.78	1.17	-3.23	**0.006**	-2.91	1.24	-2.34	**0.030**	-3.64	1.46	-2.49	**0.024**	-3.90	1.49	-2.62	**0.019**

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Precuneus	L	-10.78	2.59	-4.16	**0.001**	-8.65	2.64	-3.28	**0.006**	-10.14	2.98	-3.41	**0.005**	-11.16	3.15	-3.54	**0.004**
	R	-10.32	2.81	-3.67	**0.004**	-9.39	2.94	-3.19	**0.007**	-10.75	3.30	-3.26	**0.006**	-11.73	3.43	-3.42	**0.005**
Superior parietal	L	-10.31	3.61	-2.85	**0.012**	-9.00	3.72	-2.42	**0.027**	-10.11	4.18	-2.42	**0.027**	-11.18	4.29	-2.61	**0.019**
	R	-9.64	3.62	-2.67	**0.017**	-9.80	3.70	-2.65	**0.018**	-10.97	4.16	-2.64	**0.018**	-11.86	4.28	-2.77	**0.014**
Supramarginal	L	-11.28	3.32	-3.40	**0.005**	-9.65	3.29	-2.93	**0.010**	-11.21	3.79	-2.96	**0.010**	-12.22	3.99	-3.06	**0.008**
	R	-12.75	3.05	-4.18	**0.001**	-10.17	3.29	-3.09	**0.007**	-12.19	3.85	-3.17	**0.007**	-13.40	3.96	-3.38	**0.005**
Temporal																	
Banks of superior	L	-1.55	1.10	-1.41	0.173	-0.76	1.06	-0.71	0.475	-1.13	1.20	-0.94	0.355	-1.19	1.24	-0.96	0.342
temporal sulcus	R	-1.69	0.85	-1.99	0.061	-1.01	0.87	-1.15	0.262	-1.48	0.98	-1.52	0.146	-1.52	1.02	-1.50	0.150
Entorhinal	L	-0.78	0.44	-1.79	0.090	-0.60	0.45	-1.31	0.204	-0.76	0.52	-1.46	0.159	-0.81	0.53	-1.53	0.142
	R	-0.54	0.46	-1.19	0.246	-0.45	0.48	-0.93	0.355	-0.53	0.54	-0.98	0.335	-0.58	0.58	-1.02	0.321
Fusiform	L	-6.89	2.21	-3.12	**0.007**	-4.79	2.26	-2.12	**0.048**	-5.94	2.57	-2.31	**0.031**	-6.48	2.69	-2.41	**0.027**
	R	-7.26	2.09	-3.47	**0.004**	-5.37	2.14	-2.51	**0.024**	-6.19	2.43	-2.55	**0.022**	-6.87	2.53	-2.72	**0.015**
Inferior temporal	L	-8.45	2.51	-3.37	**0.005**	-6.38	2.65	-2.41	**0.027**	-7.81	2.99	-2.61	**0.019**	-8.48	3.08	-2.75	**0.015**
	R	-9.59	2.24	-4.29	**0.001**	-7.36	2.46	-2.99	**0.009**	-7.84	2.76	-2.84	**0.012**	-9.04	2.87	-3.15	**0.007**
Middle temporal	L	-7.97	2.19	-3.63	**0.004**	-5.81	2.20	-2.63	**0.018**	-7.60	2.51	-3.03	**0.008**	-7.99	2.58	-3.09	**0.007**
	R	-10.21	2.32	-4.40	**0.001**	-7.63	2.46	-3.10	**0.007**	-9.46	2.68	-3.53	**0.004**	-10.17	2.81	-3.62	**0.004**
Parahippocampal	L	-1.53	0.68	-2.24	**0.036**	-1.29	0.72	-1.78	0.091	-1.50	0.83	-1.81	0.087	-1.62	0.85	-1.90	0.073
	R	-1.15	0.73	-1.58	0.132	-0.85	0.72	-1.17	0.254	-1.27	0.84	-1.50	0.149	-1.24	0.87	-1.43	0.167
Superior temporal	L	-9.55	2.41	-3.96	**0.002**	-7.62	2.48	-3.07	**0.008**	-8.81	2.83	-3.11	**0.007**	-9.72	2.93	-3.31	**0.006**
	R	-8.46	2.12	-3.99	**0.002**	-6.93	2.21	-3.13	**0.007**	-8.44	2.60	-3.25	**0.006**	-9.09	2.65	-3.43	**0.005**
Temporal pole	L	-0.91	0.32	-2.85	**0.012**	-0.80	0.33	-2.42	**0.027**	-0.91	0.37	-2.43	**0.026**	-1.00	0.39	-2.59	**0.020**
	R	-0.31	0.32	-0.98	0.335	-0.34	0.34	-1.00	0.326	-0.31	0.38	-0.82	0.415	-0.36	0.39	-0.91	0.364
Transverse temporal	L	-0.87	0.42	-2.05	0.055	-0.67	0.42	-1.58	0.131	-0.68	0.49	-1.39	0.177	-0.81	0.50	-1.61	0.126
	R	-0.59	0.30	-1.95	0.067	-0.60	0.31	-1.92	0.071	-0.66	0.35	-1.89	0.075	-0.73	0.36	-2.01	0.060
Occipital																	
Cuneus	L	-2.27	1.08	-2.10	**0.049**	-1.83	1.11	-1.64	0.118	-2.20	1.28	-1.72	0.103	-2.39	1.35	-1.77	0.092
	R	-2.83	1.20	-2.36	**0.030**	-2.04	1.23	-1.66	0.115	-2.47	1.37	-1.80	0.088	-2.73	1.45	-1.88	0.076
Lateral occipital	L	-9.26	3.06	-3.02	**0.009**	-7.61	3.14	-2.42	**0.027**	-9.43	3.69	-2.55	0.022	-10.13	3.77	-2.68	**0.017**
	R	-10.03	3.10	-3.24	**0.006**	-7.98	3.17	-2.51	**0.023**	-9.85	3.76	-2.62	0.019	-10.47	3.86	-2.72	**0.015**
Lingual	L	-3.46	2.18	-1.59	0.129	-2.41	2.32	-1.04	0.310	-3.37	2.63	-1.28	0.215	-3.46	2.73	-1.27	0.219
	R	-4.95	2.08	-2.38	**0.028**	-2.92	2.18	-1.34	0.193	-4.53	2.56	-1.77	0.092	-4.69	2.58	-1.82	0.086
Perical carine	L	-2.00	1.22	-1.64	**0.118**	-1.43	1.28	-1.12	0.273	-2.11	1.46	-1.45	0.163	-2.16	1.52	-1.42	0.171
	R	-3.08	1.23	-2.50	**0.024**	-1.97	1.29	-1.52	0.145	-3.19	1.49	-2.14	**0.045**	-3.16	1.56	-2.03	0.057
Insula	L	-4.13	1.19	-3.47	**0.004**	-4.17	1.29	-3.23	**0.006**	-4.75	1.45	-3.27	**0.006**	-5.06	1.50	-3.37	**0.005**
	R	-3.90	1.29	-3.02	**0.009**	-3.75	1.36	-2.75	**0.015**	-4.83	1.51	-3.19	**0.007**	-4.89	1.60	-3.06	**0.008**

Table S9: The relationship between cortical volume and psychopathology controlling for parental education, income and maternal psychopathology in the ABCD Study (n=10,858)

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Frontal																	
Caudal anterior cingulate	L	-6.28	3.33	-1.89	0.087	-4.65	3.47	-1.34	0.199	-5.44	3.96	-1.37	0.190	-6.06	4.15	-1.46	0.166
	R	-10.51	3.39	-3.10	**0.015**	-7.55	3.53	-2.14	0.057	-9.91	4.02	-2.47	**0.033**	-10.46	4.10	-2.55	**0.030**
Caudal middle frontal	L	-12.92	8.15	-1.59	0.137	-10.94	8.30	-1.32	0.204	-13.03	9.36	-1.39	0.185	-13.91	9.68	-1.44	0.173
	R	-20.73	8.31	-2.49	**0.032**	-18.54	8.81	-2.11	0.061	-20.81	9.59	-2.17	0.055	-23.03	10.04	-2.29	**0.045**
Lateral orbitofrontal	L	-19.37	5.03	-3.85	**0.009**	-14.57	5.40	-2.70	**0.024**	-18.86	5.97	-3.16	**0.015**	-20.09	6.32	-3.18	**0.015**
	R	-21.06	5.30	-3.97	**0.009**	-16.83	5.54	-3.04	**0.015**	-20.48	6.22	-3.29	**0.015**	-22.21	6.52	-3.41	**0.013**
Medial orbitofrontal	L	-8.25	4.18	-1.98	0.075	-7.30	4.42	-1.65	0.123	-7.76	4.86	-1.60	0.135	-8.72	5.18	-1.68	0.120
	R	-10.01	3.96	-2.53	**0.031**	-8.43	4.04	-2.09	0.063	-10.18	4.56	-2.23	0.050	-11.03	4.77	-2.31	**0.044**
Paracentral	L	-7.82	3.85	-2.03	0.069	-8.02	3.94	-2.03	0.069	-8.92	4.51	-1.98	0.075	-9.67	4.61	-2.10	0.062
	R	-11.03	4.35	-2.54	**0.031**	-10.41	4.62	-2.25	**0.049**	-11.86	5.10	-2.33	0.042	-12.79	5.35	-2.39	**0.037**
Pars opercularis	L	-9.47	5.57	-1.70	0.116	-9.93	5.66	-1.75	0.109	-11.16	6.38	-1.75	0.109	-12.23	6.70	-1.83	0.097
	R	-12.22	4.69	-2.60	**0.028**	-10.59	4.84	-2.19	0.053	-13.16	5.42	-2.43	**0.035**	-13.85	5.65	-2.45	**0.034**
Pars orbitalis	L	-4.48	1.98	-2.26	**0.048**	-3.89	2.07	-1.88	0.087	-4.45	2.33	-1.91	0.083	-4.87	2.43	-2.00	0.072
	R	-6.37	2.46	-2.58	**0.030**	-5.49	2.49	-2.20	0.052	-7.07	2.76	-2.56	**0.030**	-7.39	2.88	-2.56	**0.030**
Pars triangularis	L	-10.70	4.07	-2.63	**0.027**	-8.40	4.29	-1.96	0.077	-9.79	4.88	-2.00	0.072	-10.77	5.03	-2.14	0.057
	R	-9.44	5.08	-1.86	**0.091**	-7.95	5.28	-1.51	0.157	-9.97	5.74	-1.74	0.112	-10.47	6.13	-1.71	0.116
Precentral	L	-26.08	9.63	-2.71	**0.024**	-17.49	9.96	-1.76	0.109	-21.00	11.51	-1.82	0.097	-23.24	11.60	-2.00	0.072
	R	-30.29	9.13	-3.32	**0.015**	-25.29	9.40	-2.69	**0.024**	-30.18	10.73	-2.81	**0.021**	-32.53	11.12	-2.92	**0.017**
Rostral anterior cingulate	L	-7.56	3.06	-2.47	**0.033**	-6.23	3.19	-1.95	0.077	-6.81	3.62	-1.88	0.087	-7.68	3.68	-2.08	0.063
	R	-8.23	2.76	-2.98	**0.016**	-6.43	2.98	-2.16	0.056	-8.18	3.26	-2.51	**0.032**	-8.77	3.42	-2.56	**0.030**
Rostral middle frontal	L	-51.06	13.35	-3.82	**0.009**	-39.98	13.50	-2.96	**0.016**	-48.27	15.18	-3.18	**0.015**	-52.48	16.08	-3.26	**0.015**
	R	-37.09	13.06	-2.84	**0.019**	-23.80	13.69	-1.74	0.111	-26.96	14.95	-1.80	0.099	-31.49	15.55	-2.03	0.070
Superior frontal	L	-54.33	15.36	-3.54	**0.012**	-46.65	15.87	-2.94	**0.016**	-54.17	17.75	-3.05	**0.015**	-59.16	18.59	-3.18	**0.015**
	R	-48.49	15.61	-3.11	**0.015**	-49.41	16.03	-3.08	**0.015**	-53.52	18.12	-2.95	**0.016**	-58.55	18.89	-3.10	**0.015**
Frontal pole	L	-0.89	1.00	-0.90	0.384	-1.57	1.05	-1.50	0.158	-1.36	1.19	-1.14	0.268	-1.57	1.23	-1.27	0.219
	R	-2.77	1.26	-2.20	0.052	-1.99	1.35	-1.48	0.164	-2.10	1.50	-1.40	0.183	-2.52	1.55	-1.63	0.127
Parietal																	
Inferior parietal	L	-42.13	11.85	-3.56	**0.012**	-35.50	12.08	-2.94	**0.016**	-40.47	13.38	-3.02	**0.015**	-44.50	14.05	-3.17	**0.015**
	R	-38.81	13.85	-2.80	**0.021**	-30.35	13.66	-2.22	0.050	-38.51	15.29	-2.52	**0.032**	-40.26	16.06	-2.51	0.032
Isthmus cingulate	L	-8.78	3.22	-2.73	**0.024**	-6.15	3.39	-1.81	0.099	-7.66	3.90	-1.96	0.077	-8.49	4.01	-2.11	0.060
	R	-4.85	2.97	-1.63	0.126	-4.61	3.14	-1.47	0.165	-6.03	3.61	-1.67	0.120	-6.14	3.71	-1.66	0.122
Post central	L	-29.43	9.17	-3.21	**0.015**	-26.17	9.67	-2.71	**0.024**	-29.02	10.88	-2.67	**0.025**	-32.32	11.22	-2.88	**0.018**
	R	-27.60	8.53	-3.23	**0.015**	-22.81	9.22	-2.48	**0.033**	-26.90	10.08	-2.67	**0.025**	-29.43	10.58	-2.78	**0.022**
Posterior cingulate	L	-10.66	3.45	-3.09	**0.015**	-10.44	3.59	-2.91	**0.017**	-12.14	4.06	-2.99	**0.016**	-12.94	4.20	-3.08	**0.015**

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
	R	-10.50	3.73	-2.82	**0.020**	-8.09	4.00	-2.02	0.070	-9.94	4.61	-2.16	0.056	-10.73	4.73	-2.27	**0.047**
Precuneus	L	-28.25	8.30	-3.41	**0.013**	-22.95	8.31	-2.76	**0.023**	-26.81	9.31	-2.88	**0.018**	-29.56	9.91	-2.98	**0.016**
	R	-26.73	8.51	-3.14	**0.015**	-24.60	8.65	-2.84	**0.019**	-26.96	9.79	-2.75	**0.023**	-29.95	10.13	-2.96	**0.016**
Superior parietal	L	-27.63	10.94	-2.52	**0.031**	-24.76	11.24	-2.20	0.052	-28.24	12.62	-2.24	**0.049**	-30.73	13.07	-2.35	**0.040**
	R	-27.75	11.23	-2.47	**0.033**	-27.65	11.50	-2.41	**0.037**	-31.08	12.81	-2.43	**0.035**	-33.50	13.25	-2.53	**0.031**
Supramarginal	L	-32.63	11.01	-2.96	**0.016**	-27.43	11.08	-2.48	**0.033**	-32.62	12.68	-2.57	**0.030**	-35.32	13.49	-2.62	**0.028**
	R	-39.01	10.17	-3.84	**0.009**	-30.49	10.71	-2.85	**0.019**	-37.80	12.59	-3.00	**0.016**	-41.00	13.20	-3.11	**0.015**
Temporal																	
Banks of superior temporal sulcus	L	-3.84	3.34	-1.15	0.265	-1.81	3.28	-0.55	0.592	-1.91	3.67	-0.52	0.612	-2.42	3.80	-0.64	0.537
	R	-4.23	2.73	-1.55	0.146	-1.92	2.84	-0.68	0.512	-3.34	3.18	-1.05	0.306	-3.38	3.31	-1.02	0.318
Entorhinal	L	-4.29	2.07	-2.07	0.064	-4.20	2.15	-1.95	0.078	-4.68	2.40	-1.95	0.078	-5.00	2.49	-2.01	0.072
	R	-3.59	2.15	-1.67	0.120	-2.68	2.16	-1.24	0.230	-3.32	2.53	-1.31	0.205	-3.62	2.69	-1.35	0.198
Fusiform	L	-23.73	8.64	-2.75	**0.023**	-15.36	8.88	-1.73	0.112	-19.82	9.97	-1.99	0.074	-21.53	10.39	-2.07	0.064
	R	-24.76	8.08	-3.06	**0.015**	-18.36	8.20	-2.24	0.049	-22.20	9.15	-2.43	**0.035**	-24.02	9.57	-2.51	0.032
Inferior temporal	L	-28.46	10.22	-2.78	**0.022**	-20.57	10.74	-1.91	0.083	-24.37	12.00	-2.03	0.069	-27.07	12.42	-2.18	0.054
	R	-30.45	9.25	-3.29	**0.015**	-22.38	10.20	-2.19	0.053	-22.52	11.62	-1.94	0.079	-26.99	11.81	-2.29	**0.046**
Middle temporal	L	-28.16	9.17	-3.07	**0.015**	-23.07	9.35	-2.47	**0.033**	-26.94	10.42	-2.59	**0.030**	-29.08	10.76	-2.70	**0.024**
	R	-33.55	9.47	-3.54	**0.012**	-26.71	10.06	-2.66	**0.026**	-32.54	10.60	-3.07	**0.015**	-34.88	11.33	-3.08	**0.015**
Parahippocampal	L	-5.31	2.36	-2.25	**0.049**	-3.73	2.45	-1.53	0.152	-4.61	2.76	-1.67	0.120	-4.94	2.87	-1.72	0.113
	R	-2.82	2.37	-1.19	0.248	-1.87	2.31	-0.81	0.432	-3.39	2.68	-1.26	0.223	-3.06	2.76	-1.11	0.282
Superior temporal	L	-27.75	9.20	-3.02	**0.015**	-24.05	9.63	-2.50	**0.032**	-26.57	10.82	-2.46	**0.034**	-29.54	10.92	-2.71	**0.024**
	R	-25.27	8.04	-3.15	**0.015**	-22.90	8.55	-2.68	**0.025**	-26.19	9.67	-2.71	**0.024**	-28.60	9.90	-2.89	**0.018**
Temporal pole	L	-4.60	1.97	-2.33	0.042	-5.06	2.14	-2.36	0.039	-5.52	2.32	-2.38	**0.038**	-6.00	2.39	-2.51	0.032
	R	-0.40	1.92	-0.21	0.840	-0.40	2.02	-0.20	0.844	-0.48	2.25	-0.21	0.840	-0.46	2.29	-0.20	0.844
Transverse temporal	L	-2.67	1.47	-1.81	0.099	-2.49	1.44	-1.73	0.112	-2.39	1.65	-1.44	0.171	-2.85	1.74	-1.64	0.126
	R	-2.33	1.15	-2.03	0.069	-2.88	1.18	-2.44	**0.034**	-3.03	1.32	-2.29	**0.046**	-3.31	1.38	-2.39	0.037
Occipital																	
Cuneus	L	-5.12	3.05	-1.68	0.120	-4.65	3.16	-1.47	0.164	-4.86	3.63	-1.34	0.199	-5.57	3.75	-1.48	0.162
	R	-6.06	3.38	-1.79	0.101	-4.74	3.58	-1.32	0.203	-4.83	4.06	-1.19	0.248	-5.74	4.26	-1.35	0.197
Lateral occipital	L	-25.58	9.30	-2.75	**0.023**	-20.66	9.72	-2.12	0.059	-24.83	11.12	-2.23	0.050	-27.08	11.43	-2.37	**0.039**
	R	-29.18	9.55	-3.05	0.015	-23.16	9.79	-2.36	0.039	-29.01	11.32	-2.56	0.030	-30.54	11.67	-2.62	**0.028**
Lingual	L	-9.83	6.29	-1.56	0.142	-8.13	6.56	-1.24	0.230	-10.22	7.43	-1.38	0.190	-10.77	7.68	-1.40	0.183
	R	-13.17	6.12	-2.15	0.056	-10.25	6.36	-1.61	0.131	-13.29	7.36	-1.81	0.099	-14.15	7.47	-1.89	0.086
Perical carine	L	-3.44	2.30	-1.50	0.159	-3.96	2.38	-1.66	0.122	-4.51	2.70	-1.67	0.120	-4.82	2.83	-1.70	0.116
	R	-4.44	2.38	-1.86	0.090	-3.46	2.52	-1.37	0.191	-4.81	2.80	-1.72	0.114	-4.99	2.99	-1.67	0.120
Insula	L	-14.85	4.17	-3.57	*0.012*	-14.74	4.32	-3.41	**0.013**	-16.75	4.82	-3.48	**0.013**	-17.96	5.03	-3.57	**0.012**
	R	-14.33	4.28	-3.35	*0.014*	-13.54	4.44	-3.05	**0.015**	-17.17	4.87	-3.52	**0.012**	-17.52	5.21	-3.36	**0.014**
Subcortical																	
Cerebellum	L	-36.14	24.32	-1.49	0.326	-11.14	25.32	-0.44	0.670	-27.42	29.11	-0.94	0.462	-26.71	29.93	-0.89	0.467
	R	-33.83	25.16	-1.34	0.337	-7.55	25.98	-0.29	0.772	-21.73	29.68	-0.73	0.504	-21.58	30.32	-0.71	0.508

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Thalamus proper	L	-9.36	3.46	-2.70	0.148	-6.54	3.71	-1.76	0.251	-8.03	4.15	-1.93	0.233	-8.88	4.24	-2.10	0.233
	R	-6.10	3.31	-1.84	0.233	-4.91	3.51	-1.40	0.333	-6.05	3.89	-1.55	0.297	-6.51	4.03	-1.62	0.285
Caudate	L	-5.07	2.75	-1.85	0.233	-2.94	2.88	-1.02	0.419	-3.70	3.32	-1.11	0.388	-4.14	3.48	-1.19	0.376
	R	-5.71	2.84	-2.01	0.233	-3.72	2.93	-1.27	0.351	-4.23	3.34	-1.26	0.351	-4.80	3.52	-1.37	0.337
Putamen	L	-4.02	3.44	-1.17	0.378	-3.01	3.66	-0.82	0.486	-4.62	4.09	-1.13	0.388	-4.55	4.27	-1.06	0.409
	R	-3.15	3.01	-1.05	0.412	-2.36	3.21	-0.73	0.504	-3.19	3.58	-0.89	0.467	-3.34	3.74	-0.89	0.467
Pallidum	L	-1.62	1.28	-1.26	0.351	-1.04	1.28	-0.81	0.486	-0.99	1.50	-0.66	0.537	-1.26	1.55	-0.81	0.486
	R	-0.78	0.99	-0.79	0.494	-0.60	1.03	-0.58	0.580	-0.97	1.17	-0.82	0.486	-0.92	1.23	-0.75	0.504
Hippocampus	L	-4.94	2.09	-2.36	0.173	-4.09	2.18	-1.88	0.233	-4.42	2.49	-1.78	0.251	-4.94	2.52	-1.96	0.233
	R	-5.39	1.98	-2.73	0.148	-5.75	2.16	-2.66	0.148	-5.84	2.41	-2.42	0.173	-6.44	2.47	-2.61	0.148
Amygdala	L	-1.37	1.06	-1.29	0.351	-1.53	1.13	-1.35	0.337	-1.40	1.24	-1.13	0.388	-1.56	1.29	-1.21	0.371
	R	-2.11	1.06	-1.99	0.233	-2.21	1.12	-1.98	0.233	-2.10	1.27	-1.65	0.285	-2.43	1.30	-1.87	0.233
Accumbens area	L	-1.31	0.56	-2.35	0.173	-0.83	0.58	-1.44	0.333	-0.95	0.66	-1.44	0.333	-1.09	0.68	-1.59	0.285
	R	-1.06	0.50	-2.10	0.233	-0.82	0.51	-1.61	0.285	-0.81	0.57	-1.41	0.333	-0.97	0.59	-1.63	0.285

Table S10: The relationship between surface area and psychopathology controlling for parental education, income and maternal psychopathology in the ABCD Study (n=10,858)

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Frontal																	
Caudal anterior cingulate	L	-1.90	0.90	-2.12	0.051	-1.41	0.90	-1.56	0.137	-1.67	1.04	-1.60	0.128	-1.85	1.09	-1.71	0.109
	R	-3.10	0.91	-3.39	**0.008**	-2.23	0.98	-2.27	**0.037**	-2.92	1.10	-2.65	**0.020**	-3.10	1.13	-2.74	**0.018**
Caudal middle frontal	L	-5.28	2.36	-2.24	**0.040**	-4.26	2.39	-1.78	0.096	-5.00	2.71	-1.84	0.084	-5.44	2.82	-1.93	0.073
	R	-6.14	2.41	-2.54	**0.025**	-5.48	2.59	-2.11	0.051	-5.99	2.88	-2.08	0.055	-6.71	3.00	-2.24	**0.040**
Lateral orbitofrontal	L	-5.51	1.54	-3.57	**0.007**	-3.89	1.65	-2.36	**0.033**	-5.15	1.82	-2.83	**0.014**	-5.49	1.92	-2.86	**0.014**
	R	-5.67	1.64	-3.45	**0.008**	-4.26	1.72	-2.47	**0.027**	-5.33	1.94	-2.74	**0.018**	-5.79	2.01	-2.88	**0.014**
Medial orbitofrontal	L	-2.66	1.33	-2.01	0.063	-2.13	1.35	-1.58	0.133	-2.51	1.56	-1.61	0.128	-2.75	1.62	-1.70	0.109
	R	-3.37	1.13	-2.99	**0.012**	-2.68	1.15	-2.34	**0.034**	-3.31	1.33	-2.49	**0.026**	-3.57	1.36	-2.62	**0.021**
Paracentral	L	-2.37	1.13	-2.09	0.054	-2.47	1.15	-2.16	**0.047**	-2.75	1.31	-2.10	0.052	-2.98	1.34	-2.22	**0.041**
	R	-3.58	1.33	-2.70	**0.019**	-3.28	1.39	-2.35	**0.033**	-3.68	1.58	-2.33	**0.034**	-4.04	1.64	-2.47	**0.027**
Pars opercularis	L	-3.93	1.57	-2.51	**0.026**	-3.83	1.60	-2.39	**0.031**	-4.38	1.82	-2.40	**0.030**	-4.79	1.88	-2.55	**0.024**
	R	-4.38	1.45	-3.02	**0.012**	-3.75	1.47	-2.55	**0.024**	-4.75	1.66	-2.87	**0.014**	-4.97	1.73	-2.88	**0.014**
Pars orbitalis	L	-1.41	0.45	-3.13	**0.010**	-1.05	0.46	-2.27	**0.037**	-1.26	0.53	-2.39	**0.031**	-1.39	0.55	-2.53	**0.025**
	R	-1.64	0.57	-2.88	**0.014**	-1.32	0.58	-2.26	**0.038**	-1.68	0.64	-2.64	**0.020**	-1.78	0.67	-2.66	**0.020**
Pars triangularis	L	-3.51	1.13	-3.12	**0.010**	-2.79	1.19	-2.33	**0.034**	-3.43	1.36	-2.53	**0.025**	-3.67	1.41	-2.61	**0.022**
	R	-3.72	1.44	-2.59	**0.022**	-2.95	1.48	-1.99	0.065	-3.77	1.63	-2.32	**0.035**	-3.95	1.72	-2.29	**0.036**
Precentral	L	-8.76	3.06	-2.87	**0.014**	-6.36	3.16	-2.01	0.062	-7.27	3.59	-2.02	0.061	-8.18	3.65	-2.24	**0.040**
	R	-9.55	3.06	-3.12	**0.010**	-8.37	3.21	-2.61	**0.022**	-9.60	3.62	-2.65	**0.020**	-10.50	3.78	-2.78	**0.016**
Rostral anterior cingulate	L	-2.20	0.82	-2.66	**0.020**	-1.82	0.87	-2.10	0.053	-2.12	0.97	-2.20	**0.043**	-2.34	1.00	-2.35	**0.033**
	R	-2.43	0.73	-3.34	**0.008**	-1.88	0.80	-2.35	**0.033**	-2.44	0.87	-2.82	**0.014**	-2.60	0.91	-2.84	**0.014**
Rostral middle frontal	L	-17.10	4.10	-4.17	**0.003**	-11.91	4.36	-2.73	**0.018**	-15.11	4.92	-3.07	**0.011**	-16.38	5.08	-3.22	**0.009**
	R	-14.96	4.25	-3.52	**0.008**	-8.96	4.47	-2.00	0.063	-10.85	4.95	-2.19	**0.044**	-12.41	5.02	-2.47	**0.027**
Superior frontal	L	-19.11	4.39	-4.35	**0.003**	-15.90	4.73	-3.36	**0.008**	-18.92	5.25	-3.61	**0.007**	-20.53	5.48	-3.75	**0.005**
	R	-17.11	4.63	-3.70	**0.005**	-15.95	4.80	-3.32	**0.008**	-17.96	5.55	-3.24	**0.009**	-19.60	5.68	-3.45	**0.008**
Frontal pole	L	-0.35	0.20	-1.81	0.089	-0.38	0.20	-1.87	0.080	-0.37	0.23	-1.61	0.128	-0.42	0.24	-1.74	**0.103**
	R	-0.66	0.26	-2.50	**0.026**	-0.44	0.28	-1.53	0.146	-0.47	0.31	-1.54	0.144	-0.56	0.33	-1.69	0.112
Parietal																	
Inferior parietal	L	-12.33	3.67	-3.36	**0.008**	-10.05	3.77	-2.66	**0.020**	-11.56	4.09	-2.83	**0.014**	-12.78	4.34	-2.94	**0.013**
	R	-12.44	4.21	-2.95	**0.013**	-10.08	4.18	-2.41	**0.030**	-12.29	4.65	-2.65	**0.020**	-13.08	4.86	-2.69	**0.019**
Isthmus cingulate	L	-3.20	1.07	-3.01	**0.012**	-2.18	1.14	-1.90	0.076	-2.84	1.30	-2.19	**0.044**	-3.09	1.35	-2.29	**0.036**
	R	-1.38	0.91	-1.52	0.146	-1.07	0.95	-1.12	0.276	-1.46	1.12	-1.31	0.207	-1.51	1.13	-1.33	0.200
Post central	L	-11.07	2.86	-3.86	**0.004**	-9.60	2.99	-3.21	**0.009**	-10.63	3.41	-3.12	**0.010**	-11.93	3.48	-3.43	**0.008**
	R	-10.13	2.65	-3.82	**0.004**	-8.24	2.92	-2.83	**0.014**	-9.63	3.23	-2.98	**0.012**	-10.61	3.36	-3.16	**0.010**
Posterior cingulate	L	-3.73	1.09	-3.43	**0.008**	-3.53	1.12	-3.15	**0.010**	-4.15	1.25	-3.32	**0.008**	-4.42	1.30	-3.41	**0.008**
	R	-3.63	1.19	-3.04	**0.011**	-2.72	1.27	-2.15	**0.048**	-3.44	1.49	-2.31	**0.035**	-3.69	1.52	-2.43	**0.029**
Precuneus	L	-10.51	2.63	-3.99	**0.004**	-8.31	2.69	-3.09	**0.011**	-9.77	3.03	-3.23	**0.009**	-10.79	3.21	-3.36	**0.008**

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
	R	-9.81	2.86	-3.43	**0.008**	-8.83	3.00	-2.94	**0.013**	-10.14	3.36	-3.02	**0.012**	-11.10	3.49	-3.18	**0.010**
Superior parietal	L	-10.62	3.68	-2.89	**0.014**	-9.30	3.79	-2.45	**0.028**	-10.41	4.25	-2.45	**0.028**	-11.54	4.37	-2.64	**0.020**
	R	-9.53	3.68	-2.59	**0.022**	-9.69	3.77	-2.57	**0.023**	-10.83	4.23	-2.56	**0.024**	-11.74	4.36	-2.69	**0.019**
Supramarginal	L	-11.03	3.38	-3.27	**0.009**	-9.34	3.35	-2.79	**0.016**	-10.87	3.86	-2.82	**0.014**	-11.89	4.07	-2.92	**0.013**
	R	-12.41	3.10	-4.00	**0.004**	-9.72	3.35	-2.90	**0.013**	-11.72	3.92	-2.99	**0.012**	-12.93	4.04	-3.20	**0.009**
Temporal																	
Banks of superior temporal sulcus	L	-1.37	1.12	-1.22	0.238	-0.54	1.08	-0.50	0.614	-0.91	1.23	-0.74	0.460	-0.96	1.26	-0.76	0.454
	R	-1.66	0.86	-1.92	0.073	-0.96	0.89	-1.08	0.294	-1.44	0.99	-1.45	0.167	-1.48	1.04	-1.43	0.173
Entorhinal	L	-0.71	0.45	-1.60	0.128	-0.52	0.46	-1.12	0.276	-0.68	0.53	-1.29	0.213	-0.72	0.54	-1.35	0.196
	R	-0.51	0.47	-1.10	0.285	-0.41	0.49	-0.84	0.406	-0.49	0.55	-0.89	0.380	-0.54	0.59	-0.93	0.366
Fusiform	L	-6.59	2.25	-2.93	**0.013**	-4.42	2.30	-1.92	0.073	-5.56	2.61	-2.13	0.050	-6.08	2.74	-2.22	**0.042**
	R	-6.96	2.13	-3.27	**0.009**	-5.00	2.18	-2.29	**0.036**	-5.79	2.47	-2.35	**0.033**	-6.46	2.57	-2.51	**0.025**
Inferior temporal	L	-7.79	2.55	-3.05	**0.011**	-5.60	2.70	-2.07	0.055	-7.00	3.04	-2.30	**0.035**	-7.61	3.14	-2.42	**0.029**
	R	-8.94	2.27	-3.93	**0.004**	-6.60	2.51	-2.63	**0.021**	-7.01	2.81	-2.50	**0.026**	-8.17	2.93	-2.79	**0.015**
Middle temporal	L	-7.86	2.23	-3.52	**0.008**	-5.65	2.25	-2.52	**0.025**	-7.45	2.55	-2.92	**0.013**	-7.84	2.63	-2.98	**0.012**
	R	-9.78	2.36	-4.15	**0.003**	-7.10	2.51	-2.83	**0.014**	-8.91	2.72	-3.27	**0.009**	-9.59	2.86	-3.35	**0.008**
Parahippocampal	L	-1.41	0.69	-2.03	0.061	-1.15	0.74	-1.56	0.137	-1.36	0.85	-1.61	0.128	-1.47	0.87	-1.68	0.112
	R	-1.01	0.74	-1.36	0.193	-0.69	0.74	-0.93	0.362	-1.11	0.86	-1.29	0.213	-1.07	0.89	-1.21	0.243
Superior temporal	L	-9.59	2.46	-3.90	**0.004**	-7.60	2.53	-3.00	**0.012**	-8.78	2.88	-3.05	**0.011**	-9.72	2.99	-3.25	**0.009**
	R	-8.29	2.15	-3.85	**0.004**	-6.71	2.25	-2.98	**0.012**	-8.22	2.64	-3.11	**0.010**	-8.86	2.70	-3.28	**0.009**
Temporal pole	L	-0.94	0.33	-2.90	**0.013**	-0.83	0.34	-2.47	**0.027**	-0.95	0.38	-2.49	**0.026**	-1.04	0.39	-2.65	**0.020**
	R	-0.29	0.32	-0.91	0.372	-0.32	0.35	-0.94	0.362	-0.29	0.38	-0.75	0.455	-0.34	0.40	-0.84	0.406
Transverse temporal	L	-0.92	0.43	-2.13	0.050	-0.71	0.43	-1.66	0.116	-0.72	0.49	-1.46	0.164	-0.87	0.51	-1.68	0.112
	R	-0.58	0.31	-1.89	0.077	-0.59	0.32	-1.87	0.080	-0.65	0.36	-1.84	0.085	-0.72	0.37	-1.96	0.069
Occipital																	
Cuneus	L	-2.54	1.10	-2.30	**0.035**	-2.10	1.13	-1.86	0.082	-2.49	1.30	-1.91	0.075	-2.71	1.38	-1.97	0.067
	R	-2.98	1.22	-2.44	**0.029**	-2.18	1.25	-1.74	0.103	-2.62	1.39	-1.88	0.079	-2.90	1.48	-1.96	0.069
Lateral occipital	L	-9.32	3.12	-2.99	**0.012**	-7.63	3.20	-2.38	**0.031**	-9.46	3.76	-2.52	0.025	-10.18	3.85	-2.65	**0.020**
	R	-9.57	3.15	-3.04	**0.011**	-7.43	3.23	-2.30	**0.035**	-9.28	3.83	-2.43	0.029	-9.88	3.93	-2.51	**0.025**
Lingual	L	-3.82	2.22	-1.72	0.106	-2.76	2.36	-1.17	0.258	-3.75	2.68	-1.40	0.180	-3.89	2.78	-1.40	0.180
	R	-4.89	2.11	-2.31	0.035	-2.80	2.22	-1.26	0.222	-4.43	2.60	-1.70	0.109	-4.59	2.63	-1.74	0.103
Perical carine	L	-2.04	1.24	-1.64	0.121	-1.46	1.30	-1.12	0.276	-2.15	1.48	-1.45	0.166	-2.21	1.55	-1.42	0.175
	R	-3.02	1.26	-2.40	**0.030**	-1.87	1.32	-1.42	0.175	-3.10	1.51	-2.05	0.057	-3.07	1.59	-1.93	0.072
Insula	L	-4.03	1.21	-3.34	**0.008**	-4.07	1.32	-3.09	**0.011**	-4.65	1.48	-3.15	0.010	-4.96	1.53	-3.24	**0.009**
	R	-3.77	1.32	-2.87	**0.014**	-3.60	1.39	-2.60	**0.022**	-4.68	1.54	-3.04	0.011	-4.74	1.63	-2.91	**0.013**

Table S11: The relationship between gray matter volume and psychopathology controlling for parental education, income, maternal psychopathology and cognition in the ABCD Study (n=10,858)

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Frontal																	
Caudal anterior cingulate	L	-5.46	3.46	-1.58	0.173	-4.31	3.61	-1.20	0.272	-4.81	4.19	-1.15	0.284	-5.38	4.33	-1.24	0.260
	R	-9.82	3.52	-2.79	0.051	-7.17	3.67	-1.95	0.097	-9.37	4.19	-2.24	0.071	-9.81	4.27	-2.30	0.069
Caudal middle frontal	L	-10.44	8.44	-1.24	0.261	-8.93	8.72	-1.02	0.330	-10.03	9.74	-1.03	0.329	-10.98	10.08	-1.09	0.305
	R	-17.72	8.71	-2.03	0.086	-15.59	9.20	-1.70	0.143	-17.40	10.07	-1.73	0.135	-19.42	10.55	-1.84	0.115
Lateral orbitofrontal	L	-17.57	5.28	-3.33	0.049	-13.69	5.70	-2.40	0.062	-17.32	6.31	-2.75	0.051	-18.54	6.70	-2.77	0.051
	R	-19.32	5.56	-3.47	0.049	-15.65	5.88	-2.66	0.052	-18.55	6.59	-2.81	0.051	-20.28	6.88	-2.95	0.051
Medial orbitofrontal	L	-7.87	4.28	-1.84	0.115	-6.74	4.61	-1.46	0.199	-7.26	4.99	-1.46	0.200	-8.15	5.30	-1.54	0.182
	R	-8.76	4.08	-2.15	0.077	-7.37	4.17	-1.77	0.128	-8.84	4.71	-1.88	0.110	-9.62	4.89	-1.97	0.095
Paracentral	L	-8.22	4.03	-2.04	0.086	-7.79	4.17	-1.87	0.111	-9.07	4.78	-1.90	0.107	-9.73	4.87	-2.00	0.089
	R	-11.00	4.59	-2.40	0.062	-10.16	4.85	-2.09	0.080	-11.47	5.39	-2.13	0.079	-12.45	5.67	-2.20	0.074
Pars opercularis	L	-7.11	5.82	-1.22	0.264	-8.89	5.88	-1.51	0.189	-9.54	6.69	-1.42	0.208	-10.47	7.01	-1.49	0.193
	R	-11.95	4.94	-2.42	0.062	-10.78	5.12	-2.10	0.080	-13.36	5.74	-2.33	0.067	-14.00	5.97	-2.34	0.067
Pars orbitalis	L	-3.69	2.09	-1.77	0.128	-3.57	2.15	-1.66	0.151	-3.88	2.44	-1.59	0.170	-4.27	2.54	-1.68	0.147
	R	-5.73	2.57	-2.23	0.072	-5.22	2.59	-2.01	0.088	-6.67	2.87	-2.33	0.067	-6.95	2.99	-2.32	0.067
Pars triangularis	L	-9.73	4.28	-2.27	0.070	-7.68	4.51	-1.70	0.141	-9.07	5.08	-1.79	0.126	-9.88	5.21	-1.90	0.107
	R	-8.01	5.35	-1.50	0.193	-7.16	5.60	-1.28	0.247	-9.01	6.11	-1.48	0.196	-9.38	6.50	-1.44	0.204
Precentral	L	-21.54	10.01	-2.15	0.077	-13.75	10.54	-1.30	0.241	-16.07	12.11	-1.33	0.235	-18.08	12.13	-1.49	0.193
	R	-26.58	9.61	-2.77	0.051	-22.73	9.89	-2.30	0.069	-26.49	11.30	-2.35	0.067	-28.76	11.65	-2.47	0.060
Rostral anterior cingulate	L	-6.95	3.20	-2.17	0.075	-5.95	3.30	-1.80	0.123	-6.20	3.79	-1.64	0.157	-7.10	3.81	-1.87	0.111
	R	-7.17	2.86	-2.51	0.057	-5.45	3.09	-1.76	0.128	-7.03	3.40	-2.07	0.082	-7.51	3.60	-2.09	0.080
Rostral middle frontal	L	-46.85	13.63	-3.44	0.049	-37.39	14.03	-2.67	0.052	-44.12	16.01	-2.75	0.051	-48.39	16.77	-2.89	0.051
	R	-30.24	13.52	-2.24	0.071	-19.87	14.22	-1.40	0.215	-20.22	15.61	-1.30	0.244	-24.78	16.06	-1.54	0.182
Superior frontal	L	-53.24	15.79	-3.37	0.049	-44.22	16.64	-2.66	0.052	-51.10	18.64	-2.74	0.051	-56.47	19.30	-2.93	0.051
	R	-46.21	15.87	-2.91	0.051	-46.83	16.72	-2.80	0.051	-49.57	18.97	-2.61	0.055	-55.10	19.41	-2.84	0.051
Frontal pole	L	-1.00	1.05	-0.95	0.362	-1.64	1.08	-1.53	0.185	-1.41	1.23	-1.15	0.284	-1.65	1.26	-1.31	0.241
	R	-2.76	1.32	-2.09	0.080	-2.06	1.39	-1.48	0.196	-2.07	1.59	-1.30	0.241	-2.53	1.63	-1.55	0.180
Parietal																	
Inferior parietal	L	-38.57	12.25	-3.15	0.051	-33.63	12.78	-2.63	0.053	-37.71	14.08	-2.68	0.052	-41.49	14.71	-2.82	0.051
	R	-31.76	14.56	-2.18	0.074	-25.41	14.39	-1.77	0.128	-33.17	16.07	-2.06	0.082	-33.91	16.87	-2.01	0.089
Isthmus cingulate	L	-7.55	3.38	-2.24	0.071	-5.03	3.55	-1.42	0.210	-6.07	4.09	-1.49	0.194	-6.88	4.17	-1.65	0.154
	R	-3.80	3.12	-1.22	0.264	-3.88	3.29	-1.18	0.279	-5.18	3.78	-1.37	0.220	-5.14	3.85	-1.34	0.232
Post central	L	-27.73	9.59	-2.89	0.051	-24.53	10.03	-2.45	0.062	-27.16	11.56	-2.35	0.067	-30.43	11.73	-2.59	0.056
	R	-25.85	8.96	-2.88	0.051	-21.35	9.53	-2.24	0.071	-25.07	10.39	-2.41	0.062	-27.48	10.90	-2.52	0.057
Posterior cingulate	L	-9.04	3.60	-2.51	0.057	-9.17	3.76	-2.44	0.062	-10.61	4.22	-2.51	0.057	-11.22	4.35	-2.58	0.056
	R	-9.66	3.91	-2.47	0.060	-7.70	4.19	-1.84	0.115	-9.44	4.68	-2.01	0.088	-10.09	4.83	-2.09	0.080
Precuneus	L	-25.40	8.68	-2.93	0.051	-21.22	8.79	-2.42	0.062	-23.89	9.80	-2.44	0.062	-26.63	10.38	-2.56	0.057

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
	R	-23.81	8.84	-2.69	0.052	-22.09	9.17	-2.41	0.062	-23.94	10.34	-2.32	0.068	-26.71	10.58	-2.53	0.057
Superior parietal	L	-26.16	11.43	-2.29	0.069	-25.25	11.86	-2.13	0.079	-28.66	13.28	-2.16	0.076	-30.90	13.78	-2.24	0.071
	R	-24.39	11.58	-2.11	0.080	-26.39	11.94	-2.21	0.073	-28.32	13.40	-2.11	0.080	-30.90	13.77	-2.24	0.071
Supramarginal	L	-25.80	11.45	-2.25	0.071	-22.84	11.69	-1.95	0.097	-26.91	13.30	-2.02	0.088	-29.01	13.98	-2.07	0.081
	R	-36.03	10.53	-3.42	**0.049**	-29.13	11.06	-2.63	0.053	-35.63	13.16	-2.71	0.052	-38.66	13.54	-2.86	0.051
Temporal																	
Banks of superior temporal sulcus	L	-2.87	3.48	-0.82	0.429	-0.82	3.39	-0.24	0.823	-0.89	3.88	-0.23	0.830	-1.23	3.94	-0.31	0.773
	R	-3.31	2.88	-1.15	0.284	-0.98	2.97	-0.33	0.761	-2.10	3.42	-0.61	0.557	-2.11	3.49	-0.60	0.563
Entorhinal	L	-3.31	2.18	-1.52	0.186	-3.18	2.22	-1.43	0.207	-3.53	2.50	-1.41	0.212	-3.77	2.58	-1.46	0.199
	R	-3.10	2.25	-1.37	0.220	-2.41	2.24	-1.08	0.308	-2.99	2.63	-1.14	0.288	-3.27	2.79	-1.17	0.280
Fusiform	L	-19.55	8.84	-2.21	0.073	-14.24	9.26	-1.54	0.182	-18.04	10.38	-1.74	0.134	-19.37	10.70	-1.81	0.121
	R	-21.06	8.46	-2.49	0.058	-17.18	8.59	-2.00	0.089	-20.58	9.51	-2.16	0.076	-21.93	9.96	-2.20	0.073
Inferior temporal	L	-27.16	10.67	-2.55	0.057	-19.57	11.28	-1.73	0.135	-22.71	12.60	-1.80	0.123	-25.46	13.02	-1.95	0.097
	R	-26.85	9.72	-2.76	0.051	-20.53	10.71	-1.92	0.104	-19.90	12.18	-1.63	0.157	-24.11	12.37	-1.95	0.097
Middle temporal	L	-24.32	9.65	-2.52	0.057	-20.39	9.73	-2.09	0.080	-23.80	10.92	-2.18	0.074	-25.45	11.15	-2.28	0.070
	R	-28.55	9.81	-2.91	0.051	-23.11	10.46	-2.21	0.073	-28.00	11.18	-2.50	0.057	-29.94	11.73	-2.55	0.057
Parahippocampal	L	-4.36	2.47	-1.76	0.128	-2.98	2.57	-1.16	0.283	-3.60	2.93	-1.23	0.264	-3.88	3.03	-1.28	0.247
	R	-2.26	2.42	-0.93	0.372	-1.73	2.38	-0.73	0.485	-2.88	2.77	-1.04	0.326	-2.62	2.85	-0.92	0.378
Superior temporal	L	-23.13	9.52	-2.43	0.062	-22.04	10.06	-2.19	0.074	-23.54	11.31	-2.08	0.081	-26.07	11.35	-2.30	0.069
	R	-22.59	8.45	-2.67	0.052	-22.75	9.09	-2.50	0.057	-25.17	10.32	-2.44	0.062	-27.34	10.53	-2.60	0.056
Temporal pole	L	-4.28	2.04	-2.10	0.080	-4.95	2.21	-2.24	0.071	-5.35	2.45	-2.19	0.074	-5.83	2.49	-2.34	0.067
	R	-0.33	2.02	-0.16	0.871	-0.47	2.09	-0.23	0.830	-0.42	2.38	-0.18	0.862	-0.45	2.39	-0.19	0.859
Transverse temporal	L	-2.06	1.54	-1.34	0.232	-2.16	1.50	-1.44	0.204	-1.96	1.77	-1.11	0.299	-2.35	1.83	-1.29	0.246
	R	-1.94	1.19	-1.64	0.157	-2.59	1.22	-2.11	0.080	-2.64	1.40	-1.89	0.109	-2.90	1.45	-2.01	0.089
Occipital																	
Cuneus	L	-3.60	3.13	-1.15	0.284	-4.23	3.30	-1.28	0.247	-3.85	3.79	-1.02	0.332	-4.52	3.91	-1.16	0.284
	R	-4.21	3.51	-1.20	0.272	-4.10	3.75	-1.09	0.305	-3.33	4.33	-0.77	0.461	-4.28	4.48	-0.96	0.362
Lateral occipital	L	-22.77	9.80	-2.32	0.067	-18.83	10.20	-1.85	0.115	-21.64	11.56	-1.87	0.111	-24.09	11.84	-2.03	0.086
	R	-27.23	10.07	-2.70	0.052	-21.68	10.28	-2.11	0.080	-26.91	11.81	-2.28	0.070	-28.47	12.15	-2.34	0.067
Lingual	L	-8.23	6.61	-1.25	0.260	-6.08	6.92	-0.88	0.399	-8.43	7.68	-1.10	0.304	-8.61	7.92	-1.09	0.305
	R	-11.08	6.41	-1.73	0.135	-9.21	6.63	-1.39	0.217	-11.96	7.65	-1.56	0.177	-12.56	7.70	-1.63	0.157
Perical carine	L	-2.45	2.41	-1.02	0.332	-3.47	2.49	-1.40	0.215	-3.79	2.84	-1.34	0.232	-4.03	2.93	-1.37	0.220
	R	-2.92	2.49	-1.17	0.280	-2.78	2.62	-1.06	0.315	-3.65	2.97	-1.23	0.264	-3.79	3.10	-1.22	0.264
Insula	L	-13.20	4.35	-3.04	0.051	-13.71	4.47	-3.07	0.051	-15.62	5.00	-3.13	0.051	-16.58	5.16	-3.22	0.051
	R	-13.20	4.46	-2.96	0.051	-12.35	4.59	-2.69	0.052	-15.91	5.05	-3.15	0.051	-16.12	5.34	-3.02	0.051
Subcortical																	
Cerebellum	L	-22.80	25.82	-0.88	0.616	-0.69	26.21	-0.03	0.979	-15.30	30.19	-0.51	0.700	-12.96	31.25	-0.41	0.736
	R	-19.65	26.53	-0.74	0.633	3.51	26.99	0.13	0.911	-9.49	30.92	-0.31	0.796	-7.46	31.74	-0.23	0.841
Thalamus	L	-6.73	3.63	-1.85	0.557	-4.56	3.85	-1.18	0.593	-5.66	4.31	-1.32	0.593	-6.29	4.43	-1.42	0.593

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
	R	-3.67	3.48	-1.06	0.601	-3.12	3.59	-0.87	0.616	-3.83	4.02	-0.95	0.601	-4.09	4.16	-0.98	0.601
Caudate	L	-4.65	2.84	-1.64	0.557	-2.79	2.97	-0.94	0.601	-3.31	3.42	-0.97	0.601	-3.76	3.59	-1.05	0.601
	R	-5.22	2.94	-1.78	0.557	-3.40	3.03	-1.12	0.600	-3.75	3.45	-1.09	0.601	-4.31	3.63	-1.19	0.593
Putamen	L	-2.42	3.62	-0.67	0.634	-2.11	3.81	-0.55	0.684	-3.43	4.35	-0.79	0.631	-3.18	4.46	-0.71	0.634
	R	-2.53	3.13	-0.81	0.631	-2.07	3.33	-0.62	0.658	-2.81	3.81	-0.74	0.633	-2.87	3.92	-0.73	0.633
Pallidum	L	-1.31	1.35	-0.97	0.601	-0.94	1.36	-0.69	0.634	-0.87	1.60	-0.54	0.684	-1.09	1.64	-0.67	0.634
	R	-0.43	1.04	-0.42	0.736	-0.42	1.09	-0.38	0.747	-0.71	1.24	-0.57	0.684	-0.63	1.29	-0.49	0.703
Hippocampus	L	-3.58	2.19	-1.63	0.557	-3.02	2.28	-1.33	0.593	-3.07	2.62	-1.17	0.593	-3.49	2.62	-1.33	0.593
	R	-4.26	2.09	-2.04	0.557	-4.77	2.23	-2.14	0.557	-4.68	2.55	-1.83	0.557	-5.18	2.60	-1.99	0.557
Amygdala	L	-0.91	1.11	-0.82	0.631	-1.31	1.17	-1.12	0.600	-1.03	1.31	-0.78	0.631	-1.18	1.36	-0.87	0.616
	R	-1.75	1.10	-1.59	0.557	-2.07	1.16	-1.79	0.557	-1.87	1.33	-1.41	0.593	-2.17	1.35	-1.60	0.557
Accumbens area	L	-1.23	0.58	-2.12	0.557	-0.75	0.60	-1.25	0.593	-0.89	0.70	-1.27	0.593	-1.00	0.72	-1.40	0.593
	R	-0.87	0.52	-1.66	0.557	-0.65	0.53	-1.21	0.593	-0.62	0.61	-1.02	0.601	-0.75	0.63	-1.20	0.593

Table S12: The relationship between surface area and psychopathology controlling for parental education, income, maternal psychopathology and cognition in the ABCD Study (n=10,858)

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
Frontal																	
Caudal anterior cingulate	L	-1.60	0.93	-1.72	0.124	-1.29	0.94	-1.37	0.207	-1.43	1.10	-1.31	0.227	-1.61	1.14	-1.41	0.199
	R	-2.78	0.95	-2.92	**0.037**	-2.00	1.02	-1.97	0.084	-2.61	1.15	-2.27	0.056	-2.75	1.18	-2.33	0.052
Caudal middle frontal	L	-4.62	2.45	-1.89	0.093	-3.77	2.50	-1.51	0.173	-4.18	2.83	-1.48	0.178	-4.66	2.93	-1.59	0.151
	R	-5.72	2.50	-2.29	0.054	-4.92	2.70	-1.82	0.104	-5.38	3.03	-1.78	0.112	-6.07	3.14	-1.93	0.088
Lateral orbitofrontal	L	-4.93	1.60	-3.07	**0.036**	-3.45	1.73	-1.99	0.081	-4.53	1.91	-2.37	0.050	-4.85	2.02	-2.41	**0.047**
	R	-4.83	1.70	-2.84	**0.037**	-3.57	1.82	-1.96	0.085	-4.28	2.06	-2.08	0.073	-4.76	2.12	-2.25	0.057
Medial orbitofrontal	L	-2.44	1.34	-1.82	0.104	-1.78	1.40	-1.27	0.238	-2.25	1.60	-1.40	0.199	-2.43	1.66	-1.47	0.181
	R	-2.86	1.16	-2.46	**0.046**	-2.23	1.18	-1.90	0.092	-2.75	1.36	-2.01	0.078	-2.99	1.39	-2.15	0.065
Paracentral	L	-2.41	1.18	-2.04	0.076	-2.28	1.21	-1.89	0.092	-2.66	1.38	-1.93	0.089	-2.86	1.41	-2.03	0.077
	R	-3.41	1.40	-2.44	**0.047**	-3.03	1.46	-2.07	0.073	-3.36	1.66	-2.03	0.077	-3.73	1.73	-2.16	0.065
Pars opercularis	L	-3.17	1.63	-1.94	0.088	-3.39	1.65	-2.05	0.076	-3.78	1.90	-1.99	0.081	-4.13	1.95	-2.12	0.069
	R	-4.36	1.52	-2.87	**0.037**	-3.80	1.54	-2.47	0.046	-4.81	1.75	-2.74	**0.037**	-5.02	1.81	-2.77	**0.037**
Pars orbitalis	L	-1.30	0.47	-2.79	**0.037**	-0.99	0.49	-2.04	0.077	-1.15	0.55	-2.08	0.073	-1.28	0.57	-2.23	0.058
	R	-1.51	0.60	-2.53	**0.043**	-1.25	0.60	-2.07	0.074	-1.59	0.66	-2.39	**0.048**	-1.68	0.69	-2.42	**0.047**
Pars triangularis	L	-3.09	1.19	-2.60	**0.040**	-2.39	1.25	-1.92	0.090	-2.98	1.42	-2.10	0.071	-3.17	1.45	-2.18	0.063
	R	-3.30	1.52	-2.17	0.064	-2.57	1.58	-1.63	0.142	-3.31	1.74	-1.90	0.092	-3.46	1.84	-1.88	0.094
Precentral	L	-7.69	3.18	-2.42	0.047	-5.41	3.30	-1.64	0.140	-5.97	3.77	-1.58	0.152	-6.85	3.79	-1.81	0.105
	R	-8.78	3.22	-2.73	**0.037**	-7.79	3.35	-2.32	0.052	-8.69	3.80	-2.29	0.054	-9.61	3.95	-2.43	**0.047**
Rostral anterior cingulate	L	-1.98	0.87	-2.28	0.054	-1.68	0.90	-1.86	0.098	-1.89	1.02	-1.86	0.098	-2.11	1.04	-2.03	0.077
	R	-2.14	0.75	-2.86	**0.037**	-1.65	0.83	-2.00	0.081	-2.15	0.90	-2.40	0.047	-2.28	0.95	-2.40	0.047
Rostral middle frontal	L	-15.27	4.22	-3.62	**0.024**	-10.38	4.47	-2.32	0.052	-13.02	5.15	-2.53	0.043	-14.26	5.26	-2.71	0.037
	R	-13.00	4.40	-2.95	**0.037**	-7.58	4.60	-1.65	0.139	-8.71	5.14	-1.70	0.128	-10.26	5.17	-1.98	0.081
Superior frontal	L	-18.38	4.53	-4.06	**0.014**	-14.79	4.93	-3.00	**0.037**	-17.54	5.54	-3.17	**0.034**	-19.21	5.68	-3.38	**0.024**
	R	-16.04	4.75	-3.38	**0.024**	-14.64	4.98	-2.94	**0.037**	-16.04	5.80	-2.77	**0.037**	-17.84	5.81	-3.07	**0.036**
Frontal pole	L	-0.36	0.21	-1.74	0.119	-0.37	0.21	-1.82	0.104	-0.36	0.24	-1.48	0.178	-0.41	0.25	-1.65	0.139
	R	-0.57	0.27	-2.09	0.073	-0.35	0.29	-1.20	0.265	-0.36	0.33	-1.10	0.310	-0.44	0.34	-1.30	0.230
Parietal																	
Inferior parietal	L	-11.56	3.78	-3.06	**0.036**	-9.67	3.98	-2.43	**0.047**	-11.06	4.30	-2.57	**0.040**	-12.20	4.53	-2.69	**0.037**
	R	-10.25	4.40	-2.33	0.052	-8.35	4.36	-1.92	0.090	-10.47	4.83	-2.17	0.064	-10.94	5.06	-2.16	0.065
Isthmus cingulate	L	-2.78	1.13	-2.47	**0.046**	-1.84	1.20	-1.53	0.167	-2.32	1.38	-1.69	0.131	-2.56	1.41	-1.82	0.104
	R	-1.01	0.95	-1.06	0.329	-0.79	1.00	-0.79	0.444	-1.14	1.17	-0.97	0.359	-1.14	1.19	-0.96	0.362
Post central	L	-10.18	2.97	-3.43	**0.024**	-8.72	3.09	-2.82	**0.037**	-9.68	3.58	-2.71	**0.037**	-10.90	3.60	-3.03	**0.037**
	R	-9.32	2.82	-3.31	**0.024**	-7.42	3.00	-2.47	**0.046**	-8.75	3.33	-2.63	**0.040**	-9.62	3.44	-2.80	**0.037**
Posterior cingulate	L	-3.16	1.13	-2.79	**0.037**	-3.06	1.17	-2.62	**0.040**	-3.58	1.30	-2.75	**0.037**	-3.79	1.34	-2.82	**0.037**
	R	-3.32	1.25	-2.66	**0.038**	-2.56	1.32	-1.94	0.088	-3.23	1.50	-2.15	0.065	-3.44	1.54	-2.23	0.058
Precuneus	L	-9.24	2.75	-3.36	**0.024**	-7.16	2.83	-2.53	**0.043**	-8.32	3.18	-2.61	**0.040**	-9.25	3.34	-2.76	**0.037**

		Externalising				Internalising				Thought disorder				General psychopathology			
		B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)	B	SE	t	p(FDR)
	R	-8.68	2.96	-2.93	**0.037**	-7.55	3.14	-2.40	**0.047**	-8.70	3.53	-2.46	**0.046**	-9.56	3.60	-2.66	**0.038**
Superior parietal	L	-10.09	3.85	-2.62	**0.040**	-9.21	3.99	-2.31	0.053	-10.27	4.46	-2.30	0.053	-11.33	4.58	-2.47	**0.046**
	R	-8.63	3.77	-2.29	0.054	-9.10	3.85	-2.36	0.050	-9.84	4.38	-2.25	0.057	-10.80	4.49	-2.41	**0.047**
Supramarginal	L	-8.99	3.51	-2.56	**0.041**	-7.95	3.55	-2.24	0.058	-9.20	4.06	-2.27	0.056	-10.01	4.25	-2.36	0.050
	R	-11.21	3.20	-3.50	**0.024**	-9.02	3.49	-2.58	**0.040**	-10.70	4.12	-2.60	**0.040**	-11.84	4.19	-2.83	**0.037**
Temporal																	
Banks of superior	L	-0.97	1.17	-0.83	0.426	-0.16	1.11	-0.15	0.883	-0.48	1.28	-0.37	0.713	-0.48	1.31	-0.36	0.718
temporal sulcus	R	-1.33	0.90	-1.47	0.180	-0.66	0.92	-0.72	0.476	-1.06	1.06	-1.00	0.352	-1.07	1.08	-0.99	0.354
Entorhinal	L	-0.60	0.47	-1.27	0.237	-0.37	0.48	-0.77	0.452	-0.51	0.57	-0.90	0.392	-0.54	0.56	-0.96	0.362
	R	-0.46	0.48	-0.96	0.362	-0.38	0.50	-0.76	0.455	-0.50	0.57	-0.87	0.401	-0.53	0.60	-0.89	0.397
Fusiform	L	-5.34	2.31	-2.31	0.053	-3.95	2.38	-1.66	0.137	-4.94	2.72	-1.82	0.104	-5.34	2.81	-1.90	0.092
	R	-6.05	2.23	-2.72	**0.037**	-4.67	2.28	-2.04	0.076	-5.27	2.57	-2.05	0.076	-5.88	2.68	-2.19	0.062
Inferior temporal	L	-7.49	2.66	-2.82	**0.037**	-5.41	2.83	-1.91	0.091	-6.73	3.18	-2.12	0.069	-7.32	3.29	-2.22	0.058
	R	-7.93	2.39	-3.32	**0.024**	-5.93	2.63	-2.25	0.057	-6.14	2.98	-2.06	0.075	-7.22	3.06	-2.36	0.050
Middle temporal	L	-7.34	2.32	-3.16	**0.034**	-5.17	2.31	-2.23	0.058	-6.86	2.65	-2.59	**0.040**	-7.19	2.71	-2.66	**0.038**
	R	-8.58	2.42	-3.55	**0.024**	-6.09	2.58	-2.36	0.050	-7.62	2.83	-2.70	**0.037**	-8.25	2.93	-2.81	**0.037**
Parahippocampal	L	-1.20	0.74	-1.63	0.142	-1.00	0.78	-1.28	0.236	-1.15	0.90	-1.28	0.236	-1.25	0.93	-1.35	0.214
	R	-0.77	0.76	-1.01	0.348	-0.57	0.76	-0.76	0.458	-0.92	0.89	-1.03	0.338	-0.88	0.92	-0.96	0.362
Superior temporal	L	-7.92	2.54	-3.12	**0.036**	-6.64	2.63	-2.52	**0.043**	-7.46	3.01	-2.48	**0.046**	-8.28	3.10	-2.67	**0.038**
	R	-7.46	2.24	-3.33	**0.024**	-6.35	2.38	-2.67	**0.038**	-7.52	2.78	-2.70	**0.037**	-8.14	2.84	-2.87	**0.037**
Temporal pole	L	-0.95	0.34	-2.80	**0.037**	-0.83	0.35	-2.40	**0.047**	-0.97	0.40	-2.45	**0.047**	-1.06	0.41	-2.60	**0.040**
	R	-0.33	0.34	-0.99	0.354	-0.33	0.36	-0.92	0.383	-0.30	0.40	-0.73	0.472	-0.35	0.42	-0.84	0.419
Transverse temporal	L	-0.78	0.45	-1.75	0.116	-0.63	0.45	-1.41	0.199	-0.63	0.52	-1.20	0.265	-0.75	0.53	-1.40	0.199
	R	-0.48	0.32	-1.51	0.173	-0.50	0.33	-1.52	0.170	-0.51	0.37	-1.37	0.207	-0.59	0.38	-1.53	0.167
Occipital																	
Cuneus	L	-1.96	1.12	-1.75	0.117	-1.89	1.18	-1.61	0.147	-2.15	1.34	-1.60	0.149	-2.32	1.42	-1.64	0.140
	R	-2.28	1.26	-1.81	0.104	-1.86	1.30	-1.44	0.190	-2.03	1.47	-1.38	0.206	-2.31	1.54	-1.50	0.173
Lateral occipital	L	-8.13	3.27	-2.49	**0.046**	-6.68	3.31	-2.02	0.077	-8.10	3.86	-2.10	0.071	-8.83	3.95	-2.24	0.058
	R	-8.54	3.32	-2.57	**0.040**	-6.56	3.35	-1.96	0.085	-7.94	3.96	-2.01	0.079	-8.59	4.06	-2.11	0.070
Lingual	L	-3.02	2.29	-1.31	0.225	-1.92	2.46	-0.78	0.452	-2.99	2.76	-1.08	0.319	-2.96	2.83	-1.04	0.335
	R	-3.90	2.22	-1.76	0.116	-2.18	2.32	-0.94	0.371	-3.62	2.74	-1.32	0.224	-3.69	2.74	-1.35	0.214
Perical carine	L	-1.39	1.30	-1.07	0.325	-1.05	1.36	-0.77	0.452	-1.60	1.55	-1.03	0.338	-1.61	1.60	-1.01	0.350
	R	-2.09	1.31	-1.60	0.149	-1.35	1.37	-0.99	0.354	-2.34	1.61	-1.45	0.185	-2.27	1.65	-1.37	0.207
Insula	L	-3.64	1.26	-2.88	**0.037**	-3.82	1.36	-2.81	**0.037**	-4.33	1.54	-2.81	**0.037**	-4.60	1.57	-2.92	**0.037**
	R	-3.43	1.38	-2.49	**0.046**	-3.15	1.43	-2.20	0.060	-4.19	1.60	-2.62	**0.040**	-4.20	1.68	-2.51	**0.045**

Table S13. Multiple regression analyses of the relationship between grey matter volume and psychopathology in the ABCD Study, with all dimensions entered into models simultaneously (n= n=10,858)

		Externalizing				Internalizing				Thought Disorder			
		B	SE	t	p	B	SE	t	p	B	SE	t	p
Frontal													
Caudal anterior cingulate	L	-6.27	5.18	-1.21	.226	-0.67	6.69	-0.10	.921	-1.09	8.14	-0.13	.894
	R	-9.55	5.42	-1.76	.079	1.71	7.28	0.24	.814	-4.57	8.65	-0.53	.597
Caudal middle frontal	L	-9.95	13.21	-0.75	.452	-1.94	16.86	-0.12	.908	-6.07	20.35	-0.30	.766
	R	-15.62	13.47	-1.16	.247	-7.34	16.94	-0.43	.665	-5.34	20.06	-0.27	.790
Lateral orbitofrontal	L	-16.48	7.93	-2.08	.038	2.41	11.02	0.22	.827	-9.65	12.63	-0.76	.445
	R	-17.43	8.20	-2.13	.034	-0.56	10.79	-0.05	.959	-7.85	12.85	-0.61	.541
Medial orbitofrontal	L	-7.03	6.40	-1.10	.272	-4.00	8.58	-0.47	.641	-0.42	9.99	-0.04	.966
	R	-7.90	6.25	-1.26	.207	-1.18	8.06	-0.15	.884	-4.29	9.69	-0.44	.658
Paracentral	L	-4.97	6.21	-0.80	.423	-3.98	7.95	-0.50	.617	-3.15	10.01	-0.31	.753
	R	-7.61	6.91	-1.10	.271	-3.77	9.77	-0.39	.699	-4.04	11.49	-0.35	.725
Pars opercularis	L	-4.34	8.71	-0.50	.619	-4.01	11.56	-0.35	.729	-4.87	13.42	-0.36	.716
	R	-7.93	7.87	-1.01	.314	0.21	9.70	0.02	.983	-6.89	11.90	-0.58	.563
Pars orbitalis	L	-3.53	3.16	-1.12	.264	-1.04	4.26	-0.24	.807	-1.45	5.08	-0.29	.775
	R	-4.39	3.91	-1.12	.262	-0.07	5.42	-0.01	.990	-4.73	6.42	-0.74	.461
Pars triangularis	L	-9.12	6.45	-1.41	.158	-0.92	9.12	-0.10	.920	-1.97	10.78	-0.18	.855
	R	-6.97	7.73	-0.90	.368	-0.21	10.14	-0.02	.983	-5.01	11.69	-0.43	.668
Precentral	L	-28.30	15.17	-1.87	.063	-0.18	19.81	-0.01	.993	-4.14	23.95	-0.17	.863
	R	-24.82	14.24	-1.74	.082	-4.35	19.58	-0.22	.824	-12.57	23.55	-0.53	.594
Rostral anterior cingulate	L	-6.76	4.94	-1.37	.172	-2.29	6.65	-0.34	.730	-0.36	7.84	-0.05	.963
	R	-6.44	4.60	-1.40	.162	1.22	5.88	0.21	.836	-3.72	6.98	-0.53	.595
Rostral middle frontal	L	-45.13	20.92	-2.16	.031	-2.70	27.09	-0.10	.921	-16.71	32.68	-0.51	.609
	R	-41.39	21.08	-1.96	.050	-0.03	28.60	0.00	.999	3.53	34.18	0.10	.918
Superior frontal	L	-42.54	25.15	-1.69	.091	-11.17	32.94	-0.34	.735	-18.09	39.54	-0.46	.647
	R	-29.15	25.22	-1.16	.248	-25.64	33.80	-0.76	.448	-15.90	39.53	-0.40	.688
Frontal pole	L	0.04	1.55	0.02	.981	-2.10	2.23	-0.94	.348	-0.04	2.62	-0.02	.986
	R	-3.11	1.96	-1.59	.112	-0.79	2.75	-0.29	.774	0.62	3.13	0.20	.843
Parietal													
Inferior parietal	L	-34.80	19.17	-1.82	.070	-9.19	24.54	-0.37	.708	-8.83	28.67	-0.31	.758
	R	-33.22	21.47	-1.55	.122	0.83	27.14	0.03	.976	-20.77	32.73	-0.63	.526
Isthmus cingulate	L	-8.59	4.94	-1.74	.083	0.64	6.51	0.10	.922	-2.04	7.94	-0.26	.798
	R	-2.36	4.60	-0.51	.609	0.16	6.38	0.02	.980	-4.74	7.73	-0.61	.540
Postcentral	L	-23.22	14.23	-1.63	.103	-8.83	19.56	-0.45	.652	-5.46	23.71	-0.23	.818
	R	-22.94	13.48	-1.70	.089	-3.40	18.52	-0.18	.854	-8.43	21.45	-0.39	.694
Posterior cingulate	L	-6.48	5.45	-1.19	.235	-3.43	7.74	-0.44	.658	-5.54	8.73	-0.63	.526
Posterior cingulate	R	-9.61	6.13	-1.57	.118	0.03	7.87	0.00	.997	-3.28	9.80	-0.34	.738
Precuneus	L	-24.49	12.98	-1.89	.060	-4.37	17.27	-0.25	.801	-7.38	20.66	-0.36	.721
	R	-20.23	13.72	-1.47	.141	-10.72	17.54	-0.61	.542	-5.81	22.60	-0.26	.797

		Externalizing				Internalizing				Thought Disorder			
		B	SE	t	p	B	SE	t	p	B	SE	t	p
Superior parietal	L	-20.56	17.11	-1.20	.230	-7.04	24.11	-0.29	.770	-8.22	28.77	-0.29	.775
	R	-16.47	18.45	-0.89	.373	-11.14	23.92	-0.47	.642	-11.57	29.58	-0.39	.696
Supramarginal	L	-25.96	17.17	-1.51	.131	-4.53	23.01	-0.20	.844	-13.14	28.13	-0.47	.641
	R	-32.95	16.35	-2.01	.044	0.06	21.56	0.00	.998	-15.65	26.41	-0.59	.554
Temporal													
Banks of Superior Temporal	L	-6.14	5.23	-1.18	.240	-0.28	6.74	-0.04	.967	1.50	8.03	0.19	.852
Sulcus	R	-5.19	4.25	-1.22	.222	3.13	5.91	0.53	.597	-2.98	7.02	-0.42	.671
Entorhinal	L	-2.83	3.29	-0.86	.390	-1.99	4.36	-0.46	.649	-1.69	5.03	-0.34	.737
	R	-3.44	3.32	-1.04	.300	0.02	4.21	0.00	.997	-1.39	5.20	-0.27	.790
Fusiform	L	-25.20	13.63	-1.85	.065	3.70	18.99	0.20	.845	-7.41	21.79	-0.34	.734
	R	-23.73	12.90	-1.84	.066	-0.71	17.24	-0.04	.967	-7.39	19.68	-0.38	.707
Inferior temporal	L	-29.32	15.77	-1.86	.063	-2.49	22.05	-0.11	.910	-5.81	25.60	-0.23	.821
	R	-33.84	14.83	-2.28	.023	-10.98	21.46	-0.51	.609	8.69	25.02	0.35	.729
Middle temporal	L	-23.93	14.74	-1.62	.105	-3.88	19.91	-0.20	.845	-8.29	23.69	-0.35	.726
	R	-27.96	14.89	-1.88	.061	-1.34	20.97	-0.06	.949	-13.79	24.06	-0.57	.567
Parahippocampal	L	-5.42	3.80	-1.42	.155	0.11	5.11	0.02	.983	-1.67	6.11	-0.27	.785
	R	-2.18	3.67	-0.59	.553	2.33	4.86	0.48	.632	-5.25	6.06	-0.87	.387
Superior temporal	L	-21.73	14.55	-1.49	.136	-8.01	19.22	-0.42	.677	-5.48	22.70	-0.24	.809
	R	-17.46	12.73	-1.37	.171	-6.17	17.67	-0.35	.727	-9.71	21.35	-0.45	.650
Temporal pole	L	-1.95	3.23	-0.60	.547	-2.46	4.63	-0.53	.596	-2.08	5.19	-0.40	.689
	R	-0.16	3.06	-0.05	.957	-0.09	4.20	-0.02	.984	-0.76	4.78	-0.16	.873
Transverse temporal	L	-2.01	2.34	-0.86	.391	-1.58	3.03	-0.52	.602	0.68	3.62	0.19	.851
	R	-0.55	1.78	-0.31	.757	-1.79	2.36	-0.76	.449	-1.06	2.87	-0.37	.713
Occipital													
Cuneus	L	-3.73	4.76	-0.78	.434	-2.15	6.42	-0.33	.738	-0.02	7.65	0.00	.998
	R	-5.88	5.54	-1.06	.289	-2.09	7.69	-0.27	.786	1.42	9.16	0.15	.877
Lateral occipital	L	-20.81	14.49	-1.44	.151	-2.47	20.06	-0.12	.902	-9.86	24.51	-0.40	.688
	R	-25.28	15.18	-1.67	.096	-0.33	20.60	-0.02	.987	-13.94	24.46	-0.57	.569
Lingual	L	-7.01	9.76	-0.72	.473	0.31	13.48	0.02	.982	-6.05	16.17	-0.37	.708
	R	-10.15	9.43	-1.08	.282	1.70	13.53	0.13	.900	-7.74	16.19	-0.48	.633
Perical carine	L	-1.08	3.44	-0.31	.754	-1.81	4.90	-0.37	.712	-2.49	5.79	-0.43	.668
	R	-3.18	3.68	-0.86	.388	1.22	5.13	0.24	.813	-3.85	5.85	-0.66	.511
Insula	L	-8.79	6.69	-1.31	.189	-5.30	9.11	-0.58	.561	-6.29	10.55	-0.60	.551
	R	-8.03	6.67	-1.20	.229	-0.73	9.27	-0.08	.938	-11.73	10.66	-1.10	.272

Note: Uncorrected p-values reported, none of the p-values passed FDR correction

Table S14. Multiple regression analyses of the relationship between surface area and psychopathology in the ABCD Study, with all dimensions entered into models simultaneously (n=10,858)

		Externalizing				Internalizing				Thought Disorder			
		B	SE	t	p	B	SE	t	p	B	SE	t	p
Frontal													
Caudal anterior cingulate	L	-1.88	1.42	-1.32	.188	-0.17	1.79	-0.09	.926	-0.42	2.17	-0.19	.847
	R	-2.85	1.50	-1.89	.059	0.47	2.02	0.23	.816	-1.32	2.40	-0.55	.583
Caudal middle frontal	L	-4.53	3.78	-1.20	.232	-0.67	4.84	-0.14	.890	-1.62	5.83	-0.28	.782
	R	-4.87	3.90	-1.25	.212	-2.41	5.05	-0.48	.633	-1.00	6.07	-0.17	.869
Lateral orbitofrontal	L	-5.07	2.42	-2.10	.037	1.11	3.28	0.34	.736	-2.58	3.81	-0.68	.499
	R	-5.11	2.53	-2.02	.044	0.36	3.37	0.11	.914	-2.10	4.03	-0.52	.603
Medial orbitofrontal	L	-2.43	2.13	-1.14	.254	-0.52	2.70	-0.19	.847	-0.81	3.32	-0.24	.808
	R	-2.88	1.74	-1.66	.098	-0.10	2.21	-0.04	.966	-1.38	2.68	-0.52	.606
Paracentral	L	-1.35	1.84	-0.73	.463	-1.14	2.36	-0.48	.630	-1.00	2.91	-0.34	.732
	R	-2.63	2.09	-1.26	.210	-1.13	2.98	-0.38	.706	-0.87	3.49	-0.25	.804
Pars opercularis	L	-2.22	2.46	-0.90	.366	-1.13	3.27	-0.35	.730	-1.65	3.80	-0.43	.664
	R	-2.97	2.42	-1.23	.220	0.27	2.85	0.09	.925	-2.62	3.53	-0.74	.458
Pars orbitalis	L	-1.35	0.71	-1.91	.057	-0.07	0.95	-0.07	.943	-0.33	1.15	-0.29	.774
	R	-1.30	0.92	-1.41	.158	0.03	1.22	0.03	.979	-0.92	1.43	-0.65	.519
Pars triangularis	L	-2.81	1.76	-1.60	.111	0.09	2.48	0.04	.971	-1.31	2.94	-0.45	.656
	R	-3.00	2.22	-1.35	.178	0.26	3.03	0.09	.931	-1.88	3.44	-0.55	.585
Precentral	L	-9.14	4.93	-1.85	.064	-1.22	6.33	-0.19	.847	-0.72	7.56	-0.10	.924
	R	-7.47	4.83	-1.55	.122	-2.31	6.89	-0.34	.737	-3.07	8.23	-0.37	.710
Rostral anterior cingulate	L	-1.84	1.32	-1.39	.164	-0.40	1.83	-0.22	.829	-0.59	2.11	-0.28	.782
	R	-1.94	1.23	-1.58	.114	0.40	1.56	0.26	.796	-1.27	1.87	-0.68	.496
Rostral middle frontal	L	-16.92	6.66	-2.54	.011	1.88	8.79	0.21	.830	-5.41	10.97	-0.49	.622
	R	-17.35	6.92	-2.51	.012	2.09	9.19	0.23	.820	0.27	11.27	0.02	.981
Superior frontal	L	-15.38	7.21	-2.14	.033	-2.11	9.81	-0.21	.830	-6.61	11.64	-0.57	.571
	R	-11.95	7.36	-1.62	.105	-5.72	10.07	-0.57	.570	-5.48	12.07	-0.45	.650
Frontal pole	L	-0.26	0.31	-0.82	.414	-0.31	0.44	-0.70	.487	0.00	0.51	-0.01	.994
	R	-0.75	0.42	-1.81	.071	-0.05	0.56	-0.10	.922	0.15	0.64	0.23	.821
Parietal													
Inferior parietal	L	-10.82	5.99	-1.80	.072	-2.31	7.72	-0.30	.764	-2.58	8.81	-0.29	.770
	R	-10.41	6.63	-1.57	.117	-0.78	8.43	-0.09	.926	-5.34	10.03	-0.53	.594
Isthmus cingulate	L	-3.10	1.62	-1.91	.057	0.58	2.18	0.27	.790	-1.11	2.63	-0.42	.674
	R	-1.08	1.41	-0.76	.446	0.31	1.98	0.16	.875	-1.13	2.44	-0.46	.642
Postcentral	L	-9.13	4.54	-2.01	.045	-3.13	6.15	-0.51	.611	-1.31	7.52	-0.17	.862
	R	-9.00	4.26	-2.11	.035	-1.55	5.87	-0.26	.791	-2.33	6.82	-0.34	.733
Posterior cingulate	L	-2.39	1.71	-1.40	.161	-0.97	2.45	-0.40	.691	-1.88	2.77	-0.68	.498
	R	-3.38	1.97	-1.72	.086	0.21	2.49	0.08	.933	-1.35	3.18	-0.43	.671
Precuneus	L	-9.35	4.15	-2.26	.024	-1.13	5.64	-0.20	.841	-2.35	6.82	-0.34	.730
	R	-7.35	4.62	-1.59	.112	-2.68	6.23	-0.43	.667	-3.35	7.94	-0.42	.673

		Externalizing				Internalizing				Thought Disorder			
		B	SE	t	p	B	SE	t	p	B	SE	t	p
Superior parietal	L	-8.31	5.68	-1.46	.144	-2.67	8.07	-0.33	.741	-1.86	9.44	-0.20	.844
	R	-5.45	5.95	-0.91	.361	-4.13	7.76	-0.53	.595	-3.90	9.60	-0.41	.684
Supramarginal	L	-8.83	5.18	-1.70	.089	-1.96	7.08	-0.28	.782	-3.41	8.47	-0.40	.687
	R	-10.86	4.89	-2.22	.027	-0.70	6.82	-0.10	.918	-3.64	8.17	-0.45	.656
Temporal													
Banks of Superior Temporal	L	-2.00	1.76	-1.14	.256	0.81	2.22	0.37	.715	-0.51	2.62	-0.19	.847
Sulcus	R	-1.80	1.36	-1.32	.187	0.82	1.90	0.43	.667	-1.02	2.24	-0.45	.650
Entorhinal	L	-0.66	0.71	-0.93	.350	0.07	0.96	0.07	.945	-0.41	1.12	-0.37	.715
	R	-0.46	0.71	-0.65	.515	-0.09	0.97	-0.09	.928	-0.23	1.13	-0.21	.836
Fusiform	L	-6.93	3.54	-1.96	.051	0.56	4.74	0.12	.905	-1.84	5.55	-0.33	.740
	R	-7.17	3.45	-2.08	.038	-0.62	4.65	-0.13	.895	-0.77	5.39	-0.14	.887
Inferior temporal	L	-7.68	3.93	-1.95	.051	0.27	5.59	0.05	.961	-2.67	6.50	-0.41	.682
	R	-9.49	3.69	-2.57	.010	-2.35	5.29	-0.44	.657	1.44	6.10	0.24	.813
Middle temporal	L	-7.20	3.60	-2.00	.046	1.51	4.75	0.32	.751	-3.83	5.69	-0.67	.501
	R	-9.23	3.74	-2.47	.014	0.59	5.27	0.11	.911	-3.36	6.01	-0.56	.577
Parahippocampal	L	-1.22	1.17	-1.04	.298	-0.21	1.53	-0.14	.890	-0.45	1.84	-0.25	.806
	R	-0.85	1.20	-0.71	.478	0.56	1.50	0.38	.706	-1.34	1.90	-0.70	.481
Superior temporal	L	-8.35	4.02	-2.07	.039	-1.15	5.07	-0.23	.821	-1.75	5.87	-0.30	.766
	R	-6.81	3.48	-1.96	.051	-0.34	4.78	-0.07	.944	-3.52	5.77	-0.61	.542
Temporal pole	L	-0.69	0.53	-1.30	.195	-0.18	0.70	-0.26	.793	-0.23	0.84	-0.27	.785
	R	-0.20	0.51	-0.39	.700	-0.31	0.70	-0.45	.655	0.07	0.76	0.10	.923
Transverse temporal	L	-0.90	0.69	-1.30	.193	-0.29	0.87	-0.34	.736	0.25	1.03	0.25	.806
	R	-0.35	0.48	-0.73	.463	-0.26	0.63	-0.41	.679	-0.23	0.77	-0.29	.769
Occipital													
Cuneus	L	-1.94	1.75	-1.11	.267	-0.20	2.28	-0.09	.929	-0.73	2.79	-0.26	.793
	R	-2.80	1.98	-1.41	.158	0.09	2.70	0.03	.973	-0.44	3.15	-0.14	.890
Lateral occipital	L	-7.22	4.92	-1.47	.142	-0.24	6.71	-0.04	.971	-4.80	8.36	-0.57	.566
	R	-8.53	4.94	-1.73	.085	-0.01	6.80	0.00	.998	-4.12	8.33	-0.49	.621
Lingual	L	-3.24	3.42	-0.95	.343	1.03	4.93	0.21	.835	-2.41	5.80	-0.42	.678
	R	-5.06	3.25	-1.56	.120	2.77	4.83	0.57	.568	-3.61	5.79	-0.62	.533
Perical carine	L	-1.66	1.86	-0.89	.372	0.84	2.66	0.32	.751	-1.85	3.10	-0.60	.551
	R	-2.67	2.00	-1.34	.182	2.09	2.70	0.77	.440	-3.16	3.18	-0.99	.321
Insula	L	-2.33	1.97	-1.18	.237	-1.46	2.74	-0.54	.593	-1.85	3.17	-0.58	.560
	R	-1.99	2.08	-0.96	.339	0.04	2.84	0.02	.988	-3.59	3.27	-1.10	.271

Note: Uncorrected p-values reported, none of the p-values passed FDR correction