

Examining Specificity of Neural Correlates of Childhood Psychotic-Like Experiences During an Emotional N-back Task

Supplemental Information

Supplemental Methods

Participants

ABCD study exclusion criteria included: child not fluent in English, MRI contraindication (e.g., irremovable ferromagnetic implants or dental appliances, claustrophobia), major neurological disorder, gestational age <28 weeks or birthweight <1,200 grams, history of traumatic brain injury, or a current diagnosis of schizophrenia, autism spectrum disorder (moderate, severe), mental retardation/intellectual disability, or alcohol/substance use disorder.

Imaging Procedure

Each child completed T1-weighted and T2-weighted structural scans (1-mm isotropic) before completing tasks, which were counterbalanced across subjects (see (1) for details). In terms of assessing and correcting head motion, first, head motion was monitored in real time using a system called FIRMM (fMRI Integrated Real-time Motion Monitor; (2)), which calculates motion values and summary statistics during scan acquisition, providing estimates of movement. Then, using the pre-processing pipeline, head motion was corrected by registering each frame to the first using AFNI's 3dvolreg (3) and B₀ distortions were corrected using a reversing polarity method (4).

Supplemental Table S1. Overall ROI activation for 2-back vs 0-back contrast.

ROI	<i>t</i>	<i>p</i>
DLPFC	23.65	<.001
Right DLPFC	23.85	<.001
Left DLPFC	21.34	<.001
Hippocampus	-23.13	<.001
Right Hippocampus	-19.08	<.001
Left Hippocampus	-23.64	<.001
Parahippocampus	-17.47	<.001
Right Parahippocampus	-13.81	<.001
Left Parahippocampus	-16.68	<.001
Caudate	9.80	<.001
Right Caudate	9.19	<.001
Left Caudate	9.52	<.001
Putamen	-6.20	<.001
Right Putamen	7.26	<.001
Left Putamen	-6.31	<.001
Nucleus Accumbens	-8.91	<.001
Right Nucleus Accumbens	-7.05	<.001
Left Nucleus Accumbens	-8.90	<.001
Amygdala	-15.70	<.001
Right Amygdala	-12.70	<.001
Left Amygdala	-15.36	<.001
Caudal ACC	12.14	<.001
Right Caudal ACC	14.98	<.001
Left Caudal ACC	8.33	<.001
Rostral ACC	-18.84	<.001
Right Rostral ACC	-15.51	<.001
Left Rostral ACC	-20.32	<.001
Pallidum	5.66	<.001
Right Pallidum	7.26	<.001
Left Pallidum	2.67	.01

Note. *t*=*t*-test statistic; *p*=*p*-value; DLPFC=dorsolateral prefrontal cortex; ACC=anterior cingulate cortex.

Supplemental Table S2. Overall ROI activation for emotion vs neutral contrast.

ROI	<i>t</i>	<i>p</i>
DLPFC	-3.61	<.001
Right DLPFC	-3.28	<.001
Left DLPFC	-3.69	<.001
Hippocampus	0.09	.93
Right Hippocampus	0.41	.68
Left Hippocampus	-0.28	.78
Parahippocampus	0.03	.97
Right Parahippocampus	0.76	.45
Left Parahippocampus	-0.73	.47
Caudate	-4.13	<.001
Right Caudate	-3.92	<.001
Left Caudate	-4.04	<.001
Putamen	-3.12	<.001
Right Putamen	-2.20	.03
Left Putamen	-3.82	<.001
Nucleus Accumbens	-2.23	.03
Right Nucleus Accumbens	-1.13	.26
Left Nucleus Accumbens	-2.90	<.001
Amygdala	5.24	<.001
Right Amygdala	5.31	<.001
Left Amygdala	3.72	<.001
Caudal ACC	-3.93	<.001
Right Caudal ACC	-3.94	<.001
Left Caudal ACC	-3.62	<.001
Rostral ACC	-1.53	.13
Right Rostral ACC	-1.30	.19
Left Rostral ACC	-1.66	.10
Pallidum	-0.62	.54
Right Pallidum	0.53	.59
Left Pallidum	-1.64	.10

Note. *t*=*t*-test statistic; *p*=*p*-value; DLPFC=dorsolateral prefrontal cortex; ACC=anterior cingulate cortex.

Supplemental Table S3. Overall ROI activation for face vs place contrast.

ROI	<i>t</i>	<i>p</i>
DLPFC	-3.62	<.001
Right DLPFC	-3.48	<.001
Left DLPFC	-3.53	<.001
Hippocampus	-6.22	<.001
Right Hippocampus	-6.31	<.001
Left Hippocampus	-5.09	<.001
Parahippocampus	-117.63	<.001
Right Parahippocampus	-112.11	<.001
Left Parahippocampus	-97.48	<.001
Caudate	11.46	<.001
Right Caudate	11.42	<.001
Left Caudate	1.85	<.001
Putamen	7.89	<.001
Right Putamen	8.46	<.001
Left Putamen	6.66	<.001
Nucleus Accumbens	6.82	<.001
Right Nucleus Accumbens	5.00	<.001
Left Nucleus Accumbens	7.30	<.001
Amygdala	43.94	<.001
Right Amygdala	37.94	<.001
Left Amygdala	37.16	<.001
Caudal ACC	-.97	.33
Right Caudal ACC	-1.28	.20
Left Caudal ACC	-.59	.56
Rostral ACC	3.27	<.001
Right Rostral ACC	4.61	<.001
Left Rostral ACC	1.71	.09
Pallidum	2.49	.01
Right Pallidum	1.92	.05
Left Pallidum	6.66	<.001

Note. *t*=*t*-test statistic; *p*=*p*-value; DLPFC=dorsolateral prefrontal cortex; ACC=anterior cingulate cortex.

Supplemental References

1. Casey BJ, Cannonier T, Conley MI, Cohen AO, Barch DM, Heitzeg MM, *et al.* (2018): The Adolescent Brain Cognitive Development (ABCD) study: Imaging acquisition across 21 sites. *Dev Cogn Neurosci.* 32: 43–54.
2. Dosenbach NUF, Koller JM, Earl EA, Miranda-Dominguez O, Klein RL, Van AN, *et al.* (2017): Real-time motion analytics during brain MRI improve data quality and reduce costs. *Neuroimage.* 161: 80–93.
3. Cox RW (1996): AFNI: software for analysis and visualization of functional magnetic resonance neuroimages. *Comput Biomed Res.* 29: 162–73.
4. Hagler DJ, Hatton SN, Makowski C, Cornejo MD, Fair DA, Dick AS, *et al.* (2018): Image processing and analysis methods for the Adolescent Brain Cognitive Development Study. *bioRxiv.* 457739.