Neural Plasticity

Alterations of the brain microstructure and corresponding functional connectivity in early blind adolescents

Running title: Brain microstructure in EBAs.

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Supplementary Materials

Table SI. Brain regions with significant changes in diffusion tensor imaging metrics between LPs and NLPs.

DTI parameters changes	Brain regions	Abbreviations	Cluster size	T score	Peak MNI		
					x	y	z
FA reduction	Right Fusiform Gyrus	FG.R	80	-4.95	26	-78	-12
	Right Middle Temporal Gyrus	MTG.R	61	-4.94	66	-38	-4
	Right Superior Occipital Gyrus	SOG.R	112	-6.48	24	-68	32
FA elevation	Right Superior Frontal Gyrus	SFG.R	107	4.32	28	54	18
	Right Lingual	LING.R	50	4.43	12	-80	0
MD elevation	Right Temporal Pole Middle	MTP.R	88	3.93	26	12	-38
	Right Fusiform Gyrus	FG.R	97	5.38	30	-78	-16
MD reduction	Right Caudate	CAU.R	67	-3.89	20	-8	22
	Left Caudate	CAU.L	106	-4.15	-18	-8	26
RD elevation	Right Temporal Pole Middle	MTP.R	71	3.79	26	12	-38
	Right Fusiform Gyrus	FG.R	108	5.24	30	-78	-16
	Right Superior Occipital Gyrus	SOG.R	83	7.34	24	-72	34
RD reduction	Left Caudate	CAU.L	89	-4.45	-20	-4	26
AD elevation	Right Temporal Pole Middle	MTP.R	93	4.14	26	12	-38
	Right Fusiform Gyrus	FG.R	83	5.41	32	-72	-16
AD reduction	Right Caudate	CAU.R	160	-4.31	18	-10	22
	Left Caudate	CAU.L	87	-4.47	-18	-10	26

AlphaSim corrected with a voxel-level threshold of $p < 0.01$ and a cluster-level threshold of $p < 0.05$. Abbreviations: LP, early-blind adolescents with light perception; NLP, early-blind adolescents without light perception; FA, fractional anisotropy; MD, mean diffusivity; RD, radial diffusivity; AD, axial diffusivity; and MNI, Montreal Neurological Institute.

Table SII. Brain regions with significant changes of RSFC between LP and NLP group.

ROI seeds	Brain regions	Abbreviations	Cluster size (voxels)	*T* score	Peak MNI		
					x	*y*	*z*
FG.R	Right superior frontal gyrus	SFG.R	93	6.14	15	39	-15
SFG.R	Right middle temporal	MTG.R	89	5.41	63	-51	-6
	Left inferior temporal gyrus	ITG.L	48	-4.47	-39	-45	-12
	Right postcentral gyrus	PCG.R	36	-3.98	30	-27	48

AlphaSim corrected with a voxel-level threshold of $p < 0.01$ and a cluster-level threshold of $p < 0.05$. Abbreviations: RSFC, resting-state functional connectivity; LP, early blind adolescents with light perception; NLP, early blind adolescents without light perception; ROI, region of interest; FG.R, right fusiform gyrus; SFG.R, right superior frontal gyrus; and MNI, Montreal Neurological Institute.

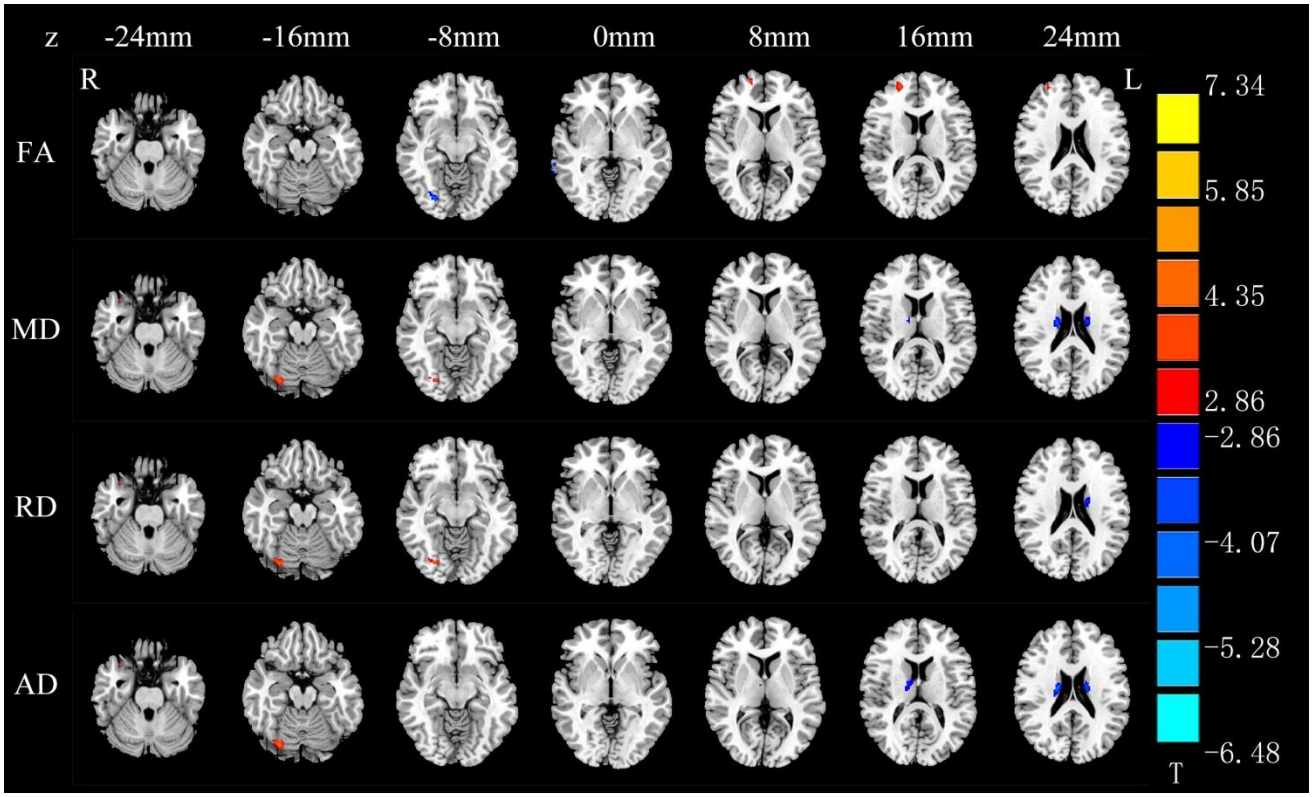

Figure SI: Group differences of fractional anisotropy (FA), mean diffusivity (MD), radial diffusivity (RD) and axial diffusivity (AD) using voxel-based analyses in LPs compared to NLPs (AlphaSim corrected with a voxel-level threshold of $p < 0.01$ and a cluster-level threshold of $p < 0.05$.). Blue and red regions denote decreased and increased DTI parameters, respectively. The numbers at the top indicate the z value of MNI coordinates.

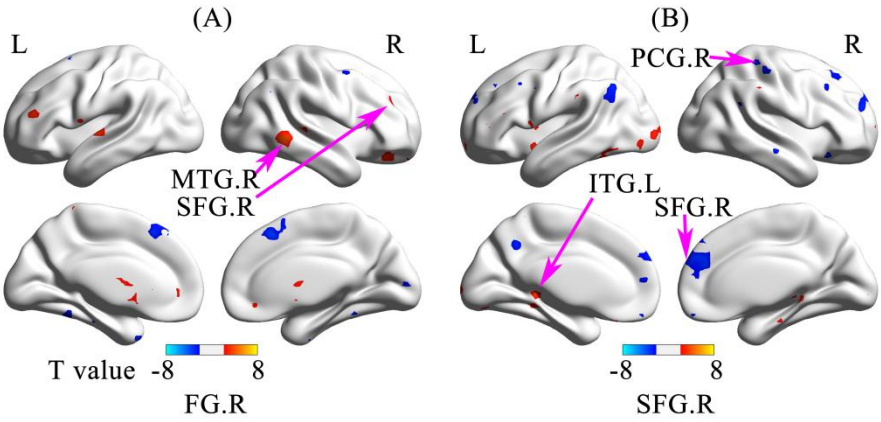

Figure SII: Brain regions that showed altered functional connectivity with FG.R (A) and SFG.R (B), respectively, in LPs compared to NLPs. Two sample *t*-tests were performed to explore the intergroup differences. The results were corrected by AlphaSim method at a voxel level of $p < 0.01$. All abbreviations of brain regions are shown in **Table SI-II**.

References