

Table S1 The group comparison results of the causal brain network

Effective connectivity	TD	ASD	P
SFGdor.R→MFG.R	0.31±0.03	0.33±0.06	0.036
ROL.R→INS.R	0.32±0.06	0.29±0.04	0.015
HES.R→ROL.R	0.36±0.06	0.32±0.07	0.010
HES.L→ROL.R	0.32±0.05	0.29±0.05	0.009
SMA.R→PCL.R	0.34±0.06	0.37±0.10	0.038
PCL.R→SMA.R	0.30±0.04	0.32±0.05	0.042
HES.R→INS.R	0.32±0.06	0.29±0.05	0.015
PCG.R→PCUN.L	0.31±0.04	0.29±0.03	0.007
PCG.R→PCUN.R	0.32±0.07	0.29±0.04	0.001
CAL.R→LING.R	0.33±0.05	0.36±0.09	0.025
CAL.L→LING.R	0.32±0.05	0.35±0.08	0.034
CUN.R→SOG.R	0.37±0.09	0.34±0.05	0.015
SOG.R→MOG.R	0.38±0.09	0.35±0.06	0.045
SPG.L→PCUN.L	0.32±0.05	0.29±0.04	<0.001
PUT.L→PAL.L	0.40±0.08	0.36±0.09	0.026
PUT.L→PAL.R	0.38±0.06	0.34±0.07	0.004
PUT.R→PAL.R	0.41±0.07	0.36±0.07	0.001

ASD, autism spectrum disorder; CAL.L, calcarine fissure and surrounding cortex left; CAL.R, calcarine fissure and surrounding cortex right; CUN.R, cuneus right; HES.R, Heschl gyrus right; INS.R, insula right; LING.R, lingual gyrus right; MFG.R, middle frontal gyrus right; MOG.R, middle occipital gyrus right; PAL.L, lenticular nucleus, pallidum left; PAL.R, lenticular nucleus, pallidum right; PCG.R, posterior cingulate gyrus right; PCL.R, paracentral lobule right; PCUN.L, precuneus left; PCUN.R, precuneus right; PUT.L, lenticular nucleus, putamen left; PUT.R, lenticular nucleus, putamen right; ROL.R, Rolandic operculum right; SFGdor.R, superior frontal gyrus, dorsolateral right; SMA.R, supplementary motor area right; SOG.R, superior occipital gyrus right; SPG.L, superior parietal gyrus left; TD, typically developing.

Table S2 The group comparison results of the temporal-lag brain network

Lag connectivity	TD	ASD	P
HES.L→ROL.R	0.38±0.14	0.32±0.14	0.040
PCG.R→PCUN.L	0.38±0.15	0.30±0.12	0.004
SPG.L→PCUN.L	0.43±0.17	0.30±0.14	<0.001
PCG.R→PCUN.R	0.40±0.14	0.31±0.13	0.001
PCUN.R→PCG.R	0.45±0.14	0.38±0.16	0.024
LING.L→CAL.R	0.44±0.15	0.38±0.13	0.043
SOG.L→CUN.R	0.50±0.18	0.43±0.13	0.037
CUN.R→SOG.R	0.45±0.17	0.37±0.14	0.019
SOG.R→CUN.R	0.50±0.17	0.41±0.14	0.008
MOG.R→SOG.R	0.50±0.19	0.41±0.16	0.008
MOG.L→SOG.L	0.51±0.19	0.40±0.16	0.002
IOG.L→MOG.L	0.38±0.11	0.31±0.11	0.002

ASD, autism spectrum disorder; CAL.R, calcarine fissure and surrounding cortex right; CUN.R, cuneus right; HES.L, Heschl gyrus left; IOG.L, inferior occipital gyrus left; LING.L, lingual gyrus left; MOG.L, middle occipital gyrus left; MOG.R, middle occipital gyrus right; PCG.R, posterior cingulate gyrus right; PCUN.L, precuneus left; PCUN.R, precuneus right; ROL.R, Rolandic operculum right; SOG.L, superior occipital gyrus left; SOG.R, superior occipital gyrus right; SPG.L, superior parietal gyrus left; TD, typically developing.