Supplementary

Table S1 Definitions and descriptions of the 7 functional cortical networks

No.	Network	Parcels	Network Function
1	Visual Network	7Networks_LH_Vis_1	The Visual Network is responsible for processing visual information. It primarily includes the primary and secondary visual cortices (V1, V2, V3, V4), and is involved in the perception of light, shapes, and motion. It plays a crucial role in visual perception, recognition, and spatial orientation.
2		7Networks_LH_Vis_2	
3		7Networks_LH_Vis_3	
4		7Networks_LH_Vis_4	
5		7Networks_LH_Vis_5	
6		7Networks_LH_Vis_6	
7		7Networks_LH_Vis_7	
8		7Networks_LH_Vis_8	
9		7Networks_LH_Vis_9	
10	Somatomotor Network	7Networks_LH_SomMot_1	Key areas of this network include the primary motor cortex and somatosensory cortex, which coordinate movement and the perception of bodily sensations.
11		7Networks_LH_SomMot_2	
12		7Networks_LH_SomMot_3	
13		7Networks_LH_SomMot_4	
14		7Networks_LH_SomMot_5	
15		7Networks_LH_SomMot_6	
16	Dorsal Attention Network	7Networks_LH_DorsAttn_Post_1	It is involved in voluntary (top-down) orienting and shows activity increases after presentation of cues indicating where, when, or to what subjects should direct their attention.
17		7Networks_LH_DorsAttn_Post_2	
18		7Networks_LH_DorsAttn_Post_3	
19		7Networks_LH_DorsAttn_Post_4	
20		7Networks_LH_DorsAttn_Post_5	
21		7Networks_LH_DorsAttn_Post_6	
22		7Networks_LH_DorsAttn_PrCv_1	
23		7Networks_LH_DorsAttn_FEF_1	
24	Salience/ Ventral Attention Network	7Networks_LH_SalVentAttn_ParOper_1	Salience Network: Detection of important stimuli and emotional regulation. Ventral Attention Network: It shows activity increases upon detection of salient targets, especially when they appear in unexpected locations.
25		7Networks_LH_SalVentAttn_FrOperIns_1	
26		7Networks_LH_SalVentAttn_FrOperIns_2	
27		7Networks_LH_SalVentAttn_PFCl_1	
28		7Networks_LH_SalVentAttn_Med_1	
29		7Networks_LH_SalVentAttn_Med_2	
30		7Networks_LH_SalVentAttn_Med_3	
31	Limbic Network	7Networks_LH_Limbic_OFC_1	The Limbic Network connects emotion, memory, and motivation, providing the foundation for emotional regulation, social behavior, and adaptive responses to internal and external environments.
32		7Networks_LH_Limbic_TempPole_1	
33		7Networks_LH_Limbic_TempPole_2	
34	Control Network	7Networks_LH_Cont_Par_1	Executive control and task-switching.
35		7Networks_LH_Cont_PFCl_1	
36		7Networks_LH_Cont_pCun_1	
37		7Networks_LH_Cont_Cing_1	
38	Default network	7Networks_LH_Default_Temp_1	The network is closely involved in episodic memory processing.
39		7Networks_LH_Default_Temp_2	
40		7Networks_LH_Default_Par_1	
41		7Networks_LH_Default_Par_2	
42		7Networks_LH_Default_PFC_1	
43		7Networks_LH_Default_PFC_2	
44		7Networks_LH_Default_PFC_3	
45		7Networks_LH_Default_PFC_4	
46		7Networks_LH_Default_PFC_5	
47		7Networks_LH_Default_PFC_6	
48		7Networks_LH_Default_PFC_7	
49		7Networks_LH_Default_pCunPCC_1	
50		7Networks_LH_Default_pCunPCC_2	
51	Visual Network	7Networks_RH_Vis_1	The Visual Network is responsible for processing visual information. It primarily includes the primary and secondary visual cortices (V1, V2, V3, V4), and is involved in the perception of light, shapes, and motion. It plays a crucial role in visual perception, recognition, and spatial orientation.
52		7Networks_RH_Vis_2	
53		7Networks_RH_Vis_3	
54		7Networks_RH_Vis_4	
55		7Networks_RH_Vis_5	
56		7Networks_RH_Vis_6	
57		7Networks_RH_Vis_7	
58		7Networks_RH_Vis_8	
59	Somatomotor Network	7Networks_RH_SomMot_1	Key areas of this network include the primary motor cortex and somatosensory cortex, which coordinate movement and the perception of bodily sensations.
60		7Networks_RH_SomMot_2	
61		7Networks_RH_SomMot_3	
62		7Networks_RH_SomMot_4	
63		7Networks_RH_SomMot_5	
64		7Networks_RH_SomMot_6	
65		7Networks_RH_SomMot_7	
66		7Networks_RH_SomMot_8	
67	Dorsal Attention Network	7Networks_RH_DorsAttn_Post_1	It is involved in voluntary (top-down) orienting and shows activity increases after the presentation of cues indicating where, when, or to what subjects should direct their attention.
68		7Networks_RH_DorsAttn_Post_2	
69		7Networks_RH_DorsAttn_Post_3	
70		7Networks_RH_DorsAttn_Post_4	
71		7Networks_RH_DorsAttn_Post_5	
72		7Networks_RH_DorsAttn_PrCv_1	
73		7Networks_RH_DorsAttn_FEF_1	
74	Salience/ Ventral Attention Network	7Networks_RH_SalVentAttn_TempOccPar_1	Salience Network: Detection of important stimuli and emotional regulation. Ventral Attention Network: It shows activity increases upon detection of salient targets, especially when they appear in unexpected locations.
75		7Networks_RH_SalVentAttn_TempOccPar_2	
76		7Networks_RH_SalVentAttn_FrOperIns_1	
77		7Networks_RH_SalVentAttn_Med_1	
78		7Networks_RH_SalVentAttn_Med_2	
79	Limbic Network	7Networks_RH_Limbic_OFC_1	The Limbic Network connects emotion, memory, and motivation, providing the foundation for emotional regulation, social behavior, and adaptive responses to internal and external environments.
80		7Networks_RH_Limbic_TempPole_1	
81	Control Network	7Networks_RH_Cont_Par_1	Executive control and task-switching.
82		7Networks_RH_Cont_Par_2	
83		7Networks_RH_Cont_PFCl_1	
84		7Networks_RH_Cont_PFCl_2	
85		7Networks_RH_Cont_PFCl_3	
86		7Networks_RH_Cont_PFCl_4	
87		7Networks_RH_Cont_Cing_1	
88		7Networks_RH_Cont_PFCmp_1	
89		7Networks_RH_Cont_pCun_1	
90	Default Network	7Networks_RH_Default_Par_1	The network is closely involved in episodic memory processing.
91		7Networks_RH_Default_Temp_1	
92		7Networks_RH_Default_Temp_2	
93		7Networks_RH_Default_Temp_3	
94		7Networks_RH_Default_PFCv_1	
95		7Networks_RH_Default_PFCv_2	
96		7Networks_RH_Default_PFCdPFCm_1	
97		7Networks_RH_Default_PFCdPFCm_2	
98		7Networks_RH_Default_PFCdPFCm_3	
99		7Networks_RH_Default_pCunPCC_1	
100		7Networks_RH_Default_pCunPCC_2	
101	Cerebellar and Brainstem	Caudate nucleus (Left)	—
102		Caudate nucleus (Right)	
103		Lenticular nucleus, putamen (Left)	
104		Lenticular nucleus, putamen (Right)	
105		Lenticular nucleus, pallidum (Left)	
106		Lenticular nucleus, pallidum (Right)	
107		Thalamus (Left)	
108		Thalamus (Right)	
109		Cerebelum_Crus1_L	
110		Cerebelum_Crus1_R	
111		Cerebelum_Crus2_L	
112		Cerebelum_Crus2_R	
113		Cerebelum_3_L	
114		Cerebelum_3_R	
115		Cerebelum_4_5_L	
116		Cerebelum_4_5_R	
117		Cerebelum_6_L	
118		Cerebelum_6_R	
119		Cerebelum_7b_L	
120		Cerebelum_7b_R	
121		Cerebelum_8_L	
122		Cerebelum_8_R	
123		Cerebelum_9_L	
124		Cerebelum_9_R	
125		Cerebelum_10_L	
126		Cerebelum_10_R	
127		Vermis_1_2	
128		Vermis_3	
129		Vermis_4_5	
130		Vermis_6	
131		Vermis_7	
132		Vermis_8	
133		Vermis_9	
134		Vermis_10	
135		Brainstem	

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Table S2 Abbreviation and full name of parcel

Abbreviation	Full parcel Name
LH	left hemisphere
RH	right hemisphere
Vis	visual
SomMot	somatomotor
DorsAttn	dorsal attention
SalVentAttn	salience/ventral attention
Cont	control
PrCv	precentral ventral
FEF	frontal eye fields
ParOper	parietal operculum
FrOperIns	frontal operculum insula
PFCl	lateral prefrontal cortex
Med	medial
OFC	orbital frontal cortex
TempPole	temporal pole
Par	parietal
pCun	precuneus
Cing	cingulate
Temp	temporal
PFC	prefrontal cortex
pCunPCC	precuneus posterior cingulate cortex

Table S3 Number of PSCI *vs.* non-PSCI patients in each 5-fold training set and validation set

Experiment	Train		Val	
	PSCI	Non-PSCI	PSCI	Non-PSCI
Experiment 1	31	48	8	13
Experiment 2	31	49	8	12
Experiment 3	31	49	8	12
Experiment 4	31	49	8	12
Experiment 5	32	49	7	12

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Table S4 the performance metrics for the validation set of each fold

Model	Fold	ACC	AUC	F1	SEN	SPE	BACC
DWI+ResNet18	1	0.762	0.788	0.667	0.625	0.846	0.7355
	2	0.75	0.854	0.667	0.625	0.833	0.729
	3	0.75	0.427	0.545	0.375	1	0.686
	4	0.8	0.854	0.778	0.875	0.75	0.813
	5	0.789	0.75	0.75	0.857	0.75	0.804
SDC+ResNet18	1	0.714	0.76	0.5	0.375	0.923	0.649
	2	0.7	0.604	0.625	0.625	0.75	0.688
	3	0.75	0.609	0.667	0.625	0.833	0.729
	4	0.75	0.635	0.667	0.625	0.833	0.729
	5	0.737	0.631	0.615	0.571	0.833	0.702
RD+ResNet18	1	0.667	0.558	0.588	0.625	0.692	0.659
	2	0.8	0.771	0.714	0.625	0.917	0.771
	3	0.75	0.677	0.706	0.75	0.75	0.75
	4	0.75	0.635	0.545	0.375	1	0.688
	5	0.737	0.702	0.615	0.571	0.833	0.702
Late Fusion	1	0.762	0.721	0.545	0.375	1	0.688
	2	0.75	0.667	0.615	0.5	0.917	0.708
	3	0.75	0.708	0.667	0.625	0.833	0.729
	4	0.75	0.667	0.615	0.5	0.917	0.708
	5	0.842	0.857	0.8	0.857	0.833	0.845
Score Fusion	1	0.81	0.76	0.778	0.875	0.769	0.822
	2	0.75	0.635	0.615	0.5	0.917	0.708
	3	0.7	0.708	0.5	0.375	0.917	0.646
	4	0.8	0.813	0.667	0.5	1	0.75
	5	0.790	0.75	0.75	0.857	0.75	0.804
Clinic+MLP	1	0.81	0.75	0.778	0.875	0.769	0.822
	2	0.7	0.615	0.5	0.375	0.917	0.646
	3	0.75	0.771	0.667	0.625	0.833	0.729
	4	0.8	0.906	0.667	0.5	1	0.75
	5	0.737	0.798	0.667	0.714	0.75	0.732
Radiomic+SVM	1	0.714	0.567	0.571	0.5	0.846	0.673
	2	0.55	0.479	0.4	0.375	0.667	0.520
	3	0.45	0.438	0.353	0.375	0.5	0.438
	4	0.6	0.552	0.333	0.25	0.833	0.542
	5	0.632	0.417	0.462	0.429	0.75	0.589
Our model	1	0.81	0.817	0.75	0.75	0.846	0.798
	2	0.85	0.854	0.824	0.875	0.833	0.854
	3	0.8	0.688	0.714	0.625	0.917	0.771
	4	0.8	0.771	0.714	0.625	0.917	0.771
	5	0.842	0.845	0.8	0.857	0.833	0.845

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