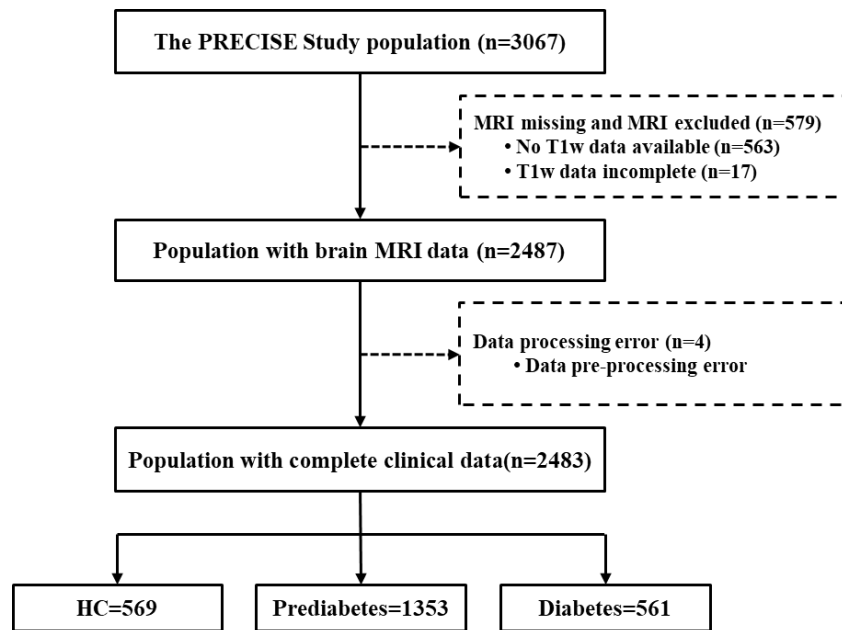
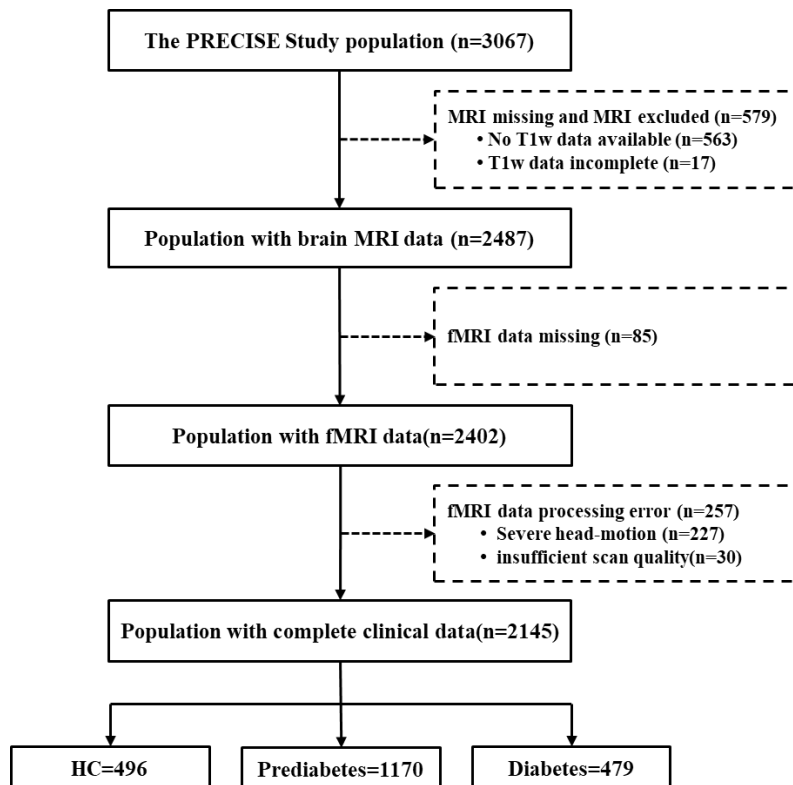


SUPPLEMENTARY DATA

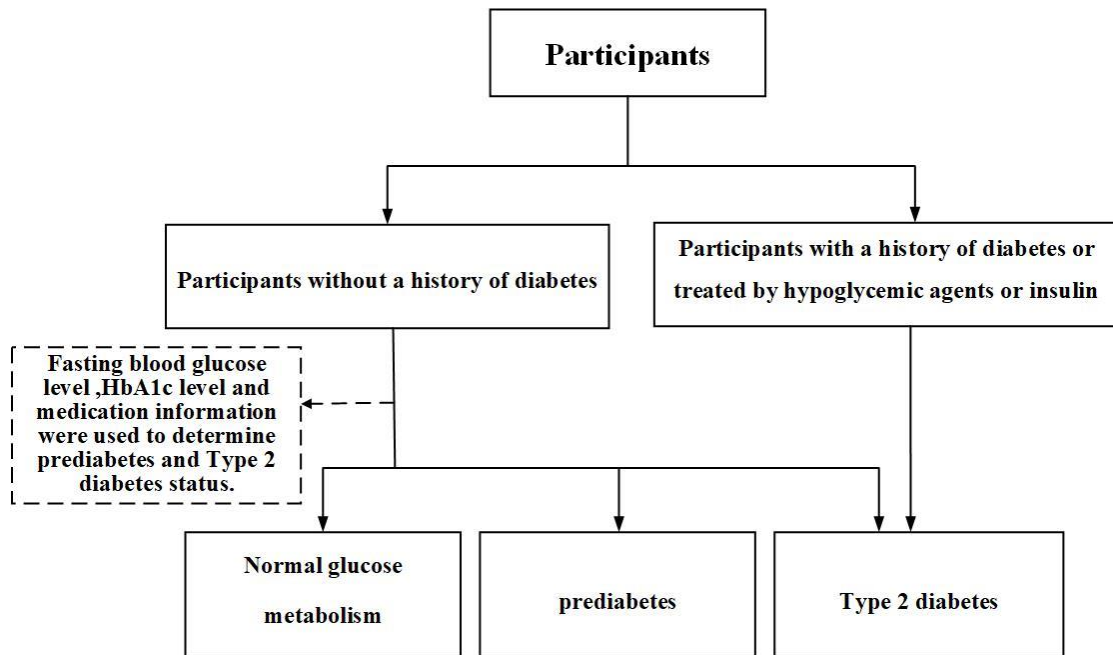
Supplementary Figure 1. Flowchart of the sMRI study population



Supplementary Figure 2. Flowchart of the fMRI study population



**Supplementary Figure 3.** Flowchart of the assessment of prediabetes and diabetes



**Supplementary Table 1** Details of the 246 regions in Human Brainnetome atlas

Lobe	Gyrus	Left and Right Hemisphere	Anatomical and modified Cyto-architectonic descriptions	lh.MNI(X,Y,Z)	rh.MNI(X,Y,Z)
Frontal Lobe	SFG, Superior Frontal Gyrus	SFG_L(R)_7_1	A8m, medial area 8	-5, 15, 54	7, 16, 54
		SFG_L(R)_7_2	A8dl, dorsolateral area 8	-18, 24, 53	22, 26, 51
		SFG_L(R)_7_3	A9l, lateral area 9	-11, 49, 40	13, 48, 40
		SFG_L(R)_7_4	A6dl, dorsolateral area 6	-18, -1, 65	20, 4, 64
		SFG_L(R)_7_5	A6m, medial area 6	-6, -5, 58	7, -4, 60
		SFG_L(R)_7_6	A9m, medial area 9	-5, 36, 38	6, 38, 35
		SFG_L(R)_7_7	A10m, medial area 10	-8, 56, 15	8, 58, 13
	MFG, Middle Frontal Gyrus	MFG_L(R)_7_1	A9/46d, dorsal area 9/46	-27, 43, 31	30, 37, 36
		MFG_L(R)_7_2	IFJ, inferior frontal junction	-42, 13, 36	42, 11, 39
		MFG_L(R)_7_3	A46, area 46	-28, 56, 12	28, 55, 17
		MFG_L(R)_7_4	A9/46v, ventral area 9/46	-41, 41, 16	42, 44, 14
		MFG_L(R)_7_5	A8vl, ventrolateral area 8	-33, 23, 45	42, 27, 39
		MFG_L(R)_7_6	A6vl, ventrolateral area 6	-32, 4, 55	34, 8, 54
		MFG_L(R)_7_7	A10l, lateral area 10	-26, 60, -6	25, 61, -4
	IFG, Inferior Frontal Gyrus	IFG_L(R)_6_1	A44d, dorsal area 44	-46, 13, 24	45, 16, 25
		IFG_L(R)_6_2	IFS, inferior frontal sulcus	-47, 32, 14	48, 35, 13
		IFG_L(R)_6_3	A45c, caudal area 45	-53, 23, 11	54, 24, 12
		IFG_L(R)_6_4	A45r, rostral area 45	-49, 36, -3	51, 36, -1
		IFG_L(R)_6_5	A44op, opercular area 44	-39, 23, 4	42, 22, 3
		IFG_L(R)_6_6	A44v, ventral area 44	-52, 13, 6	54, 14, 11
	OrG, Orbital Gyrus	OrG_L(R)_6_1	A14m, medial area 14	-7, 54, -7	6, 47, -7
OrG_L(R)_6_2		A12/47o, orbital area 12/47	-36, 33, -16	40, 39, -14	
OrG_L(R)_6_3		A11l, lateral area 11	-23, 38, -18	23, 36, -18	
OrG_L(R)_6_4		A11m, medial area 11	-6, 52, -19	6, 57, -16	
OrG_L(R)_6_5		A13, area 13	-10, 18, -19	9, 20, -19	
OrG_L(R)_6_6		A12/47l, lateral area 12/47	-41, 32, -9	42, 31, -9	
PrG, Precentral Gyrus	PrG_L(R)_6_1	A4hf, area 4(head and face region)	-49, -8, 39	55, -2, 33	
	PrG_L(R)_6_2	A6cdl, caudal dorsolateral area 6	-32, -9, 58	33, -7, 57	
	PrG_L(R)_6_3	A4ul, area 4(upper limb region)	-26, -25, 63	34, -19, 59	
	PrG_L(R)_6_4	A4t, area 4(trunk region)	-13, -20, 73	15, -22, 71	
	PrG_L(R)_6_5	A4tl, area 4(tongue and larynx region)	-52, 0, 8	54, 4, 9	
	PrG_L(R)_6_6	A6cvl, caudal ventrolateral area 6	-49, 5, 30	51, 7, 30	
PCL, Paracentral Lobule	PCL_L(R)_2_1	A1/2/3ll, area 1/2/3 (lower limb region)	-8, -38, 58	10, -34, 54	
	PCL_L(R)_2_2	A4ll, area 4, (lower limb region)	-4, -23, 61	5, -21, 61	
Temporal Lobe	STG, Superior Temporal Gyrus	STG_L(R)_6_1	A38m, medial area 38	-32, 14, -34	31, 15, -34
		STG_L(R)_6_2	A41/42, area 41/42	-54, -32, 12	54, -24, 11
		STG_L(R)_6_3	TE1.0 and TE1.2	-50, -11, 1	51, -4, -1
		STG_L(R)_6_4	A22c, caudal area 22	-62, -33, 7	66, -20, 6
		STG_L(R)_6_5	A38l, lateral area 38	-45, 11, -20	47, 12, -20
		STG_L(R)_6_6	A22r, rostral area 22	-55, -3, -10	56, -12, -5

MTG, Middle Temporal Gyrus	MTG_L(R)_4_1	A21c, caudal area 21	-65, -30, -12	65, -29, -13
	MTG_L(R)_4_2	A21r, rostral area 21	-53, 2, -30	51, 6, -32
	MTG_L(R)_4_3	A37dl, dorsolateral area37	-59, -58, 4	60, -53, 3
	MTG_L(R)_4_4	aSTS, anterior superior temporal sulcus	-58, -20, -9	58, -16, -10
ITG, Inferior Temporal Gyrus	ITG_L(R)_7_1	A20iv, intermediate ventral area 20	-45, -26, -27	46, -14, -33
	ITG_L(R)_7_2	A37elv, extreme lateroventral area37	-51, -57, -15	53, -52, -18
	ITG_L(R)_7_3	A20r, rostral area 20	-43, -2, -41	40, 0, -43
	ITG_L(R)_7_4	A20il, intermediate lateral area 20	-56, -16, -28	55, -11, -32
	ITG_L(R)_7_5	A37vl, ventrolateral area 37	-55, -60, -6	54, -57, -8
	ITG_L(R)_7_6	A20cl, caudolateral of area 20	-59, -42, -16	61, -40, -17
	ITG_L(R)_7_7	A20cv, caudoventral of area 20	-55, -31, -27	54, -31, -26
FuG, Fusiform Gyrus	FuG_L(R)_3_1	A20rv, rostroventral area 20	-33, -16, -32	33, -15, -34
	FuG_L(R)_3_2	A37mv, medioventral area37	-31, -64, -14	31, -62, -14
	FuG_L(R)_3_3	A37lv, lateroventral area37	-42, -51, -17	43, -49, -19
PhG, Parahippocampal Gyrus	PhG_L(R)_6_1	A35/36r, rostral area 35/36	-27, -7, -34	28, -8, -33
	PhG_L(R)_6_2	A35/36c, caudal area 35/36	-25, -25, -26	26, -23, -27
	PhG_L(R)_6_3	TL, area TL (lateral PPHC, posterior parahippocampal gyrus)	-28, -32, -18	30, -30, -18
	PhG_L(R)_6_4	A28/34, area 28/34 (EC, entorhinal cortex)	-19, -12, -30	19, -10, -30
	PhG_L(R)_6_5	TI, area TI (temporal agranular insular cortex)	-23, 2, -32	22, 1, -36
	PhG_L(R)_6_6	TH, area TH (medial PPHC)	-17, -39, -10	19, -36, -11
pSTS, posterior Superior Temporal Sulcus	pSTS_L(R)_2_1	rpSTS, rostroposterior superior temporal sulcus	-54, -40, 4	53, -37, 3
	pSTS_L(R)_2_2	cpSTS, caudoposterior superior temporal sulcus	-52, -50, 11	57, -40, 12
SPL, Superior Parietal Lobule	SPL_L(R)_5_1	A7r, rostral area 7	-16, -60, 63	19, -57, 65
	SPL_L(R)_5_2	A7c, caudal area 7	-15, -71, 52	19, -69, 54
	SPL_L(R)_5_3	A5l, lateral area 5	-33, -47, 50	35, -42, 54
	SPL_L(R)_5_4	A7pc, postcentral area 7	-22, -47, 65	23, -43, 67
	SPL_L(R)_5_5	A7ip, intraparietal area 7(hIP3)	-27, -59, 54	31, -54, 53
IPL, Inferior Parietal Lobule	IPL_L(R)_6_1	A39c, caudal area 39(PGp)	-34, -80, 29	45, -71, 20
	IPL_L(R)_6_2	A39rd, rostrordorsal area 39(Hip3)	-38, -61, 46	39, -65, 44
	IPL_L(R)_6_3	A40rd, rostrordorsal area 40(PFt)	-51, -33, 42	47, -35, 45
	IPL_L(R)_6_4	A40c, caudal area 40(PFm)	-56, -49, 38	57, -44, 38
	IPL_L(R)_6_5	A39rv, rostroventral area 39(PGa)	-47, -65, 26	53, -54, 25
	IPL_L(R)_6_6	A40rv, rostroventral area 40(PFop)	-53, -31, 23	55, -26, 26
Pcun, Precuneus	PCun_L(R)_4_1	A7m, medial area 7(PEp)	-5, -63, 51	6, -65, 51
	PCun_L(R)_4_2	A5m, medial area 5(PEm)	-8, -47, 57	7, -47, 58
	PCun_L(R)_4_3	dmPOS, dorsomedial parietooccipital sulcus(PEr)	-12, -67, 25	16, -64, 25
	PCun_L(R)_4_4	A31, area 31 (Lc1)	-6, -55, 34	6, -54, 35
PoG, Postcentral Gyrus	PoG_L(R)_4_1	A1/2/3ulhf, area 1/2/3(upper limb, head and face region)	-50, -16, 43	50, -14, 44
	PoG_L(R)_4_2	A1/2/3tonla, area 1/2/3(tongue and larynx region)	-56, -14, 16	56, -10, 15
	PoG_L(R)_4_3	A2, area 2	-46, -30, 50	48, -24, 48
	PoG_L(R)_4_4	A1/2/3tru, area1/2/3(trunk region)	-21, -35, 68	20, -33, 69

Insular Lobe	INS, Insular Gyrus	INS_L(R)_6_1	G, hypergranular insula	-36, -20, 10	37, -18, 8
		INS_L(R)_6_2	vIa, ventral agranular insula	-32, 14, -13	33, 14, -13
		INS_L(R)_6_3	dIa, dorsal agranular insula	-34, 18, 1	36, 18, 1
		INS_L(R)_6_4	vId/vIg, ventral dysgranular and granular insula	-38, -4, -9	39, -2, -9
		INS_L(R)_6_5	dIg, dorsal granular insula	-38, -8, 8	39, -7, 8
		INS_L(R)_6_6	dId, dorsal dysgranular insula	-38, 5, 5	38, 5, 5
Limbic Lobe	CG, Cingulate Gyrus	CG_L(R)_7_1	A23d, dorsal area 23	-4, -39, 31	4, -37, 32
		CG_L(R)_7_2	A24rv, rostroventral area 24	-3, 8, 25	5, 22, 12
		CG_L(R)_7_3	A32p, pregenual area 32	-6, 34, 21	5, 28, 27
		CG_L(R)_7_4	A23v, ventral area 23	-8, -47, 10	9, -44, 11
		CG_L(R)_7_5	A24cd, caudodorsal area 24	-5, 7, 37	4, 6, 38
		CG_L(R)_7_6	A23c, caudal area 23	-7, -23, 41	6, -20, 40
		CG_L(R)_7_7	A32sg, subgenual area 32	-4, 39, -2	5, 41, 6
Occipital Lobe	MVOcC, MedioVentral Occipital Cortex	MVOcC_L(R)_5_1	cLinG, caudal lingual gyrus	-11, -82, -11	10, -85, -9
		MVOcC_L(R)_5_2	rCunG, rostral cuneus gyrus	-5, -81, 10	7, -76, 11
		MVOcC_L(R)_5_3	cCunG, caudal cuneus gyrus	-6, -94, 1	8, -90, 12
		MVOcC_L(R)_5_4	rLinG, rostral lingual gyrus	-17, -60, -6	18, -60, -7
		MVOcC_L(R)_5_5	vmPOS, ventromedial parietooccipital sulcus	-13, -68, 12	15, -63, 12
	LOcC, lateral Occipital Cortex	LOcC_L(R)_4_1	mOccG, middle occipital gyrus	-31, -89, 11	34, -86, 11
		LOcC_L(R)_4_2	V5/MT+, area V5/MT+	-46, -74, 3	48, -70, -1
		LOcC_L(R)_4_3	OPC, occipital polar cortex	-18, -99, 2	22, -97, 4
		LOcC_L(R)_4_4	iOccG, inferior occipital gyrus	-30, -88, -12	32, -85, -12
		LOcC_L(R)_2_1	msOccG, medial superior occipital gyrus	-11, -88, 31	16, -85, 34
LOcC_L(R)_2_2	lsOccG, lateral superior occipital gyrus	-22, -77, 36	29, -75, 36		
Subcortical Nuclei	Amyg, Amygdala	Amyg_L(R)_2_1	mAmyg, medial amygdala	-19, -2, -20	19, -2, -19
		Amyg_L(R)_2_2	lAmyg, lateral amygdala	-27, -4, -20	28, -3, -20
	Hipp, Hippocampus	Hipp_L(R)_2_1	rHipp, rostral hippocampus	-22, -14, -19	22, -12, -20
		Hipp_L(R)_2_2	cHipp, caudal hippocampus	-28, -30, -10	29, -27, -10
	BG, Basal Ganglia	BG_L(R)_6_1	vCa, ventral caudate	-12, 14, 0	15, 14, -2
		BG_L(R)_6_2	GP, globus pallidus	-22, -2, 4	22, -2, 3
BG_L(R)_6_3		NAC, nucleus accumbens	-17, 3, -9	15, 8, -9	
BG_L(R)_6_4		vmPu, ventromedial putamen	-23, 7, -4	22, 8, -1	
BG_L(R)_6_5		dCa, dorsal caudate	-14, 2, 16	14, 5, 14	
BG_L(R)_6_6		dIPu, dorsolateral putamen	-28, -5, 2	29, -3, 1	
Tha, Thalamus	Tha_L(R)_8_1	mPFtha, medial pre-frontal thalamus	-7, -12, 5	7, -11, 6	
	Tha_L(R)_8_2	mPMtha, pre-motor thalamus	-18, -13, 3	12, -14, 1	
	Tha_L(R)_8_3	Stha, sensory thalamus	-18, -23, 4	18, -22, 3	
	Tha_L(R)_8_4	rTtha, rostral temporal thalamus	-7, -14, 7	3, -13, 5	
	Tha_L(R)_8_5	PPtha, posterior parietal thalamus	-16, -24, 6	15, -25, 6	
	Tha_L(R)_8_6	Otha, occipital thalamus	-15, -28, 4	13, -27, 8	
	Tha_L(R)_8_7	cTtha, caudal temporal thalamus	-12, -22, 13	10, -14, 14	
	Tha_L(R)_8_8	IPFtha, lateral pre-frontal thalamus	-11, -14, 2	13, -16, 7	

**Supplementary Table 2.** Clinical characteristics of the study population and the subjects excluded from the study

Characteristic	Study population (n = 2483)	Excluded from the study (n = 584)	P
<b>Demographics</b>			
Age (years)	61.4±6.6	60.2 ±6.9	<.001
Sex (% female)	53.4	53.6	0.979
<b>Glucose metabolism</b>			
Fasting glucose (mmol/L)	6.0 ±1.6	5.7±1.6	<.001
2-h post-load glucose (mmol/L) *	7.7±2.9	8.0±3.2	0.026
HbA1c (%)	6.0 ±1.0	5.8±0.8	<.001
HbA1c (mmol/mol)	41.8±10.6	39.5±9.1	<.001
<b>Cardiovascular risk factors</b>			
BMI (kg/m <sup>2</sup> )	24.0 ±3.0	22.9±3.0	<.001
Systolic BP (mmHg)	130.1±16.3	125.9±16.2	<.001
Diastolic BP (mmHg)	75.5±9.0	73.8±9.3	<.001
Hypertension (%)	44.3	37.8	0.004
Total-to-HDL cholesterol ratio	4.0±1.1	4.07±1.2	0.032
Triglycerides (mmol/L)	1.8±1.3	1.7±1.2	0.023
eGFR (mL/min/1.73 m <sup>2</sup> )	101.9±12.5	102.2±12.0	0.769
History of stroke (%)	2.7	3.3	0.500
History of heart disease (%)	8.6	5.8	0.024
<b>Medication use (%)</b>			
Lipid-lowering	4.5	1.4	<.001
Antihypertensive	27.0	26.4	0.700
<b>MoCA</b>			
	21.6±4.8	20.5±4.9	<.001
<b>Lifestyle factors (%)</b>			
Smoking, never/current/quit	64.4/22.8/12.7	61.0/25.2/13.9	0.289
Education illiteracy or elementary school / middle or high school / college or above	41.0/51.4/7.7	59.2/40.6/0.2	<.001

Data are presented as means ± SD or percentage. Fasting glucose values were available in n = 3065. 2-h post-load glucose values were available in n = 2760. Total-to-HDL cholesterol ratio values were available in n = 3065. Triglycerides values were available in n = 3065. eGFR values were available in n = 3065.

BMI, body mass index; BP, blood pressure; HDL, high-density lipoproteins; eGFR, estimated glomerular filtration rate.

**Supplementary Table 3** Multivariable-adjusted associations of MoCA with the brain volume

Region volume	Model 1		Model 2	
	$\beta$ (95%CI)	<i>P</i>	$\beta$ (95%CI)	<i>P</i>
<b>SUB</b>	0.098 (0.058,0.137)	<b>&lt;0.001</b>	0.098 (0.058,0.138)	<b>&lt;0.001</b>
<b>THA.L</b>	0.112 (0.074,0.151)	<b>&lt;0.001</b>	0.108 (0.070,0.147)	<b>&lt;0.001</b>
<b>THA.R</b>	0.085 (0.046,0.124)	<b>&lt;0.001</b>	0.082 (0.043,0.121)	<b>&lt;0.001</b>
<b>CAU.L</b>	0.018 (-0.018,0.054)	0.329	0.021 (-0.015,0.057)	0.251
<b>CAU.R</b>	0.013 (-0.022,0.049)	0.454	0.019 (-0.017,0.054)	0.303
<b>PUT.L</b>	0.038 (0.001,0.074)	<b>0.042</b>	0.038 (0.001,0.074)	<b>0.045</b>
<b>PUT.R</b>	0.019 (-0.018,0.056)	0.309	0.021 (-0.016,0.058)	0.262
<b>PAL.L</b>	0.030 (-0.004,0.065)	0.086	0.031 (-0.004,0.066)	0.079
<b>PAL.R</b>	0.037 (0.002,0.072)	<b>0.036</b>	0.036 (0.002,0.071)	<b>0.041</b>
<b>HIP.L</b>	0.120 (0.083,0.157)	<b>&lt;0.001</b>	0.120 (0.082,0.157)	<b>&lt;0.001</b>
<b>HIP.R</b>	0.106 (0.070,0.142)	<b>&lt;0.001</b>	0.104 (0.068,0.141)	<b>&lt;0.001</b>
<b>AMY.L</b>	0.108 (0.072,0.144)	<b>&lt;0.001</b>	0.111 (0.074,0.148)	<b>&lt;0.001</b>
<b>AMY.R</b>	0.083 (0.047,0.120)	<b>&lt;0.001</b>	0.084 (0.047,0.121)	<b>&lt;0.001</b>
<b>NAcc.L</b>	0.032 (-0.003,0.067)	0.071	0.027 (-0.008,0.061)	0.132
<b>NAcc.R</b>	0.064 (0.029,0.099)	<b>&lt;0.001</b>	0.059 (0.024,0.095)	<b>0.001</b>

Model 1: adjustment for age, sex, and education level. Model 2: model 1 additionally adjusted for BMI, hypertension, total-to-HDL cholesterol ratio, history of stroke, history of heart disease.

SUB, total subcortical gray matter; THA, thalamus; CAU, caudate; PUT, putamen; PAL, pallidum; HIP, hippocampus; AMY, amygdala;NAcc, nucleus accumbens; L, left; R, right.

**Supplementary Table 4** Multivariable-adjusted associations of MoCA with the functional connectivity

Functional connectivity	Model 1		Model 2	
	$\beta$ (95%CI)	<i>P</i>	$\beta$ (95%CI)	<i>P</i>
THA.L and VIS	-0.040 (-0.076, -0.005)	<b>0.027</b>	-0.031 (-0.067,0.005)	0.093
THA.R and VIS	-0.050 (-0.086, -0.014)	<b>0.007</b>	-0.041 (-0.077, -0.004)	<b>0.029</b>
THA.L and SMN	-0.052 (-0.088, -0.017)	<b>0.004</b>	-0.048 (-0.083, -0.013)	<b>0.007</b>
THA.R and SMN	-0.030 (-0.065,0.006)	0.099	-0.029 (-0.064,0.006)	0.107
THA.L and DAN	0.010 (-0.026,0.046)	0.590	0.007 (-0.029,0.043)	0.712
THA.R and DAN	-0.007 (-0.043,0.029)	0.712	-0.008 (-0.043,0.029)	0.666
THA.L and VAN	-0.045 (-0.08, -0.009)	<b>0.013</b>	-0.040 (-0.076, -0.005)	<b>0.025</b>
THA.R and VAN	-0.023 (-0.058,0.012)	0.200	-0.020 (-0.055,0.015)	0.261
THA.L and LIM	0.037 (0.002,0.073)	<b>0.037</b>	0.040 (0.005,0.075)	<b>0.026</b>
THA.R and LIM	0.022 (-0.013,0.057)	0.219	0.024 (-0.011,0.059)	0.178
THA.L and FPN	0.010 (-0.025,0.046)	0.565	0.012 (-0.023,0.047)	0.516
THA.R and FPN	0.011 (-0.024,0.046)	0.540	0.013 (-0.022,0.048)	0.463
THA.L and DMN	-0.018 (-0.054,0.017)	0.319	-0.010 (-0.046,0.026)	0.584
THA.R and DMN	-0.005 (-0.041,0.030)	0.764	0.002 (-0.034,0.037)	0.921

Model 1: adjustment for age, sex, and education level. Model 2: model 1 additionally adjusted for BMI, hypertension, total-to-HDL cholesterol ratio, history of stroke, history of heart disease.

THA, thalamus; L, left; R, right



**Supplementary Table 5** Multivariable-adjusted associations of functional connectivity with the brain volume

Functional connectivity	Region volume	Model 1		Model 2	
		$\beta$ (95%CI)	<i>P</i>	$\beta$ (95%CI)	<i>P</i>
THA.L and VIS	THA.L	-0.076 (-0.125, -0.027)	<b>0.002</b>	-0.075 (-0.124, -0.026)	<b>0.003</b>
THA.R and VIS	THA.R	-0.064 (-0.113, -0.015)	<b>0.010</b>	-0.064 (-0.113, -0.015)	<b>0.010</b>
THA.L and SMN	THA.L	0.044 (-0.005,0.094)	0.080	0.047 (-0.003,0.097)	0.064
THA.R and SMN	THA.R	0.024 (-0.026,0.074)	0.340	0.024 (-0.026,0.074)	0.346
THA.L and DAN	THA.L	-0.012 (-0.061,0.037)	0.621	-0.016 (-0.065,0.033)	0.528
THA.R and DAN	THA.R	-0.003 (-0.053,0.046)	0.895	-0.004 (-0.054,0.045)	0.866
THA.L and VAN	THA.L	0.024 (-0.026,0.073)	0.347	0.029 (-0.021,0.079)	0.256
THA.R and VAN	THA.R	0.000 (-0.050,0.050)	0.999	0.002 (-0.048,0.053)	0.928
THA.L and LIM	THA.L	0.010 (-0.040,0.060)	0.691	0.005 (-0.045,0.055)	0.836
THA.R and LIM	THA.R	0.011 (-0.040,0.061)	0.680	0.004 (-0.046,0.054)	0.869
THA.L and FPN	THA.L	-0.010 (-0.060,0.040)	0.692	-0.007 (-0.057,0.043)	0.781
THA.R and FPN	THA.R	-0.004 (-0.055,0.046)	0.861	-0.002 (-0.052,0.049)	0.947
THA.L and DMN	THA.L	-0.047 (-0.096,0.002)	0.062	-0.045 (-0.094,0.005)	0.075
THA.R and DMN	THA.R	-0.040 (-0.090,0.010)	0.116	-0.041 (-0.094,0.009)	0.107

Model 1: adjustment for age, sex, and education level. Model 2: model 1 additionally adjusted for BMI, hypertension, total-to-HDL cholesterol ratio, history of stroke, history of heart disease.

THA, thalamus; L, left; R, right