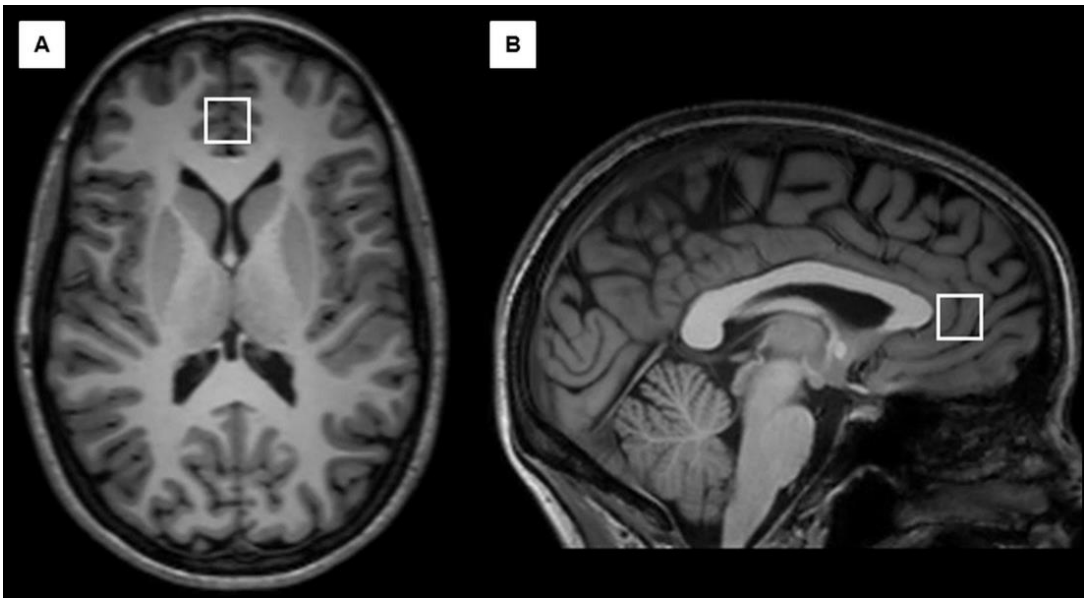
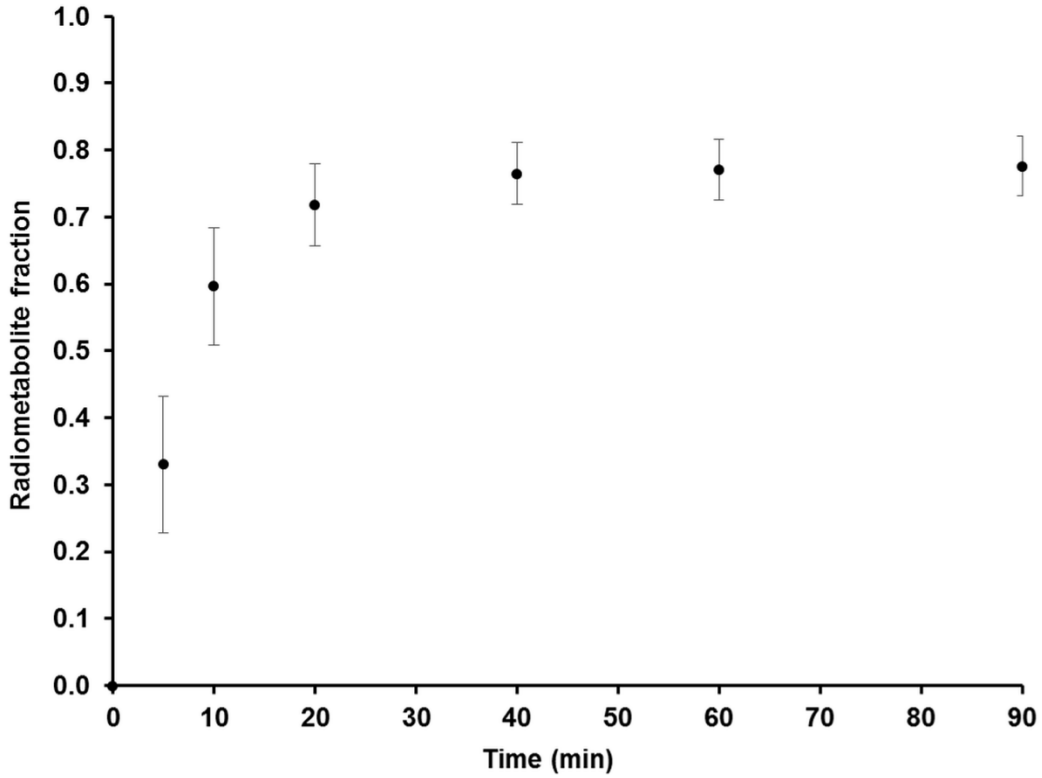
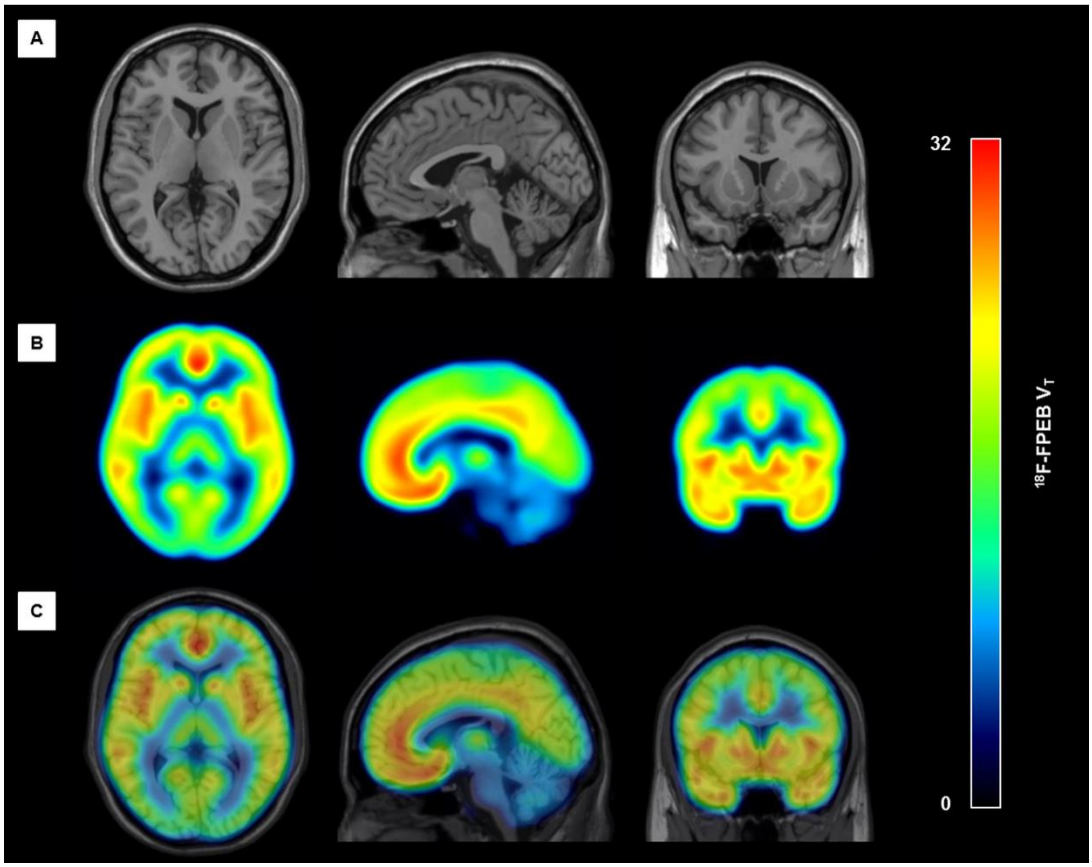


Supplemental FIGURE 1. Location of the proton-magnetic resonance spectroscopy voxel (white square; 3.4 cm^3) in the bilateral anterior cingulate cortex using the following landmarks: anterior to the genu of the corpus callosum, the inferior border of the voxel along the anterior-posterior commissure line, and centered on the interhemispheric fissure. Axial (A) and parasagittal (B) images.



Supplemental FIGURE 2. Mean ± standard deviation (error bar) of radioactive metabolite fractions (N = 44) in plasma at six time-points after ^{18}F-FPEB bolus injection.



Supplemental FIGURE 3. Brain regional distribution of average mGluR5 availability (^{18}F-FPEB V_T) in the study sample (N = 44)**.** MRI (A), PET (B), and fused PET-MRI (C) orthogonal sections. Abbreviations: mGluR5, metabotropic glutamate receptor subtype 5; V_T, total distribution volume.

Supplemental TABLE 1. Temperament scores of the 44 included participants using the Temperament and Character Inventory (TCI)

TCI – Temperament Dimensions	**Raw Score**	***Z* Score***
Novelty-seeking (NS)	16.9 ± 5.0	-0.17 ± 0.85
Exploratory excitability (NS1)	6.0 ± 2.0	0.08 ± 0.85
Impulsiveness (NS2)	3.0 (3.0)	-0.40 (0.90)
Extravagance (NS3)	4.3 ± 1.9	-0.18 ± 0.92
Disorderliness (NS4)	3.3 ± 1.6	-0.12 ± 0.84
Harm avoidance (HA)	13.5 ± 5.7	-0.23 ± 0.81
Anticipatory worry (HA1)	4.0 (3.0)	-0.21 (0.94)
Fear of uncertainty (HA2)	3.6 ± 1.5	-0.33 ± 0.83
Shyness (HA3)	3.0 (4.0)	-0.16 (1.60)
Fatigability (HA4)	3.0 (2.0)	-0.04 (0.87)
Reward dependence (RD)	17.4 ± 4.5	0.21 ± 1.21
Sentimentality (RD1)	7.0 (4.0)	-0.16 (1.71)
Attachment (RD2)	6.0 (3.0)	0.43 (1.43)
Dependence (RD3)	5.0 (2.0)	0.62 (1.54)
Persistence (P)	5.0 (4.0)	0.35 (2.00)

* Compared to the reference population (N = 1034).

Normally distributed data are presented as mean ± standard deviation. Skewed data are reported as median (interquartile range).

Supplemental Table 2. Partial correlation coefficients* for mGluR5 availability corrected for partial volume effects versus temperament dimensions and novelty-seeking subdimensions

Volume of interest†	Hemisphere	NS		HA		RD		P	
		r	*P value*	*r*	*P value*	*r*	*P value*	*r*	*P value*
Thalamus	Right	0.65	<0.001	0.12	0.458	0.14	0.379	-0.17	0.270
	Left	0.66	<0.001	0.10	0.532	0.14	0.383	-0.15	0.351
Parahippocampal and ambient gyrus	Right	0.41	0.007	0.18	0.254	0.19	0.219	-0.16	0.325
	Left	0.51	0.001	0.07	0.651	0.17	0.294	-0.23	0.145
Amygdala	Right	0.54	<0.001	-0.03	0.836	0.30	0.053	-0.15	0.342
	Left	0.65	<0.001	-0.06	0.722	0.35	0.024	-0.12	0.445
Insula	Right	0.54	<0.001	-0.10	0.540	0.21	0.192	-0.13	0.415
	Left	0.52	<0.001	-0.09	0.550	0.15	0.349	-0.15	0.351
Anterior cingulate cortex	Right	0.59	<0.001	0.02	0.895	0.25	0.110	-0.16	0.325
	Left	0.53	<0.001	-0.13	0.409	0.18	0.244	-0.17	0.284
Posterior cingulate cortex	Right	0.57	<0.001	0.04	0.816	0.11	0.492	-0.17	0.293
	Left	0.56	<0.001	0.01	0.942	0.19	0.219	-0.15	0.354
Superior parietal gyrus	Right	0.56	<0.001	0.09	0.563	0.12	0.452	-0.16	0.304
	Left	0.56	<0.001	0.07	0.658	0.13	0.408	-0.15	0.338
Cuneus	Right	0.47	0.002	0.06	0.716	0.17	0.286	-0.12	0.466
	Left	0.49	0.001	0.02	0.884	0.24	0.129	-0.13	0.401

mGluR5, metabotropic glutamate receptor subtype 5; NS, novelty-seeking; HA, harm avoidance; RD, reward dependence; P, persistence.

* Controlling for age and gender.

† According to Hammers et al. [1]

Reference

1. Hammers A, Allom R, Koepp MJ, et al. Three-dimensional maximum probability atlas of the human brain, with particular reference to the temporal lobe. *Hum Brain Mapp.* 2003;19(4):224-247.

Supplemental Table 3. Partial correlation coefficients[*] for mGluR5 availability corrected for partial volume effects versus temperament dimensions and novelty-seeking subdimensions, using data from subjects ≤ 30 y (N=20).

Volume of interest[†]	Hemisphere	NS		HA		RD		P	
		r	*P value*	*r*	*P value*	*r*	*P value*	*r*	*P value*
Thalamus	Right	0.62	0.005	0.10	0.680	0.42	0.071	-0.21	0.401
	Left	0.65	0.003	0.07	0.766	0.45	0.0551	-0.19	0.438
Parahippocampal and ambient gyrus	Right	0.57	0.011	0.03	0.901	0.50	0.029	-0.23	0.342
	Left	0.62	0.005	0.14	0.543	0.43	0.064	-0.16	0.499
Amygdala	Right	0.61	0.005	-0.73	0.767	0.49	0.034	-0.22	0.353
	Left	0.54	0.016	-0.01	0.984	0.45	0.051	-0.22	0.353
Insula	Right	0.60	0.007	0.08	0.731	0.46	0.046	-0.23	0.336
	Left	0.57	0.01	0.03	0.917	0.47	0.044	-0.18	0.457
Anterior cingulate cortex	Right	0.52	0.023	0.32	0.186	0.25	0.297	-0.32	0.185
	Left	0.56	0.013	0.02	0.927	0.43	0.063	-0.28	0.251
Posterior cingulate cortex	Right	0.58	0.009	0.01	0.975	0.46	0.046	-0.17	0.465
	Left	0.40	0.093	0.37	0.121	0.13	0.603	-0.33	0.166
Superior parietal gyrus	Right	0.62	0.004	0.11	0.648	0.43	0.065	-0.23	0.337
	Left	0.62	0.004	0.16	0.507	0.42	0.070	-0.24	0.342
Cuneus	Right	0.64	0.003	-0.06	0.820	0.57	0.011	-0.13	0.602
	Left	0.49	0.035	0.19	0.435	0.44	0.058	-0.23	0.341

mGluR5, metabotropic glutamate receptor subtype 5; NS, novelty-seeking; HA, harm avoidance; RD, reward dependence; P, persistence.

[*] Controlling for gender.

[†] According to Hammers et al. [1]

Reference

1. Hammers A, Allom R, Koepp MJ, et al. Three-dimensional maximum probability atlas of the human brain, with particular reference to the temporal lobe. *Hum Brain Mapp.* 2003;19(4):224-247.

Supplemental Table 4. Partial correlation coefficients[*] for mGluR5 availability corrected for partial volume effects versus temperament dimensions and novelty-seeking subdimensions, using data from subjects ≥ 40 y (N=20).

Volume of interest[†]	Hemisphere	NS		HA		RD		P	
		r	*P value*	*r*	*P value*	*r*	*P value*	*r*	*P value*
Thalamus	Right	0.69	0.008	-0.31	0.901	0.02	0.941	-0.86	0.725
	Left	0.77	<0.001	0.084	0.734	-0.03	0.898	-0.18	0.463
Parahippocampal and ambient gyrus	Right	0.75	<0.001	-0.08	0.748	0.03	0.917	-0.17	0.484
	Left	0.71	0.001	0.01	0.952	0.04	0.883	-0.08	0.744
Amygdala	Right	0.69	0.001	0.01	0.978	0.14	0.569	-0.07	0.791
	Left	0.68	0.001	0.03	0.903	0.02	0.927	-0.16	0.514
Insula	Right	0.70	0.001	-0.01	0.984	0.06	0.792	-0.11	0.666
	Left	0.69	0.001	-0.07	0.772	0.02	0.921	-0.19	0.439
Anterior cingulate cortex	Right	0.69	0.001	-0.13	0.585	-0.05	0.844	-0.17	0.489
	Left	0.69	0.001	-0.12	0.617	0.08	0.750	-0.01	0.761
Posterior cingulate cortex	Right	0.72	0.001	-0.09	0.729	0.02	0.920	-0.16	0.500
	Left	0.67	0.002	-0.05	0.825	-0.04	0.856	-0.18	0.464
Superior parietal gyrus	Right	0.72	0.001	-0.04	0.877	0.01	0.962	-0.07	0.778
	Left	0.70	0.001	-0.01	0.978	0.06	0.804	-0.08	0.734
Cuneus	Right	0.66	0.002	-0.02	0.941	0.01	0.985	-0.14	0.574
	Left	0.67	0.002	0.05	0.843	0.408	0.868	-0.14	0.575

mGluR5, metabotropic glutamate receptor subtype 5; NS, novelty-seeking; HA, harm avoidance; RD, reward dependence; P, persistence.
[*] Controlling for gender.
[†] According to Hammers et al. [1]

Reference

1. Hammers A, Allom R, Koepp MJ, et al. Three-dimensional maximum probability atlas of the human brain, with particular reference to the temporal lobe. *Hum Brain Mapp.* 2003;19(4):224-247.