

## Data supplement

Table DS1 Cocaine- and tryptophan-depletion induced changes in [ <sup>11</sup> C]raclopride binding (BP <sub>ND</sub> )					
(a) Nutritionally balanced amino acid mixture + placebo v. nutritionally balanced amino acid mixture + cocaine					
Region	Peak coordinates (x, y, z)	Peak t-value	Cluster size (voxels), n	BP <sub>ND</sub> values on nutritionally balanced amino acid mixture + placebo test, mean (s.d.)	% change BP <sub>ND</sub> induced by nutritionally balanced amino acid mixture + cocaine, mean (s.d.)
Posterior putamen					
Left	-26, -12, 2	5.6	155	2.1 (0.3)	-10.3 (10.9)
Right	32, -14, -2	6.2	134	1.7 (0.4)	-14.2 (13.1)
Ventral striatum					
Left	-18, 12, -8	4.8	17	1.9 (0.5)	-12.4 (16.6)
Right	20, 12, -6	5.6	115	2.0 (0.2)	-12.0 (13.9)
Ventral caudate					
Left	-12, 18, -2	4.6	19	1.8 (0.3)	-11.2 (12.0)
(b) Nutritionally balanced amino acid mixture + cocaine v. acute tryptophan depletion + cocaine					
Region	Peak coordinates (x, y, z)	Peak t-value	Cluster size (voxels), n	BP <sub>ND</sub> values on nutritionally balanced amino acid mixture + placebo test, mean (s.d.)	% change BP <sub>ND</sub> induced by nutritionally balanced amino acid mixture + cocaine, mean (s.d.)
Posterior putamen					
Left	-30, -16, 6	5.1	89	1.9 (0.4)	-10.7 (13.2)
Right	30, -6, -2	4.6	37	2.0 (0.5)	-7.9 (16.2)
Anterior putamen (dorsal)					
Right	24, 10, 4	5.4	34	2.7 (0.3)	-8.1 (13.0)
Anterior caudate					
Left	-12, 8, 16	4.8	21	1.9 (0.6)	-9.8 (16.4)
Right	16, 12, 14	4.9	27	2.2 (0.4)	-8.5 (16.2)
(c) Nutritionally balanced amino acid mixture + placebo v. acute tryptophan depletion + cocaine					
Region	Peak coordinates (x, y, z)	Peak t-value	Cluster size (voxels), n	BP <sub>ND</sub> values on nutritionally balanced amino acid mixture + placebo test, mean (s.d.)	% change BP <sub>ND</sub> induced by nutritionally balanced amino acid mixture + cocaine, mean (s.d.)
Posterior putamen extending into anterior putamen and anterior caudate					
Left	26, -12, 6	9.2	1452	1.8 (0.2)	-14.2 (9.4)
	-16, 10, -6	7.0			
	-20, 6, 4	5.7			
	-10, 10, 10	5.5			
Posterior putamen extending into anterior putamen and anterior plus posterior caudate					
Right	30, -8, 0	8.9	1415	1.7 (0.1)	-14.9 (10.1)
	30, 4, -2	8.2			
	20, 10, -8	6.7			
	16, -4, 20	6.4			
	16, 10, 10	6.1			
(d) Nutritionally balanced amino acid mixture v. acute tryptophan depletion					
Region	Peak coordinates (x, y, z)	Peak t-value	Cluster size (voxels), n	BP <sub>ND</sub> values on nutritionally balanced amino acid mixture + placebo test, mean (s.d.)	% change BP <sub>ND</sub> induced by nutritionally balanced amino acid mixture + cocaine, mean (s.d.)
Posterior putamen extending into anterior putamen					
Right	34, 0, -4	5.4	67	1.6 (0.4)	+16.5 (14.8)
	30, 6, -4	4.5			
Posterior putamen					
Right	26, -14, 2	4.4	15	1.7 (0.3)	+16.2 (22.9)
Anterior putamen					
Left	-22, 18, 4	5.0	59	1.6 (0.4)	+20.8 (22.8)
	-22, 16, 0	4.9			
BP <sub>ND</sub> , binding potential.					