Supplementary Table 1. Additional task performance measures

PERFORMANCE VARIABLE	REWARD HIGH		REWARD LOW		NEUTRAL		PUNISHMENT LOW		PUNISHMENT HIGH	
	Repeat	**Switch**	**Repeat**	**Switch**	**Repeat**	**Switch**	**Repeat**	**Switch**	**Repeat**	**Switch**
Missed trials										
Mean (%)	0.73	3.87	2.09	4.55	2.69	4.10	3.05	2.22	0.87	3.14
(SD)	(1.57)	(7.36)	(3.29)	(9.18)	(3.51)	(5.45)	(3.84)	(4.34)	(2.11)	(6.26)
Accuracy Switch Cost	3.23 (11.38)		5.08 (13.07)		4.75 (8.47)		1.68 (13.13)		3.31 (11.27)	
RT Switch Cost	0.055 (0.054)		0.068 (0.07)		0.063 (0.041)		0.055 (0.046)		0.064 (0.052)	

Accuracy switch cost is computed as the difference in percent correct responses on repeat minus switch trials.
RT switch cost is computed as the difference in response times for switch minus repeat trials in milliseconds.

Supplementary Table 2. Regions showing greater activity on Switch versus Repeat trials under reward relative to punishment incentives in GLM-1.

Region	Cluster Size	x; y; z	TFCE T-stat
Paracingulate gyrus; cingulate Gyrus, anterior division; Frontal Pole; Superior Frontal Gyrus	802	-5; 46; 18	5.14
Lingual gyrus, Cingulate gyrus posterior division; Precentral gyrus; Intracalcarine Cortex; Precuneous Cortex; Cuneal Cortex; Lingual Gyrus; Supracalcarine Cortex	183	22; -48; 4	5.98
Middle frontal gyrus; Inferior frontal gryus pars opercularis; Inferior frontal gyrus pars triangularis; Precentral gyrus; Central Opercular Cortex	132	-50; 14; 40	5.5
Middle frontal gyrus; Frontal Pole; Superior Frontal Gyrus; Inferior Frontal Gyrus, pars triangularis	113	22; 14; 40	4.62
Juxtapositional Lobule Cortex (formerly Supplementary Motor Cortex); Cingulate Gyrus, anterior division; Cingulate Gyrus, posterior division; Precentral Gyrus; Paracingulate Gyrus	91	-10; 1; 47	4.43
Superior Frontal Gyrus; Frontal Pole; Middle Frontal Gyrus	26	-17; 39; 36	5.29
Middle Frontal Gyrus; Precentral Gyrus; Superior Frontal Gyrus	22	27; 6; 43	3.6
Frontal Pole; Frontal Orbital Cortex; Inferior Frontal Gyrus, pars triangularis	13	45; 39; -14	6.13
Precentral Gyrus; Postcentral Gyrus	12	-42; -13; 43	4.61
Lingual Gyrus; Cingulate Gyrus, posterior division	8	12; -43; -7	4.25
Angular Gyrus; Lateral Occipital Cortex, superior division; Middle Temporal Gyrus, temporooccipital part; Lateral Occipital Cortex, inferior division	7	-52; -58; 18	4.9
Lateral Occipital Cortex, superior division; Angular Gyrus; Lateral Occipital Cortex, inferior division; Middle Temporal Gyrus, temporooccipital part	6	52; -58; 22	3.73
Lingual Gyrus; Occipital Fusiform Gyrus; Temporal Occipital Fusiform Cortex; Precuneous Cortex	5	-17; -56; -4	3.84
Intracalcarine Cortex; Precuneous Cortex; Supracalcarine Cortex; Lingual Gyrus; Cuneal Cortex	5	-10; -73; 11	3.81
Intracalcarine Cortex; Precuneous Cortex; Lingual Gyrus; Cingulate Gyrus, posterior division; Supracalcarine Cortex	5	-15; -61; 7	4.05
Angular Gyrus; Supramarginal Gyrus, posterior division	5	45; -51; 25	4.18

All reported regions are significant at $p < 0.05$ after whole brain FWE correction at the voxel level and a cluster extent of 5 voxels. The FWE correction was based on 5000 permutations of the threshold free cluster enhancement (TFCE) values. The TFCE values and permutation-derived test statistics were calculated using the Randomise function implemented in FSL. All coordinates are listed in MNI space and represent the peaks of all clusters formed by contiguous voxels as well as peaks > 20 mm apart within the same cluster.

Supplementary Table 3. Regions showing increased activation for Low magnitude incentives relative to High magnitude incentives (independent of incentive value) in GLM-1

Region	Cluster Size	x; y; z	TFCE T-stat
Occipital Pole; Intracalcarine Cortex; Lateral Occipital Cortex, inferior division; Occipital Fusiform Gyrus; Lateral Occipital Cortex, superior division; Precuneous Cortex; Cuneal Cortex; Lingual Gyrus; Supracalcarine Cortex	4020	-10; -96; -4	9.04
		-10; 96; -4	*9.04*
		20; -88; -7	*7.51*
		-25; -96; 22	*7.11*
		-25; -51; -4	*6.95*
		22; -63; -7	*5.94*
		-22; -78; -11	*5.92*
		15; -91; 18	*5.53*
		-7; -58; 14	*4.98*
		22; -56; 14	*4.57*
		-30; -73; 25	*4.55*
		32; -83; 36	*4.49*
		37; -73; 7	*4.39*
		-47; -81; 14	*4.37*
		-47; -61; 11	*4.13*
		40; -86; -14	*4.08*
		-2; -86; 36	*3.74*
		15; -38; 0	*3.74*
Temporal Pole; Frontal Orbital Cortex	150	-30; 9; -32	5.63
Parahippocampal Gyrus, anterior division; Left Hippocampus; Left Amygdala	90	-25; -3; -22	4.68
Precentral Gyrus; Postcentral Gyrus; Supramarginal Gyrus, anterior division	77	-40; -16; 40	6.17
Parahippocampal Gyrus, anterior division; Right Hippocampus; Right Amygdala	58	25; -13; -25	4.76
Temporal Pole	53	50; 14; -32	4.39
Postcentral Gyrus; Precentral Gyrus	26	57; -6; 32	5.01
Precentral Gyrus; Postcentral Gyrus; Middle Frontal Gyrus	24	40; -8; 61	4.5
Subcallosal Cortex; Frontal Medial Cortex; Frontal Orbital Cortex	16	-7; 29; -18	4.11
Superior Frontal Gyrus	14	-7; 21; 65	6.18
Juxtapositional Lobule Cortex (formerly Supplementary Motor Cortex); Precentral Gyrus	8	0; -8; 76	3.78
Subcallosal Cortex; Frontal Orbital Cortex	7	5; 24; -22	3.95
Temporal Pole; Planum Polare; Insular Cortex; Frontal Orbital Cortex	6	-40; 4: -18	3.79

All reported regions are significant at $p < 0.05$ after whole brain FWE correction at the voxel level and a cluster extent of 5 voxels. The FWE correction was based on 5000 permutations of the threshold free cluster enhancement (TFCE) values. The TFCE values and permutation-derived test statistics were calculated using the Randomise function implemented in FSL. All coordinates are listed in MNI space and represent the peaks of all clusters formed by contiguous voxels as well as peaks > 20 mm apart within the same cluster.

Supplementary Table 4. Regions showing increased activation for Low magnitude incentives relative to High magnitude incentives (independent of incentive valence) in GLM-2

Region	Cluster Size	x; y; z	TFCE T-stat
Lateral Occipital Cortex, superior division; Lateral Occipital Cortex, inferior division; Intracalcarine Cortex; Lingual Gyrus; Occipital Fusiform Gyrus; Supracalcarine Cortex; Occipital Pole	9829	-10; -96; -14	11.7
		-10; -96; -4	*11.7*
		-22; -51; -4	*9.83*
		-25; -96; 18	*8.87*
		22; -86; -7	*8.66*
		15; -96; 11	*8.47*
		27; -51; -7	*7.57*
		-25; -78; -11	*7.07*
		-7; 26; -18	*6.76*
		25; -83; 25	*6.48*
		-7; -58; 14	*6.48*
		17; -61; 7	*6.27*
		25; 6; -25	*6.06*
		-5; -26; -4	*5.78*
		-42; -76; 25	*5.71*
		27; -13; -25	*5.48*
		-22; -1; -25	*5.15*
		-27; -23; -18	*5.12*
		-37; 16; -32	*5.08*
		60; -1; -25	*4.93*
		-37; 4; 0	*4.78*
Postcentral Gyrus; Precentral Gyrus; Supramarginal Gyrus, anterior division	222	-32; -18; 57	5.33
Frontal Operculum Cortex; Insular Cortex; Frontal Orbital Cortex; Inferior Frontal Gyrus, pars triangularis; Inferior Frontal Gyrus, pars opercularis	43	-40; 24; 0	5.2

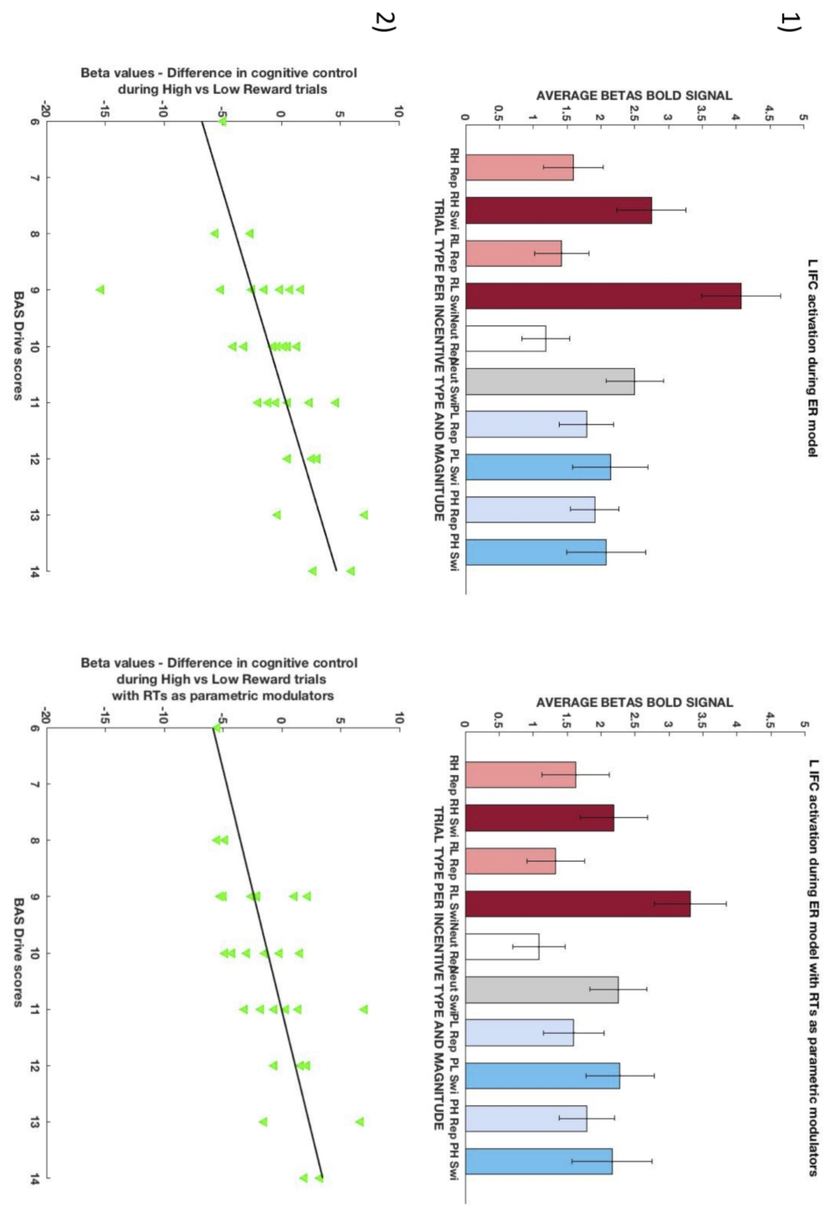
All reported regions are significant at $p < 0.05$ after whole brain FWE correction at the voxel level and a cluster extent of 5 voxels. The FWE correction was based on 5000 permutations of the threshold free cluster enhancement (TFCE) values. The TFCE values and permutation-derived test statistics were calculated using the Randomise function implemented in FSL. All coordinates are listed in MNI space and represent the peaks of all clusters formed by contiguous voxels as well as peaks > 20 mm apart within the same cluster.

Supplementary Table 5. Associations between brain activation and reward and punishment sensitivity

Region	**Cluster Size**	**x; y; z**	**TFCE T-stat**
Positive correlations between BAS-Drive and RH (S>R) > RL (S>R)			
Frontal Pole; Paracingulate Gyrus; Superior Frontal Gyrus	3	-5; 61; 7	5.98
Negative correlations between BIS and PH (S>R) > PL (S>R)			
Frontal Pole; Inferior Frontal Gyrus, pars triangularis; Frontal Orbital Cortex	40	-47; 44; -7	6.15
All reported regions are significant at $p < 0.05$ after whole brain FWE correction at the voxel level. The FWE correction was based on 5000 permutations of the threshold free cluster enhancement (TFCE) values. The TFCE values and permutation-derived test statistics were calculated using the Randomise function implemented in FSL. All coordinates are listed in MNI space and represent the peaks of all clusters formed by contiguous voxels as well as peaks > 20 mm apart within the same cluster. RH = Reward high; RL = Reward low; PH = Punishment high; PL = Punishment low; S>R = contrast of switch minus repeat trials.			

Supplementary Table 6. Regions showing BOLD activity associated with longer reaction times in GLM-1s

Region	**Cluster Size**	**x; y; z**	**TFCE T-stat**
A) Positive correlations: increased activation with longer RTs			
Inferior Frontal Gyrus, pars opercularis; Middle Frontal Gyrus; Precentral Gyrus; Frontal Pole; Cingulate Gyrus, anterior division; Paracingulate Gyrus; Superior Frontal Gyrus; Insular Cortex; Cingulate Gyrus, posterior division; Precuneous Cortex; Frontal Orbital Cortex; Inferior Frontal Gyrus, pars triangularis; Juxtapositional Lobule Cortex (formerly Supplementary Motor Cortex); Temporal Pole	4788	45; 14; 29	7.39
		45; 14; 29	*7.39*
		0; 19; 40	*6.74*
		35; 6.5; 7	*6.01*
		32; 21; -11	*5.83*
		-2; -41; 47	*5.8*
		57; -1; 7	*5.48*
		35; 39; 0	*5.42*
		47; 41; 18	*5.25*
		5; 39; 40	*5.07*
		22; 16; 54	*4.92*
		7; 26; 22	*4.6*
		5; 24; 61	*4.49*
		-2; 46; 22	*4.39*
		-12; -23; 36	*4.37*
		-12; -58; 68	*4.3*
		57; 24; 11	*4.04*
		25; 51; 25	*3.9*
		2; -11; 72	*3.9*
		15; -48; 36	*3.89*
		10; -38; 79	*3.78*
Inferior Frontal Gyrus, pars opercularis; Middle Frontal Gyrus; Frontal Orbital Cortex; Frontal Pole; Thalamus; Precentral Gyrus; Temporal Pole; Inferior Frontal Gyrus, pars triangularis; Insular Cortex; Frontal Operculum Cortex; Caudate	1937	-40; 19; 22	7
		-40; 19; 22	*7*
		10; -11; -7	*5.84*
		-32; 14; -25	*5.61*
		10; 4; 7	*5.54*
		-27; 19; 4	*5.4*
		-40; 41; 4	*5.09*
		-10; -3; 11	*5.05*
		-52; 6; 36	*4.48*
		-47; 21; -4	*4.34*
		17; 24; 0	*3.82*
		-12; 16; -11	*3.69*
Supramarginal Gyrus, anterior division; Supramarginal Gyrus, posterior division; Angular Gyrus; Postcentral Gyrus; Superior Parietal Lobule	282	55; -33; 50	5.61
Lateral Occipital Cortex, superior division; Angular Gyrus	189	42; -73; 36	5.35
Middle Frontal Gyrus	7	-27; 16; 32	3.2
Temporal Pole; Temporal Fusiform Cortex, anterior division; Parahippocampal Gyrus, anterior division	6	-35; 4; -32	3.91
B) Negative correlations: increased activation with shorter RTs			
Occipital Pole; Lingual Gyrus; Lateral Occipital Cortex, inferior division; Occipital Fusiform Gyrus; Intracalcarine Cortex; Lateral Occipital Cortex, superior division	465	17; -88; 0	6.96
Occipital Pole; Occipital Fusiform Gyrus; Lingual Gyrus; Lateral Occipital Cortex, inferior division	357	-12; -104; 7	6.42



Supplementary Figure 1. Results comparison from models GLM-1 and GLM-1s.
The left column shows the results from the original model and the right shows results from a supplemental model including response times as a parametric regressor for all trials. 1) Comparison between the average Beta coefficients for each trial type and magnitude in the left inferior frontal voxels that show a conjunction of: (a) increased activation in Switch vs Repeat trials; (b) increased activation in Reward vs Punishment trials during cognitive control and (c) increased functional connectivity with vStr PPI seed. This region is circled in blue in Figure 3.
2) Comparison of the scatterplot of Beta coefficients for the high vs low reward under cognitive control contrast and BAS drive scores.

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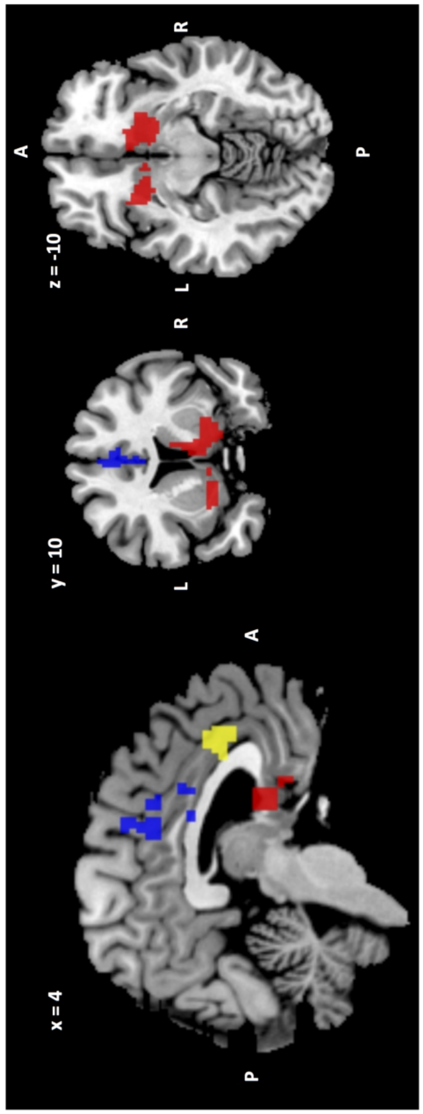

Supplementary Figure 2. Clusters taken as seed regions for Psychophysiological (PPI) analyses. Voxels in yellow depict the mask of the dACC from the value effects, voxels in blue depict the mask of the dACC from the magnitude effects; voxels in red depict the mask of the vStr from the magnitude effects.

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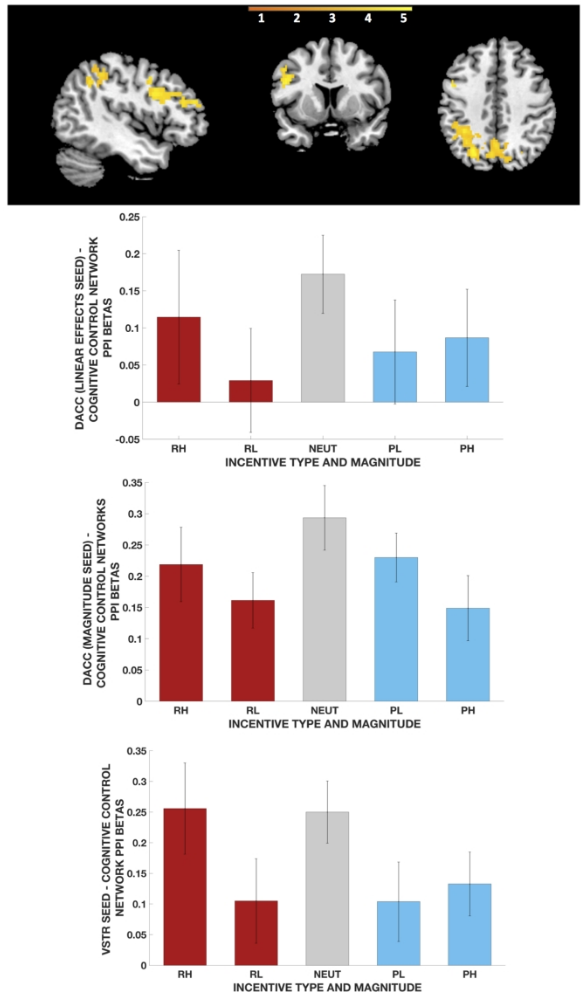

Supplementary Figure 3. Beta coefficients for each of the three PPI analyses showing functional connectivity between each seed region and cognitive control regions. (a) shows the regions of increased activation during switch relative to repeat trials across all incentive types (b) shows the Betas for the functional connectivity analysis between each of the three seed regions and the cognitive control regions shown in (a).

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