

Table S3. Functional neuroimaging studies (conducted during 2000-2010) comparing brain activity during cue exposure in addicted individuals (S) and healthy controls (C)

	Subjects	Abstinence length	Tool/Task	Task performance / Craving	PFC results	PFC correlations with task or drug use
Nicotine						
Brody, Mandelkern et al. 2002	20 S 20 C	As usual	FDG video cues (+ tactile): D, N	S>C D urge, interest	S>C D>N R vACC 24,32	Craving (+) D>N B OFC 11,47, B DLPFC 9,46, B INS
Artiges, Ricalens et al. 2009	13 S 13 C	≥2 hours	fMRI emotion recognition after: D, N	S<C D (not N) accuracy	S>C D>N ↑ R DLPFC 10, ↓ R ACC 25, ↓ L ACC 32, ↓ R INS	FTND (-) D>N R INS
Yalachkov, Kaiser et al. 2009	15 S 15 C	fMRI: NR	fMRI passive viewing: D, N	NA	S>C D (not N) L DLPFC, L MedFG, R subcallosal gyrus 34, ↑ L INS	FTND (+) D>N R MidFG
Zhang, Chen et al. 2009	10 S 10 C	≥2 hours	fMRI passive picture viewing : D, N (masked vs. unmasked stimuli)	NA	S>C D>N ↑ L DLPFC 9/46 (unmasked)	NR
Zhang, Salmeron et al.	22 S 22 C	≥2 hours	ASL passive picture viewing : D, N	NA	S>C D>N ↑ B dmPFC, ↑ R DLPFC, ↑ B dACC, ↑ B rACC, ↑ L INS	Lifetime drug use (+) D>N rACC Lifetime drug use (-) D>N DLPFC
Alcohol						
Grusser, Wrase et al. 2004	10 S 10 C	7 weeks	fMRI passive picture viewing: D, N, A	S=C ratings, SCR	S>C D>N/A L ACC 32, R ACC 33, L SFG 10, L MidFG 9, R MedFG 10	Drug use follow up D>N/A mPFC
Myrick, Anton et al. 2004	10 S 10 C	24 hours	fMRI passive picture viewing: D, N, A	S>C D craving	S=C	Craving D (not N, A) L ACC, L OFC
Heinz, Wrase et al. 2007	12 S 12 C	2 weeks	fMRI passive picture viewing: D, N, P, U	S>C D arousal ratings	S>C D>N R SFG 10, R MidFG 6, L ACC 24,23 S>C P>N R SFG 10, ACC 24	NS

	Subjects	Abstinence length	Tool/Task	Task performance / Craving	PFC results	PFC correlations with task or drug use
					S>C U>N L SFG 10, L MedFG 10	
de Greck, Supady et al. 2009	10 S 10 C	5 months	fMRI monetary gain vs. loss, pictures: D, F, G rated for self-reference	S<C D low reference S>C D high reference S=C craving	S=C L vmPFC	NR
Cocaine						
Garavan, Pankiewicz et al. 2000	17 S 14 C	NR	fMRI passive video viewing: D, N	S>C D craving	S>C D (& S D>N) L MedFG 9, L MidFG 8,6, R IFG 9, 6, R SFG 10, L ACC 32/24,23	NR
Heroin						
Zijlstra, Veltman et al. 2009	12 S 17 C	8 weeks	fMRI passive picture viewing: D, N, P	NR	S<C P>BL B anterior FC	NS
Non-drug						
Crockford, Goodyear et al. 2005	10 S 10 C	5 days	fMRI viewing video: G, N (gambling after MRI)	S>C craving	S>C G>N R IFG 44, R MidFG 9	NR
Reuter, Raedler et al. 2005	12 S 12 C	NR	fMRI abstract guessing task: W, L	S=C	S<C W>L L vmPFC	Gambling severity (-) W>L L vmPFC
Ko, Liu et al. 2009	10 S 10 C	1-30 hours	fMRI passive picture viewing: G, N	S>C G gaming urge	S>C G>N: B OFC 47, B medial FC 10,11, R vACC 32, R middle FC 8, R superior FC 9,10, L ACC 32, L superior FC 8, R ACC 23, L INS 13	Gaming urge & recall G>N B ACC 32, L medial FC 10, R superior FC 10, R middle FC 10, R OFC 47, R medial FC 11
Goudriaan, De Ruiter et al. 2010	17 Sg 18 Sm 17 C	Sg: 1 week Sm: 16-18 hours	fMRI press during picture view: G, D, N, BL	Sg>C=Sm gambling urge Sm>C=Sg smoking urge	Sg>C G>N R DLPFC Sg>Sm G>N B DLPFC, L vIPFC	Gambling urge G>N (Sg) L vIPFC, L dACC, L INS

	Subjects	Abstinence length	Tool/Task	Task performance / Craving	PFC results	PFC correlations with task or drug use
					Sm>C D>N B vmPFC, L vIPFC, B rACC Sm>Sg D>N B vmPFC, R vIPFC, B rACC	Smoking urge D>N (Sm) L vIPFC
Uher, Murphy et al. 2004	<i>26 S</i> <i>19 C</i>	4 hours S 3 hours C	fMRI passive picture viewing: F, N, U	S>C F (& U) Ratings	S<C F>N ↑ L PFC 45,46, ↑ L DLPFC 44 S>C F>N ↑ L vmPFC/ACC 11,25,32 An>Bul F R PFC 10,47	NR
Miyake, Okamoto et al. 2010	<i>36 S</i> <i>12 C</i>	NR	fMRI select most negative or neutral words: Bd, N, U	NR	S>C Bd>N ↑ L vmPFC 9	NS with body mass index

C controls, S subjects, Sg gamblers, Sm smokers

fMRI functional magnetic resonance imaging, FDG positron emission tomography with [¹⁸F]fluorodeoxyglucose, SCR skin conductance responses, ASL arterial spin labeling for perfusion

NR not reported, NA not applicable, NS not significant

D drug (within respective category), T Task, N neutral, P pleasant, U unpleasant, F food, G gambling/gaming, A abstract (e.g., scrambled), W win, L loss, Bd body image, BL baseline

ACC anterior cingulate cortex, dACC dorsal ACC, pgACC perigenual ACC, rACC rostral ACC, scACC subcallosal ACC, vACC ventral ACC, FC frontal cortex, aFC anterior FC, mFC middle FC, IFC inferior FC, PFC prefrontal cortex, mPFC medial PFC, dmPFC dorsomedial PFC, vmPFC ventromedial PFC, DLPFC dorsolateral PFC, vIPFC ventrolateral PFC, IFG inferior frontal gyrus, OFC orbitofrontal cortex, mOFC medial OFC, MedFG medial frontal gyrus, MidFG middle frontal gyrus, SFG superior frontal gyrus, INS insula, SMA supplementary motor area

(+) positive correlation, (-) negative correlation

R right, L left, B bilateral, C central

If available: ↑ increase/activation/hyperactivation, ↓ decrease/deactivation/hypoactivation, Brodmann Areas are noted by numbers

Subject column is in italics if groups are matched on at least two of the following: age, sex, race, education

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