

this context if services are to present a stable and coherent view of the patient's subjective world that may be adopted (internalised) as part of the self-image of the patient's mind. In our view this is the critical change in the treatment of borderline personality disorder.

#### Declaration of interest

The authors are in receipt of a grant from the Borderline Personality Disorder Foundation to support a randomised controlled trial of intensive out-patient psychotherapy.

**Paris, J. (2004)** Is hospitalization useful for suicidal patients with borderline personality disorder? *Journal of Personality Disorders*, **18**, 240–247.

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#### Neurobehavioural characteristics and relapse in addiction

The systematic review by Dom *et al* (2005) of studies using behavioural decision-making tasks and/or neuroimaging techniques to investigate orbitofrontal cortex functioning in substance use disorders was comprehensive. Our research article 'Risk-taking on tests sensitive to ventromedial prefrontal cortex dysfunction predicts early relapse in alcohol dependency' (Bowden-Jones *et al*, 2005) was published simultaneously and, because of its relevance to the review, we considered it important to bring it to readers' attention.

We not only used most of the neuropsychological tests mentioned by Dom *et al* but, more importantly, rated participants on both the Rogers Cambridge Gamble Task (RCGT; Rogers *et al*, 1999) and the Iowa Gambling Task (IGT; Bechara *et al*, 1994), and on the Barratt Impulsivity Scale and two personality scales: the Structured Clinical Interview for DSM-III-R (Spitzer *et al*, 1989) and the Dimensional Assessment of Personality Pathology-Basic Questionnaire (Livesley & Jackson, 2002).

The 21 participants in our study were in-patients in a residential detoxification unit and we were therefore able to carry out tests at 21 days post-detoxification in

the knowledge that they had been substance-free during that period. They were followed up for 3 months post-discharge.

The six patients who relapsed early were significantly younger and more impulsive on the Barratt Impulsivity Scale, they sampled significantly more cards from the bad decks on the IGT and consistently risked more points across all odds on the RCGT. Hence people who had recently undergone detoxification were more likely to relapse within 3 months if they made more choices on a gambling task in which the immediate reward was large but the long-term consequences were disadvantageous.

It is unlikely that these findings reflect alcohol-induced brain damage because these people showed no impairments on a memory test sensitive to the early stages of dementia and on tests of dorsolateral prefrontal cortex functioning, which is particularly affected by long-term alcoholism.

Our results are consistent with the hypothesis that a dysfunctional orbitofrontal prefrontal cortex mediates the inability to resist the impulse to drink. This may lead a person to relapse after treatment despite the ultimately deleterious effects and despite the many hours of psychological input associated with a rehabilitation programme.

Relapse after detoxification is an area in need of further research. If it has a biological basis we need simple tests that are able to predict vulnerability to relapse and treatment programmes which are able to identify those patients at greater risk.

**Bechara, A., Damario, A. R., Damario, H., et al (1994)** Insensitivity to future consequences following damage to human prefrontal cortex. *Cognition*, **50**, 7–15.

**Bowden-Jones, H., McPhillips, M., Rogers, R., et al (2005)** Risk-taking on tests sensitive to ventromedial prefrontal cortex dysfunction predicts early relapse in alcohol dependency: a pilot study. *Journal of Neuropsychiatry and Clinical Neurosciences*, **17**, 417–420.

**Dom, G., Sabbe, B., Hulstijn, W., et al (2005)** Substance use disorders and the orbitofrontal cortex. Systematic review of behavioural decision-making and neuroimaging studies. *British Journal of Psychiatry*, **187**, 209–220.

**Livesley, W. J. & Jackson, D. N. (2002)** *Manual for the Dimensional Assessment of Personality Problems – Basic Questionnaire*. London: Research Psychologists' Press.

**Rogers, R. D., Owen, A. M., Middleton, H. C., et al (1999)** Choosing between small, likely rewards and large unlikely rewards activates inferior and orbital prefrontal cortex. *Journal of Neuroscience*, **20**, 9029–9038.

**Spitzer, R. L., Williams, J. B. W., Gibbon, M., et al (1989)** *Structured Clinical Interview for DSM-III-R*–

*Patient Edition (with Psychotic Screen)*. New York: Biometrics Research Department.

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**Authors' reply:** The findings of Bowden-Jones *et al* (2005) add to the accumulating evidence that impairments on decision-making tasks are an important characteristic of people with substance use and possibly other addictive disorders. The finding that those alcohol-dependent people that performed poorly on behavioural tasks were at higher risk of relapse is a nice demonstration of the 'myopia' for the future that is reflected by poor task performance. This is in line with other recent studies, including that of Goudriaan *et al* (2006), which showed that relapse among gamblers was associated with behavioural (but not self-reported) measures of impulsivity. Furthermore, Paulus *et al* (2005) reported that methamphetamine-dependent people with low prefrontal activation during a decision-making task relapsed significantly more frequently than those with greater activation. Together with the results of Bowden-Jones *et al* (2005), these findings represent an important new line of investigation.

Identification of distinctive neurobehavioural characteristics may allow detection of those people with addictions that are more vulnerable to relapse. Neurobehavioural (endophenotypic) characteristics may prove to be better for the identification of high-risk patients than traditional clinical (phenotypic) variables.

**Goudriaan, A. E., Oosterlaan, J., de Beurs, E., et al (2006)** Neurocognitive functions in pathological gambling: a comparison with alcohol dependence, Tourette syndrome and normal controls. *Addiction*, **101**, 534–547.

**Paulus, M. P., Tapert, S. F. & Schuckit, M. A. (2005)** Neural activation patterns of methamphetamine-dependent subjects during decision making predict relapse. *Archives of General Psychiatry*, **62**, 761–768.

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