NeuroImage

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Alcoholism and drug abuse are disorders in which people continue their use of harmful substances despite major long-term negative consequences (e.g. in the areas of employment, family, education, and health). A number of studies (Bechara, 2001; Bechara et al., 2001; Grant et al., 2000) have examined the mechanisms underlying this aspect of substance dependence using the simulated gambling task (SGT) developed by Bechara et al. (1994). The SGT simulates real-life decision-making that requires an individual to weigh long and short-term rewards and punishments in an atmosphere of uncertain outcomes. A hallmark of drug and alcohol abuse is that users persist in behaviors that have short-term benefits (e.g., intoxication) despite long-term major negative consequences.

The gambling task was initially developed to study patients with acquired sociopathy due to damage to the ventromedial prefrontal cortex (VMPFC) (Bechara et al., 1994, 1997). Such patients often take part in risky behaviors that are immediately gratifying while ignoring negative future outcomes. It is thought that they cannot see beyond short-term rewards to potential long-term consequences (Bechara et al., 1994). Compared with controls, when engaged in the SGT, patients with VMPFC lesions consistently choose to draw more cards from decks with larger immediate rewards and long-term net losses, than from decks with a smaller immediate reward, smaller delayed punishments and long-term net gains (Bechara et al., 1994, 1997). Dysfunction of the VMPFC may predispose an individual to make disadvantageous personal choices possibly leading to socially inappropriate, or socially deviant behavior (Bechara et al., 1994, 1997), or to drink excessively even when it leads to significant problems.

There is also a growing body of literature implicating the amygdala in decision-making and learning (Baxter and Murray, 2002; Baxter et al., 2000; Kahn et al., 2002; R[illegible]

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2003; Bechara et al., 1999, 2003; Ernst et al., 2002). Research indicates that the amygdala and VMPFC are part of a 'circuit' that

Image acquisition and assessment

and in a manuscript on cognitive function in these same subjects (Fein et al., in press), we did not find any associations between performance and duration of abstinence. In the cognition paper, we

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