

Dopaminergic involvement in cognitive impulsivity

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Impulsive behavior is a symptom in mental illnesses such as mania, personality disorders, substance abuse disorders and ADHD. Although behavioral and pharmacological experiments have indicated that impulsivity is a multifactorial phenomenon, to date most research has been directed at the role of the serotonin system in impulsivity. Here, we have investigated the role of dopaminergic neurotransmission in impulsivity, using the delayed reward paradigm. Wistar rats were trained to choose between an immediate small reward and a delayed larger reward. During the sessions, the delay between choosing and receiving the larger reward increased. Animals prefer the larger reward when the delay is short, but this preference diminishes as the delay increases. Amphetamine dose-dependently increased the preference for the larger reward, indicating reduced impulsivity. Although the dopamine D2 receptor antagonist eticlopride did not significantly affect the preference for the larger reward under basal conditions, it was able to attenuate the amphetamine-induced reduction of impulsivity. These data indicate that psychostimulant drugs can reduce impulsive behavior through a dopamine D2-receptor dependent mechanism.

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