

Imaging examines risky decision making on brains of methamphetamine users

May 21 2014

Methamphetamine users showed less sensitivity to risk and reward in one region of the brain and greater sensitivity in other brain regions compared with non-users when performing an exercise involving risky decision making.

Deficiencies in decision making are linked to addiction. Chronic methamphetamine use is associated with abnormalities in the neural circuits of the brain involved in risky decision making. Faulty decision making is targeted in addiction therapy so understanding its causes could help in the development of more effective treatments.

The authors used functional [magnetic resonance imaging](#) in a study of 25 methamphetamine users and 27 non-users (controls). The patients were examined at rest and when performing the Balloon Analogue Risk Task (BART), which involves the choice to pump up a balloon to increase earnings or cash out to avoid uncertain risk.

Methamphetamine users earned less than the healthy patients on the BART and they showed less sensitivity to risk and reward in the brain region known as the right [dorsolateral prefrontal cortex](#) (rDLPFC), greater sensitivity in the [ventral striatum](#) and greater mesocorticolimbic resting-state functional connectivity (RSFC). The healthy patients had a greater association between the RSFC of the rDLPFC and sensitivity of the rDLPFC to risk during risky decision making. The authors indicate that may suggest that a deficit in rDLPFC connectivity contributes to dysfunction in methamphetamine users.

"These findings suggest that circuit-level abnormalities affect brain function during [risky decision](#) making in stimulant users." Milky Kohno, Ph.D., of the University of California, Los Angeles, and colleagues wrote in their *JAMA Psychiatry* article.

More information: *JAMA Psychiatry*. Published online May 21, 2014.
[DOI: 10.1001/jamapsychiatry.2014.399](https://doi.org/10.1001/jamapsychiatry.2014.399)

Provided by The JAMA Network Journals

Citation: Imaging examines risky decision making on brains of methamphetamine users (2014, May 21) retrieved 5 May 2024 from
<https://medicalxpress.com/news/2014-05-imaging-risky-decision-brains-methamphetamine.html>

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