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Study: Gambling Affects Brain Like Drugs

For Gamblers and Older Adult Gamblers

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WASHINGTON-The brains of people anticipating a win at the roulette table appear to react much like those taking euphoria-inducing drugs.

A team of investigators report in the current issue of the journal Neuron that the parts of the brain that respond to the prospects of winning and losing money while gambling are the same as those that appear to respond to cocaine and morphine.

The overlap of brain activity seen in the gambling experiment with that found in earlier studies of drug use indicates, the researchers said, that the brain uses the same circuitry for “the processing of diverse rewards.”

“The results of our gaming experiment, coupled with findings from prior studies of the anticipation and experience of positive and negative outcomes in humans and animals, suggests that a network of interrelated structures... coordinate the processing of goal-related stimuli,” the team led by Hans Breiter of Massachusetts General Hospital said.

A challenge for the future, Breiter said, is to determine how different parts of these brain circuits affect the thinking, emotion and motivation involved in anticipation, evaluation and decision-making.

“Identifying these regions of the brain and mapping the neural pathways the process the anticipation and ‘rewards’ associated with drug abuse would be a tremendous boost to the development of medications or interventions that could block these circuits and provide other treatment approaches,” said Alan Leshner, director of the National Institute on Drug Abuse. The research was supported by NIDA, a division of the National Institute of Health.

The research team led by Breiter used magnetic resonance imaging to map the brain responses of twelve men while they participated in a game of chance involving winning or losing money.

They found that in the gambling experiment, blood flow to the brain changed in ways similar to that seen in other experiments during an infusion of cocaine in subjects addicted to that drug and to low doses of morphine in drug-free individuals.

The changes varied in accordance with the amount of money involved, and a broadly distributed set of brain regions were involved in anticipating a win. The more money involved, the more excited the person became.

The primary response to winning, or the prospect of winning, was seen in the right hemisphere of the brain. The left hemisphere was more active in response to losing, the researchers said.