

Time-based training can decrease impulsivity, research finds

February 4 2015, by Lindsey Elliott

A study conducted by researchers at Kansas State University is the first to demonstrate increases in both self-control and timing precision as a result of a time-based intervention. This new research may be an important clue for developing behavioral approaches to treat disorders like attention deficit hyperactivity disorder, substance abuse and obesity.

The study, "Mechanisms of impulsive choice: II. Time-based interventions to improve self-control," was published online in the *Journal of Behavioral Processes* and will be part of a special publication in March. To look at impulsivity, researchers studied rat behavior, as rat brains are fairly similar to humans, especially in terms of timing and decision-making systems.

"Our previous research found that individual rats with greater self-control have a better understanding of delays, which means that they can wait for a longer period of time to earn a larger reward," said Kimberly Kirkpatrick, professor of psychological sciences at Kansas State University. "We more recently conducted experiments to determine if we could teach individual rats to be less impulsive and found that time-based interventions can be an effective mechanism to increase self-control."

Kirkpatrick thinks these time-based interventions could help people make better choices.

"For example, we all know some of us are better at deferring the

chocolate cake and opting for the fruit platter instead, whereas others are prone to giving in and making these impulsive choices," she said. "We hope these interventions can help those more impulsive individuals learn not to choose the chocolate cake—at least not every time."

While the research can apply to obesity, gambling, [substance abuse](#) and other impulsive behaviors, the researchers are focusing on alternative ways to treat [attention deficit hyperactivity disorder](#), or ADHD.

"Up to 15 percent of the population may suffer from ADHD during development and our main way of treating it is with medication," Kirkpatrick said. "We think having alternatives is a good thing. If we could use [behavioral interventions](#) to help people gain better self-control, we think this could be a nice addition or alternative to medication."

The researchers also are working with researchers at the University of Kansas Medical Center to develop and test a game to teach children that delaying their response could earn a larger reward. The space invader game enables children to shoot a missile at a target. They must wait for the missile to charge before being able to shoot, but they have to learn how long the delay takes. The researchers will see if the game helps defer impulsive choices in overweight children.

While time-based interventions may be an alternative form of therapy for individuals with [impulsive behavior](#), Kirkpatrick said they are not a cure. The most impulsive individuals did improve their [self-control](#), but they weren't cured of their impulsivity.

More information: Aaron P. Smith, Andrew T. Marshall, Kimberly Kirkpatrick, "Mechanisms of impulsive choice: II. Time-based interventions to improve self-control," *Behavioural Processes*, Volume 112, March 2015, Pages 29-42, ISSN 0376-6357, dx.doi.org/10.1016/j.beproc.2014.10.010.

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