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I Want It Now

Drug addicts routinely throw away the chance of a better future for the more immediate satisfaction delivered by a fix. This kind of impulsive choice can be studied in animals, and now researchers working with rats may have found a brain region that plays a key role in spur-of-the-moment decisions. The finding could help clarify human conditions as well, including addiction.

The biological basis for self-control has become clearer in recent years. Animal studies, as well as imaging studies in people with impulsivity problems, have hinted at several brain structures that might help people hold their horses in hopes of a later, greater reward. The nucleus accumbens is one of these, and it's also been shown to be critical for experiencing pleasure.

Intrigued, Rudolf Cardinal of the University of Cambridge, United Kingdom, and colleagues decided to zero in on the nucleus accumbens as a potential center of impulsiveness. They killed the cells of the nucleus accumbens by chemical injection in one group of rats and compared those rats' behavior to that of healthy ones. The researchers offered the rats a choice of two levers. Pressing one delivered a single sugar pellet immediately, and pressing the other delivered four sugar pellets after a delay of up to 60 seconds. In a study published online today by *Science*, the team reports that about 50% of normal rats learned to choose the large reward, but fewer than 25% of rats whose nucleus accumbens had been destroyed would wait for the jackpot.

The findings "provide some different angles on this whole topic of impulsive choice," says neurologist John Evenden of AstraZeneca in Wilmington, Delaware. But he points out that impulsivity is expressed in many ways. It will be interesting to look at these animals in situations that call for sustained attention, he says, because lack of concentration is a more common manifestation of impulsivity in humans.

--CAROLINE SEYDEL

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[Magnetic resonance imaging showing the nucleus accumbens, from the Whole Brain Atlas](#)

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