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# TIME

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## Can Dopamine Make Your Future Look Brighter?

By John Cloud

Humans have expended a great deal of intellectual energy over the past few thousand years trying to understand the morality (or amorality) of seeking pleasure. Most of philosophy begins with the question of what defines the (or a) good life. But what if the answer to what makes us happy comes down to how much of a particular chemical is circulating in our brain at any particular moment?

The neurotransmitter dopamine isn't quite that powerful, but evidence has been mounting for the past 40 years that its activity is key to helping the brain recognize experiences that cause pleasure. The more dopamine a certain event (having sex or eating ice cream, say) triggers, the more strongly that event gets hard-wired in the brain, and the more intensely your brain drives you to revisit it. ([See the best inventions of 2009.](#))

That knowledge also helps the brain figure out how much pleasure it can expect from future experiences and, therefore, influences virtually any decision you make about what you might like or not like: whether you should buy the red shirt or black one, whether you'll enjoy watching *Top Chef* over *Mad Men*, whether you should leave your job or whether you should move in with your boyfriend.

Now a [new paper](#) in the journal *Current Biology* shows for the first time that by tinkering with levels of dopamine in the brain, researchers were able to influence people's future decisions in a reliable, predictable way. Led by Tali Sharot and Tamara Shiner of the the Wellcome Trust Center for Neuroimaging at University College London, scientists presented 61 healthy volunteers with 80 different vacation locations, such as Brazil, Thailand and Greece, and asked the volunteers to rate how happy they thought they would be visiting each place. Later, 29 of the participants were given 100 mg of levodopa (or L-DOPA), a drug that increases dopamine in the brain; the other 32 were unwittingly given a sugar pill. Forty minutes later, each participant was given a questionnaire about their emotional state, then a list containing half of the previously rated destinations. They were asked to imagine themselves vacationing in each of the far-flung locations.

The next day (once the L-DOPA had cleared from the body), all the participants were brought back and

presented with 40 pairs of vacation spots, each pair containing locations to which they had given equal ratings in the first part of the experiment. Participants were asked to pick which of each pair of places they would prefer to visit. It turned out that those who had imagined themselves vacationing the previous day under the influence of dopamine were significantly more likely to predict they'd be happier in those same spots. That same preference didn't occur in the placebo group. ([Read why dopamine makes you take risks.](#))

The findings suggest that when dopamine is present during an imagined event — that is, even when you're not actually experiencing it in person — it still influences how much pleasure the brain will expect from it in the future. Researchers think the extra shot of dopamine may aid learning — that is, it boosts your brain's learned association between pleasure and whatever experience you're thinking about at the time. Or perhaps, the authors speculate, the extra dopamine makes us simply want something more while we're imagining it. In other words, it would be useful to have a bit of L-DOPA handy now, while you're preparing for your future visit to the in-laws' over the holidays.

The interesting thing was that the presence of dopamine didn't make participants feel any happier at the time they took it. According to the questionnaires that the volunteers filled out, there was no difference in the current emotional state of people who got the sugar pill versus those who got L-DOPA, while they were imagining their vacations. But the drug did change people's predictions about their *future* emotional state.

It's possible, then, that the more dopamine that is active in your brain, the more likely you are to view the future as rosy, which raises at least two questions: how do I get more dopamine, and is there such a thing as too much?

The answer to the latter question is, yes. Although dopamine may be crucial to making decisions about future pleasure, too much of it might distort those decisions. A surplus of dopamine is at the root of addiction, for instance: Cocaine, for one, works in part by preventing brain cells from reabsorbing dopamine that the brain has released in connection with pleasurable sensations. And once the brain has learned to like cocaine, it causes all kinds of self-destructive behavior to satisfy its cravings.

Too little dopamine, meantime, can lead to movement disorders like Parkinson's disease. An excess is thought to be a cause of schizophrenia. The research suggests that most of us should not try to manipulate our dopamine levels with drugs. On a therapeutic level, however, interfering with the chemical could lead to new treatments for conditions as varied as drug addiction and mental disease.

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