

# Whiff of 'love hormone' helps monkeys show a little kindness

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Oxytocin, the "love hormone" that builds mother-baby bonds and may help us feel more connected toward one another, can also make surly monkeys treat each other a little more kindly.

Administering the hormone nasally through a kid-sized nebulizer, like a gas mask, a Duke University research team has shown that it can make rhesus macaques pay more attention to each other and make choices that give another monkey a squirt of fruit juice, even when they don't get one themselves.

Two macaques were seated next to each other and trained to select symbols from a screen that represented giving a rewarding squirt of juice to one's self, giving juice to the neighbor, or not handing out any juice at all. In repeated trials, they were faced with a choice between just two of these options at a time: reward to self vs. no reward; reward to self vs. reward to other; and reward to other vs. no reward.

"The inhaled oxytocin enhanced 'prosocial' choices by the monkeys, perhaps by making them pay more attention to the other individual," said neuroscientist Michael Platt, who headed the study and is director of the Duke Institute for [Brain Sciences](#). "If that's true, it's really cool, because it suggests that oxytocin breaks down normal social barriers."

Earlier work by Platt's group had shown that macaques would rather give a reward to another monkey when the alternative is no reward for anyone, a concept they call "vicarious reinforcement." Their data in the

latest study show an apparent improvement in vicarious reinforcement about a half-hour after exposure to oxytocin. Interestingly, for the first half-hour, the monkey was more likely to reward itself.

The researchers also tracked the monkeys' [eye movements](#). Typically after making a prosocial choice, they will shift their [gaze](#) to the other monkey. Under the influence of oxytocin, the gaze lingered a bit more when they made other vs. neither choices.

The hormone is currently being evaluated as a therapy for autism, schizophrenia and other disorders that are marked by an apparent lack of interest or caring about others, Platt said. It seems to give patients increased trust and better social skills, but not much is known about how that process works, or whether the effects would be consistent over the long term.

This study may help establish [monkeys](#) as a good behavioral and pharmacological model for understanding oxytocin therapy, Platt said.

The nebulizer mask used in these tests is also more pleasant than the sprays now being used on humans, he added. "We were able to make the inhalation very tolerable by using the pediatric nebulizer," Platt said. "This may be much better for treating young children with autism or related disorders than the typical nasal spray, which can be uncomfortable. It may deliver the hormone more effectively, too."

The researchers were also able to determine for the first time that nasally administered oxytocin actually travels into the brain. "Understanding how [oxytocin](#) works in the brain, where the site of action is, and the long-term consequences of treatment can't be done in humans," Platt said. "And rodent models are too distant behaviorally and neurologically to provide much insight."

**More information:** "Inhaled oxytocin amplifies both vicarious reinforcement and self reinforcement in rhesus macaques (*Macaca mulatta*)," Steve W. C. Chang, Joseph W. Barter et al. *PNAS* published online before print, Jan. 3, 2012.

[www.pnas.org/content/early/2012/01/02/1114621109](http://www.pnas.org/content/early/2012/01/02/1114621109)

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