Study: Brains Want to Cooperate

By Louise Knapp

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A team from Emory University in Atlanta says they have resolved a question philosophers have been debating for centuries: Why do people cooperate with one another even when it is not in their best interests to do so?

The Emory studies revealed a biological theory that essentially says people cooperate because it makes them feel good.

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"We say people act this way because the brain is hard-wired to cooperate -- it associates cooperation with reward," said Gregory Berns, a professor at the Emory University Department of Psychiatry and Behavioral Sciences.

During their experiments, Berns and the Emory team discovered that when pairs of volunteers cooperated with one another, the regions of the brain known as reward circuits were activated.

"These are the same regions of the brain that are activated when certain drugs are taken, or when you receive an unexpected sum of money," Berns said.

Thirty-six women participated in the study. No men were chosen because the Emory team wanted to avoid introducing any possible sexual tension that might affect participants' judgment.

The volunteers were divided into teams of two. One team member was placed inside a functional MRI scanner that monitors brain activity, while the second sat outside the scanner.

"A regular MRI gives a static picture; a functional MRI is more like a movie. It scans every two seconds, and so we can see any changes as they occur in the brain," Berns said.

Both volunteers could see a computer monitor where a game of Prisoner's Dilemma -- a decades-old model for cooperation -- was screened.

Each volunteer pressed a button to indicate when she was ready to play, and then each simultaneously pushed another button to indicate if she wished to cooperate with, or betray, the other player.

If both players chose to cooperate, each volunteer was awarded $2. If one cooperated, but the other defected, the defector received $3 and the cooperator received nothing. If both defected, each received $1.

According to economists, the rational selection in the game would be to defect.

"John Nash won his Nobel Prize by forming the theory that people act in a way that minimizes losses," Berns said. "In this game the way to play would be to defect, as you're guaranteed a minimum of $1 whatever the other chooses."

But Berns said that in real life, this is generally not what people select: Mutual cooperation was the most common outcome in the games.

And every time the two cooperated, the volunteer in the scanner showed activity in her brain's reward circuit: the nucleus accumbens, the caudate nucleus, ventromedial frontal/orbitofrontal cortex and rostral anterior cingulate cortex.

The Emory team did a number of other experiments to make sure this activity was directly related to human cooperation.

In these activities the volunteer in the scanner was pitted against a computer.

"The activation and reward circuit trigger only happened when they played with another person -- not against the computer," Berns said.

Berns said his findings fit in with the theory that there is a biological explanation for all human behavior.

"Everything we do, and the reason we do it, has a basis in what's happening in our brains," Berns said.

Some people, however, believe an explanation for human behavior is more complicated than Berns would have it.

Professor Thomas Scanlon, of the Harvard University Department of Philosophy, is one such naysayer.

"It's too quick of a move to say that because it feels good you are doing it solely because of that feeling -- there are many other factors involved," Scanlon said. "It's not the bottom-line motivator."

Richard Heck, a philosophy professor at Harvard, agreed with Scanlon.

"It may not be that we act because it makes us feel good. This could just be a side effect," Heck said. "The main issue is that correlation is not causation. Just because they happen together doesn't mean anything."

And it's not just the professors at Harvard who hold this view.

"All that this research shows is that when people are altruistic, then they get a positive feeling. This does not mean that people behave altruistically to get this feeling," said Connie Rosati, an assistant professor from the University of California, Davis Philosophy Department.

"They'd have to show that people behave in this way just so they could achieve this feeling," Rosati said.

Berns does admit that biology may only be one factor motivating human behavior.

"We're studying adults, so it's hard to know how much of the response is due to a biological basis and how much due to social reinforcement," Berns said.

Despite the criticism, the study was still seen as a valuable one.

David Chadd, a lecturer at the California State University, Long Beach Department of Philosophy, said that although the theory does not adequately explain what motivates people, it still offers some useful evidence.

"I thought what they did is certainly remarkable and a helpful addition to the body of evidence out there," Chadd said. "They were able to show there is some real testable way, in some biological sense, of cooperative behavior. What comes after this will require a lot more study."

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