

Brain scans show why we love cooperating

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By Alison McCook

NEW YORK (Reuters Health) - New research reveals why people often cooperate with each other, even when it is not necessarily to their advantage to do so.

A group of researchers based at Emory University in Atlanta, Georgia, found that when a woman is involved in a situation where she is cooperating with someone else, she experiences activation in brain areas that are also [activated](#) by "rewards" such as food, money and drugs.

This indicates that our bodies may have been somehow programmed to "tag cooperation as rewarding," study author Dr. Gregory S. Berns told Reuters Health.

"Which is good, because it probably keeps the social fabric of society together," he added.

The researchers uncovered the brain's reaction to cooperation by scanning the brains of 36 women while they played a game known as the Prisoner's Dilemma.

During the game, a participant was told that she can either cooperate with a partner or defect against her. After both independently make their choices, they are awarded separate amounts based on both of their decisions. The biggest payoff comes from defecting when your partner cooperates, followed by, in decreasing order, both cooperating, both defecting, then cooperating when your partner decides to defect.

Based on the logic of the game, the most rational decision a player could make is to defect, which ensures she will not get the least amount of money, and provides her with the opportunity to earn the most.

The researchers, led by Dr. James K. Rilling, now at Princeton University in New Jersey, scanned the brains of one player, and instructed the other player to either play as she wished, or follow certain rules when choosing either to defect or cooperate.

Despite the fact that defecting is the most rational option, when both players were given the freedom to choose as they wished, both decided to cooperate more often than any other decision. Out of a total of 20 rounds, players chose to cooperate an average of 11 times, compared to 2 to 3 times for each of the other decision patterns.

Using MRI scans, the investigators found that when both players cooperated, the player whose brain was being scanned showed significant activation in brain regions associated with reward. They report their findings in the July 18th issue of *Neuron*.

In an interview with Reuters Health, Berns pointed out that this finding may explain why players opt for cooperating over the more rational option of defecting, "because social cooperation is intrinsically rewarding in the human brain."

The authors opted to use all women to avoid any sexual undertones that might influence how women and men behave with each other, Berns noted. He said he expected experiments using only men would produce similar results to the current study, but that further studies are needed to demonstrate if that is, in fact, the case.

Berns admitted that he and his colleagues were surprised to discover this finding. People can become visibly upset when their opponent defects against them, and it was in this situation the researchers had expected to see the strongest brain activity.

"I find it interesting and reassuring that it seems the brain's default mode is to cooperate, and not to defect," he

added.

Many versions of the Prisoner's Dilemma are constantly being played out in the political arena, Berns noted. For example, in the Middle East, or the region of Kashmir, two groups (Israelis and Palestinians, Indians and Pakistanis, respectively) are deciding whether to cooperate with each other or not, and many would argue they have all decided to defect.

While the safest strategy may be to not cooperate, "it may be going against what is biologically wired in our brains," Berns said.

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