

# The female brain reacts more strongly to prosocial behavior than the male brain

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Credit: Wikimedia Commons

Behavioral experiments have shown that women are likely to share a sum of money more generously than men. To gain a more in-depth understanding of this behavior, neuroscientists from the Department of Economics looked at the areas of the brain that are active when

decisions of this kind are made. They are the first to demonstrate that the brains of men and women respond differently to prosocial and selfish behavior.

The striatum, located in the middle of the [brain](#), is responsible for the assessment of reward and is active whenever a decision is made. The findings show that the striatum was more strongly activated in female brains during prosocial decisions than during selfish decisions. By contrast, selfish decisions led to a stronger activation of the reward system in male brains.

In the second experiment, the reward system was disrupted by administering medication to the participants. Under these conditions, women behaved more selfishly, while men became more prosocial. The latter result surprised the researchers. Soutschek says, "These results demonstrate that the brains of women and men also process generosity differently at the pharmacological level." The results also have consequences for further brain research. Soutschek says, "Future studies need to take into account gender differences more seriously."

Even if these differences are evident at the biological level, Soutschek warns against assuming that they must be innate or of evolutionary origin. "The reward and learning systems in our brains work in close cooperation. Empirical studies show that girls are rewarded with praise for [prosocial behavior](#), implying that their reward systems learn to expect a reward for helping behavior instead of selfish behavior. With this in mind, the gender differences that we observed in our studies could best be attributed to the different cultural expectations placed on men and women." This learning account is also supported by findings that indicate significant differences in the sensitivity of the [reward](#) system to prosocial and [selfish behavior](#) across cultures.

The study is published in *Nature Human Behaviour*.

**More information:** The dopaminergic reward system underpins gender differences in social preferences, *Nature Human Behaviour*, [nature.com/articles/doi:10.1038/s41562-017-0226-y](https://doi.org/10.1038/s41562-017-0226-y)

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