

Human sense of fairness evolved to favor long-term cooperation

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Two adult females look on as a third eats a preferred food resource. Credit: Sarah Brosnan and the Keeling Center for Comparative Medicine and Research of MD Anderson Cancer Center

The human response to unfairness evolved in order to support long-term

cooperation, according to a research team from Georgia State University and Emory University.

Fairness is a social ideal that cannot be measured, so to understand the evolution of [fairness](#) in humans, Dr. Sarah Brosnan of Georgia State's departments of Psychology and Philosophy, the Neuroscience Institute and the Language Research Center, has spent the last decade studying behavioral responses to equal versus unequal reward division in other primates.

In their paper, published in the journal *Science*, she and colleague Dr. Frans de Waal of the Yerkes National Primate Research Center and the Psychology Department at Emory University, reviewed literature from their own research regarding responses to [inequity](#) in primates, as well as studies from other researchers. Although fairness is central to humans, it was unknown how this arose. Brosnan and de Waal hypothesize that it evolved, and therefore elements of it can be seen in other species.

"This [sense of fairness](#) is the basis of lots of things in human society, from wage discrimination to international politics," Brosnan said. "What we're interested in is why humans aren't happy with what we have, even if it's good enough, if someone else has more. What we hypothesize is that this matters because evolution is relative. If you are cooperating with someone who takes more of the benefits accrued, they will do better than you, at your expense. Therefore, we began to explore whether responses to inequity were common in other cooperative species."

Brosnan and de Waal began their studies of fairness in monkeys in 2003, becoming the first in the field to report on this subject for any non-[human](#) species, Brosnan said. This paper, titled "Monkeys Reject Unequal Pay," was published in *Nature*.

In this study, brown capuchin monkeys became agitated and refused to

perform a task when a partner received a superior reward for that same task. To view video footage of the study, visit <http://www.youtube.com/watch?v=meiU6TxysCg>. Since then, Brosnan has tested responses to inequity in nine different species of primates, including humans. She has found that species only respond to inequity when they routinely cooperate with those who are not related to them.

However, responding to getting less than a partner is not the only aspect of fairness. For a true sense of fairness, it also matters if you get more. Brosnan and de Waal hypothesize that individuals should be willing to give up a benefit in order to reach equal outcomes and stabilize valuable, long-term cooperative relationships. Thus far, this has only been found in humans and their closest relatives, the apes.



A juvenile capuchin monkey shows interest in the food held by the alpha male of his group. Credit: Frans de Waal

"Giving up an outcome that benefits you in order to gain long-term benefits from the relationship requires not only an ability to think about the future, but also the self-control to turn down a reward," Brosnan said. "These both require a lot of cognitive control. Therefore, we hypothesize that lots of species respond negatively to getting less than a partner, which is the first step in the evolution of fairness, but only a few species are able to make the leap to this second step, which leads to a true sense of fairness."

More information: "Evolution of Responses to (Un)Fairness," by S.F. Brosnan et al. *Science*, www.sciencemag.org/lookup/doi/10.1126/science.1251776

Provided by Georgia State University

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