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Yerkes national Primate Research Center The Newsroom

CHIMPANZEES SHOW QUALITY OF RELATIONSHIP DRIVES SENSE OF FAIRNESS

Finding, Which Parallels Human Behavior, May Shed Light on the Evolution of Fairness and the Role Social Environment Plays in Human Decision-Making

ATLANTA – The evolution of the sense of fairness may have involved the quality of relationships according to behavioral researchers at the Yerkes National Primate Research Center in Atlanta. By observing variability in chimpanzees' responses to inequity, Sarah Brosnan, PhD, and Frans de Waal, PhD, both researchers in Yerkes' Division of Psychobiology and the Yerkes-based Living Links Center, determined the chimpanzees' responses depended upon the strength of their social connections. This is the first demonstration that nonhuman primates' reactions to inequity parallel the variation in human responses to unfair situations based on the quality of the relationship. This novel finding appears January 26 on the Proceedings of the Royal Academy of Sciences, Series B web site, www.journals.royalsoc.ac.uk. The finding also will appear in the journal's February 7 print edition.

Coupled with data from the authors' previous fairness-related research in capuchin monkeys, released in fall 2003, Brosnan and de Waal's current research provides new insight into the role social environment and relationships play in human decision-making. In their previous study, the researchers identified for the first time a sense of fairness in nonhuman primates and correlated that finding to human economic decision-making.

"Human decisions tend to be emotional and vary depending on the other people involved," said Brosnan. "Our finding in chimpanzees implies this variability in response is adaptive and emphasizes there is not one best response for any given situation but rather it depends on the social environment at the time."

In the current study, Drs. Brosnan and de Waal made food-related exchanges with chimpanzees from groups that had lived together either their entire lives or a relatively short time (less than eight years). Animals were paired to determine how they would react when their partners received a superior reward (grapes) instead of a less-valued reward (cucumbers) for the same amount of work, considered an unfair situation. The researchers observed the chimpanzees in the close, long-term social groups were less likely to react negatively to the unfair situation than were the chimpanzees in the short-term social groups, who refused to work when their partners received a superior reward. Such a reaction is seen in humans who might react negatively to unfair situations with a stranger or enemy but not with a family member or friend.

"Identifying a sense of fairness in two, closely-related nonhuman primate species implies it could have a long evolutionary history. The capuchin responses as well as those of the chimpanzees, the most closely related species to humans, could represent stages in the evolution of the complex responses to inequity exhibited by humans and may help explain why we make certain decisions," said Brosnan.

Brosnan and de Waal currently are investigating reactions to unfairness in more detail. They hope to uncover the specific situations that lead to such reactions.

The goal of the Living Links Center at the Yerkes National Primate Research Center is to view great apes as a window to the human past by studying their behavior, cognition, neuroanatomy,

genes and reproduction in a noninvasive manner. Another goal is to educate the public about apes and to help guarantee their continued existence in the wild.

The Yerkes National Primate Research Center of Emory University is one of eight National Primate Research Centers funded by the National Institutes of Health. The Yerkes Research Center is a recognized leader for its biomedical and behavioral studies with nonhuman primates, which provide a critical link between research with small laboratory animals and the clinical trials performed in humans. Yerkes researchers are on the forefront of developing vaccines for AIDS and malaria, and treatments for cocaine addiction and Parkinson's disease. Yerkes researchers also are leading programs to better understand the aging process, pioneer organ transplant procedures and provide safer drugs to organ transplant recipients, determine the behavioral effects of hormone replacement therapy, prevent early onset vision disorders and shed light on human behavioral evolution.

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Sarah Brosnan, a former student in the Population Biology, Ecology, and Evolution Program of the Graduate Division of Biological and Biomedical Sciences, received her PhD from Emory in 2004. Currently she holds a pos-doctoral fellowship through the Fellowships in Research and Science Teaching (FIRST) program.

To Learn More About:

Sarah Brosnan's Research:

[Sept. 2003 Publication in Nature on fairness-related research in capuchin monkeys](#)

[Sarah Brosnan's homepage](#)

[Fellowships in Research and Science Teaching \(FIRST\) Program at Emory](#)

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