



# Chimpanzee responders still behave like rational maximizers

The ultimatum game (1) is a powerful and widely used test of bargaining behavior that has only recently been applied to nonhuman animals (2–4). The key feature of this game is the power the responder has; the threat of rejections—the ultimatum—typically induces proposers to be more generous than they would be otherwise. Proctor et al. (4) suggested that chimpanzees exhibit sensitivity to fairness in a more “intuitive” ultimatum game based on token exchange, contrary to refs. 2 and 3. This contradiction, however, is more apparent than real. Responders in Proctor et al. (4) accepted 100% of all offers, even more than chimpanzees and bonobos in refs. 2 and 3. If anything, responders in Proctor et al. were more indifferent to unfairness.

In Proctor et al. (4), the conclusion that chimpanzees play an ultimatum game was based on an exclusive focus on proposers. The four proposers showed a preference for smaller quantities (fair divisions) in the test compared with a prior preference test. However, the preference test was not a true control, but was based on final performance after up to 10 d of training. Furthermore, because of an order confound (the preference test only occurred before testing), and because analyses were based on pooled data (figure 2 in ref. 4), these results cannot be entirely trusted.

These problems aside, it is puzzling that the proposers would prefer lesser amounts (resulting in equitable resource divisions) over personally maximizing outcomes; chimpanzees are not wont toward generosity. In

a repeated-rounds game such as this one, clever proposers should have realized that low offers were invariably accepted, and they should have persisted with these. Proctor et al. (4) will surely argue that this is because chimpanzees are fair to each other. However, if this is the reason, it is not for the same reasons that humans distribute resources. Alternatively, might responders have intimidated proposers? Unlikely. Intimidation was rare and its influences were not tested. The only study that tested intimidation found that chimpanzees actively punished theft but not unfair outcomes, yet over time, thieves stole more (5).

The token exchange task is not as “intuitive” as Proctor et al. (4) claimed. Subjects interacted with experimenters more than with each other, and a surprising amount of training was required. “Complex mechanical apparatuses,” as in refs. 2 and 3, are not complex if they are learned with minimal training: consider “complex” smartphones. Intuitive or complex, controls—to determine whether subjects can attend to what the others received and the consequences of rejecting—are needed to ascertain that subjects know the task’s contingencies. These controls were absent in ref. 4. It is conceivable that responders were not aware of the social consequences of their actions (or inactions), in which case they were not playing an ultimatum game.

More studies using different methods will be needed to determine whether other

species, such as chimpanzees, have a sense of fairness. The ultimatum game is possibly the best tool for this. Contrary to claims in Proctor et al. (4), chimpanzees did not behave like humans in an ultimatum game. Confirming refs. 2 and 3, chimpanzee responders continue to behave like “rational maximizers.”

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