Reciprocal behaviour in non-human primates a balancing act between fairness and empathy (w/ Video)

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Griffin the grey parrot

A study into whether grey parrots understand the notion of sharing suggests that they can learn the benefits of reciprocity.

The research involved a grey parrot called Griffin, who consistently favoured the option of 'sharing' with two different human partners.

Griffin was presented with a choice of four different coloured cups. A green cup (the sharing option) meant he and his partner each got treats. A pink cup represented the selfish choice as only Griffin got a treat, an orange cup was the giving option as only his partner got a treat, and a violet cup denoted the spiteful selection as no one got treats.

With few exceptions he consistently favoured green for each human partner, indicating he understood the benefits of choosing the 'sharing' option.

The results of this study, carried out by Dr Franck Péron, from the School of Life Sciences, University of Lincoln, UK, with colleagues at Harvard University and Brandeis University, US, have now been published in the journal *Animal Cognition*.

The question under investigation was whether Griffin would learn the human partner's actions, understand that the human was replicating his own behaviour by acting in a reciprocal manner, and that by choosing the green (sharing) cup, he could maximize the overall payoff, because then each would receive a reward on each turn.

It followed a previous study conducted by the same team, which focussed on grey parrots and used a similar token-based system, demonstrating a limited understanding of reciprocity in grey parrots.

When the pairs involved several different human-parrot pairings with each human playing a specific role, such as being selfish, giving, or copying the bird's behaviour, birds' responses only tended towards consistency with human behaviour.

It was theorised that the birds' inability to understand the copycat condition fully - that they could potentially maximize reward by choosing to share - was a consequence of their viewing the copycat's behaviour as erratic, compared with the consistently selfish or giving humans and therefore not realising that they were being mirrored.

Dr Péron said: "This follow-up experiment has shown that at least one grey parrot - the dominant in this case - responded in a manner suggesting that he deduced the appropriate eventualities.

"With few exceptions, Griffin chose the green sharing cup. He seemed to understand the parameters of the study; that is, that each person was mirroring Griffin's own behaviour and not acting erratically. Although choosing pink (selfish) would have presented the same immediate reward as choosing green (sharing), Griffin did not act in that manner. He seemed to figure out fairly quickly that his choice of pink meant that he would miss a reward when the human subsequently made the choice."

A possible explanation for Griffin's behaviour may be derived from two papers on primates, which argue that various forms of reciprocal behaviour in non-human primates can be explained as either a balancing act between fairness and empathy, or fairness and welfare.

The basic idea in both papers is that the choice of group members to reciprocate in kind derives from the interplay among selfishness, some level of concern for the well-being of others, and some sense of fairness.

The new data suggests that some level of reciprocity can be demonstrated in at least one avian species, whatever the underlying mechanisms. The basis for such behaviour may be a consequence of the same evolutionary pressures that were exerted to develop advanced cognitive and communicative abilities in both avian and primate lineages.

The team suggested that copycat trials should be performed as a separate experiment, without being contrasted with trials in which humans acted consistently, in order to determine if results might have differed.

More information: Franck Péron, Luke Thornberg, Brya Gross, Suzanne Gray, Irene M. Pepperberg. "Human-grey parrot (Psittacus erithacus) reciprocity: a follow-up study." *Animal Cognition*. DOI: 10.1007/s10071-014-0726-3