

Ravens found able to remember people who tricked them up to two months later

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(Phys.org)—A small team of researchers from Austria and Sweden has found that ravens are able to remember people who trick them for at least two months. In their paper published in the journal *Animal Behavior*, the group describes experiments they conducted with the birds and offer some suggestions regarding how the behavior they observed might be useful to the birds in the wild.

Most everyone knows that [birds](#) belonging to the corvid family are smart—magpies are notorious for their antics, as are crows. In this new effort, the researchers devised and conducted experiments designed to test whether ravens are capable of understanding different negative behaviors from different people, whether they are able to respond, and if so, for how long.

The experiments consisted of training tame ravens to offer one treat to a person in exchange for a better treat; sometimes, the person offering the treat would cheat the bird out of their reward. Each of seven birds was given a bit of bread, which they

like to eat. But then each was given the opportunity, like contestants on *Let's Make a Deal*, to exchange their measly bread chunk for a hunk of cheese, which they like much better. Once they had the routine down, the humans changed things by occasionally cheating a [raven](#) out of its treat. When the bird offered up its bread, the human took it, then ate both the bread and cheese. To provide for comparison purposes, only some of the humans cheated the birds and two additional birds were allowed to watch the proceedings but not participate.

The researchers report that two days after the initial trials, the birds that had been duped refused to trade with those people that had duped them, opting instead to haggle only with fair or neutral traders (people not involved in the original exchange). The observer birds showed no preference. The team reports further that two months later only one of the birds was willing to trade with a person that had deceived them earlier. The study shows, the researchers claim, that the birds are capable of understanding when they have been cheated and associating that with a single individual. It also shows they have a long memory. Such skills, they note, likely come in handy in the wild as the social birds deal with transgressions of their peers.

More information: J.J.A. Müller et al, Ravens remember the nature of a single reciprocal interaction sequence over 2 days and even after a month, *Animal Behaviour* (2017). [DOI: 10.1016/j.anbehav.2017.04.004](https://doi.org/10.1016/j.anbehav.2017.04.004)

Abstract

To explain reciprocity, direct or indirect, several proximate mechanisms have been proposed, yet little attention has been given to the specific underlying cognitive mechanisms. Regardless of what proximate rules underlie reciprocity, some kind of memory would be paramount. Corvids in general, and ravens, *Corvus corax*, specifically,

have been shown to possess an array of sophisticated cognitive mechanisms involved in memory. In this study, we tested the memory of nine ravens in an exchange paradigm where they could exchange a low-quality for a high-quality food item. Specifically, we tested whether they remembered who was a reliable 'fair' experimenter and who would not reliably exchange (the 'unfair' experimenter), and whether they would subsequently choose to interact with the former when given the choice. In addition, we tested whether ravens that observed the initial seeding of information about who was 'fair' or 'unfair' could transform bystander information into first-person interactions, i.e. also preferring to interact with the 'fair' experimenter when given the choice. The results show that ravens with first-hand experience were more likely to interact with experimenters with whom they had had a positive previous experience, and that this memory lasted at least 1 month. In contrast, observers did not distinguish between the experimenters when given the choice to interact with them. Previous first-hand experience with the paradigm, however, seemed to help observers to be more successful in solving the task, albeit not significantly above chance. In sum, this study shows memory for direct reciprocity in ravens, and tentatively suggests memory for indirect reciprocity. Accordingly, these results provide hints for the underlying mechanism of memory in raven social interactions.

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