Study shows toddlers can produce a novel action after observing a correlation, while New Caledonian crows cannot

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Credit: Elsa Loissel

(Phys.org) —A diverse team of psychology researchers with affiliations in several countries has found that while two year old children are able to produce an effective and novel action after witnessing a correlative event, New Caledonian crows are not. The team has published a paper in *Proceedings of the Royal Society B: Biological Sciences*, describing

experiments they conducted with volunteer toddlers and New Caledonian crows.

New Caledonian Crows are clever birds, of that there is no doubt. Humans have witnessed instances of their thinking abilities for years. But, are they able to understand correlative events and take action based on their observations? That's what the team with this new effort sought to find out. While they were at it, they decided to include very young humans to provide a comparison.

In a video that accompanied the paper, the researchers show a New Caledonian crow observing an initial experiment. Tiles are set up to fall domino-style against a box with a hole in it—as the last tile reaches the box, a stone is forced to fall through the hole and into the box causing food inside to be moved to a point where the crow could reach it. The question was, would the bird figure out that instead of pushing the first domino, it could instead simply drop a rock through the hole. As it turned out, the answer was no.

The second experiment was similar to the first, but rather than using tiles, the box had six holes in it which would allow a wooden block to fit through. The trick was that pushing a block through only one of the holes led to a treat being dispensed (due to the weight of the block). The question then was, if a crow was allowed to watch as several examples of rock dropping were made, would it be able to figure out the trick for itself. As with the first exercise, the answer turned out to be a clear no. Conversely, when two-year old toddlers were faced with the same set of conditions, 16 of 22 managed to figure out how to get their treat in short order.

Such exercises demonstrate the huge gulf that exists between certain types of thinking in humans and other animals, and suggests that those that are involved in the observation of correlative events and the

observer coming up with novel actions as a result, is likely one that only humans can do.

More information: Of babies and birds: complex tool behaviours are not sufficient for the evolution of the ability to create a novel causal intervention, Published 11 June 2014 DOI: 10.1098/rspb.2014.0837

Abstract

Humans are capable of simply observing a correlation between cause and effect, and then producing a novel behavioural pattern in order to recreate the same outcome. However, it is unclear how the ability to create such causal interventions evolved. Here, we show that while 24-month-old children can produce an effective, novel action after observing a correlation, tool-making New Caledonian crows cannot. These results suggest that complex tool behaviours are not sufficient for the evolution of this ability, and that causal interventions can be cognitively and evolutionarily disassociated from other types of causal understanding.