First evidence that reptiles can learn through imitation

September 30 2014, by Marie Daniels

New research has for the first time provided evidence that reptiles could be capable of social learning through imitation.

The ability to acquire new skills through the 'true imitation' of others' behaviour is thought to be unique to humans and advanced primates, such as chimpanzees.

Scientists draw an important distinction between imitation and emulation

when studying the cognitive abilities of animals. In true imitation, the individual 'copying' another's behaviour not only mimics what they see, but also understands the intention behind the action. In emulation, an animal copies a behaviour without understanding its deeper significance: for example, a parrot reciting the words of its owner.

There is considerable debate about the extent to which non-primates are capable of true imitation.

Now researchers from the UK and Hungary have presented the first compelling scientific evidence that reptiles could be capable of social learning through imitation.

They set out to investigate whether the bearded dragon (Pogona vitticeps) is capable of imitating another bearded dragon through a simple experiment using a wooden board which contained a doorway.

All subjects successfully copied the actions of the demonstrator lizard, suggesting for the first time that reptiles exhibit social learning through imitation equivalent to that observed in 'higher' species.

Lead researcher Dr Anna Wilkinson from the School of Life Sciences, University of Lincoln, UK, said: "The ability to learn through imitation is thought to be the pinnacle of social learning and long considered a distinctive characteristic of humans. However, nothing is known about these abilities in reptiles. This research suggests that the bearded dragon is capable of social learning that cannot be explained by simple mechanisms - such as an individual being drawn to a certain location because they observed another in that location or through observational learning. The finding is not compatible with the claim that only humans, and to a lesser extent great apes, are able to imitate."

Reptiles and mammals evolved from a common ancestor and the

investigation of similarities and differences in their behaviour is essential for understanding the evolution of cognition, Dr Wilkinson explained.

Recent advances in the field of reptile cognition have found evidence of sophisticated abilities in this group.

The latest research, published in the academic journal *Animal Cognition*, involved 12 bearded dragons which had not previously been involved in cognition experiments.

One lizard was trained to act as a 'demonstrator', opening a wire door which covered a hole in a wooden board. The door could be moved horizontally along sliding rails to left or right by use of the head or the foot. The demonstrator was then rewarded with food (a mealworm) on the other side of the door.

The subjects were divided into an experimental group and a control group. The experimental group watched the demonstrator lizard approaching the test apparatus and opening the door with a sliding head movement.

All eight experimental subjects went on to successfully open the sliding door, pushing it to the same side they had observed. None of the control group subjects did this.

A key difference between the control and experimental groups was that, while sliding head movement occurred in the case of all experimental subjects, it was never observed in the control subjects. As this was the movement that the demonstrator performed in order to open the sliding door, this suggests that experimental subjects imitated an action that was not part of their spontaneous behaviour.

Dr Wilkinson concluded: "This, together with differences in behaviour between experimental and control groups, suggests that learning by imitation is likely to be based on ancient mechanisms. These results reveal the first evidence of imitation in a reptile species and suggest that reptiles can use social information to learn through imitation."

More information: "Social learning by imitation in a reptile (Pogona vitticeps)" Anna Kis, Ludwig Huber, Anna Wilkinson. *Animal Cognition*, September 2014. link.springer.com/article/10.1 … 07/s10071-014-0803-7

Provided by University of Lincoln

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