

Ability of horses to manipulate the attention of humans shown in study

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Horses are able to manipulate the attention of a human to obtain an unreachable goal, such as a source of food, recent research has shown.

Rachele Malavasi, of the School of Ethical Equitation in Moncigoli Di Fivizzano, Italy, and Professor Ludwig Huber, from the Messerli Research Institute at the University of Veterinary Medicine in Vienna, Austria, suggest horses should be added to the list of species capable of flexible and intentional use of communicative signals.

Such cognitive abilities have never before been confirmed among ungulates, according to the pair, whose findings have been published in the journal *Animal Cognition*.

Horses would join several primate species, dogs, dolphins, reef fish and corvids – the family of birds that includes crows, ravens, rooks, jackdaws, jays and magpies – in

showing this ability. They would become the second domesticated species, after dogs, to join the list.

Malavasi says several studies have provided evidence for advanced cognitive abilities in horses, such as cross-modal individual recognition and social learning, and this latest study added to scientific literature confirming horses were more clever than expected.

“We found that the horses tried to influence the behavior of a human experimenter using their eyes, providing evidence they understand that intentions can be communicated between individuals using gaze,” Malavasi told Horsetalk.

Horses would even add other methods, depending upon the degree of attention of the human. They used both pointing with the head and head gestures, such as nods and shakes, to get the attention of the human, and would even switch to using touch if the human did not “get the message”. The researchers said this showed perseverance in their communication.



The gaze the horse gave to a recipient to convey its attention towards a third entity – in this case, the bucket filled with food – is called a referential gesture.

Such gestures are mechanically ineffective body movements, such as moving the head from the bucket to the human, aimed at eliciting specific behaviors from a recipient (picking up the bucket). These gestures can be repeated until the desired result is obtained, or the attempt is deemed a failure.

In humans, such gestures include the likes of pointing or showing an object, such as an empty wine glass, to indicate to the recipient what is wanted.

Malavasi and Huber set up an experiment to test the ability of domestic horses to communicate referentially with a human about out-of-reach food buckets.

They examined six criteria for intentional communication first described in a human context in 1975 and then adapted to animals: whether the horses alternated their gaze between the bucket and the human; whether they employed attention-getting behaviors such head jerks, nods and shakes; whether such signals were used socially; whether the amount of attention from the human influenced communicative behavior; whether the horses persisted with their signals; and whether they changed their approach if their efforts weren't working.

Fourteen horses based at the School of Ethical Equitation in Italy were involved in the study, all of which had been trained under natural horsemanship principles. The experiment unfolded in a fenced arena, with two open food buckets randomly filled with carrots, apples or oats placed out of reach behind two gates. A video camera was used to record a series of trials – 12 in all – for each horse.

Each horse was released in the middle of the arena and gravitated to the gate behind which lay their preferred reward.

The experimenter stared at a point between the two gates unless her attention was drawn by the horse, either by making noises, pulling the gate, or looking back at her. The experimenter opened the gate after a set time, regardless of the actions of the horses, to ensure they did not start to associate any particular communication method with having the gate opened.

Variations included the experimenter facing forward or back, and even walking away, or the added presence of other experimenters behind the buckets. In all cases, the experimenter looked at the horse as soon as it caught her attention by the methods described above.

Malavasi said the fundamental question was whether the horses sought the food by manipulating the human's attention differently according to the different attentional states, which she said would require an understanding of these states.

The results showed that the horses alternated their gaze to coordinate the attention of the human toward the food. They did so more often when the experimenter was facing forward, demonstrating they understood that visual signals were of no use if she was facing away. Horses, she said, were able to use this behavior in a flexible way, apparently depending upon whether the human was paying attention.

The horses' communicative strategy even extended to entering the recipient's visual field or getting closer to her when their first efforts at communication failed, in some cases even touching the experimenter.

Malavasi says more research is required to understand whether this ability occurs only in horses living with humans, who may have evolved specific forms of communicating with them.

“Anyhow, these findings provide strong reasons to revise the view of horses as simply good executors and prompt us to enforce proper ethical management of horses in

domestic settings,” she says. “If they are able to communicate us their needs, we cannot ignore their efforts.”

Malavasi, R. & Huber, L. (2016). Evidence of heterospecific referential communication from domestic horses (*Equus caballus*) to humans. *Animal Cognition*, 1-11. doi:10.1007/s10071-016-0987-0