An online meeting with your dog? Study tests dogs' ability to imitate actions observed on video projections

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Examples of one of the demonstrations, cross one arm, seen on the screen from different perspectives (A Frontal; B Lateral; C From above) and D one of the subjects, Tara, looking at the projected demonstration as seen from the screen of the owner's device. Credit: *Biologia Futura* (2024). DOI: 10.1007/s42977-024-00222-6

A new study published in *Biologia Futura* found that dogs can imitate human actions from two-dimensional video projections. The study discovered that dogs' cognitive abilities to process and replicate actions observed in 2D video projections align with their everyday observational experiences with humans. The researchers are from the Department of Ethology at Eötvös Loránd University in Budapest, Hungary.

Using the "Do as I Do" training method, the researchers trained two dogs, Tara, a male Golden Retriever, and Franc, a female Labrador Retriever, to imitate human actions, first from live demonstrations, and then displayed on a screen.

The setup involved life-size video projections streamed via online conference software, enabling real-time interaction between the dogs and their owners, who were located remotely. For example, the owner would spin in a circle in front of the camera of its device and verbally cue the dog to "Do it!" The dog, having observed this action on the screen, was then expected to replicate it.

The experiment tested the dogs' ability to imitate actions observed from three different camera angles: frontal, side and above. The tested actions included walking backward, spinning horizontally, pushing a buzzer button and lying down, among others.

Additionally, the dogs were tested on their ability to imitate novel actions, not included in the training, such as picking up an object, touching a pole with their nose, and knocking down a water bottle. The results showed that dogs could replicate actions observed from frontal and side angles, which are observational perspectives commonly encountered in dogs' daily lives with humans.

However, they faced challenges when trying to imitate actions from an overhead perspective, which is a less familiar viewpoint.

"Using the Do as I Do imitation paradigm is similar to asking the dogs, 'What did I just do?' while showing them on the screen various human actions under different camera angles. The dogs responded by performing matching actions based on how they perceived and processed the demonstration.

"For instance, one of the demonstrated actions included knocking down a plastic bottle, which was demonstrated from an overhead view. My dog Tara observed my demonstration on the screen, looked for the bottle in his room, in front of the screen, and then knocked it down. But he struggled to replicate other actions with an overhead view," explained Fumi Higaki, co-author and owner of Tara.

"This study, even if only exploratory, not only advances our understanding of how dogs perceive and interpret human actions, but more importantly, this innovative method could broaden research into several other potential cognitive abilities, and could also be extended to other species," said lead researcher, Claudia Fugazza.

The "Do as I Do" training method has been employed to study imitative abilities not only of dogs but also of cats, orcas, and various other species.

More information: Claudia Fugazza et al, Exploring the use of projected videos to test action matching from different perspectives in dogs, *Biologia Futura* (2024). DOI: 10.1007/s42977-024-00222-6

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