Dog brains are tuned to dog-directed speech spoken by women

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Dogs show greater brain sensitivity to the speech directed at them than to adult-directed speech, especially if spoken by women. Credit: Dora Tuzson-Varga

Dogs show greater brain sensitivity to the speech directed at them than to adult-directed speech, especially if spoken by women, according to a

new study in *Communications Biology*.

By conducting an fMRI study on trained dogs, Hungarian researchers at the Department of Ethology, Eötvös Loránd University, the Research Centre for Natural Sciences and the Eötvös Loránd Research Network revealed exciting similarities between infant and dog brains during the processing of speech with exaggerated prosody.

When communicating with individuals having limited linguistic competence (such as infants and dogs), to grab and maintain their attention, we speak with a specific speech-style characterized by exaggerated prosody. Infant-directed speech is very important as it helps kids' healthy cognitive, social and language development. So, it's no surprise that infant brains are tuned to this speech style, but are dog brains also sensitive to the way we speak to them?

To answer this question, Hungarian researchers measured dog brain activity via functional magnetic resonance imaging (fMRI). In the MRI, trained, conscious family dogs listened to dog-, infant-, and adult-directed speech recorded from 12 women and 12 men in real-life interactions.

"Studying how dog brains process dog-directed speech is exciting, because it can help us understand how exaggerated prosody contributes to efficient speech processing in a nonhuman species skilled at relying on different speech cues (e.g. follow verbal commands)," Anna Gergely, co-first author of the study explains.

The study shows that dog auditory brain regions responded more to dog- and infant-directed than to adult-directed speech, which is the first neural evidence that dog brains are tuned to the speech directed specifically at them.

Interestingly, dog- and infant-directed speech sensitivity of dog brains was more pronounced when the speakers were women and was affected by voice pitch and its variation. These results suggest that the way we speak to our dogs does matter, and that their brain is specifically sensitive to the exaggerated prosody typical to the female voice.

"What makes this result particularly interesting is that in dogs, as opposed to infants, this sensitivity cannot be explained by either ancient responsiveness to conspecific signals or by intrauterine exposure to women's voice. Remarkably, the voice tone patterns characterizing women's dog-directed speech are not typically used in dog-dog communication—our results may thus serve evidence for a neural preference that dogs developed during their domestication."

"Dog brains' increased sensitivity to dog-directed speech spoken by women specifically may be due to the fact that women more often speak to dogs with exaggerated prosody than men," explains Anna Gábor, co-first author of the study.

More information: Anna Gergely et al, Dog brains are sensitive to infant- and dog-directed prosody, *Communications Biology* (2023). DOI: 10.1038/s42003-023-05217-y

Provided by Eötvös Loránd University

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