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Animal Emotions

# Dogs Watch Us Carefully and Read Our Faces Very Well

Research shows dogs pay close attention to different human facial expressions.

Posted Apr 13, 2019



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In *Unleashing Your Dog: A Field Guide to Giving Your Canine Companion the Best Life Possible*, Jessica Pierce and I stress the importance of people who choose to live with dogs becoming "fluent in dog" or "dog literate." In addition to learning the basics of dog behavior, one area that's important for us to

understand is how their various senses work and how they use their eyes to read our faces and the reasons for their sensitivity to the various visual social cues we emit.<sup>1</sup> (See "[How Dogs See the World: Some Facts About the Canine Cosmos](#)," "[Dogs: An Exciting Journey Through Their Sensory Worlds](#)," and *Canine Confidential: Why Dogs Do What They Do*.) Not surprisingly, research shows that dogs pay particularly close attention to human facial expressions—perhaps because we don't have tails, and our ears don't move. Here's a review of some of what we know about what dogs are able to learn when they read our faces.

In one study of dogs and human facial expressions, a team of scientists led by Corsin Müller demonstrated that dogs differentiate between happy and angry human faces, and that dogs find angry faces to be aversive. (1) In a related study, Natalia Albuquerque and colleagues examined the behavior of dogs in response to emotionally relevant visual cues from humans. The team compared the responses of dogs to happy and angry human facial expressions and found that dogs engaged in mouth-licking in response to angry expressions. Dogs mouth-licked when they saw images of angry human faces, but not when they heard angry voices, emphasizing the importance of the visual cues. Mouth-licking can be an appeasement signal during dog-dog communications, and it may similarly serve as a way for a dog to respond to perceived negative emotion in a human companion. (An "appeasement behavior" inhibits or reduces the aggressive behavior of a social partner.) In the study, dogs engaged in mouth-licking more often when looking at images of humans than of other dogs, suggesting that dogs may have evolved their sensitivity to human facial expression to facilitate interactions with us. (2) (Also see "[Can Dogs Tell Us We're Angry When We Don't Know We Are?](#)")

In another study, researchers found that the hormone oxytocin (which is associated with feelings of trust and affection) made dogs interested in smiling human faces and less threatened by an angry face. The researchers gave half of a group of dogs a nasal spray containing oxytocin and half a placebo nasal spray. Those dogs with increased levels of oxytocin spent more time gazing at images of happy human faces than dogs in the placebo group. The researchers also found that in the placebo group, the pupils of the dogs were more dilated when gazing at angry faces, a sign that they found the angry faces aversive. In the oxytocin group, this negative emotional response was less pronounced. They concluded, "Oxytocin has the potential to decrease vigilance toward threatening social stimuli and increase the salience of positive social stimuli thus making eye gaze of friendly human faces more salient for dogs." (3) In other words, oxytocin likely plays a key role in the development of the human-canine bond.



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Some of the most exciting research into canine cognition has involved the use of functional magnetic resonance imaging (fMRI) to study how dogs' brains process social information. (See "[What It's Like to Be a Dog](#).") This research is noninvasive, and the dogs participate voluntarily.

Neurobiologist Gregory Berns, working at Emory University, has been interested in facial recognition and whether, like humans and nonhuman primates, dogs have a special region in their brain dedicated to processing faces. It would make sense that dogs evolved the neural machinery to process the facial information of other dogs, because dogs (and wolves) are highly social mammals. But have dogs also evolved the neural machinery to process human faces, based on their history of domestication and coevolution with humans? Berns and his colleagues found that dogs do, indeed, have a dedicated region of the brain for processing human faces, which helps explain their exquisite sensitivity to human social cues. (4) (Also see "[How Dogs View the World: Brain Scans Tell Us What They See](#).")

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It seems that dogs not only read our facial expressions, they also, in turn, communicate with us using their own facial expressions. Scientists at Portsmouth University's Dog Cognition Centre in the United Kingdom found that dogs produced far more facial expressions when a human was watching than when a human was not. The expression most commonly used by dogs was one in which they raise their inner brow, making the eyes appear wider and sadder, a look all dog owners will immediately recognize as "puppy dog eyes." (5) Dogs know when we're watching. And they also know when we're not. Dogs are more likely to steal food when a person's eyes are closed, or their back is turned. (6) I know this well from living with a good number of admirably clever dogs, who constantly watched me as I walked around my home and office. They knew when I was watching them and when I wasn't, even for a few seconds.

Stay tuned for further discussions of the how's and why's of dogs' sensitivity to human social cues and how they talk to us using their own facial expressions. While we know quite a bit about human->dog and dog->human communication, there's still much to learn, and this is why this is a very important and exciting area of research. The more we learn about the nature and details of dog<-->human social interactions, the better it will be for developing and maintaining deep and meaningful bonds, a win-win for all.

Some of the above is excerpted from *Unleashing Your Dog: A Field Guide to Giving Your Canine Companion the Best Life Possible*. I thank Jessica Pierce for her collaboration on this and other projects.

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## References

- 1) Corsin A. Müller et al., "[Dogs Can Discriminate Emotional Expressions of Human Faces](#)," *Current Biology* 25, no. 5 (February 2015).
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- 3) Sanni Somppi et al., "[Nasal Oxytocin Treatment Biases Dogs' Visual Attention and Emotional Response toward Positive Human Facial Expressions](#)," *Frontiers in Psychology* 8 (2017).
- 4) Daniel D. Dilks et al., "[Awake fMRI Reveals a Specialized Region in Dog Temporal Cortex for Face Processing](#)," *PeerJ* (August 4, 2015).
- 5) Juliane Kaminski et al., "[Human Attention Affects Facial Expressions in Domestic Dogs](#)," *Scientific Reports* 7 (October 2017): 12914.
- 6) J. Call et al., "[Domestic Dogs \(\*Canis familiaris\*\) Are Sensitive to the Attentional State of Humans](#)," *Journal of Comparative Psychology* 117 (2003): 257–63.