bark&whiskers™

Dog Tips

Doing This Will Help Your Dog's Brain Sing with Joy

Don't just praise your dog, do this too. It will likely double his pleasure. In this first-ever study, researchers have discovered how dogs' brains react to our words, so please be careful how you use them.

Reviewed by Dr. Becker

STORY AT-A-GLANCE

- A first-of-its kind study reveals that dogs hear not only what we say, but how we say it
- Dogs use the left hemisphere of their brains to process meaningful words, and the right hemisphere to process vocal tones
- The reward center of your dog's brain is activated by praise, but only if you praise him in an upbeat tone of voice
- It's important to note there can be a difference between a dog processing words for their familiarity and actually understanding the words as we intend
- The researchers hope this and subsequent studies can be used to enhance communication and cooperation between dogs and humans

Editor's Note: This article is a reprint. It was originally published December 16, 2016.

In the first-ever study of how a dog's brain "hears" human speech, researchers have concluded our four-legged friends are listening to both what we say, and how we say it.[1]

When you **praise your dog**, her brain's "reward center" perks up if your words match your tone of voice. These findings suggest the ability to process words evolved much earlier than was originally thought, and it isn't a talent unique to humans.

> *According to Phys.org, "It shows that if an environment is rich in speech, as is the case of family dogs, word meaning representations can arise in the brain, even in a non-primate mammal that is not able to speak."[2]*

Lead researcher Attila Andics, Ph.D., of Eötvös Loránd University in Budapest explains:

> *"During speech processing, there is a well-known distribution of labor in the human brain. It is mainly the left hemisphere's job to process word meaning, and the right hemisphere's job to process intonation.*
>
> *The **human brain** not only separately analyzes what we say and how we say it, but also integrates the two types of information, to arrive at a unified meaning. Our findings suggest that dogs can also do all that, and they use very similar brain mechanisms."[3]*

Dogs Use Both the Left and Right Hemispheres of Their Brains When We Talk to Them

For the study, 13 dogs were trained to lie completely still for (noninvasive) functional magnetic resonance imaging (fMRI) brain scans so the researchers could analyze their brain activity as they listened to their trainer talk.

It's important to note that the dogs were "volunteers" and could leave the experiment at any time.

The trainer, speaking in Hungarian, praised the dogs using words and phrases such as "good boy," "super" and "well done." The words were spoken in both an upbeat tone and a neutral tone. The trainer also used neutral conjunction words like "however," and "nevertheless" that meant nothing to the dogs.

While the trainer spoke, the researchers checked the scans for regions of the dogs' brains that were able to differentiate between praise words and meaningless words, as well as praise and non-praise (neutral) tones of voice.

The researchers observed that the dogs used the left hemisphere of their brains to process meaningful — but not meaningless — words, and the right hemisphere to process vocal tones.

> *"This was the same auditory brain region that this group of researchers previously found in dogs for processing emotional non-speech sounds from both dogs and humans, suggesting that intonation processing mechanisms are not specific to speech," according to Phys.org.*[4]

When You Praise Your Dog, Double His Pleasure by Using an Upbeat Tone

The research team also observed from the scans that the reward center (the region of the brain that processes enjoyable sensations) of the dogs' brains was strongly triggered by praise — but only when the praise was spoken in an encouraging, upbeat tone.

All other combinations of words and vocal tones resulted in much less reward center activity. For example, when the trainer said "good boy" in a neutral tone, or "however" in either a positive or neutral tone, the result was the same — the dogs' reward centers didn't light up.

Now, if you have a habit of calling your dog a not-so-nice nickname like, say, Stinky Face, but you always say it lovingly, your dog probably responds as if he's being praised because he's learned to associate the words "Stinky Face" with your affectionate tone of voice. According to Andics:

> *"It shows that for dogs, a nice praise can very well work as a reward, but it works best if both words and intonation match.*

> *So dogs not only tell apart what we say and how we say it, but they can also combine the two, for a correct interpretation of what those words really meant. Again, this is very similar to what human brains do."* [5]

The researchers hope this and subsequent studies can be used to enhance **communication and cooperation between dogs and humans**.

Processing Words Doesn't Always Mean Understanding Them

It's important to note there can be a difference between a dog processing words for their familiarity and actually understanding the words as we intend. As study co-author Adam Miklosi, Ph.D., head of the Family Dog Project told Scientific American magazine:

> *"'Understanding' is a tricky word. Studies using brain imaging technology cannot firmly say that the activation of a specific brain area indicates 'understanding.'*
>
> *For sure, dogs in this study reacted to the meaningful words, that is, to those words that their owners often use when they want to attract the dog's attention or provide a positive feedback for the dog. So in this sense our dogs recognized these words as familiar and probably meaning something good."*[6]

An important feature of the study is that it demonstrated the left hemisphere of dogs processed meaningful words separate from the vocal tone. This suggests your dog may understand that "good dog" is praise regardless of the tone of voice you use when you say it.

> *"We think that intonation is important," says Miklosi. "Owners should learn how to praise a dog, and then use the same expression in similar way. Consistency in praising and in general in communication with the dog is important."*[7]

Sources and References

The New York Times August 30, 2016

[1] Science. 2016 Sep 2;353(6303):1030-1032

[2,3,4,5] Phys.org, August 30, 2016

[6,7] Scientific American, August 30, 2016