



“THIS IS NOT YOUR FOOD! Don’t even think about eating it. This ... is ... not ... your ... food.” What do our words mean to dogs? Not that I’m about to stop speaking to dogs anytime soon, but I do wonder what my daily utterances signify to Millie, Piper, Upton and Finnegan, the dogs I converse with on a regular basis. Do I sound like a cross between Charlie Brown’s teacher and Gary Larson’s “What Dogs Hear” cartoon? Are we on the same page, or even in the same book?

I set out on a quest to explore dogs and their understanding of human language. What do we think dogs understand? A lot, according to a study by Péter Pongrácz and his colleagues at the Family Dog Project in Budapest. Thirty-seven owners provided a list of 430 different utterances that they thought their dogs knew, with each owner providing an average of 30 phrases.

Enter Rico, Chaser, Sofia, Bailey, Paddy and Betsy, companion dogs celebrated for their panache for human language. The news media hails them as “super smart,” and after meeting Chaser, astrophysicist Neil deGrasse Tyson exclaimed, “Who would have thought that animals are capable of this much display of intellect?”

So what are these dogs doing with words?

## OBJECTS

Dogs can learn the names of many, many, many different objects. Julia Fischer, group leader at the German Primate Center's Cognitive Ethology Lab, heard that a Border Collie named Rico knew the names of 70 individual objects, and she wanted to know how Rico mapped specific human words to particular objects. "I contacted the owners, and they let us visit their home and start a study of Rico," explains Fischer. This culminated in 2004 with

an article in *Science*, reporting that Rico knew the names of over 200 different objects.

Seven years later, Chaser, a Border Collie in South Carolina, took the gold medal when Alliston Reid and John Pilley of Wofford College reported that Chaser knew the distinct names of 1,022 objects—more than 800 cloth animals, 116 balls, 26 Frisbees and 100 plastic items. Chaser knows that “Uncle Fuzz” is different from “Wise Owl,” who is certainly different from “Merlin.” This is not merely a story about Border Collies, however. Researchers recently related that Bailey, a 12-year-old Yorkshire Terrier, knows the names of about 120 toys.

Chaser and Rico also win praise for their ability to learn and retain the names of new objects. When presented with a group of toys, all of which were familiar except one, the dogs could retrieve the unknown toy when asked to fetch using an unfamiliar word. In

essence, the dogs were pairing a novel object with an unfamiliar name after a single association and then remembering the name of that new object in subsequent trials. In children, this is called “fast mapping,” and it was thought to be uniquely human. Pilley notes, “This research shows that this understanding occurs on a single trial. However, Chaser needed additional rehearsal in order to transfer this understanding or learning into long-term memory.”

## ACTIONS

But life is not only about knowing the names of one’s stuffies and Frisbees. Humans often use verbs such as *come*, *sit*, *down* and *off* to get dogs to alter their behavior. After controlling for outside contextual cues, researchers found that dogs could still understand that specific words map to specific physical actions. Chaser showed an incredible amount of flexibility with actions—performing “take,” “paw” and “nose” toward different objects.

“That’s just training,” you might say, but this suggests that some dogs show a cognitively advanced skill where actions are understood as independent from objects. Reid and Pilley found that Chaser does not interpret “fetch sock” as one single word, like “fetchsock.” Instead, she can perform a number of different actions flexibly toward a number of different objects. Daniela Ramos, a veterinary behaviorist in São Paulo, discovered that a mutt named Sofia could also differentiate object names from action commands, suggesting these dogs attend to the individual meaning of each word.

## CATEGORIES

Chaser puts the icing on the cake when she assigns objects to different categories based on their physical properties; some are “toys,” others are “Frisbees” and, of course, there are “balls.” Chaser takes her cue from Alex, Irene Pepperberg’s African Grey Parrot, who also learned categories like color, shape and material, and differentiated which trait was the same or different.

This all seems quite extraordinary, but nothing comes free of controversy. Do dogs like Chaser and Sofia use and understand language the same way humans do, or are they merely well-trained? For example, some researchers are not certain that dogs actually “fast map”; dogs might be doing something that simply looks like “fast mapping” from the outside. Regardless, it does seem as though these dogs have a conception of objects and actions. Patricia McConnell, PhD, Certified Applied Animal Behaviorist and beloved Bark columnist, agrees. “Understanding requires that we share the same reference—that we have the same construct of an object or an action. For some dogs, it seems like they do.” Pilley concurs. “When an object, such as a toy, is held before Chaser and a verbal label is given to that object, Chaser understands that the verbal label refers to that object.”

In her book *Inside of a Dog*, Alexandra Horowitz reminds us that even if these are the only dogs in the world capable of using words this way, it allows us to see that a “dog’s cognitive equipment is good enough to understand language in the right context.” This body of research indicates what is possible, not necessarily what most dogs do every day.

## WHO ARE YOU LIVING WITH?

Whether you have a Chaser or a Rico in your home might largely depend on you. As Fischer explains, “A dog’s use of human language depends very much on the willingness of the owner to establish a verbal relationship, to establish links between words and particular meanings.” Fischer is referring to motivation in both the human and the dog. Ramos and her colleagues trained and tested Sofia two to three times a day, three to six times a week. When Pilley, who doubles as researcher and Chaser’s owner, began training Chaser to identify objects at five months of age, Pilley repeated object names 20 to 40 times each session to make sure she got it.

Like Rocky Balboa preparing for his climactic showdown, these dogs are

highly motivated. Fischer notes, “Rico was eager and hard working. You’d have to tell him, ‘That’s enough. Get something to drink. Take a rest.’” Chaser is similar, says Pilley. “She has two states—highly, highly active and recuperating and resting.”

Denise Fenzi, a professional dog trainer from Woodside, Calif., who specializes in a variety of dog sports, reminds us that this type of motivation is not necessarily the norm. “Not all dogs share this attention to words. Even in my dogs [all of whom are the same breed], there is a huge difference in ability to verbally process. I didn’t train them differently. It’s just easier for one to quickly get words.”

## References

- Griebel, U., and D.K. Oller. 2012. Vocabulary learning in a Yorkshire terrier: slow mapping of spoken words. *PLoS ONE* 7 (2): e30182.
- Horowitz, A. 2009. *Inside of a Dog: What Dogs See, Smell, and Know*. New York: Scribner.
- Kaminski, J., et al. 2004. Word learning in a domestic dog: evidence for “fast mapping.” *Science* 304: 1682–1683.
- Pilley, J.W., and A.K. Reid. 2011. Border collie comprehends object names as verbal referents. *Behavioural Processes* 86: 184–195.
- Pongrácz, P., et al. 2001. Owners’ beliefs on the ability of their pet dogs to understand human verbal communication: A case of social understanding. *Current Psychology of Cognition* 20 (1/2): 87–107.
- Ramos, D., and C. Ades. 2012. Two-item sentence comprehension by a dog (*Canis familiaris*). *PLoS ONE* 7 (2): e29689.
- Warden, C.J., and L.H. Warner. 1928. The sensory capacities and intelligence of dogs, with a report on the ability of the noted dog “Fellow” to respond to verbal stimuli. *Quarterly Review of Biology* 3 (1): 1–28.

## TRAINING MATTERS

The way dogs learn words might be the biggest piece of the puzzle. McConnell finds, “Word learning might depend upon how words are first introduced. The guardians who explicitly differentiate words, teaching, ‘Get your Greenie! Get your ball,’ often have the dogs with big vocabularies. On the other hand, my own dog Willie was given verbal cues for years that stood for actions rather than objects. When I tried to teach him that words could refer to objects he was completely confused.”

What dogs are able to do with language could also be explained by their tutelage. If dogs don’t learn to attach a variety of different actions to a variety of objects, it might be harder for them in the long run to be flexible with human language. Susanne Grassmann, a developmental psychologist and psycholinguist at the University of Groningen in the Netherlands explains, “Chaser was trained to do different things with different objects, and she differentiates between what is the object label and what is the action command, meaning what to do with that object.”

Ramos notes that Sofia’s relationship with certain objects was a bit different. “Throughout the training, we always paired ‘stick’ with ‘point.’ As a result, it was difficult for her to perform any other action toward the stick beside ‘point.’ If we had trained her ‘stick: sit,’ ‘stick: point’ and ‘stick: fetch,’ she would have learned that multiple actions can be directed toward the stick, and her response would probably be different. For example, when presented with a novel object, such as a toy bear, she could direct a number of different actions toward the bear, but there was a reluctance to change her action towards the stick, which could have to do with the rigidity of training.”

And even if you do explicitly teach that different words have different meanings, it can be challenging. Ramos found that learning the names of objects is not always easy for dogs. “It was hard for Sofia to learn to discriminate the names of her first two objects, but after

the initial discrimination, it was like she learned to learn. It became easier,” recalls Ramos.

“Because this type of learning can be challenging, service dogs [who have little margin for error] are taught a limited, but instrumental, set of words,” explains Kate Schroer-Shepard, a qualified guide dog instructor at Guiding Eyes for the Blind in Yorktown Heights, N.Y.

Pilley found that dogs’ success at object learning depended upon the training method used. “When we put two objects on the floor and asked dogs to retrieve each object by name, they couldn’t do it; simultaneous discrimination wasn’t working. Instead, Chaser was able to learn the names of objects through successive discrimination. She would play with one object in each training session, and through play, the object assumed value. We’d name the object, hide it and ask her to find it. Discrimination testing between the names of different objects occurred later.”

## WORDS OR MELODY?

Are these just “type-A” dogs whose accomplishments cannot easily be replicated? After all, most dogs aren’t explicitly taught words as described above, yet they interact with us talkers in ways that make us feel like we’re on the same page. “Dinnertime!” “Wanna go for a walk?” “Where’s Dad?” elicit an appropriate “bouncing dog” response. But are most dogs attending to our actual words, or are other factors at play?

Dogs derive an enormous amount of information from contextual cues, particularly our body movements as well as tone and “prosody”—the rhythm, stress and intonation of our speech. “When people talk to dogs, dogs pay attention to the melody and the mood to predict what is happening or what will happen next,” explains Fischer.

Fenzi says that dogs can just as easily respond to gibberish as to real English words; “I could go through every level of AKC obedience from the bottom to the top saying, ‘Kaboola,’ and the dog could succeed.” In many cases, dogs

---

## JUST DOING MY JOB

You’re going to the mailbox  
To drop some letters there.  
It won’t take long  
It’s no big deal.  
Hey, I know—I’ll come, too.

You’re filing up the feeders  
For birds in our back yard.  
You don’t need help.  
It isn’t hard,  
But why don’t I come, too?

You’re driving “home” for Christmas  
You dread this trip each year.  
The roads are jammed.  
Your family’s nuts.  
Don’t worry. I’ll come, too!

Your cold is getting worse, dear.  
You’re sneezing up a storm.  
That cough is bad.  
You need some rest.  
To bed now!—I’ll come too...

—Donna J. Hughes

---

may be understanding tone rather than individual words.

“One of the most notable differences between novices and professional trainers is the ability to modulate the prosodic features of their speech,” notes McConnell. “The pros learn to keep problematic emotions out of their verbal cues, like nervousness in a competition, and to use prosody to their advantage when it’s advantageous, for example, to calm a dog down or to motivate him to speed up.”

In another study, Ramos explored whether, when taken out of context, dogs knew the words relating to toys they were thought to know. Most did not, much to the surprise of the owners. When the verbal skills of Fellow, a performing German Shepherd from the 1920s, were tested outside their customary contexts, Fellow knew only some of the words and actions that his owners thought he understood.

While many owners deem their dogs to be word-savvy, their reports tell a



different story. The Pongrácz survey found that many words and phrases were executed only in contextually adequate situations (for example, saying “bedtime” when it’s dark and you’re in your pajamas rather than at noon when you’re in your work clothes). As with Fellow, this suggests dogs might not be attending to only words themselves.

#### PUT WORDS TO THE TEST

Does Rufus understand your words as you intend them, or does he have a different understanding? If you always use a word in the same context, it’s easy to assume that you and your dog define it identically. Changing the context in some way offers a better understanding of what the dog perceives.

McConnell initially thought Willie knew the name of her partner, Jim. “To teach Willie, I would say, ‘Where’s Jim?’ and Jim would call Willie over. When Willie consistently went to Jim, I’d say it as Jim was driving up, and Willie would run to the window. One day, Jim

was sitting on the couch, and I said, ‘Where’s Jim?’ and Willie ran to the window, all excited. This difference in definitions is more common than people realize—dogs don’t have the exact same concept of words that we do.”

While there is no question dogs can understand verbs, their definitions might differ from ours. McConnell shares a classic example that she learned from Ian Dunbar, founder of the Association of Pet Dog Trainers. “What do dogs think ‘sit’ means? We think ‘sit’ means this posture we call ‘sitting,’ but if you ask a dog who is sitting to ‘sit,’ he will very often lie down. To him, ‘sit’ might mean get lower, go down toward the ground.”

Many people tend to overestimate their dogs’ facility with words and assume that dogs and humans have a shared understanding. Because a dog responds in one context and not in another doesn’t mean he is being disobedient. As Tom Brownlee, master trainer with the American Society of

Canine Trainers and instructor in Carroll College’s anthrozoology program, candidly advises owners, “If a dog’s not getting ‘it’—whatever ‘it’ may be—then you are doing something wrong. It’s our job to help them understand.”

When you talk to your dog, consider that the words you speak might not carry the same meaning for both of you. Instead, other aspects of communication might be more relevant. Maybe the real lesson is that context, prosody and tone—rather than dictionary definitions of words—are vitally important for human communication, too. **B**

---

This piece is dedicated to Professor César Ades (1943–2012) and Dr. Penny Bernstein (1947–2012). While their exceptional contributions to the fields of animal behavior and psychology endure, their presences are greatly missed.

---

Julie Hecht, MSc, is an Adjunct Professor at Canisius College. She manages Alexandra Horowitz’s Dog Cognition Lab at Barnard College in New York City and teaches and lectures on dog cognition and behavior. Learn more at [dogspies.com](http://dogspies.com).



GERMAN-ENGINEERED LED COLLARS

THE ULTIMATE WAY TO KEEP YOUR DOG SEEN & SAFE AFTER DARK.

- ▶ 100% WATERPROOF
- ▶ EXTREMELY DURABLE
- ▶ GERMAN-MADE QUALITY
- ▶ 2 YEAR WARRANTY

+ K-9 SEARCH & RESCUE APPROVED +

[www.glowdoggie.com](http://www.glowdoggie.com)



