

You may not know it, but your dog understands more than you think ▼

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# Communicating with your dog

Your dog understands you. Do you understand him?

Dogs have studied human behaviour for millennia. They are experts in human communication. Researchers in dog cognition are scrambling to catch up. There are now groups of scientists worldwide trying to decipher dogs. This article summarises their most intriguing findings.

## Nature, nurture and social skills in dogs

Most people expect their dogs to understand them. We use pointing and gazing gestures to communicate with our dogs. We are not surprised when they respond. Yet even chimpanzees, our closest relatives, have difficulty interpreting human gestures.

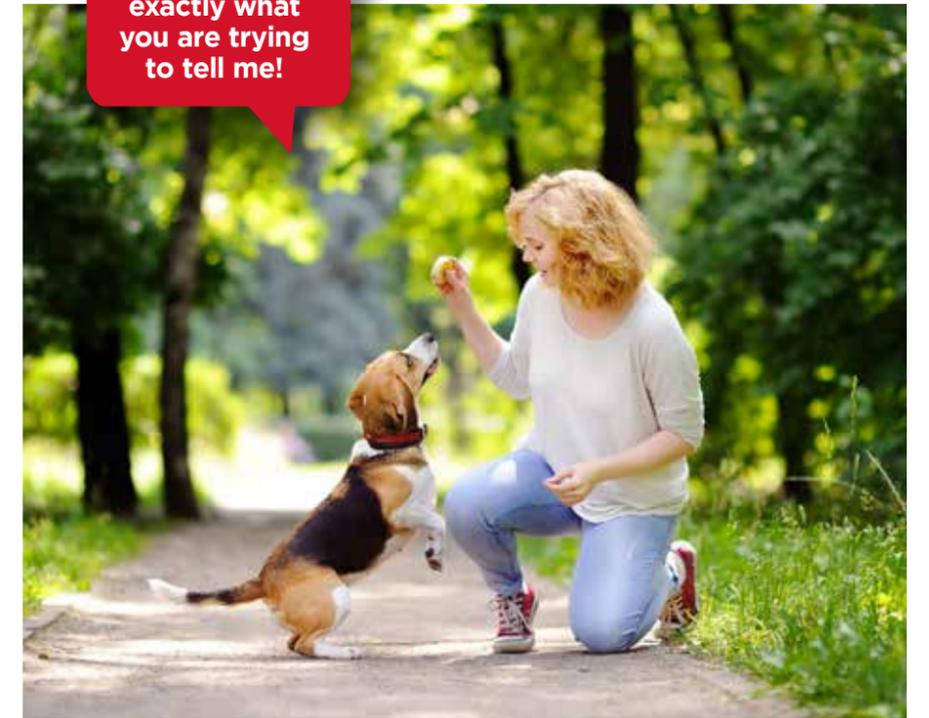
Scientists believe that dogs evolved these communication skills during domestication. Long association with humans was a driver of genetic change.

A classic behavioural experiment involves concealing food in a box. The researcher then indicates the hiding place by pointing at the box. Children can interpret the gesture from



◀ Rico

Actually, I understand exactly what you are trying to tell me!



Dogs find learning intrinsically rewarding ▲

about 14 months of age. Dogs can too, even when a human only gazes or nods at the box. Chimpanzees, in contrast, are not able to follow our gestures to find a treat.

This is not to say that dogs are smarter than chimpanzees. Only that dogs are more like humans in their communication. The special abilities of dogs do not extend beyond social contexts. Primates outperform dogs on tasks that involve manipulating objects.

Some argue that dogs are not genetically predisposed to understand humans. Critics point out that dogs can learn social skills from living with people. This is true, but not the whole story. **Young puppies and dogs with little human contact can interpret our gestures.** Wolves never become as proficient, even when brought up by people.

Scientists have studied domestication by selective breeding of wild animals. In one experiment, Dr Dmitry Balyaev and co-workers kept two groups of Siberian foxes. One group reproduced without intervention. Researchers removed fearful and aggressive animals from the other group. This produced tamer, less stressed foxes. They also developed features seen in dogs, such as floppy ears and curly tails. Foxes showed affection towards humans within six generations. This work illustrates the genetic underpinnings of behaviour.

## If only they could talk ...

Sniffer dogs have become a familiar sight at airports and in the media. Trained dogs can point out the location of concealed items. Of course, the dogs are working for praise and a reward. **Don't assume that your own dog will volunteer information for the sake of interest.**

Humans share information compulsively. We don't consider whether it is useful or necessary. Think of Facebook and Twitter. Dogs only share information when they see a direct benefit. In one experiment, researchers placed a treat out of sight on a shelf. A dog watched this, but his owner wasn't present. As soon as the owner came into the room, the dog tried to attract her attention to the hidden treat. We have all experienced similar behaviour when our dog's favourite ball rolls under the couch.

Scientists tested whether dogs would communicate information to help their owners. Dogs and owners were in a room together. In the first experiment, the owner went out and a researcher came in and hid the dog's toy. When the owner returned, the dog tried to attract their attention to the concealed toy. For the second experiment, the owner sat punching holes in paper with the dog in attendance. The owner left the room and the researcher came in and hid the punch. The dog saw all this. When the owner returned, she made a show of finding the punch gone. The dog didn't volunteer the location. It was difficult to enlist any help from the dogs in searching for the missing punch.

Since dogs are generally co-operative, it is possible that they don't volunteer information because they don't grasp that we need it. Dogs may also be unable to discern the use of objects that have no direct relevance to them.

## Now, where did I leave my car keys?

Humans can connect objects, places and time, sometimes. This enables us to remember

specific events, such as our dog digging up the flower bed yesterday morning. Animals differ in their ability to form situational memories. But research has shown that dogs can combine objects and places.

Any dog owner knows that dogs learn certain words, even if those are only 'walk' and 'dinner'. Some dogs have far more extensive vocabularies. Dr Juliane Kaminski and co-authors describe **Rico, a Border Collie who can retrieve hundreds of different objects on voice command.** Rico was also tested to see whether he could associate objects with locations. The researchers placed groups of toys in different rooms. Rico was commanded to fetch a specific toy, then another, then another, until he had brought them all. Once Rico had been into a room, he remembered what was in it. He could collect later toys from the correct room at the first attempt. For those of us who can't find our car keys, this is impressive.



*“Young puppies and dogs with little human contact can interpret our gestures.”*

Another dog, Betsy, had a different, systematic strategy. When told to fetch a toy, she always searched the rooms in the same order. She didn't appear to remember where something was, but she knew it had to be somewhere. As long as she covered all the bases, she would find it.

Rico also demonstrated the ability to reason by exclusion. A researcher placed an unknown toy with a familiar one. Rico was told to retrieve, using a word he had never heard before. He brought the novel toy. He had figured out that his owner didn't want the known toy, so the strange word had to refer to the other one. Children learn to reason by exclusion when they begin speaking. It wasn't known that other animals can also think in this way.

### A sly dog knows what you know

Dog owners learn the hard way that turning your back can lead to trouble. Scientists have found the same. A team from the Max Planck Institute for Evolutionary Anthropology in Germany put dogs in a room. They instructed the dogs not to eat a treat that was on the floor. This prohibition was only effective when a person remained in the room and stared, unblinkingly, at the dog. If the human left the room, turned their back or closed their eyes, it was all over. Dogs could even tell when experimenters were distracted by a computer game. **The lesson? Put your sandwich out of reach before you check your phone.**

Experiments with visual barriers show that **dogs can work out lines of sight.** Dogs

▲ Dogs are more human-like in their way of communication than most other animals

would leave a forbidden treat when it was in full view of an observer. They had no such reservations when the food was behind a barrier. While behind the barrier, the dogs couldn't see the human observer and were themselves unobserved. Placing the treat opposite a window in the barrier deterred the dogs. They realised that they were visible at the window.

Another well-known paper by Dr Juliane Kaminski describes how dogs steal food in darkness. The research team used different combinations of lighting to show that **dogs can tell when a person can see them.** Dogs used the cover of darkness to take a forbidden treat.

▼ Dogs understand more than what we think they do



Dr Juliene Bräuer and colleagues were also interested in dog subterfuge. They put dogs in a room and forbade them to take a treat. The dogs could approach the treat silently over a black mat. Alternatively, they could cross a white, crinkly plastic mat. Dogs chose the quiet approach when a researcher, with closed eyes, remained in the room. They showed no preference for the silent approach when no one was present.

This shows that, besides knowing when they are being watched, dogs also realise that humans can hear them. Another good reason to be suspicious when your dogs are particularly quiet.

### Teaching any dog new tricks

Ragen McGowan led a team from the Swedish University of Agricultural Sciences to study learning in dogs. They showed that dogs find learning intrinsically rewarding. In their experiment, Beagles had to solve a puzzle that would open a door. The door led to another room holding a treat. A control group did not solve a puzzle to open the door. The door opened spontaneously, but the control dogs still received the treat.

Dogs who solved the puzzle had wagging tails and signs of excitement. They were keen to repeat the task. The controls showed

no enthusiasm and soon lost interest in the experiment. A treat alone was insufficient motivation.

Humans find dogs easy to train because they are co-operative. Researchers studied co-operation by placing two dogs in a room with two exits. An exit shuts when a dog approaches it, but only one exit is closed at any time. The dogs soon learnt to solve the problem. If they went simultaneously to different exits, one dog could get out. As soon as one dog was out, the other was also released. There were treats waiting beyond.

Dogs would work together to escape even when only one of them received a treat. This contrasts with chimpanzees. Experiments with chimpanzees show that they will only co-operate when the reward can be shared. They also need to know, from previous experience, that their partner will share. **Dogs continued to work together even when one dog never obtained a treat.**

### Making head or tail of the human world

Children learn to generalise rules from an early age. We know that stealing is wrong. We don't need reminding every time we encounter someone else's property. Dogs do not reason in the same way. They associate

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- Dogs can interpret gestures
- Dogs are more like humans in communicating
- Dogs share information when they see a direct benefit
- Some dogs have extensive vocabularies

commands with the specific instructor. In one experiment, dogs entered a room with two bowls. Each bowl held a treat. They were trained to ignore the bowl closest to them and eat from the one furthest away. The dogs only obeyed this rule when the trainer stayed in the room. If the trainer left, the dogs went for the closest treat. They also did this when a stranger replaced the trainer. **In a dog's mind, a command only applies when the person who gave it sticks around.** This can lead to frustration for owners.

Like humans, dogs have certain expectations about the world. Researchers used a device called a magic cup to test the response of dogs to inconsistency. A food item placed in the cup could be switched covertly. When dogs watched a scientist placing a small sausage in the cup, but then instead discovered a piece of carrot, they showed surprise. To the dogs, this was no doubt more a cheap trick than anything magic. The researchers compared the reactions of dogs when food changed to scenarios where food remained the same. Dogs were able to remember what they saw going into the cup. They expected to find the same item when offered the cup.

Research into dog cognition continues to reveal the mental workings of our closest animal friends. **The amazing social skills of dogs have allowed us to cohabit for thousands of years.** It sometimes creates problems when we forget that dogs are not people. We humans owe it to our dogs to understand them on their own terms. After all, communication goes two ways. 🐾