Dogs (and probably many other animals) have a conscience too

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TSU researcher Roberto Cazzolla Gatti. Credit: © TSU

The article has been published in the journal *Ethology, Ecology and Evolution*, with a title the researcher Roberto Cazzolla Gatti borrowed from the novel by Lewis Carroll: "Self-consciousness: beyond the looking-glass and what dogs found there."

That man's best friend has a conscience is what every owner would be willing to bet, without even thinking about it for a moment. This means that dogs have self-consciousness. But the problem in science is that ideas and assumptions must be demonstrated. It is not enough for someone to have an inkling of something for it to be considered a scientific fact. Self-awareness, or self-consciousness, has been studied mainly by examining the responses of animals and children to their reflections in the mirror. The ultimate proof of self-consciousness, of one's body and one's own identity, is evaluated based on the individual's ability to use his own reflection to notice and touch a mark (usually a red dot) applied under anaesthesia or during a period of distraction on the face, head, or other parts of the body. This test is known as the "mirror test," and many researchers have conducted experiments with children or chimpanzees that easily identify themselves in the mirror and repeatedly touch the mark placed by the investigator on their body.

The basis of the test is that the subject who understands the concept of "self" and "the other" is able to distinguish between the two entities and, therefore, to recognize himself or herself in the reflection. The most interesting result arising from the confirmation of a consciousness of self is that, based on these results, other behavioral traits may be deduced such as, for example, empathy. In fact, the ability to differentiate oneself from others is often considered a prerequisite for understanding that

someone else may be happy or sad, even if the viewer is not.

- "When I became interested in this aspect of ethology I went through the scientific literature and I discovered that, however, the ability to recognize their own image in the mirror is a skill extremely rare in the animal kingdom," says Roberto Cazzolla Gatti. "Until now, only humans and great apes (gorillas excluded), a single Asian elephant, some dolphins, Eurasian magpies, and some ants have passed the test of mirror self-recognition (MSR). A wide range of species has been observed to fail the test, including several species of monkeys, giant pandas, sea lions, birds, and dogs."

Dogs, in particular, show no interest in looking in the mirror, but usually sniff or urinate around it. Dogs and wolves, like dolphins, show a high level of cognitive complexity, but previous attempts to demonstrate the self-recognition of these animals have been inconclusive.

"I believed that because dogs are much less sensitive to visual stimuli with respect to what, for example, humans and many apes are, it is likely that the failure of this and of other species in the mirror test is mainly due to the sensory modality chosen by the investigator to test the self-awareness and not, necessarily, to the absence of this latter," says Gatti.

Attempts to verify this idea have been made before, but most of them were only observational, lacked empirical evidence, or had been carried out only with a single individual and not repeated systematically with other dogs of different sex and age (for example Marc Bekoff in 2001 used a "yellow snow test" to measure how long his dog was sniffing his own urine scent and those of the other dogs in the area). Therefore, a definitive test of self-recognition in a species as phylogenetically distant from apes as the dog, with its different sensory modalities and communication behavior, had not previously been obtained.

"So I imagined a new test able to move beyond the mirror version, and I called it the 'sniff test of self-recognition (STSR)'," the researcher says. "I demonstrated that even when applying it to multiple individuals living in groups and with different ages and sexes, this test provides significant evidence of self-awareness in dogs and can play a crucial role in showing that this capacity is not a specific feature of only great apes, humans, and a few other animals, but it depends on the way in which researchers try to verify it."

This research was conducted with a test performed on four dogs, all strays grown in semi-freedom. Dr. Gatti collected urine samples from each dog and divided and stored them in containers specific to each dog. Then he submitted the animals to the sniff test of self-recognition. The tests were repeated four times a year, at the beginning of each season. This test is nothing more than a modified version of the mirror test, carried out to check the sense of smell, and not sight, as the main way to determine self-awareness.

"Then I placed within a fence five urine samples containing the scent of each of the four dogs and a 'blank sample,' filled only with cotton wool odorless," Dr. Gatti says. "The containers were then opened and each dog was individually introduced to the inside of the cage and allowed to freely move for five minutes. The time taken by each dog to sniff each sample was recorded."

The result was surprising: All dogs devoted more time to smelling the urine samples of the others than their own, and this behavior confirmed the hypothesis that dogs seem to know their own smell exactly; they are less interested in their own, and they are therefore self-aware.

In addition, this study shows a correlation between the age of the individual dogs and the time spent sniffing the urine samples, a result that strongly supports the idea that self-awareness increases with age, as

demonstrated in other species, such as chimpanzees and humans.

The innovative approach to test the self-awareness with a smell test highlights the need to shift the paradigm of the anthropocentric idea of consciousness to a species-specific perspective. We would never expect a mole or a bat to recognize themselves in a mirror, but now we have strong empirical evidence to suggest that species other than primates might be tested using chemical or auditory perception. According to the results of this study, the age of empathy that was anticipated by the great ethologist Frans de Waal may finally arrive.

Provided by Tomsk State University

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