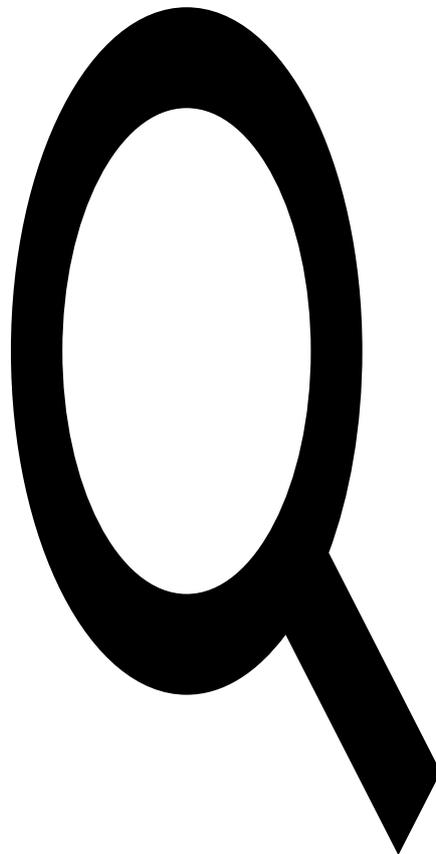


This is the second post in a series of two installments by Pierre Jacob, dwelling on Gergely and Csibra's work on human communication. In Pierre's first post, we saw that these experiments show that, as suggested by relevance theory, human can detect communicative intentions quite early. Now Pierre turns to a second issue.

Natural pedagogy has also recently cast an interesting light onto the second question raised by Sperber and Wilson's (1986) relevance approach to ostensive-inferential communication: to what extent is it distinctive of human cognition? Unlike great apes, domesticated dogs have co-evolved with humans for several thousand years. As a result and unlike great apes, they are widely believed to exhibit some understanding of human referential intentions expressed in communicative gestures, such as pointing (Hare and Tomasello, 2005). Range, Viranyi and Huber (2007) have adapted Gergely et al.'s (2002) paradigm to test the propensity of domestic dogs to engage in the selective imitation of a model's behavior.



They used an apparatus that could be used by a dog to release a food reward by either pulling a wooden rod with its mouth or pushing it down with its paw (Figure 3A). They trained a domestic dog to push the rod with its mouth: the trained dog then served as a model. They divided a population of naïve domestic dogs into two conditions: the mouth-occupied condition and the mouth-free condition. In the former condition, after communicative cues from both humans and the model dog, the naïve dogs saw the model use its paw to push the rod with a ball in its mouth (Figure 3B). In the latter condition, after communicative cues from both humans and the model dog, the naïve dogs saw the model use its paw to push the rod while its mouth was empty (Figure 3C). Range et al. (2007) found that more than 80% domestic dogs reproduced the paw action in the mouth-free condition and only slightly more than 20% reproduced the paw action in the mouth-occupied condition. Towards further investigating the species-specificity of the human sensitivity to ostensive-communicative cues, Topál, Gergely, Erdőhegyi, Csibra and Miklósi (2009) have recently adapted the paradigm used by Topál et al. (2008) for the study of the modulation of perseverative errors performed respectively by dogs and human-reared wolves in the A-not-B task by the presence of ostensive-communicative cues. (Although reared by humans, unlike dogs, wolves have not co-evolved with humans.) In a first set of experiments, Topál et al. (2009) found that dogs, but not wolves, turn out to be as sensitive as 10-month-old human infants to the presence of ostensive-communicative cues: dogs, but not wolves, turn out to commit the A-not-B error in the presence of ostensive-communicative cues. Like human infants, dogs turn out to commit far more perseverative errors in the communicative than in either the non-communicative or the non-social condition.

In a further set of experiments, Topál et al. (2009) introduced a change in their previous ostensive-communicative condition: after an adult had repeatedly hidden the toy in the A-trials, she left and another familiar person continued to demonstrate the hiding actions during the B-trials. Whereas both 10-month-olds and dogs searched correctly for the toy in the A-trials, they reacted differently in the new B-trials (involving a novel demonstrator). Infants displayed a perseverative search bias to reach toward location A, and their success rate was significantly below chance level. By contrast, dogs did not show a significant search bias towards the empty A-location. This new finding suggests that, in the presence of ostensive-communicative cues, to 10-month-old human infants, but not to dogs, the identity of the person who provides the ostensive-communicative signals does not matter. The mere presence of ostensive-communicative cues uniquely biases human infants towards a semantic or generic (i.e. generalizable) interpretation of the relation between an object and a container. By contrast, the fact that in dogs, the perseverative search bias in the A-not-B task disappears if, in the ostensive-communicative condition, two different human beings demonstrate the hiding actions during the A-trials and the B-trials, is compatible with the hypothesis that dogs' responses to human communication are primarily driven by a motivation to satisfy ostensively cued human imperatives.

Thus, natural pedagogy suggests that, unlike human-reared wolves, domesticated dogs are sensitive to cues of human ostensive communicative behavior. But it also suggests that the sensitivity to human ostensive communicative cues is not wired to the same cognitive capacities in dogs and human infants. In human infants, the presence of ostensive communicative cues triggers a learning process whereby infants learn semantic connections among objects and then generalize their erroneous semantic knowledge across different pragmatic contexts involving different demonstrators. In dogs, the sensitivity to ostensive communicative signals seems tied to particular individuals and primarily hooked to a motivational system whose goal is to satisfy human orders.

reference : Topál, J. Gergely, G., Erdőhegyi, Á., Csibra, G. and Ádám Miklósi, Á. (2009) Differential sensitivity to human communication in dogs, wolves, and human infants. *Science*, vol. 325,