

I. Dogs vs. Wolves, Hare et al vs. Wynne et al and Viranyi et al.

On the website you will find two new papers. The first is by Hare et al (2010) and is a criticism and rebuttal of the papers by Viranyi et al (2008) and Udell et al (2008) that we read earlier. The second is by Udell & Wynne (2010), and is a response to Hare et al's criticism. *[Note: they don't really criticize Viranyi et al, but everyone seemed to understand that.]*

a. Summarize the arguments of the two parties, with the special attention to the following:

- indicate where you think Hare et al's criticisms are reasonable, or are not, and why
- indicate where you think the responses of Udell & Wynne are reasonable, or are not, and why you do *not* have to make an *overall* judgment, i.e., declare that one or the other party is all wrong – one party might be reasonable with respect to one issue, unreasonable with respect to another

b. Suggest a study/experiment that might clarify the issues at dispute.

*Most of the criticisms by Hare et al are **not** reasonable. First, if as they argue, experience is not crucial (e.g., they argue that dogs do not get better with age), then why are they so concerned about equating the experience of dogs and wolves in these experiments? Second, they seem to assume that if Udell et al do anything different from how they (or other previous researchers) did their research, it is bad. Yet some of the differences in procedures used by Udell et al are clearly improvements in design. For example, controlling for olfactory cues is obviously a good idea. That necessitates the use of the 'clicker' which is actually a standard procedure for bridging the delay between the correct response and reinforcement (in fact it has become a common feature of many dog training programs). And how can you criticize Udell et al's removal of the fence between the experimenter and the wolves? Third, although Hare et al are entirely right to criticize the lumping of no-choices with wrong choices, in the end their reanalysis of the data of Udell et al just finds that wolves and dogs performed equally well (under best conditions). Remember that Udell et al were not trying to show that wolves were better than dogs, just that when tested "on a level playing field" (under comparable circumstances and with a comparable background) wolves would perform as well as dogs.*

There was a tendency for people to perseverate on minor points (which is understandable since both papers did a lot of nit-picking). The key here is to look for the big picture: once you get past each group trying to paint their research as made in Heaven and the other's in Hell, you can see that they are just recycling the old Nature vs. Nurture argument (and Hare et al, taking the Nature side, are actually more guilty of this). Only a few people looked carefully at the hypothesis that Hare et al said they were testing, the 'domestication' hypothesis. They state it at the beginning of their paper: "dogs evolved their special ability to use human communicative cues ... as a direct result of domestication," i.e., they evolved the ability to 'read' humans. Udell & Wynne never explicitly state a

*hypothesis but they frame the problem clearly at the end of their paper: “Of course something happened during domestication. We are not suggesting that a dog cannot be distinguished from a wolf. The question is not whether something happened during domestication, but **what**”? They clearly do not think it this “what” is “enhanced skills in comprehending human gestures” (as do Hare et al), but something else, probably the loss of aggressiveness or wariness towards humans, which then frees the animal to utilize its natural (pre-existing) communication abilities (which wolves presumably would need e.g. in group hunting). Once you realize that the two groups have different evolutionary hypotheses, then you can that it is irrelevant how equal (or not) is the background experience for the two species.*

What experiment might clarify the difference of opinion? Most people came up with plans for absolutely equating the experience of dogs and wolves to be tested. But as I said, this just buys into the argument of Hare et al that this is somehow important (first point above). The best approach is to test both dogs and wolves under optimal conditions, where the animals are comfortable, not distracted, not scared, etc. This will generally be easier for dogs (they are domesticated after all). If you remember the section of the movie showing a young wolf from the Viranyi et al experiment being tested, you’ll remember that he just freaks out in this situation. Perhaps he’s not picking up any cues from the humans, but of course he’s not even looking at the human (he wants to get out of there). In the end I would argue that the needed experiments have already been done, and they are staring us in the face: Hare et al; Viranyi et al; Udell et al. These studies seem to show that it is harder to train wolves but once you get their attention they do real well, as well as dogs.

A few people suggested a behavior genetics study (either looking at wolf-dog hybrids, or by ‘reversing’ the domestication process and breeding for wilder dogs), an interesting approach. Surprisingly, no one suggested an experiment we’ve talked about several times in class: wolves might be very good if tested with another wolf (or 2nd best, a dog). That would be consistent with what Udell et al are saying, that what is key it is not the dog’s ability to pick up social cues about the location of food, but its ability to tolerate and pay attention to humans in the first place.

2. Theory of Mind in Chimps

On the website you will find a new paper by the Call/Tomasello group (Schmelz et al 2011) on theory of mind in chimps.

a. Indicate the extent to which this experiment does or does not tell us more about theory in mind in chimps than the two earlier studies we read (Hare et al 2006; Kaminski et al 2008). That is, what, if anything, does this study seem to tell us that the earlier ones did not?

b. Is this new study consistent with the conclusions of Call & Tomasello (2008)? (It’s from the same group, but some years later, so it doesn’t have to be.) Explain your answer.

You have to read this new paper carefully to understand the methods. Some of you didn’t. The movie clip helps. Here’s a key point: “After the competitor’s choice, the two boards came back to the subject for her to choose (boards and competitor blocked from view)”. The video clip shows clearly

that the second chimp (the subject) makes her choice without seeing what the competitor did, i.e., she makes her choice from memory (of whether the flat board was on the right or the left).

*Hare et al (2006) and Kaminski et al (2008) are consistent with the conclusion of Call & Tomasello (2006) that “Chimpanzees understand ignorance, but not false belief”. Hare et al (2006) shows that a chimp competing with a human will approach a contested food item via a path hidden from the human’s view. Kaminski et al (2008) shows that a chimp will take account of what the competitor has seen, but not, apparently, of what it believes, i.e., chimp understands ignorance/knowledge but not ‘false beliefs’. The present study – if we judge its methods are satisfactory – appears to take us further along the TOM road. It indicates that the chimp can take account not just of what her competitor has seen or has not seen (where the food has been put, whether it’s been moved) but also what she might **infer about** what she has seen (which location is likely to be concealing the food). Given the way the testing situation has been set up, a slanted board always predicts food underneath, while a flat board either always predicts no food underneath (or, if the competitor has had some experience in the testing situation, usually predicts no food underneath). This is actually getting quite close to a false belief test.*

*People tended to diminish what is accomplished in this study. But if you disagreed with the authors’ conclusion that their study tells us more about chimp TOM than we previously knew, then you had to say **why**.*

Only a few people made high level criticisms of Schmelz et al. There were certainly a number of potential weaknesses. For example, why do the authors assume that “the subject was ignorant whether the competitor knew there was a hole in the platform”. Apparently half the subjects were in the subject condition before they were the competitor, so presumably they would be aware of the possibility. Or, why did the chimps choose the slanted board more than 50% of the time in all conditions (it was 56% even when their competitor had chosen first).

c. Imagine you are talking to your parent, or sib, or a random “intelligent layperson”. Explain to them why “false belief” tests are so popular with people studying theory of mind in kids and animals.

They are popular because they disassociate the actual state of the world (e.g., the food is in the red cup) from the subject’s beliefs about the world (the food is in the blue cup). Or you could just say: they separate reality from belief. Thus you can make a clear prediction about what the subject should do that is based purely on what (you believe) they believe. If you don’t use this method, you have no clear way of telling whether the subject made their choice on the basis of reality or their beliefs about it.

It’s not that researchers are especially fond of doing deception experiments; it’s just that this context is especially appropriate for demonstrating theory of mind.