

1. Does imitation increase affiliation? (Paukner et al 2009)

a. Is there any evidence in this study to rule out the hypothesis that the monkeys are simply more interested in the person doing the same thing as them (imitating them)? If you think there is no or only weak evidence, suggest an experiment that might address this question.

Actually their Expt. 4 does a pretty good job!

b. The distinction is often made between *explicit* and *implicit* recognition. Implicit (or unconscious) recognition is what the monkeys are presumed to be doing in this study. Explicit recognition is said to occur when the imitated individual carries out explicit ‘testing’ behaviors to see if the imitator will copy them. A good example is shown here: <http://www.youtube.com/watch?v=j5IU52aWTJo>

How might you test explicit recognition in these monkeys? Be sure to discuss necessary control conditions.

A design very much like the design of Paukner et al would work: You (the experimenter) do active imitation of monkey and see if monkey tries out odd behaviors as if testing you (changes its behavior in such a way as to see if it can manipulate your behavior correspondingly). You would need a control, say everything the same but you do contingent but non-imitative actions (just like in the Paukner et al). You would then look for behaviors by the monkey that appear in the imitation condition but not the control condition; moreover, they should be unusual, outside the normal repertoire.

2. Are chimpanzees prosocial? (Horner et al 2011)

The token-selecting chimps in this study chose *self-only* tokens in roughly one-third of 30 picks. They did this despite the non-token-selecting chimp engaging in “poking paper (from the rewards) toward the actor, begging with an open hand, staring at the bucket with tokens, or aimed displaying with pilo-erection and hooting”. Note also that these chimps were from a long-established group of 12 individuals, many of whom were kin and some of whom were in afflictive relationships. Horner et al interpreted chimps as “overwhelmingly” favoring “prosocial choices” because chimps made a statistically significant greater number of *self-and-other* token choices when a chimp was in the adjacent cage compared with the control condition in which the adjacent cage was empty.

a. Argue that the chimps in this study would be better described as making “mean-spirited” choices rather than as making “prosocial” choices.

(Pretty much stated above.) Also see Skoyles 2011 on webpage.

b. Develop a counter-argument – what you imagine Horner et al might say – to the “mean-spirited” argument.

The “mean-spirited” argument is probably expecting too much. Perfectly prosocial is taking the prosocial (both of us) token 100% of the time, perfectly selfish is taking the selfish (only me) token 100% of the time. Chance is 50%. But in fact they choose the prosocial token about 60% of the time. So although they may be imperfectly altruistic, they are clearly more altruistic than they are selfish (mean-spirited).

Also, see Horner et al reply to Skoyles on website.

3. Do animals teach? (Bender et al 2009)

Read the paper by Thornton (2008) on meerkats (many of you have read this one before) and tell me why he concludes that meerkats *don't* teach while Bender et al conclude that dolphins *do* teach. State first whether (1) both parties are correct, or (2) Bender et al are too lax in their criterion for teaching, or (3) Thornton is too strict in his criterion for teaching (one and only one of those three cases can be true). Explain the basis for your conclusion.

Both Thornton and Bender et al cite Caro & Hauser's (1992) three criteria for a behavior to qualify as teaching: a knowledgeable individual (1) modifies its behavior in the presence of a naïve observer, (2) at some cost or with no immediate benefit to itself, (3) in such a way as to facilitate learning of knowledge or skills by the observer. Thornton (2008) uses experiments and detailed observational data to examine whether wild meerkat pups learn to eat unfamiliar foods by interacting with adults and whether adults play an active role in promoting learning through teaching. Thornton concludes that although these adults do help the young, they are not actively "teaching" because they do not alter their behavior based on prey items. He suggests these helpers are simply feeding the young and the young's learning about new food is a byproduct. So, while helper meerkats are modifying their behavior in the presence of naïve observers (pups), they are not doing it "in such a way as to facilitate learning or knowledge or skills by the observer."

Bender et al concluded that dolphins do show evidence of teaching. Yet, they do not meet all 3 criterion of Caro and Hauser's description as they acknowledge when they say further research is needed to see if the calves are actually deriving benefits from the mother's altered behavior. Bender et al concludes this as a teaching behavior before having all of the information. So they are being a little lax.

Various answers were possible here, but your answer had to address the issue, which is whether these two cases satisfy the Caro & Hauser criteria, and do the authors think they do?

4. Do great apes have episodic memories? (Martin-Ordas et al 2010)

Consider a somewhat stricter definition of episodic memory: the ability to recall – complete with fairly detailed imagery – and episode from the past. This definition stills fall short of Tulving's strict definition, which requires conscious experience, and we should be able to demonstrate it in an animal.

a. In what ways does this present experiment *fall short* of demonstrating episodic memory in this stronger sense?

It does not show that animal remembers detailed imagery of this past event.

b. Suggest an experiment that might reveal episodic memory at this level in an animal. (No science-fiction experiments allowed, i.e., this experiment has to be do-able.)

The key feature of the experiment would be a way of demonstrating that the animals remember the detailed imagery, the 'what' part of the 'what, where and when'. A number of suggestions were made, generally involving teaching the animal to distinguish between positive and negative events that occurred in two complicated scenes (e.g., rooms) that had many common elements but some

very different ones. If the animal were tested a long time later, would it recognize one scene (room) as the negative and one as the positive one.

5. *Animals communicate, so why don't they have language? (Kitchen et al 2010)*

In 1997, Cheney & Seyfarth (the senior authors on the Kitchen et al paper) wrote a paper entitled "Why animals don't have language". Here is their conclusion:

Violating our own injunction, we offer here one speculative hypothesis that may be a spur to further research. The admittedly scanty evidence assembled to date suggests that the communication of nonhuman animals lacks three features that are abundantly present in the earliest words of young children: a rudimentary theory of mind, the ability to generate new words, and syntax. We suggest that the absence of all three features is not accidental, and that the lack of one (theory of mind) may be causally related to the lack of the others (words and syntax). Because they cannot attribute mental states to one another and are unaware of the relation between behavior and beliefs, monkeys and perhaps also apes are considerably less adept than young children at recognizing the intentions of others and learning new behavior from others. For the same reason, they do not go out of their way to inform others, to instruct others, or to describe and comment upon events in the world. This failure stems not from the inability to recognize or attend to events, but from the inability to recognize that not all individuals share the same knowledge about these events.

Using Kitchen et al as a prototypical field study of animal communication, and the various teaching-language-to-animals lab studies, and earlier papers on animal theory of mind, provide a critique (a critical appraisal) of this conclusion by Cheney & Seyfarth.

*As both Kitchen et al and the teaching-language-to-animals lab studies show, the animals are quite capable of learning communication signals. And the theory of mind studies we have reviewed in the course suggest that animals **may have** some theory-of-mind capability, though even in the best case it may not be as fully-developed as in humans (though you wonder about dolphins, not yet really tested in this realm). Still, to make that the key roadblock to learning language may be a mistake given the discoveries that we are making about TOM in animals.*