Psych 486: Animal Mind Exam 2 (Final) Winter 2014

Open-book and open-resource except consult no one else. Return your answers to me in the course dropbox (Catalyst link on webpage) by next Monday (March 17) at noon. As usual, at the top of your answer sheet put the following:

The answers to these questions are mine alone; I consulted no one else in writing my answers.

_____ (type your name)

1. (a) What is **anthropomorphism**? **(b)** Why do humans do it? **(c)** Do you think animals do the same thing when thinking about us? Explain your reasoning**.**

Briefly: Anthropomorphism refers to interpreting animal behavior in terms of human thoughts and feelings. Probably because we have evolved in complex social groups, interpreting the behavior of other humans in this way, i.e., using a 'theory of mind', has generally proved beneficial (unless we run up against a sociopath). Thus we can't help but do the same with animals, and have to be 'trained' to interpret their behavior in purely behavioral terms. Animals may interpret our behavior in their own mentalistic terms. For example, dogs can certainly tell whether we are happy, sad or angry, and if they are empathetic, that certainly implies that they are reading our feelings. What would we call that? Caninepomorphic?

2. Canid intelligence. What do you think is a fair conclusion about the relative intelligence of **dogs, wolves and foxes** (selectively-bred and control foxes)?

Briefly: No definitive answer here in that the evidence is mixed. However, it does appear that wolves are just as intelligent as dogs if not more so, but that there is a wildness barrier between wolves and humans that must be carefully crossed if that intelligence is to be revealed. This barrier has largely been removed in domesticated dogs and wolves.

Some students didn't really use the studies we read to answer the question. Here is how one who did answered the question:

"Based on the studies we examined, the evidence supports the idea that wolves and control/ wild foxes have better general intelligence and information processing than dogs and selectively bred foxes. The evidence supports the idea that the Intelligence Processing Theory or the idea that the domestication process has reduced much of dogs and selectively bred foxes' information processing and replaced it with a reliance of humans. We examined studies solely based on the difference between dogs and wolves but based on the correlation between the intensive domestication of foxes and their shared phenotypic and personality traits with modern dogs, these similarities most likely extend as well into their cognitive abilities. In a study done by Range and Viranyi (2014) compared wolves and dogs abilities to learn from a conspecific demonstration in opening a box with food in it. They found that the wolves all on their first trial were able to open the box as seen by their demonstrator demonstrating that they were able to process the information demonstrated by the conspecific and learn it. Many of the wolves continued to have success in opening the box after the first trial despite showing extreme signs of anxiety and fear. Their nervous mental state really impresses the cognitive information processing of the wolves since they were able to move past their anxiety to still process what was going on. The majority of dogs, however, were unable to open the puzzle box on the first trial and many that opened the first time failed to continue to open the box. The dogs were unable to learn from their conspecific and often times looked to the human experimenters for answers after

the time that most of the wolf subjects had already opened the box. So not only do the dogs have poorer information processing and social learning but they also failed to effectively use their social relationship with humans to find answers in a timely fashion. Range and Viranyi (2013) completed another experiment, which further supported the wolves' higher general intelligence as compared to dogs. When watching a dog and human demonstrate the location of hidden food, the wolves were able to use the human demonstration more effectively, only going to the end points when the human had actually hidden the food unlike the dog, who blindly followed the humans motions regardless of whether the human had actually hidden food or not. The wolves also paid more indirect attention to the details of the dog demonstration, picking up on the cue that the demonstrator dogs did not like the food treat used and actively tried to rid themselves of it. The dog subjects did not pick up on this disgust cue during the demonstrations. This evidence supports the idea that wolves and (most likely) wild foxes have better processing and social skills resulting in higher overall intelligence than dogs and domesticated foxes".

3. We read a number of papers which investigated the mental abilities of the species listed below. For each species, indicate whether the authors (believed that) they showed that this ability **does or does not have** the mental capacity investigated.

Chimps ***do*** *have 'self-concept' (MSR, Gallup 1970),* ***do*** *have some degree of theory of mind (Yamamoto et al, 2012; Kaminski et al (2008),* ***do*** *collaborate (Melis and Tomasello, 2013),* ***do*** *show altruism (Warneken et al 2008),* ***do*** *plan (Osvath & Karvonen 2013), and* ***are*** *vengeful but* ***not*** *spiteful (Jensen et al 2006) and*

Pigeons ***do*** *have genuine MSR (Epstein et al, 1981) or* ***do not*** *(critics of Epstein et al)*

Rooks ***do*** *insightfully use and shape tools (Bird & Emery, 2009)*

Elephants ***do*** *grasp cooperation (Plotnik et al, 2011) and pointing (Smet & Byrne, 2013)*

Dolphins ***do*** *have long-term social memory (Bruck, 2013)*

Octopuses ***do*** *have observational learning (Fiorito & Scotto, 1992)*

(Meant to have you add your own opinion here but inadvertently left that out of the question!)

4. Social Brain Hypothesis. We have discussed this hypothesis throughout the course. Which study – in the second half of the course – is most relevant (positive or negative) to this hypothesis?

Well there are a number of candidates, but probably the best are:

For: Metacognition study and chimp planning study, in that they get at general intelligence (in a social species)

Against: The Fiorito & Scotto octopus study. It provides evidence that, despite not being social and having short lives, octopuses possess sophisticated observational learning. This provides evidence against the social brain hypothesis, which would predict that because octopuses are not social, they would not have evolved the intelligence necessary to perform such tasks.

*Dolphin example is not a relevant example, because it shows the operation of a **specific** cognitive ability relating directly to social memory that a species in this complex fission-fusion society would absolutely need. The Social Brain theory holds that social selection pressures shape **very general** cognitive abilities that can be used in non-social as well as social context). Perhaps dolphins do this, e.g., have excellent non-social memory as well, but this study looks at this ability in the very social context it presumably evolved in.*

5. Emotion. Suppose you think dogs are capable of the emotion of jealousy and that you want to convince a skeptic that you are right. Describe the demonstrations and/or experiments that you think would make a strong case. (If you prefer, you can turn this question around, and suppose you think dogs are not capable of jealousy, and that you want convince a skeptic that you are right about this.)

You have to define jealousy first. A good definition would be the emotional reaction engendered when a competitor receives attention or positive behavior that could have gone to you. The other component is your relation to the dispenser of attention or positive behavior: it is different if it is stranger than if it is a loved one. In the context of an animal study, you would then have to define the behavioral reactions that would indicate jealousy.

There was a tendency to treat this question as if jealousy were almost the same thing as inequity aversion. But – using the dog context – when the human gives the treat to the dog standing next to you (imagine yourself as the dog), your reaction to being cheated by the human (hey, not fair! I should have gotten that) is not the same thing as being jealous of the other dog who got the treat (hey, the human likes her better than he likes me). Thus people wanted to use the 'stress' reactions of the dog as an indicator of jealousy when in fact in the original study that used it only as an indicator of the dog's being generally upset. Also remember that in the dog study (and perhaps the capuchin study) the human dispensing the treats was a stranger to the subject.

One student came up with a pretty good design, the essence of which is as follows (imagine yourself as the subject dog): We test your emotional reaction to the other dog getting attention that could have gone to you (as when the two dogs are side by side) vs. that when the other dog is getting something that you couldn't possibly have gotten (say, where the subject sees the human interacting with the other dog in a separate room, and where the human). The dog should be more jealous in the first case. Or using the side-by-side design, you could vary whether the treat goes to the other dog on a strict alternation vs randomly to one or the other (but with same average frequency). The dog should get more jealous in the second case. There are many

possible variations of this experiment, and controls that would be needed, and you would have to identify the behaviors that indicate jealousy. You could also vary the dispenser of attention, from dog's owner to a stranger (jealousy should be greater in the first case).

6. In the video we saw Tuesday, Frans de Waal showed the inequity aversion experiment with capuchin monkeys. The actual paper (Brosnan & de Waal 2003) is attached (its only 3 pages long). According to De Waal, this experiment shows that these monkeys have a sense of **fairness.** Take the role of a skeptic here and suggest another possible interpretation of these findings, and an alternative experiment or added controls that would test this interpretation.

Brosnan & de Waal presented capuchin monkeys with the chance to trade tokens for low-quality food rewards after first witnessing a conspecific partner performing a similar trade. When the partner received a relatively higher payoff, subjects showed increased refusals to exchange tokens and increased rejections of their food payoffs relative to when the partner received the same low-quality reward as the subject. Brosnan and de Waal interpreted these results as evidence that capuchins are averse to disadvantageous inequality. However, these results are also consistent with the alternative explanation that primates react negatively to receiving a lesser reward than expected, independent of whether the expectation is set by seeing a conspecific receiving a high reward. Although Brosnan and de Waal did use a nonsocial control condition in which subjects saw higher-value rewards being delivered to an empty chamber, the pattern of rejection to the control condition was almost identical to the condition where another monkey received award. Thus the clear alternative interpretation is that the monkey's response was simply to a violation of the expectation that it would receive the good reward, and had nothing to do with the fact that the other monkey got it and he didn't. Thus we need a design which disentangles these two factors.