Origins and Evolution of Language
Week 3 tutorial briefing
Tutor notes

Comments for tutors are in italics.

Two aims for today:
1. *The obvious content goal is to read and talk about an interesting paper with some nice examples of animal communication and quite a bold hypothesis about ape gesture and communicative homologies between humans and other apes.*
2. *More generally, this is an opportunity for them to practice reading, summarising, and evaluating a research paper – they will be doing a bunch of this for their essays, so if they struggle with it you can offer them advice. E.g. even just the act of explicitly summarising the paper (either giving a verbal summary out loud, or writing down a 1-paragraph summary) can force you to realise what you do or don't understand. So if the summarising process is painful, encourage them to do this for the next reading. The questions are intended to help them think sceptically/critically about the paper's methods and conclusions, and several of these are standard questions you should be asking every time you read any paper.*

In this week's lecture and associated readings we have been looking at animal communication - the gap between their rich mental lives and what their communication system allows them to express, but also some cases where animal communication systems appear to share important features with human language (in particular, intentionality and structure). For this tutorial we will look at animal communication from a different perspective, reading [Graham & Hobaiter (2023)](), which describes an experiment investigating comprehension of ape gestures by humans. If you are interested in reading about production of ape-like gestures by young children, optionally check out [Kersken et al. (2019)]().

Before or after reading Graham & Hobaiter (2023), run through a version of their experiment yourself: you can either use [a demo version of the experiment they provide](), which is close to the actual task the participants completed but which doesn't provide feedback on individual answers, or [a similar version created by the BBC](), which includes answer-by-answer feedback. As you work through one of these versions of the experiment, reflect on how you are making your guesses. NB these definitely work in Chrome, if you have problems using a different browser switch to Chrome or Edge.

I would suggest getting someone to summarise the paper content (point 1 below) then looking at both these versions of the experiment as a group (or in several small groups) and discussing what is going on to get yourself started. I found it very demystifying to see the actual videos, it's extremely intuitive what the gestures mean, and it's worth looking at both versions – the BBC one is simpler and gives some indication of what common responses were (the little green bars that appear once you answer), but seeing the real experiment interface with the additional illustrations is also worth it.

If you are keen to do an activity there's also an ontogenetic ritualisation game below…

Questions:
- What is the paper about? What did they do? What did they find?

You will have read it so will have your own summary in mind, but I'd say: they are interested in homologies in gestural communication in apes (i.e. similarities in gestural communication due to common ancestry), and in particular the fact that humans seem to be a bit of an outlier in the ape family in not producing these sorts of gestures in the wild. They set out to test whether humans can still nonetheless understand gestures from the great ape repertoire, and find that they can (at above-chance levels at least). They interpret this as showing that humans do indeed have access (at least on the comprehension side) to this ancestral ape communication system. It's quite implicit, but I think a reasonable interpretation of this is that those gestures are to some extent 'innate", i.e. coded in the genes and inherited from the common ancestor of all apes.

- What do you think the strengths of their experimental method are? What are the weaknesses? How could these be fixed?

You should be guided by your students and your own thoughts here, but personally I quite liked the experiment – I think it's a very sensible and imaginative way to attempt to address this question. I am a bit worried about the images in the "real" version, which make some quite subtle movements (e.g. presenting one's back) really clear. I also wonder how good people would be on some of these if they had to write a text description of the intended meaning rather than being presented with 4 labelled buttons – I have the intuition the "true" meaning is obvious once you see it but might not always be so obvious if you had to generate the possible meanings yourself.

- Do their conclusions follow from the results they present? Are there additional (perhaps inconvenient!) conclusions they could have drawn but didn't?

It seems pretty uncontroversial that people can do the task, so for me the key thing is the mechanisms involved, i.e. how they are doing the task, see below. Casting an ultra-cynical eye, you might question why people aren't better at it – why are we so bad for e.g. "object shake" or "present genitals", both of which primarily mean "let's have sex", given that is presumably quite an ancestrally important signal, is that to do with the obscurity of the signal or the differences the romantic lives of humans and other apes?

- How do you think these gestures became established in ape populations? For inspiration you could think back to the example of the wolf baring its teeth or the pictionary games we discussed briefly in lecture 1.

This might be quite hard to answer cold, but hopefully you can brainstorm some possibilities. There are at least a couple of obvious ones. (1) it could be an innate communication system tuned by natural selection, much like the wolf baring its teeth: if you make manifest your intended actions or desires (e.g. your intention to take food from someone's mouth, or your need to be groomed) then you are more likely to get what you want, and so selection acts to make those actions which make your intentions/desires even clearer, and also tunes receivers

to attend to those signals to avoid e.g. conflict; this is sometimes called "phylogenetic ritualization". (2) "Ontogenetic ritualization", which is basically the same process but occurring over the course of interaction between two individuals, where they come to mutually anticipate each other's intentions. For instance, if I want the food you have I reach into your mouth and pull it out; next time I try it, you realise what I want before I have actually pulled it out of your mouth and release it; eventually I can just reach for it "symbolically" and you give it to me (assuming you want to feed me!). This is much more like the development of shared pictorial conventions in the Pictionary game, where my drawing essentially reminds you of our history of interaction, and it predicts that these conventions will either be idiosyncratic to the pairs that negotiate them (e.g. my history of interaction with A is different from my history with B), **or** there are a few recurring pathways for ritualisation that explain why different pairs/groups/species might share gestures.

If ontogenetic ritualisation is too abstract, you could get them to play a cooperative game: individual A has to get individual B to either put a hand on A's shoulder, or follow A around the room. Individual B is told to help A achieve their goals, but doesn't know what those are. They aren't allowed to speak or point or use symbolic gestures like beckoning. I think (?) the best A can do initially is physically move B's arm into the right position, or drag B after them, but extremely quickly B should figure this out and raise the arm that A reaches for, or follow when A reaches out to initiate the pulling; A might also make it extra obvious what they want by exaggerating and differentiating the gestures. i.e. they develop a little short-hand gesture meaning "put your hand on my shoulder", "follow me." Might be bonkers, might be fun.

- How do you think human participants are able to interpret these gestures? How did you interpret them? Do you think these mechanisms are the same or different as those used by the apes in the videos?

This is a completely open question. For me, I feel like the meaning of the gestures is quite iconic, in that you can guess that e.g. pulling food from someone's mouth means you want food, or presenting your back to your offspring means you want to carry them on your back. In some cases the context helped too – e.g. a small chimp is unlikely to want to carry a large chimp on its back, an infant is unlikely to be soliciting sex. Whether the animals in these videos are reasoning about signal meaning on the fly in this way is another question – they may be doing the same thing, or they may be calling on their history of interaction, or it may be more instinctive and tapping into evolved innate form-meaning mappings. And it could be the case that we are doing that too, and I am just kidding myself about recovering the gesture meanings iconically. The question is, how would you tell?

- After reading the paper and discussing these issues, what conclusion do you draw on the question of whether (aspects of) the gestural communication systems of apes and humans are homologous?

For me this depends on the mechanism involved – are we looking at a homologous capacity to reason about iconic communication (in which case, that sounds like it might be very widespread indeed?), are we looking at a homologous innate gestural communication system, or are the human mechanisms of interpretation for these gestures different for

humans and chimps, in which case it might not be homologous at all. If it is homologous, you could also ponder why we no longer use this capacity.