Abstract for ESPP 2026, Utrecht
Submission for: Talk
Word count (without references): 667
Title: The Lower Bounds of Belief

Recently, much attention has been given to which species possess perceptual capacities (Burge, 2010), consciousness (Birch, Schnell, & Clayton, 2020), or episodic memory (Boyle & Burns Brown, 2025). This paper looks at the question of which species possess propositional attitudes (Bermúdez, 2003; Camp, 2009; Carruthers, 2009), focusing on belief. If it is nearly trivial that some animal species have belief, it is less clear which species lack it, or why. I argue a vast number of species are likely to bear beliefs, but that the lower bound on bearing them is fuzzy. The fuzziness is a result of belief's being a natural kind.

I propose two criteria for identifying belief in other species. One is representational format: animals with belief must mentally represent, and at least some of their representations should have language-like structure. Propositional representations make propositional attitudes. Another is belief's psychofunctional profile: animals with beliefs should form, store, and update those representations in ways similar to human belief. There is reasonable evidence for fulfillment of both criteria in several non-human species, suggesting belief is remarkably widespread; uncertainty remains for species that show only partial fulfillment of them.

As concerns propositional structure, many non-human species show capacities diagnostic of a language of thought (reference redacted for review), including logical inference (Pepperberg, et al., 2018; Engelmann, et al., 202; Dautriche, et al., 2023) and abstract representation. There is even tentative evidence for abstract representation in bumble- and honeybees (Solvi, et al, 2020; Howard, et al., 2019). This suggests a large number of species may be on the "having" side of the criterion. Yet, because the diagnostic features of a language of thought are separable ([redacted for review]), it is possible a species may possess some of the diagnostic features, but not all, failing to clearly fulfill the criterion. There is likely a "fuzzy" lower bound to language-of-thought-possessing species.

As concerns the second criterion, comparative cognition is undergoing a phase shift, with rapidly increasing uses of belief-like language to describe non-human species (Whissel, Abramson, & Barber, 2013). At the same time, theorists are developing increasingly rich models of the generalizations that cover how beliefs are formed, stored, and updated in humans (reference redacted for review; Van Leeuwen, 2023). We are beginning to be able to consider specific predictions about belief's role in non-human minds. To take one example, since cognitive dissonance is a recurrent feature of belief updating in humans (*cf.* Vaidis, et al, 2024), one might expect it to occur in other species, too. Both effort justification (Harmon-Jones, 2017) and spreading of alternatives (Egan et al. 2007) have been observed in numerous non-human species. Another example is performance on false belief tasks. While controversial as benchmarks of theory of mind (Povinelli & Vonk, 2003; Andrews, 2017), success at such tasks provides excellent evidence for an animal's possessing belief more generally (for example, beliefs about another animal's behavior or perceptual states). This criterion, like the first one, may allow for borderline cases, since some of features of belief in humans are separable frome one another.

This approach to identifying belief in non-human animals an example of what is called chauvinism (Block, 1980). We privilege human belief epistemically, measuring mental states in animal minds against states we know about from human psychology. This rules out mental states in other species

that are implemented differently, or are governed by different psychological laws, than our own—but which we might intuitively categorize as propositional attitudes. Why prioritize the human mind? One answer to this objection is that belief is a natural kind (Sperber, 1997; Van Leeuwen, 2023; reference redacted). Since our best understanding of this kind comes from the human case, human-like features are a non-question-begging starting point for inquiry. It may be the case that over time, our understanding of the principles of non-human cognition shift our understanding of the natural kind, forcing broader characterizations of its most basic features. Over time, our understanding of the natural kind is likely to shift with the full body of evidence on offer.

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