Introduction for Discussion of Minimal Theory of Mind

Stephen A. Butterfill & Ian Apperly
<s.butterfill@warwick.ac.uk>

November 8, 2013

Is mindreading in human adults automatic or non-automatic? On asking this question you are immediately confronted by apparently conflicting evidence: some studies say it is automatic, others that it is not. What to do? One idea is that mindreading may involve multiple process; some are automatic, others are not. (We defended this idea earlier, in Apperly & Butterfill 2009; see van der Wel et al. 2013 for new evidence in favour.) So there is apparently conflicting evidence because there is more than one kind of mindreading.

At this point a second puzzle confronts you. How could mindreading ever be automatic? Usually mindreading is understood to involve applying a sophisticated theory of the mental. This would mean that mindreading could never be automatic. Why not? Because for a process to be automatic it has to be cognitively efficient: it cannot rely on things like working memory, attention or inhibitory control. But a cognitively efficient process can't involve applying a sophisticated theory, at least not in the normal run of things. So we need a stripped-down, minimal theory of the mind. In the paper that is the target of this discussion we describe how to construct such a minimal theory of mind, and thereby explain how mindreading could sometimes be automatic.

We also show that a minimal theory of mind can be surprisingly powerful: within a limited but useful range of circumstances, using such a theory would be sufficient for tracking others' false beliefs. Why is this interesting? Following Bennett's, Dennett's and Harman's responses to Premack & Woodruff (1978), researchers assumed that the ability to track others' false beliefs is an acid test for full-blown theory of mind. But we've shown that this is possible with only minimal theory of mind.

Up to this point our position is merely theoretical. It concerns only how mindreading could be cognitively efficient. But we also make a conjecture. The conjecture concerns cases where mindreading is cognitively efficient—in

human adults' automatic mindreading, in infants, in chimpanzees and in scrub jays. We conjecture that, in some or all of these cases, mindreading involves using a minimal theory of mind.

At this point you might object that our conjecture is speculative. But our conjecture generates predictions about the signature limits of mindreading involving minimal theory of mind. We're starting to see these predictions being tested … and, so far, confirmed (Low & Watts 2013; Fizke et al. 2013). So what we offered as a speculation when writing the paper is now a conjecture that has been tested. Of course we don't yet know how the conjecture about minimal theory of mind will fare in future tests. But if it does turn out to be wrong, someone else will have to explain how mindreading could sometimes but not always be cognitively efficient.

To sum up:

1. How could mindreading be both automatic and non-automatic?

   Because it involves multiple systems.

2. How could mindreading ever be automatic?

   Because it involves multiple theories of mind, some sophisticated others minimal

3. How can we test which theory of mind a mindreader is using?

   Different theories have different signature limits.

References

Apperly, I. A. & Butterfill, S. (2009). Do humans have two systems to track beliefs and belief-like states? *Psychological Review*, *2009*(116), 4.

Fizke, E., Butterfill, S. A., & Rakoczy, H. (2013). Toddler's understanding of false beliefs about an object's identity. In *Poster presented at the Biennial Meeting of the SRCD, Seattle*.

Low, J. & Watts, J. (2013). Attributing false-beliefs about object identity is a signature blindspot in humans' efficient mindreading system. *Psychological Science*, *24*(3), 305–311.

Premack, D. & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioral and Brain Sciences*, *1*(04), 515–526.

van der Wel, R. P. R. D., Sebanz, N., & Knoblich, G. (2013). Do people automatically track others' beliefs? evidence from a continuous measure. *Cognition*, *in press*.